DEPARTMENT OF THE ARMY
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REPLY TO
ATTENTION OF

Directorate of Public Works

Mr. James Bearzi
New Mexico Environment Department
Hazardous Waste Bureau
2905 Rodeo Park Drive East, Building 1
Santa Fe, New Mexico 87505-6303

Subject: Phase III RCRA Facility Investigation (RFI) Report HELSTF Sites (Multiple IRP Sites; Multiple SWMUs); EPA ID# NM 2750211235

Dear Mr. Bearzi:

Enclosed you will find the following report (1 print copy w/CD):

Final Phase III RFI Report HELSTF Sites (dated February 20008)

The following certification is provided as required by our permit and according to NMAC 20.4.1.900, incorporating 40 CFR 270.11:

> *"I certify under penalty of law that this document and all attachments were prepared under my direction or supervision according to a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."*

Copies furnished, with enclosure (1 print copy w/CD), to Ms. Cheryl Frischkorn, NMED-HWB; Mr. Chuck Hendrickson, Region VI EPA; Mr. Bill Davis, U.S. Army Environmental Center; and without enclosure, to Mr. John Kieling, NMED-HWB and White Sands Technical Services, LLC.

Should you have any questions regarding this matter, please contact Mr. Jose Gallegos of our Environmental Compliance office at (505) 678-1007.

Sincerely,

Thomas A. Ladd

THOMAS A. LADD
Director, Public Works

WSMR Environmental Document ES-EC-TO-007-08-231

FINAL

PHASE III RFI REPORT HELSTF SITES

Construction Landfill (SWMUs 38 and 39) IRP ID WSMR-52;
Chromate Spill Site (SWMU 143) WSMR-54;
Systemic Diesel Spill (SWMU 154) WSMR-55;
HELSTF Groundwater WSMR-85; and Miscellaneous Sites

WHITE SANDS MISSILE RANGE

February 2008

White Sands Missile Range
Directorate of Public Works - Environment Division
White Sands Missile Range, New Mexico 88002
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14. ABSTRACT

A comprehensive investigation (Phase III RFI) was planned for and conducted under an NMED-approved work plan at HELSTF under the WSMR IRP as WSMR-85 (HELSTF Groundwater Study). The purpose was to present an evaluation of previously known contaminant releases and their associated risks at HELSTF. Activities are regulated under the terms of the WSMR RCRA Permit HSWA Module, with oversight from the NMED Hazardous Waste Bureau. The findings of the Phase III RFI confirmed and reinforced WSMR's prior understanding of HELSTF. The hydrogeologic setting consists of a series of perched water bearing zones above a brackish to saline regional aquifer. The contaminant distribution largely reflects the impacts of the two significant spills – the Systemic Diesel Spill (and the commingled spill from the Cleaning Facility) and the Storage Yard Chromate Spill. There appears to be little contamination or other impact from the HELSTF Construction Landfills or other SWMUs. Findings of this investigation will be carried forward to a Corrective Measures Study (CMS) to address the SWMUs identified as having a contaminant impact. The balance of the HELSTF site is expected to require no remediation. Changes due to decommissioning the wastewater lagoons will need to be monitored and factored into the CMS.

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PHASE III RFI REPORT – HELSTF SITES

CONSTRUCTION LANDFILL (SWMUS 38 AND 39) – IRP ID WSMR-52; CHROMATE SPILL SITE (SWMU 143) – WSMR-54; SYSTEMIC DIESEL SPILL (SWMU 154) – WSMR-55; HELSTF GROUNDWATER – WSMR-85; AND MISCELLANEOUS SITES

Submitted to:

U.S. Army
White Sands Missile Range
Directorate of Public Works - Environment Division
White Sands Missile Range, New Mexico 88002-5048

February 2008

Submitted by:

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EXECUTIVE SUMMARY

White Sands Missile Range (WSMR) has evaluated past activities and waste management practices at the High Energy Laser System Test Facility (HELSTF), a tenant area occupied and operated by the U.S. Army Space and Missile Defense Command. Based on the results of two previous phases of the Resource Conservation and Recovery Act (RCRA) Facility Investigation (RFI) and correspondence from the New Mexico Environment Department (NMED), an additional comprehensive investigation (Phase III RFI) was planned for and conducted under the US Army's WSMR Installation Restoration Program (IRP). The IRP site designation is WSMR-85 (HELSTF Groundwater Study). The purpose of the Phase III RFI is to present an evaluation of previously known contaminant releases and their associated risks at HELSTF. The expectation is that this comprehensive evaluation will lead to identification of final corrective measures.

The Phase III RFI was conducted under an NMED-approved work plan titled "*Revised Phase III RFI Work Plan – HELSTF Sites [Construction Landfill (SWMUs 38 and 39) – IRP ID WSMR-52; Chromate Spill Site (SWMU 143) – WSMR-54; Systemic Diesel Spill (SWMU 154) – WSMR-55; and HELSTF Groundwater – WSMR-85]"* (WTS, 2007). Activities are regulated under the terms of the WSMR RCRA Permit HSWA Module, with oversight from the NMED Hazardous Waste Bureau.

The Phase III RFI addresses known contaminant releases within the HELSTF complex, including 30 Solid Waste Management Units (SWMUs) and 4 Areas of Concern (AOCs). Prior efforts have been made to vertically and horizontally delineate each unit to action levels. However, due to the proximity and overlap of many of the units, it is useful to divide the facility into subareas containing groups of units. The characterization, delineation and preliminary risk assessment is completed in the Phase III RFI for each group in a holistic view rather than by specific units. This approach is consistent with previous NMED guidance regarding corrective action at HELSTF.

The findings of the Phase III RFI confirmed and reinforced WSMR's prior understanding of HELSTF. The hydrogeologic setting consists of a series of perched water bearing zones above a brackish to saline regional aquifer. The perched zones are fed and maintained by leakage from HELSTF operations, primarily the existing wastewater lagoons, which were taken out of service in August 2007. When these lagoons are fully decommissioned the expectation is that the perched zones will largely dissipate. The rate of dissipation and its completeness cannot be accurately predicted, given current data.

The contaminant distribution found at HELSTF by this and other investigations largely reflects the impacts of the two significant spills – the Systemic Diesel Spill (and the commingled spill from the Cleaning Facility) and the Storage Yard Chromate Spill. There appears to be little contamination or other impact from the HELSTF Construction Landfill or other SWMUs.

Recommendations are to carry forward the findings of this investigation to a Corrective Measures Study (CMS). The focus of that study will be development of a plan of action to address the SWMUs identified as having a contaminant impact. The balance of the HELSTF site is expected to require no remediation at the present time. Changes due to decommissioning the wastewater lagoons will need to be monitored and factored into the CMS.

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LIST OF ACRONYMS AND ABBREVIATIONS

AOC	Area of Concern
bgs	below ground surface
CC	[the Army] Compliance Cleanup Program
CCWS	Compliance Cleanup Program White Sands Missile Range
CFW	Cleaning Facility Well
COC	Contaminant of Concern
COPC	Contaminant of Potential Concern
CSM	Conceptual Site Model
DAF20	Dilution / attenuation factor [source is 20 ft above groundwater]
DRO	Diesel Range Organics
DRW	Diesel Recovery Well
EPA	[US] Environmental Protection Agency
EPC	Exposure Point Concentration
FOC	Fraction Organic Carbon [%]
ft	foot, feet
GRO	Gasoline Range Organics
HCF	HELSTF Cleaning Facility
HELSTF	High Energy laser Systems Test Facility
HMW	HELSTF Monitor Well
HSWA	Hazardous and Solid Waste Amendment of 1984
IRP	Installation Restoration Program
ITC	International Technology Corporation
LSTC	Laser Systems Test Center
MAR	Multifunction Array Radar
mg/kg	milligrams per kilogram
mg/L	milligrams per liter
NFA	No Further Action
NMED	New Mexico Environment Department
OSWER	Office of Solid Waste and Emergency Response
PID	Photoionization Detector
PVC	Polyvinyl Chloride
RCRA	Resource Conservation & Recovery Act of 1976
RFI	RCRA Facility Investigation
SB	Soil Boring
SEI	Sverdrup Environmental, Inc.
SMDC	[U.S. Army] Space and Missile Defense Command
SSL	Soil Screening Levels
SVOC	Semivolatile Organic Compound
SWMU	Solid Waste Management Unit
TCE	Trichloroethene
TDS	Total Dissolved Solids
UCL	Upper Confidence Limit
µg/kg	micrograms per kilogram
µg/L	micrograms per liter
VOC	Volatile Organic Compound
WSMR	White Sands Missile Range
WSNM	White Sands National Monument
WTS	White Sands Technical Services, LLC

PHASE III RFI REPORT – HELSTF SITES

Construction Landfill (SWMUs 38 and 39) – IRP ID WSMR-52; Chromate Spill Site (SWMU 143) – WSMR-54; Systemic Diesel Spill (SWMU 154) – WSMR-55; HELSTF Groundwater – WSMR-85; and Miscellaneous Sites

1.0 INTRODUCTION

White Sands Missile Range (WSMR) has evaluated past activities and waste management practices at the High Energy Laser System Test Facility (HELSTF), a tenant area occupied and operated by the U.S. Army Space and Missile Defense Command (SMDC). Based on the results of two previous phases of the Resource Conservation and Recovery Act (RCRA) Facility Investigation (RFI) and correspondence from the New Mexico Environment Department (NMED), an additional comprehensive investigation (Phase III RFI) was planned for and conducted under the US Army's WSMR Installation Restoration Program (IRP). The findings of the Phase III RFI are detailed in this report.

The IRP is specifically focused on addressing contamination resulting from past activities, and is funded by the centrally-managed Environmental Restoration, Army budget account. Cleanup activities directed at contamination primarily resulting from recent or current operations are separately funded and managed under the Army Compliance Cleanup (CC) Program. Sites managed under the CC Program are given CC Identification Numbers. However, all cleanup activities are regulated as RCRA corrective actions under the terms of the WSMR RCRA Permit HSWA Module, with oversight from the NMED Hazardous Waste Bureau. The IRP site designation is WSMR-85 (the HELSTF Groundwater Study).

The Phase III RFI was conducted under an NMED-approved work plan titled "*Revised Phase III RFI Work Plan – HELSTF Sites [Construction Landfill (SWMUs 38 and 39) – IRP ID WSMR-52; Chromate Spill Site (SWMU 143) – WSMR-54; Systemic Diesel Spill (SWMU 154) – WSMR-55; and HELSTF Groundwater – WSMR-85]"* (WTS, 2007). The work plan for the HELSTF Phase III RFI was prepared in support of the WSMR RCRA Permit HSWA module and the WSMR IRP.

1.1 Purpose and Scope of Investigation

The purpose of the Phase III RFI is to present a comprehensive evaluation of previously known contaminant releases and their associated risks at HELSTF. The expectation is that this comprehensive evaluation will lead to identification of final corrective measures.

The Phase III RFI addresses known contaminant releases within the HELSTF complex, including 30 Solid Waste Management Units (SWMUs) and 4 Areas of Concern (AOCs). Prior efforts have been made to vertically and horizontally delineate each unit to action levels. However, due to the proximity and overlap of many of the units, it is useful to divide the facility into subareas containing groups of units. The characterization, delineation and preliminary risk assessment is completed in the Phase III RFI for each group in a holistic view rather than by specific units. This approach is consistent with previous NMED guidance regarding corrective action at HELSTF. The locations of the Phase III investigations (monitor wells and soil borings) are shown on Plate 1 (in pocket).

1.2 Location and Mission of HELSTF

HELSTF, a facility on WSMR, is located approximately 18.5 miles northeast of the WSMR Main Post, approximately 2.2 miles north of U.S. Highway 70 (Figure 1-1).

HELSTF's primary mission is to support the testing and evaluation of high-energy laser systems, subsystems, components, and materials. Within the U.S. Army, HELSTF has been managed by WSMR and, for the last 17 years, by SMDC.

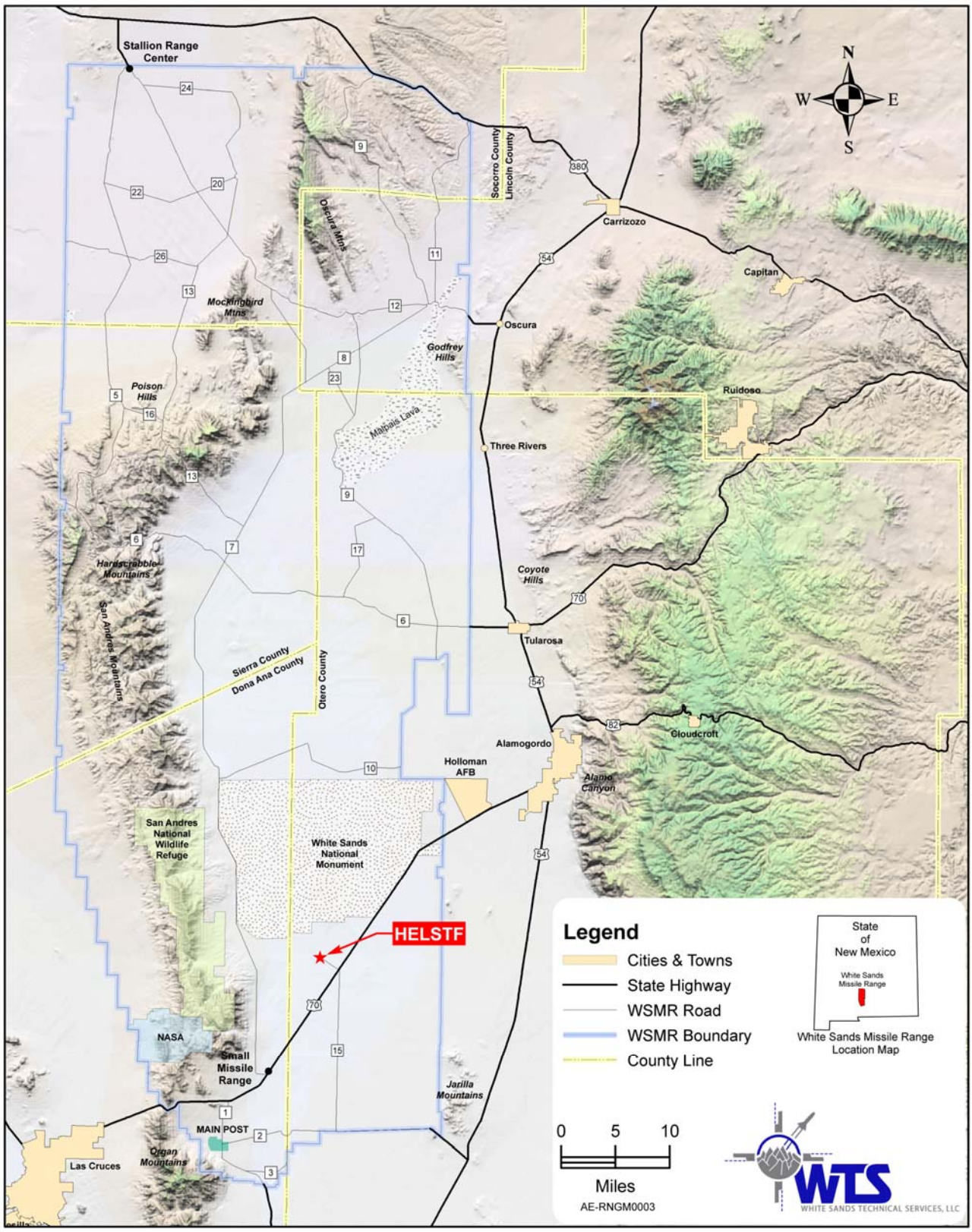

FIGURE 1-1. GENERAL LOCATION OF HELSTF.

1.3 HELSTF Site Description, Land Use, and Operational History

The area that HELSTF occupies was originally part of a bombing range. The Multifunction Array Radar (MAR) facility was constructed on the site in 1963. The radar was used to track incoming warheads and guide the missiles to their assigned targets as part of the Nike Zeus Anti-Ballistic Missile System Program. The facility had a large operations building, a small maintenance building, an administration building, and a paved airstrip.

The facility was closed in April 1968 when more advanced radar made it obsolete. The buildings later housed the Atmospheric Sciences Laboratory for conducting Electronic Countermeasures studies.

In the mid 1970's, the Department of Defense identified the need for a test site to support the continued development of laser weapon systems. WSMR was eventually chosen for the home of the High Energy Laser Systems Test Facility and several hundred acres were set aside for its use. The new facility consisted of numerous buildings in five main areas: the Laser System Test Center (LSTC), Test Cell Area, Fluid Supply Area, the Down Range Test Area and the Technical Support Area (Figure 1-2). HELSTF began limited operations in July 1982 and became fully operational in September 1985.

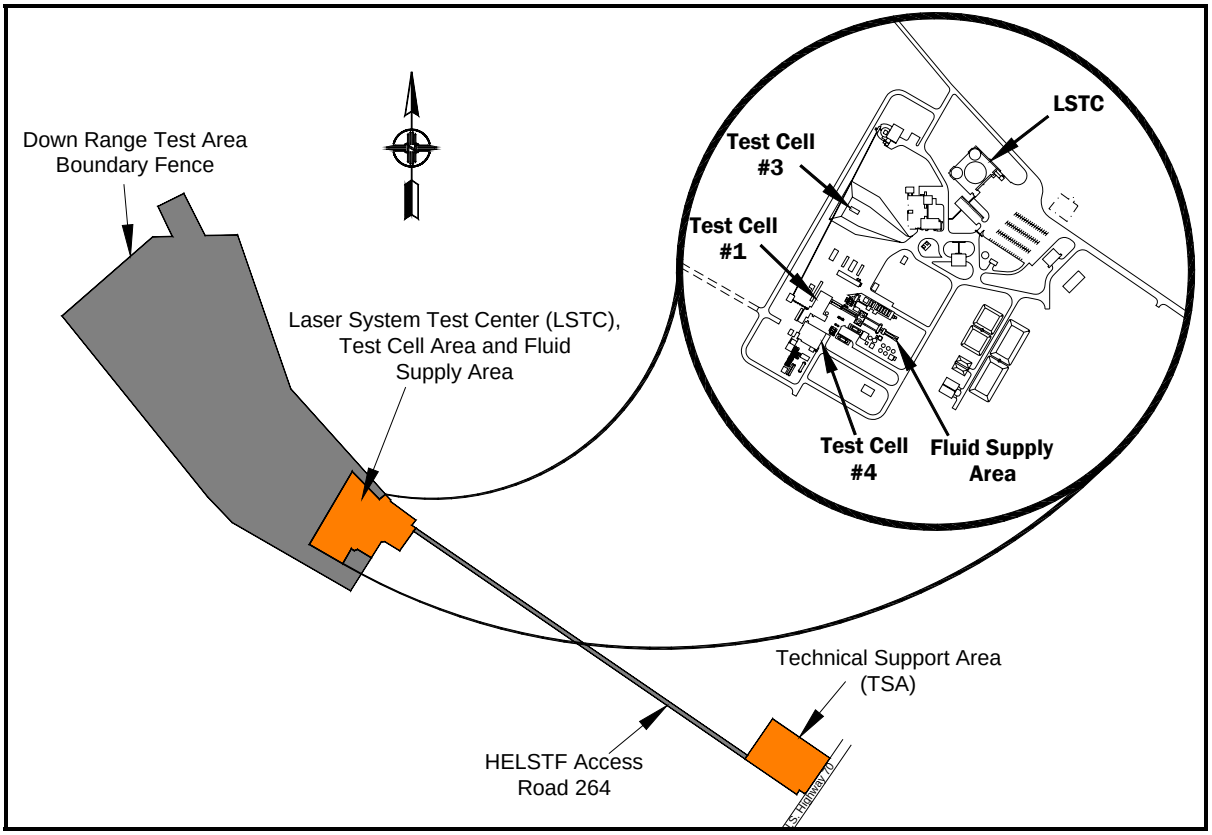

FIGURE 1-2. HELSTF LAYOUT

HELSTF was originally operated under the direction of the Commander, WSMR. On 1 October 1990, HELSTF management was transferred to the US Army Strategic Defense Command, and the HELSTF mission was expanded to include Army and Department of Defense (DoD) research and development efforts, as well as retain its capabilities for performing test and evaluation support. Today HELSTF is operated by SMDC as a tri-service (Army, Navy and Air Force) entity that tests and evaluates high-energy laser systems, subsystems, and components.

1.4 Regulatory Background

A more comprehensive regulatory background is included in the Phase III RFI Work Plan (WTS, 2007) that includes reasoning behind the comprehensive approach to studying the contamination at HELSTF. The following discussion summarizes the known regulatory activities to date.

WSMR submitted a RCRA permit application after new Hazardous Waste Management Regulations were published on 19 May 1980. The permit was issued jointly by the EPA and NMED on 29 September 1989. The SWMUs identified in the RCRA Facility Assessment (RFA) were included in the HSWA module of the permit and stipulated the investigation and corrective action at 9 SWMUs and 1 AOC at HELSTF. The other 8 SWMUs at HELSTF were placed on the no further action (NFA) list.

WSMR conducted Phase I (ITC, 1992a) and Phase II RFI (SEI, 1994) RCRA Facility Investigations (RFIs) in 1991 and 1994, respectively. Table 1-1, below, provides site descriptions and status of each SWMU and AOC at HELSTF – current as of the initiation of the RFI. For the sake of continuity, the designations and descriptions from the Work Plan are carried forward to this report. The draft WSMR RCRA Permit (June 2007) contains SWMU lists that differ somewhat from the list in this document. One of the early deliverables under the Permit will reconcile nomenclature and designations. Future documents dealing with HELSTF will use the corrected SWMU identifications. Table A-1 (Appendix A) provides a more detailed site description of each SWMU. The locations of the SWMUs and AOCs are shown on Figure 1-3.

Following the Phase I RFI, in November 1993, WSMR initiated a class III modification to the HSWA Permit to remove 24 solid waste management units from the list of sites requiring further action. The modification was formally approved by the EPA on 31 December 1996 and included a NFA determination for six HELSTF SWMUs.

When WSMR completed the Phase II RFI in 1994, NMED and EPA both issued notices of deficiency regarding the report. Since there had been a great deal of confusion over whether contaminants detected beneath a SWMU were related to that SWMU or not, NMED emphasized the need to address the SWMUs at HELSTF differently than those at other locations. The NMED provided both general and specific comments related to SWMUs at HELSTF. Specific comments and responses thereto are addressed in the Phase III RFI activities section of this report.

WSMR agreed to provide a comprehensive report, but resisted prolonging the investigative process. In response to the need for addressing the sites at HELSTF collectively, WSMR established a single IRP site (WSMR-85, HELSTF Groundwater Study) to enable funding multiple sites under the IRP.

WSMR submitted petitions to remove nine of the HELSTF SWMUs from the HSWA Permit in 2000 and 2001. The NMED denied the petitions on 11 March 2002 restating many of their concerns expressed in 1996 (NMED, 2002).

TABLE 1-1. LIST OF SWMUS AND AOCS AT HELSTF

No.	SWMU Designation	IRP OR CC ID	Description	Status
1	23	NA	Old Hazardous Waste Tanks	Omitted from HSWA Permit. Site remains on Table A.2 of the 2006 Annual Fee letter indicating No Further Action required.
2	24	NA	Old Hazardous Waste Tanks	Omitted from HSWA Permit. Site remains on Table A.2 of the 2006 Annual Fee letter indicating No Further Action required.
3	25	NA	Waste Accumulation Area	Omitted from HSWA Permit. Site remains on Table A.2 of the 2006 Annual Fee letter indicating No Further Action required.
4	26	NA	Vapor Recovery Unit	Site listed in Table A.1 of the 2006 Annual Fee letter. Needs to be moved to NFA list, Table A.2. RFI to continue as part of \diesel fuel leak, SWMU 154.
5	27	CCWS-79 formerly WSMR-44	Sanitary Treatment System	Active site. Final RFI report and ecological risk assessment is required.
6	28	CCWS-79 formerly WSMR-44	Sanitary Treatment System	Active site. Final RFI report and ecological risk assessment is required.

TABLE 1-1. LIST OF SWMUS AND AOCS AT HELSTF				
No.	**SWMU Designation**	**IRP OR CC ID**	**Description**	**Status**
7	29	CCWS-79 formerly WSMR-44	Sanitary Treatment System	Active site. Final RFI report and ecological risk assessment is required.
8	30	CCWS-79 formerly WSMR-44	Sanitary Treatment System	Active site. Final RFI report and ecological risk assessment is required.
9	31	WSMR-43	Chemical Waste Tank	RCRA closure will be coordinated with the RFI process at the cleaning facility, SWMU 142.
10	32	WSMR-43	Chemical Waste Tank	RCRA closure will be coordinated with the RFI process at the cleaning facility, SWMU 142.
11	33	WSMR-49	Fluorspar Tank	Site placed in Table A.2 of the 2006 Annual Fee letter for no further action.
12	34	WSMR-49	Fluorspar Tank	Site placed in Table A.2 of the 2006 Annual Fee letter for no further action.
13	35	WSMR-50	Ethylene Glycol Tanks	Omitted from HSWA Permit. Site remains on Table A.2 of the 2006 Annual Fee letter. No Further Action required.
14	36	WSMR-50	Ethylene Glycol Tanks	Omitted from HSWA Permit. Site remains on Table A.2 of the 2006 Annual Fee letter. No Further Action required.
15	37	NA	Waste Oil Accumulation Area at Bldg. 26121	Omitted from HSWA Permit. Site remains on Table A.2 of the 2006 Annual Fee letter. No Further Action required.
16	38	CCWS-75 formerly WSMR-52	Construction Landfill	NMED requiring closure and post-closure care activities. Final RFI and ecological risk assessment is required.
17	39	CCWS-75 formerly WSMR-52	Construction Landfill	NMED requiring closure and post-closure care activities. Final RFI and ecological risk assessment is required.
18	141	WSMR-83	Equipment Storage Area	Unit removed from 2006 Annual Fee letter. No Further Action required.
19	142	CCWS-05 formerly WSMR-48	Cleaning Facility Sump	Under the WSMR monitoring program. Further investigations and ecological risk assessment required.
20	143	WSMR-54	Chromate Spill Site	Under the WSMR monitoring program. Further investigations and ecological risk assessment required.
21	144	CCWS-02 formerly WSMR-47	LSTC Wastewater Discharge Point	2006 Annual Fee letter continues to list SWMU as requiring corrective action. Final RFI report and ecological risk assessment required. Background soil study required to rule out arsenic as contaminant.
22	145	WSMR-53	Test Cell 4 Lagoon	2006 Annual Fee letter continues to list SWMU as requiring corrective action. Final RFI report and ecological risk assessment required.
23	146	CCWS-03 formerly WSMR-45	Dry Pond	2006 Annual Fee letter continues to list SWMU as requiring corrective action. Final RFI report and ecological risk assessment required. Background soil study required to rule out arsenic as contaminant.
24	147	WSMR-78	Decontamination Pad Underground Tank	2006 Annual Fee letter continues to list SWMU requiring corrective action. Further investigations required by the NMED.
25	148	WSMR-83	MAR Waste Stabilization Pond	2006 Annual Fee letter continues to list SWMU requiring corrective action. Final RFI report and ecological risk assessment required.
26	149	WSMR-46	Maintenance Bldg. Septic System	Active site. Unit listed in Table A.2 of the Annual Unit Audits requiring no further action. No corrective action required by the NMED.
27	150	NA	MAR Dump Site	2006 Annual Fee letter continues to list SWMU requiring corrective action. Final RFI report and ecological risk assessment required.
28	151	WSMR-46	Trailer Area Septic System	Active site. Unit listed in Table A.2 of the 2006 Annual Fee letter requiring no further action. No corrective action required by the NMED.
29	152	WSMR-46	Property and Supply Bldg. Septic Sys.	Active site. Unit listed in Table A.2 of the 2006 Annual Fee letter requiring no further action. No corrective action required by the NMED.
30	154	WSMR-55	Systemic Diesel Spill	Under the WSMR monitoring program. Further investigations and ecological risk assessment required.
31	AOC - WSMR 85	WSMR-85	HELSTF Groundwater Study	Site wide RFI and ecological risk assessment to be conducted.
32	AOC – N	NA	Process Spills at HELSTF	Remains listed as non-billable corrective action unit in the 2006 Annual Fee letter.
33	AOC – Q	NA	Lab Drains	Listed in Table A.1 of the 2006 Annual Fee letter requiring corrective action. Remains listed as non-billable corrective action unit
34	AOC – V	NA	Pressure Recovery System	Removed from the HSWA operating permit. Site remains on Table A.2 of the 2006 Annual Fee letter indicating no further action.

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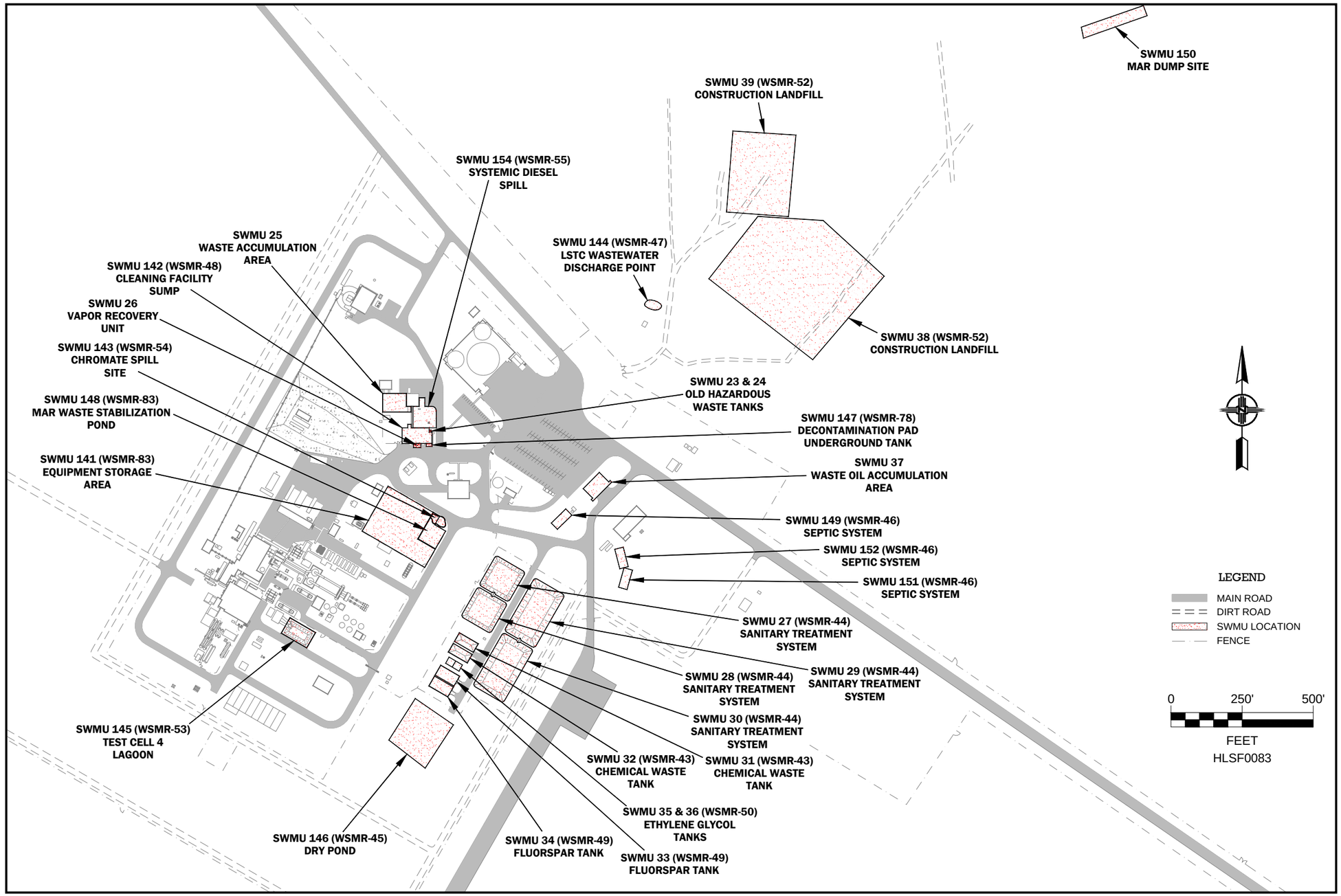

FIGURE 1-3. LOCATION OF SWMUS AT HELSTF

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2.0 ENVIRONMENTAL/REGIONAL SETTING

Descriptions of the facility demography and sensitive environments follow in this section.

2.1 Demography

During 2007 there were approximately 15 government civilian employees and 150 contracted personnel working at HELSTF. According to WSMR statistics, 56% of the range employees lived in Las Cruces, 17% in El Paso, 12% in WSMR proper, 9% in Alamogordo and 6% in other areas.

2.2 Sensitive Environments

Based on field reconnaissance and literature review, the predominant habitat at HELSTF is desert basin scrub. Five ecological receptor types near HELSTF were identified (USACE, 1989). These include flora and four types of fauna (reptiles, amphibians, birds, and mammals). Each type is further described in this section. The subject of threatened and endangered species is addressed separately in Section 2.2.5.

2.2.1 Flora and Fauna

HELSTF is centrally located in the Tularosa Basin at approximately 4,000 ft elevation. Yesum-Holloman series soils support sparse vegetation cover dominated by four-wing saltbrush, dropseed grasses, and snakeweed. The predominant and common flora occurring near HELSTF are listed in Table 2-1.

TABLE 2-1. FLORA NEAR HELSTF SITE

Common Name	Scientific Name	Frequency
Four-wing Saltbush	Atriplex canescens	Predominant
Dropseed grasses	Sporobolus nealii	Predominant
Russian thistle	Salsola tragus	Common
Threeawn grasses	Aristida sp.	Common
Mormon tea	Ephedra torreyana	Common
Snakeweed	Gutierrezia sarothrae	Common

Reptiles and amphibians that could be encountered at HELSTF are provided in Table 2-2.

TABLE 2-2. REPTILES AND AMPHIBIANS POTENTIALLY ENCOUNTERED AT HELSTF

Common Name	Scientific Name	Type/Notes
Couch's Spadefoot	Scaphiopus couchii	spadefoot toad
Mexican Spadefoot	Scaphiopus multiplicata	spadefoot toad
Southern prairie lizard	Sceloporus cowlesi	Lizard
Lesser earless lizard	Holbrookia maculata	Lizard
Lesser earless lizard	Holbrookia maculate	Lizard
Longnosed leopard lizard	Crotaphytus wislizenii	Lizard
Little striped whiptail lizard	Cnemidophorous inornatus	Lizard
Western coachwhip	Masticophis flagellum	Snake
Painted desert glossy	Arizona elegans	Snake
Gopher snake	Pituophis catenifer	Snake
Longnosed snake	Rhinocheilus lecontei	Snake
Night snake	Hypsiglena torquata	Snake
Western diamondback rattlesnake	Crotalus atrox	Snake (venomous)
Prairie rattlesnake	Crotalus viridis	Snake (venomous)

With the exception of the sewage lagoons, very little habitat exists at HELSTF to attract waterfowl. However, many upland bird species inhabit the area. A list of potential bird fauna at HELSTF is provided in Table 2-3. Many species of transient birds periodically use the area as they pass through during migration.

TABLE 2-3. BIRDS POTENTIALLY ENCOUNTERED AT HELSTF

Common Name	Scientific Name	Type/Notes
Turkey vulture	Cathartes aura	Vulture
Red-tailed hawk	Buteo jamaicensis	Raptor
Northern harrier	Circus cyaneus	Raptor
Burrowing owl	Athene cunicularia	Owl
Scaled quail	Callipepla squamata	Upland Game Bird
Cactus wren	Campylorhynchus brunneicapilus	Resident Passerine Bird
Curve-billed thrasher	Toxostoma curvirostre	Resident Passerine Bird
House finch	Carpodacus mexicanus	Resident Passerine Bird
Black throated sparrow	Amphispiza bilineata	Resident Passerine Bird
Pyrrhuloxia	Cardinalus sinuatus	Resident Passerine Bird
Greater roadrunner	Geococcyx californianus	Resident Bird
Chihuahuan raven	Corvus cryptoleucus	Resident Large Corvid

A list of mammals that might be found at the HELSTF site is provided in Table 2-4.

TABLE 2-4. MAMMALS POTENTIALLY ENCOUNTERED AT HELSTF

Common Name	Scientific Name	Type/Notes
House mouse	Mus musculas	Introduced to Area
Gemsbok	Oryx gazelle	Introduced to Area
Crawford's desert shrew	Notiosorex crawfordii	Insectivore
Mexican free-tailed bat	Tadarida braseliensis	Bat (Insectivore)
Western pipistrel	Pipistrellus Hesperus	Bat (Insectivore)
Black tailed jackrabbit	Lepus californicus	Jackrabbit
Silky pocket mouse	Perognathus flavus	Mouse (rodent)
Plains pocket mouse	Perognathus flavescens	Mouse (rodent)
Spotted ground squirrel	Spermophilus spilosoma	Squirrel (rodent)
Desert pocket mouse	Chaetodipus penicillatus	Mouse (rodent)
Merrriam's kangaroo rat	Dipdomys merriami	Kangaroo Rat
Coyote	Canis latrans	Omnivore
Pronghorn	Antilocapra americana	Ungulate/herbivore

2.2.2 Threatened and Endangered Species

After site visits, consultation with the WSMR Land Manager, Dr. David Anderson, and review of the latest sensitive and listed species listed for Otero and Doña Ana Counties, NM, it was determined to be unlikely that any Federal or State listed threatened or endangered species would be found to occur near or within HELSTF. Websites used to gather information on potential species included the US Fish and Wildlife Service Southwest Region (www.fws.gov/southwest/es/NewMexico), the New Mexico Department of Game and Fish Biota Information System of New Mexico (www.bison-m.org), and Natural Heritage of New Mexico (nhnm.unm.edu/rank_status/sstatusvalues.html).

2.3 Hydrology

The installation climatology, overland drainage, and potentially affected surface water bodies are described below.

2.3.1 Climatology

The climate at the site is typical of an arid southwestern basin. Annual precipitation is about 7 inches. Much of this precipitation occurs between July and September during brief heavy thunderstorms.

The temperature during the winter ranges from 30 to 60 degrees Fahrenheit. “Nighttime temperatures reach freezing on most nights from November to mid-March, but an average of only 1 day a year remains freezing” (Neher and Bailey, 1976). During the summer, temperatures can rise to in excess of 100 degrees Fahrenheit.

The infrequent precipitation and warm weather leads to arid soil and sparse vegetation. Strong westerly winds give rise to considerable dust storms that are most frequent during the spring.

2.3.2 Overland Drainage

The majority of WSMR is located within an enclosed area (Tularosa Basin) surrounded by mountains with no surface outlets. Very little permanent surface water exists at White Sands due to the low annual precipitation, high evapotranspiration rates, and moderate infiltration characteristics of the soil. All precipitation evaporates, infiltrates into the groundwater, or forms intermittent streams (arroyos) and lakes.

Arroyos that drain the surrounding mountains contain water only following heavy precipitation events. No major arroyos pass through the HELSTF site. Local surface drainage is contained in engineered, but unlined, channels and diverted through the site. For the Range as a whole, most surface drainage is toward the center of the range in the alkali flats. Lake Lucero, the most prominent expression of surface water, is in the heart of the alkali flats and is usually dry. Perennial surface water is limited to ponds near Mound Springs, some 40 miles north of HELSTF and the sewage effluent-related ponds onsite. The ephemeral Lake Lucero lies approximately six miles to the northwest. HELSTF itself lies in a subtle topographic low, with no major through-flowing drainage. No surface-water impacts are expected from HELSTF operations.

2.4 Regional and Local Geology

WSMR lies in New Mexico within the Mexican Highland Section of the Basin and Range Province. This province is characterized by a series of tilted fault blocks forming longitudinal, asymmetric ridges, or mountains, and broad intervening basins. The WSMR geology consists predominantly of the Tularosa Basin and surrounding mountain ranges (Figure 1). Figure 2-1 is a cross-section through the Tularosa Basin and surrounding mountain ranges. The San Andres Mountains, San Augustin, and Oscura Mountains border the Tularosa Basin on the west while the Sacramento Mountains form the eastern border. A narrow region of north-south-trending, large-displacement normal faulting separates the mountains from the basin resulting in the change in relief across the missile range. The average elevation of the Tularosa Basin is 4,000 ft above mean sea level. The majority of WSMR property, including HELSTF and most other test facilities, is located within the Tularosa Basin (WSMR, 1998).

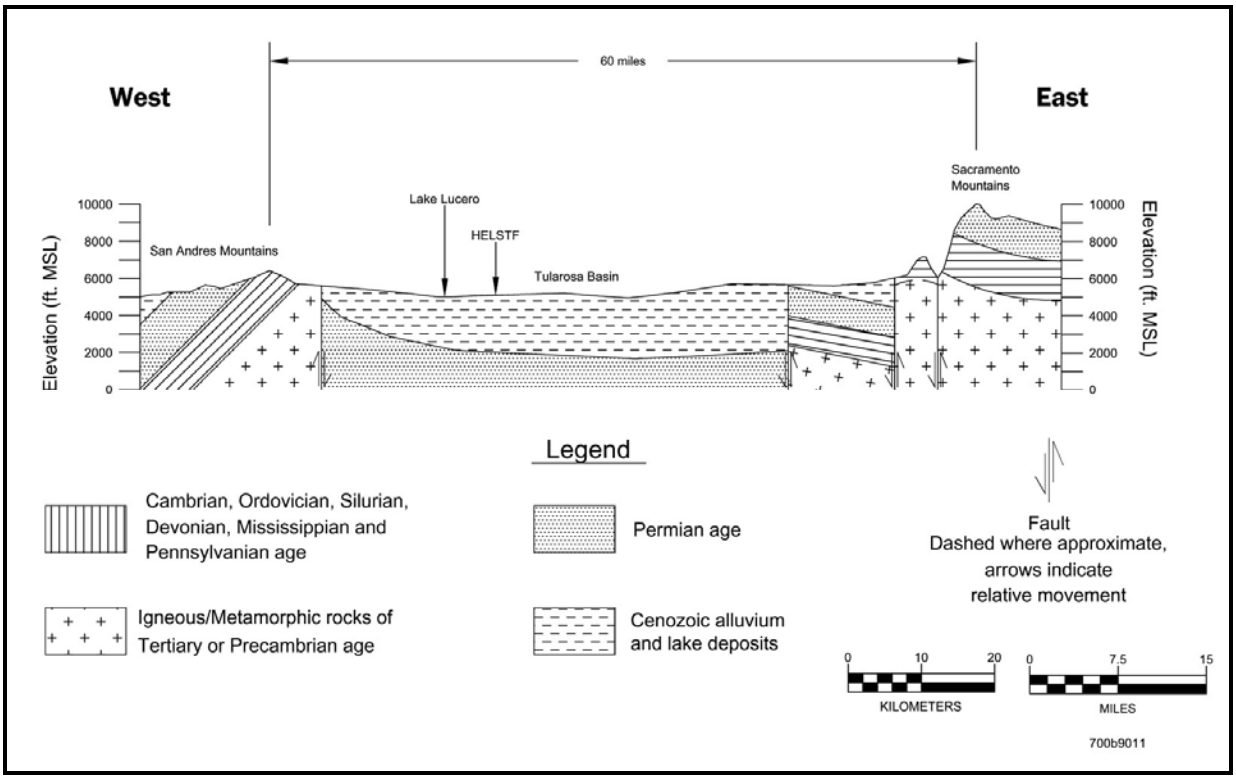

FIGURE 2-1. EAST-WEST CROSS SECTION OF THE SOUTHERN PART OF THE TULAROSA BASIN

The geography of the WSMR region is shown on Figure 1-1. The San Andres Range trends north-south for approximately 85 miles along the western border of WSMR and varies in elevation from approximately 5,700 ft at San Augustin Pass, where Highway 70 crosses the mountains, to over 9,000 ft at Salinas Peak, the highest point on WSMR. The San Andres Mountains are composed of a thick sequence of sedimentary rocks [Mississippian to Pennsylvanian limestones, sandstones, and shales] which dip westward (Kottlowski, et al., 1956). The Organ Mountain fault and Artillery Range fault zones extend from El Paso, Texas to the Mockingbird Gap along the eastern base of the San Andres Mountains. These fault zones are composed of large-displacement normal faults which promoted the uplift of the fault block mountain ranges (San Andres and Oscura) above the Tularosa Basin and are the result of continued extension in the Rio Grande Rift (Seager, 1981).

The Oscura Mountains extend north and east from the San Andres mountain range, forming the northern terminus of the Tularosa Basin. The Oscura Mountains are bounded on the west by the Jornada del Muerto basin, on the east by the northern-most limit of the Tularosa Basin, and on the north by Chupadera Mesa. The Oscura Uplift is a basement-cored uplift formed by the large-displacement normal fault on its western margin (Organ Mountain fault and Artillery Range fault zone). Paleozoic sedimentary rocks cap the Precambrian basement rocks (Precambrian granite) and dip northward and eastward towards the Tularosa Valley floor and Chupadera Mesa.

The Sacramento Mountains form an asymmetrical ridge with a steep escarpment on the west and a broad alluvial apron on the east. The escarpment marks a major fault zone along the eastern edge of the Sacramento Mountains overlooking the downthrown Tularosa Valley. The fault zone is composed of normal faults where the Sacramento Mountains were uplifted relative to the downdropped Tularosa Basin. The Sacramento Mountains contain a series of strike valleys that cut into well exposed rocks ranging from Precambrian granites to Paleozoic through tertiary sedimentary rocks [limestones, sandstones, and shales] (Kottlowski, et al., 1956). These sedimentary rocks, along with those in the San Andres Mountains, provide the source for gypsum and other evaporite minerals (mineral salts) prevalent within the Tularosa Basin.

The Tularosa Basin contains thick sequences of Tertiary and Quaternary age alluvial and bolson fill deposits. These sediments, more than 5,000 ft thick in some areas, consist mainly of silt, sand, gypsum and clay weathered from the surrounding mountain ranges. The average elevation of the basin floor is 4,000 ft above mean sea level and surface features consist of flat sandy areas, sand dunes, basalt flows, and playas (dry lake beds).

The nature of the bolson-fill deposits varies both laterally and vertically throughout the Tularosa Basin. Coarse-grained, poorly sorted sediments deposited near mountain fronts grade into fine-grained, well sorted sediments towards the center of the basin (Kelly, 1973). Sediments further from the mountain fronts also contain a greater percentage of clay and gypsum. Vertically, the sediments are reported to become finer-grained and more consolidated until reaching a laterally continuous clay unit at about 1,000 ft below ground surface (Kelly and Hearne, 1976).

In general, the stratigraphy is represented by unconsolidated to partially consolidated, fine to medium-grained sand with subordinate amounts of clay. Caliche is present as discrete layers and nodules throughout the stratigraphic section. Although no faults within the basin fill are mapped within the immediate area, Quaternary faulting is known to exist within the region. These faults are reported to occur within the unconsolidated bolson sediments, trend north to south, and are most common near the mountain fronts. Orr and Myers (1986) divide the Tularosa Basin fill deposits into 5 distinct mappable units which include:

- Coarse to fine-grained deposits occur in gently sloping alluvial fans along the basin margin. The alluvial fans spread outward from the surrounding mountain slopes and coalesce into flat alluvial plains toward the basin interior. These fan deposits interfinger with lacustrine (lake) and alluvial deposits of the central part of the Tularosa Basin.
- Fine-grained sediments formed from lacustrine deposition extend throughout most of the Tularosa Basin. These deposits consist mainly of clay and evaporites with minor sand beds and occur near surface in the northern part of the basin and at depth in the southern part of the basin.
- Fluvial-eolian sand, gravel, and clay deposits occur in the southern part of the basin, near Fort Bliss, extending from the Organ and Franklin Mountains and south to the Hueco Mountains.
- Gypsiferous evaporite deposits of the Lake Lucero-White Sands area occupy the White Sands National Monument (WSNM) and areas administered by WSMR including the Lake Lucero area and the alkali flats north of Lake Lucero. These deposits occur as dense recrystallized gypsum, gypsum sand dunes, and alluvial deposits. Hard caliche (cemented with recrystallized gypsum) is present at or near surface in the dry lake gypsum deposits of the central portion of the basin.
- The last depositional unit is described as composed of coarse-grained deposits saturated with saline water in the central portion of the Tularosa Basin.

HELSTF is located near the depositional axis of the basin, just south of the eolian gypsum dunes of the WSNM. As a result of the central basin setting and the proximity to the source of the gypsum sand (Lake Lucero), the subsurface geology at HELSTF is dominated by unconsolidated, fine-grained clastic (sand, silt, and clay) sediments interspersed with gypsum and minor selenite re-deposited from solution. These uppermost fine sediments are generally underlain by yellowish brown silty sand or poorly graded sands to at least 90 feet below ground surface (bgs). The stratigraphic units have been described as laterally discontinuous.

2.5 Groundwater

Most of the regional and local groundwater descriptions were taken from the 1997 *Final Groundwater Remedial Action Plan* (ASI/Tetra Tech, 1997). Other sources are quoted.

2.5.1 Regional Aquifer

The Tularosa Basin, an otherwise closed system, connects hydrogeologically with the Hueco Basin at the New Mexico / Texas state line to form a single aquifer system called the Hueco-Tularosa aquifer.

"This complex groundwater reservoir is the primary source of water for the City of El Paso and Ciudad Juarez, and for military installations and smaller cities in New Mexico, Texas, and Mexico. Recharge occurs primarily from precipitation and infiltration of mountain runoff through major arroyos; and recharge rates are much less than groundwater withdrawals" (Creel and Hawley, 2001).

Water generally flows away from the mountains and toward the interior of the basin. The groundwater gradient decreases toward the center of the basin, but eventually increases as it turns and flows south toward the Hueco Basin.

Groundwater studies conducted at the HELSTF Facility have documented the Regional Aquifer at approximately 70 feet bgs. The Regional Aquifer is semi-confined and consists of interbedded layers of sand, silt and clay. The direction of groundwater flow is to the southeast at a gradient of approximately 5.3 feet per mile. Based on pumping tests conducted in regional aquifer test wells, the aquifer properties are estimated as follows (ITC, 1992c):

Aquifer Property	Calculated Value
Transmissivity	683 ft^2/day
Storativity	0.0048
Hydraulic Conductivity	5.2 ft/day

Groundwater analyses indicate that the Regional Aquifer is brackish to brine. Total Dissolved Solid (TDS) concentrations ranged from 5,940 to 11,500 mg/L, of which the major ions consisted of sodium and chloride (SEI, 1994).

2.5.2 Local Groundwater

A series of hydraulically interconnected, discontinuous, perched water-bearing zones have been identified at HELSTF. Most of the detected perched zones are currently undefined and are generally reported at depths of less than 50 feet bgs. The perched zones are suspected to have been caused by multiple wastewater or surface water recharge points at various documented and undocumented locations within HELSTF, most notably the recently replaced sewage lagoons.

The perched areas are probably the result of the combination of lateral discontinuity of stratigraphic units and varying degrees of hydraulic conductivities. Depths to the perched units vary significantly across HELSTF, apparently due to the laterally discontinuous transmissive zones (such as sand). These transmissive zones appear also to be interconnected vertically, resulting in the presence of multiple water bearing zones within each perched unit. Based on data collected from several well clusters at HELSTF, multiple vertical perched zones are encountered in the areas of wastewater discharge. (Environmental Science & Engineering Incorporated (ESE), 1996)

Groundwater levels in the shallower zones (perched upper) ranged from 15 to 20 feet bgs, while deeper zones (lower perched) have been reported to a maximum of 48 feet bgs. The shallower perched zones are generally absent at increasing distances from the recharge areas, suggesting that either many of the zones are discontinuous, or that hydraulic connection between the perched zones has occurred.

In 1993, a step-drawdown test was performed from the perched water bearing zone at the Cleaning Facility (SWMU 142). Based on the results of the step-drawdown test, transmissivity of the perched zone was estimated at 2.41 to 3.48 square feet per day (ft^2/day). The storage coefficient was calculated to range from 0.24 to 0.47 (ITC, 1993). The recovery of the water level in piezometer PZ-1 was analyzed using Theis recovery method. Based on the calculations, transmissivity was estimated at 0.989 ft^2/day. Dividing by an assumed aquifer thickness of roughly 10 feet yields a hydraulic conductivity on the order of 0.1 ft/day.

Most of the HELSTF monitor wells are screened within the perched water-bearing zones. Due to the variability of shallow geologic materials beneath the site, groundwater flow direction within the perched zones appears to vary significantly across HELSTF.

2.5.3 Groundwater Use

Potable water is largely confined to alluvial fans along the mountain ranges in the basin. Water quality decreases as it moves away from the mountain fronts and mixes with slower moving brackish water at the basin interior. HELSTF, located within the alkali flats, does not produce potable water. It receives water from three supply wells (MAR-1, MAR-2, and MAR-3) located seven miles to the west along Range Road 7 (Figure 2-3).

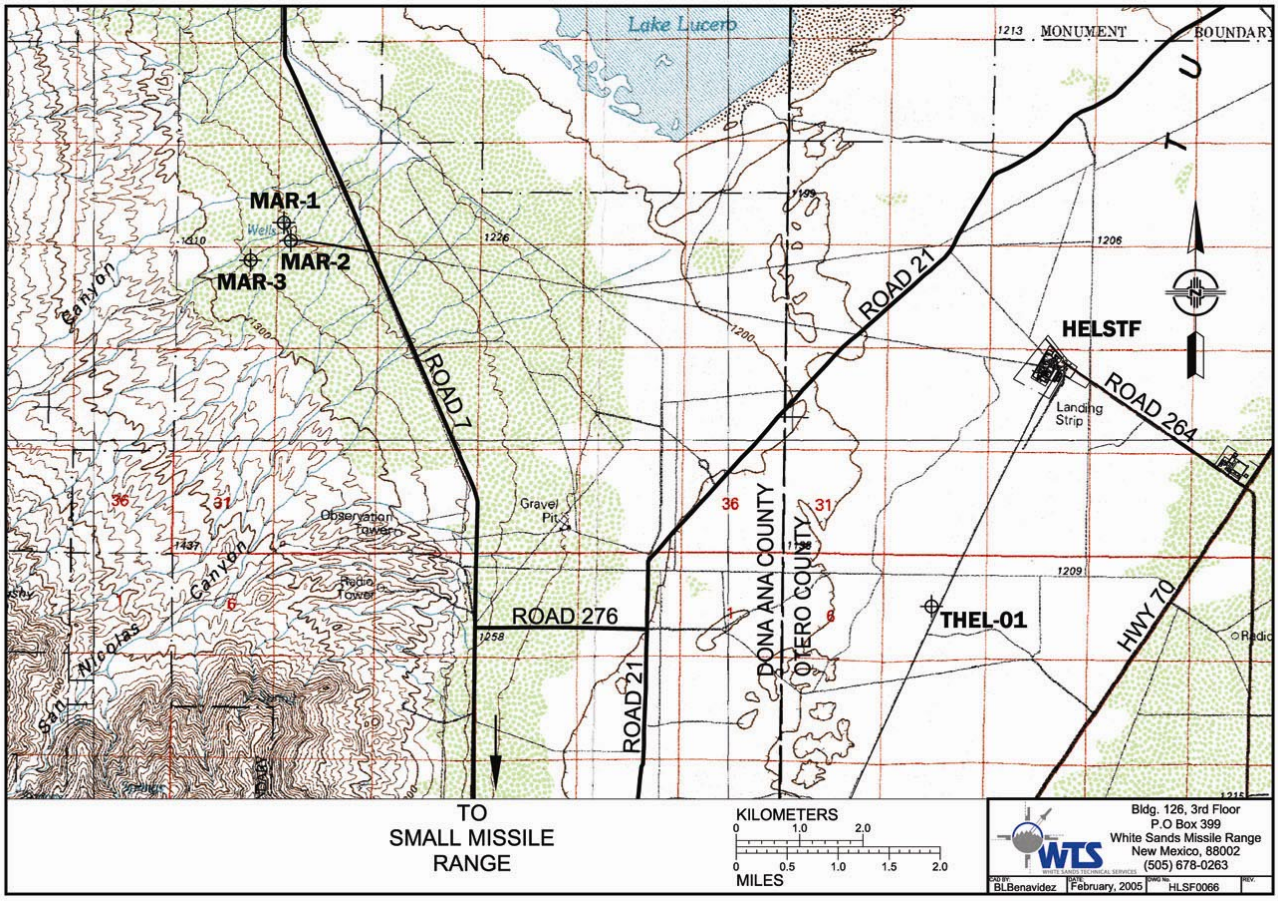

FIGURE 2-3. LOCATION OF HELSTF SUPPLY WELLS.

The closest pumping well is the THEL-01 well, located approximately 2.6 miles to the southwest (Figure 3). This well is used for fire suppression at the Tactical High Energy Laser (THEL) site. With respect to potential contaminant transport in the regional aquifer, the THEL-01 well is not located down gradient from HELSTF and would not likely be affected by operations at HELSTF. There are no known production wells downgradient of HELSTF.

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3.0 PREVIOUS INVESTIGATIONS AND CORRECTIVE ACTION ACTIVITIES

An overview of previous investigations at HELSTF is included in this section. A more comprehensive summary of investigation results for each relevant SWMU is included in the Phase III RFI Work Plan (WTS, 2007).

3.1 Environmental Impact Assessment (1975)

WSMR completed an Environmental Impact Assessment (U.S. Army, 1975) for the proposed High Energy Laser Test Facility in August 1975 in compliance with the National Environmental Policy Act of 1969. Three existing facilities at WSMR (MAR, NW-30 and LC-37) were evaluated as potential locations of the new complex in order to minimize the impact to the environment and realize savings due to existing infrastructure (i.e. buildings, roads, power, and communications). The assessment concluded that the establishment and operation of the new facility would have no significant impact on the overall environment of the region at any of the three locations.

3.2 RCRA Facility Assessment (1988)

As part of the RCRA permit application, WSMR was required to conduct a RCRA Facility Assessment (RFA) to determine whether there was a potential or an actual release of hazardous waste or hazardous waste constituents anywhere at its facility (WSMR including HELSTF). Distinct locations of potential contamination are referred to as SWMUs. Less defined areas of potential contamination are referred to as areas of concern (AOCs). WSMR submitted the RFA (A. T. Kearney, Inc., 1988) to EPA Region VI in 1988 and identified 138 SWMUs and 26 AOCs. Among these sites, 17 SWMUs and 3 AOCs were located at HELSTF.

3.3 USAEHA Evaluation (1990)

The US Army Environmental Hygiene Agency (USAEHA) conducted an evaluation of environmental conditions at HELSTF in July 1990 to facilitate a transfer of command between WSMR and the US Army Strategic Defense Command. Their report entitled “Ground-Water Quality Survey No. 38-26-0368-90, High Energy Laser Systems Test Facility, White Sands Missile Range, New Mexico, 23-27 July 1990”, dated 20 September 1990 identified another 28 suspicious sites. Eventually 13 of these sites were placed in the HSWA module of the permit as solid waste management units.

3.4 Phase I RFI (1991)

A Phase I RFI (International Technology Corporation (ITC), 1992) was conducted in 1991 and indicated that 80 SWMUs of the original 92 still required further investigation. Of the 80 SWMUs at WSMR requiring further investigations, approximately 17 SWMUs were identified at HELSTF.

WSMR submitted the first comprehensive report regarding groundwater contamination at the facility in December 1992. The report titled, “Final HELSTF Groundwater Assessment” was a recapitulation of findings reported in the Phase I RFI (ITC, 1992c).

3.5 Phase II RFI (1993)

WSMR initiated a Phase II RFI (SEI, 1994) in 1993. The Phase II RFI further defined the character and extent of contamination at 52 of the SWMUs across WSMR, including 12 at HELSTF. No additional SWMUs were identified at HELSTF.

3.6 SWMU Groundwater Monitoring Program

Currently, groundwater is monitored semi-annually at three SWMUs – the Systemic Diesel Spill (SWMU 154), the Chromate Spill site (SWMU 143), and the Construction Landfills (SWMUs 38-39). The pre-2007analytical schedule for these sites is presented in Table 3-1, below.

TABLE 3-1. HELSTF GROUNDWATER MONITORING ANALYTICAL SCHEDULE [PRIOR TO 2007]

Parameter			Reference Method	Method Type
Water Quality Parameters				
pH Temperature	Conductivity Dissolved Oxygen		Field Measurement	Orion water quality meter (Model 394)
CO_3^{-2} & HCO_3^- Alkalinity			SM 2320B	Titrimetric
pH Specific Conductance Total Dissolved Solids (TDS) Total Organic Carbon			SM 4500-H+ SM 2510B SM 2540C EPA 415.1	Electrometric Conductivity Gravimetric Combustion
Dissolved Ions				
Bromide Chloride Fluoride	Nitrate-N Nitrite-N Sulfate		EPA 300.0	Ion Chromatography
Nutrients				
Ammonia-N Total Kjeldahl Nitrogen Total Phosphorus			SM 4500-NH3 EPA 351.3 SW846-6010B	Colorimetric Colorimetric ICP-AES
Total Metals				
Aluminum Arsenic Barium Beryllium Boron Cadmium Chromium	Cobalt Copper Iron Lead Manganese Molybdenum Nickel	Selenium Silica Silver Strontium Tin Vanadium Zinc	SW846-6010B	ICP-AES
Cyanide (Spring sampling event only)			SW846-9010B	Colorimetric
Mercury			SW846-7470A	Cold Vapor-Atomic Absorption (AA)
Dissolved Metals				
Aluminum Arsenic Barium Beryllium Boron Cadmium Chromium	Cobalt Copper Iron Lead Manganese Molybdenum Nickel	Selenium Silica Silver Strontium Tin Vanadium Zinc	SW846-6010B	ICP-AES
Total and Dissolved Salts				
Calcium Lithium Magnesium	Potassium Sodium		SW846-6010B	ICP-AES
Organics				
Volatile Organic Compounds (VOCs)			SW846-8260B	GC/MS
Semi-Volatile Organic Compounds (SVOCs)			SW846-8270C	GC/MS
Explosive Residues			SW846-8330 C18	HPLC
Petroleum Hydrocarbons – DRO & GRO			SW846-8015B	GC/FID
Herbicides – *Construction Landfill Only*			SW846-8151	GC
Pesticides – *Construction Landfill Only*			SW846-8081A	GC

EPA – Environmental Protection Agency
SM – Standard Methods
MS – Mass Spectrometry
DRO – Diesel Range Organics
GRO – Gasoline Range Organics
GC – Gas Chromatography
HPLC – High Performance Liquid Chromatography
FID – Flame Ionization Detector
ICP-AES – Inductively Coupled Plasma-Atomic Emission Spectroscopy

Additionally, the HELSTF Wastewater Lagoons (SWMUs 27-30) and associated monitor wells are monitored as part of the (non-RCRA) wastewater monitoring program. Monitoring wells HMW01 through 04 and HMW08 are sampled annually. The sewage effluent at point of entry into the lagoon is sampled quarterly. The analytical program is shown in Table 3-2, below.

TABLE 3-2 HELSTF WASTEWATER LAGOONS ANALYTICAL SCHEDULE

Analyte	Quarterly		Annual	
	Effluent	*Groundwater*	*Effluent*	*Groundwater*
TKN	X	None	Same as qtrly	
Nitrate-nitrogen	X			X
Ammonia/ammonium	X			
TDS	X			X
Alkalinity	X			
Dissolved Anions				
Chloride	X			X
Fluoride	X			X
Sulfate	X			X
Dissolved Metals				
Boron				X
Iron	X			
Copper	X			
molybdenum				X
selenium				X
uranium				X
Zinc	X			
Total Metals				
Hexavalent Chromium	X			
Total cyanide (335.3)	X			

These lagoons have been replaced. After the new lagoons (Figure 3-1) are brought on line, these facilities will be decommissioned.

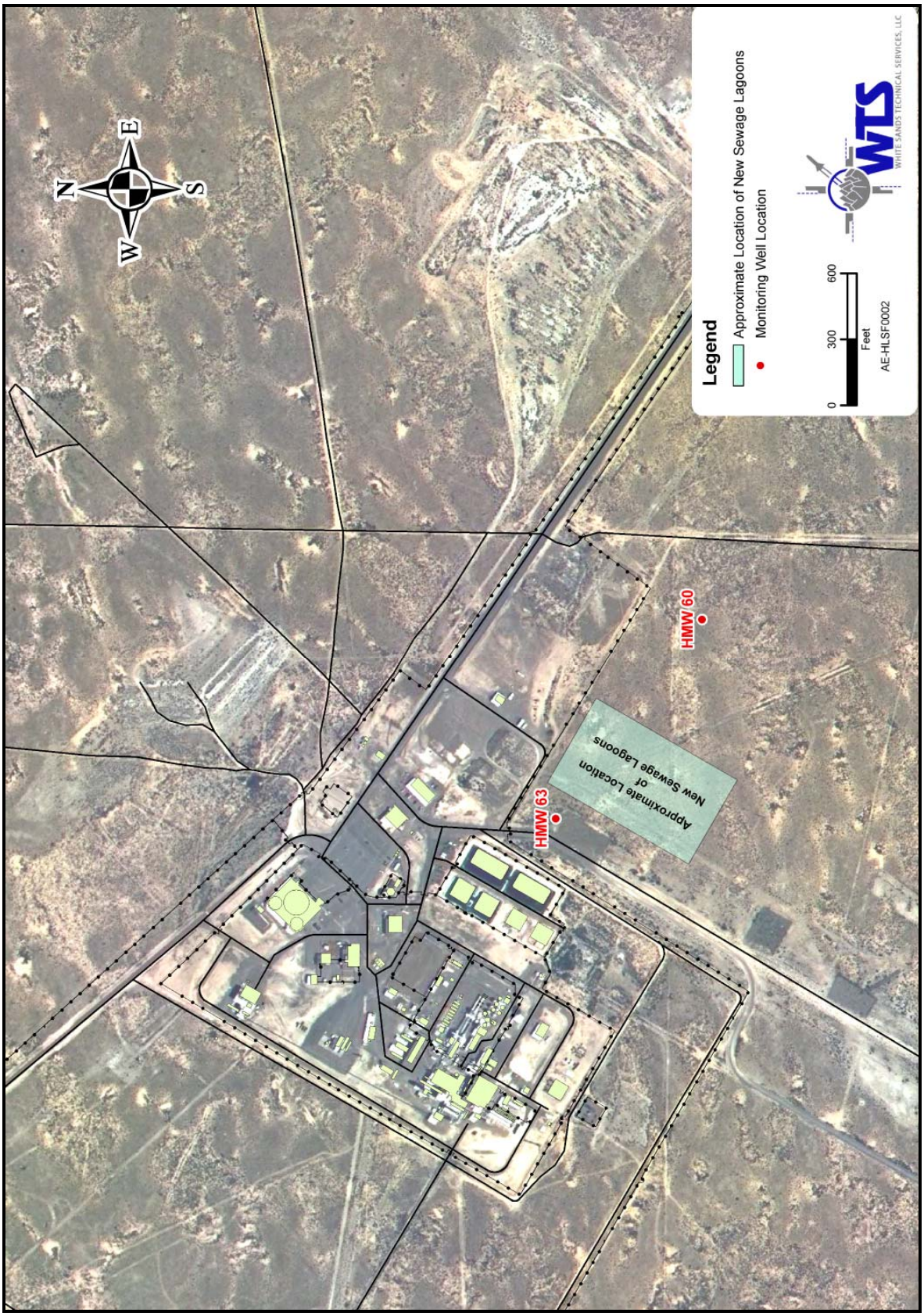

FIGURE 3-1. APPROXIMATE LOCATION OF NEW SEWAGE LAGOONS

3.7 Preliminary Conceptual Model (2001)

A conceptual model of the HELSTF system was completed (MEVATEC, 2001) based on the then-best available data collected at the site. The model identified three separate groundwater systems beneath HELSTF. The systems include: 1) an upper-perched water-bearing zone; 2) a lower perched water-bearing zone; and 3) the regional aquifer.

Based on information gathered, the perched zones are suspected to have been caused by multiple wastewater or surface water recharge points located at HELSTF. However, as surmised, the main point of recharge for the perched zones is the sewage lagoons (SWMUs 27-30). The perched areas are probably the result of the combination of lateral discontinuity of stratigraphic units and varying degrees of hydraulic conductivities. Depths to the perched units vary significantly across HELSTF, apparently due to the laterally discontinuous transmissive zones (such as sand). A cross-section of the water bearing zones at HELSTF is shown in Figure 4-7.

In general, infiltrating water appears to perch on shallow impermeable zones, then travel laterally to the limit of those perching layers. When water flows off the shallow perching layers, it continues moving vertically to greater depths, until it encounters another perching layer. There, the process repeats. The overall pattern is one of a shallow perched water bearing zone (Upper Perched Zone) (from approximately 12 ft to 20 ft bgs), a deeper perched water bearing zone (Lower Perched Zone) (from approximately 22 ft to greater than 48 ft bgs), and a regional aquifer (beginning at 67 ft bgs). The perched zones should not be thought of as solid water bodies but more likely as multiple water bodies at similar depths.

The model indicated that operations at HELSTF have acted to contaminate each water-bearing zone. The model indicated that hexavalent chromium from laser systems corrosion inhibitors has contaminated all water bearing zones. Dissolved phase hydrocarbons due to the presence of a free-phase diesel pool are limited to the lower perched water bearing zone. Trichloroethylene has been detected in the lower perched water and the regional aquifer.

3.8 Phase III RFI Activities (2006-2007)

This section identifies the activities completed for the Phase III RFI including the collection of soil and groundwater samples, the installation of new monitor wells, the assessment and redevelopment of existing monitoring points and the establishment of new monitoring point elevations for all locations.

3.8.1 Establishment of New Baseline Elevations

The top of casing for all existing monitor wells were resurveyed to a common coordinate system (NAD 83 and NAVD 88). Additionally, new monitor wells and soil borings installed during the Phase III RFI were surveyed. A complete set of static water level measurements [synoptic water level survey] was taken to establish current groundwater conditions. Table B-1 [Appendix B] lists coordinates and static water level measurements for the monitor wells. Table B-2 [Appendix B] presents survey coordinates for the soil borings. The new survey coordinates and static water level measurements are used for accurately locating monitor wells, depth to water and positions of soil samples to support conceptual modeling.

3.8.2 Inspection and Repair of Existing Monitor Wells

Prior to collecting additional data under this RFI, the existing monitor wells were inspected internally (using a downhole camera) and externally for structural integrity and suitability for continued use as a monitoring point. The wells were evaluated to determine if they required rehabilitation to prolong their life. Following the inspection, WSMR determined that redevelopment of all existing monitor wells would be prudent. Development of the existing wells occurred from 8 September 2006 to 28 September 2006.
Table B-3 [Appendix B] presents results of the rehabilitation and inspection effort.

The external inspection included examining the surface seal for breaches, checking for loose and/or broken risers, manipulating the lock, verifying accessibility and surveying the area for evidence of tampering or spills. The external inspection did not note any evidence of breaches or tampering with the monitor wells.

3.8.3 Soil Sample Collection

Thirty-eight new soil borings were drilled and sampled at eight different SWMUs. Samples were collected approximately every 10 ft from the surface down to total depth. Surface samples beneath asphalt or other artificial surface materials were not collected. The samples were analyzed for a variety of contaminants depending on the source of contamination. The drilling method used was hollow-stem auger. Collection of the soil samples was completed using a split spoon to minimize disturbance of the sample. Additionally, six soil borings were completed in areas away from known contaminated areas in undisturbed locations for use in statistical analysis of background inorganic concentrations. Table B-4 [Appendix B] lists samples collected for the Phase III RFI.

Generally, split spoon samplers were used to collect soil from the subsurface for every 5-foot length of the drill stem. The site engineer logged the samples as they were retrieved. The lithology of the borehole was recorded. Lithologic logs of borings are presented in Appendix C. When the split-barrel was removed from the boring and opened, any material appearing to be slough was removed. If sampling for VOCs, the soil core was screened using a photoionization detector (PID) to determine the interval with the highest concentration. When sampling for contaminants not associated with VOCs (or the PID did not detect VOCs), then the engineer used his best judgment sample collection from within the soil core. Samples were collected for analytes in the order from most volatile to least volatile. Samples were collected by placing the material into sampling jars using new, disposable gloves. Excess soil around the top of the sample jars was wiped away with a clean, dry paper towel to ensure the cap would fit tightly.

Rinsate blank samples were collected from sampling equipment, including the split spoons, at a rate of 1 sample per site, to determine if cross-contamination between sampling events was possible at the site.

3.8.4 New Monitor Well Installation

Thirteen (13) new monitor wells were installed at HELSTF from 6 September 2006 through 28 November 2006. The design for the monitor well installation (HMW-53 through HMW-65) was based on the need to provide additional monitor wells for regional and perched groundwater sampling and analysis at HELSTF. Monitor well locations were chosen (as outlined in the Revised Phase III RFI Work Plan-WTS, 2007) based on down-gradient locations from suspected contaminated areas and background locations. Depth to groundwater in the regional system was estimated to be approximately 70 ft bgs. The depth to groundwater in the lower perched zone was estimated to be 40 ft bgs. Monitor well construction data is included in Table 3-3 and Table B-5, Appendix B. Drilling logs and construction diagrams are provided in Appendix C. Drilling of the monitor wells was accomplished using an auger equipped drill rig. For each well, a pilot hole was augered with a 3.25 inch inside diameter (ID) auger, then overdrilled with a 6.25 inch ID (approximate 11 inch outside diameter) auger for well material installation. Added fluids for all drilling activities were obtained from potable water from a water point located near the site.

TABLE 3-3. NEW MONITOR WELL CONSTRUCTION DETAILS

Well I.D.	Date Completed	Casing Diameter inches	Sump feet	Total Depth As Constructed feet bgs	Screened Interval feet bgs	Top of Sand Pack feet bgs	Top of Bentonite Seal feet bgs	Length of Casing Stick-Up
HMW-53	9-15-06	4	5	45	30-40	28	25	2.34
HMW-54	11-27-06	4	5	84	69-79	67	64	2.62
HMW-55	9-27-06	4	5	84	69-79	60	58	2.98
HMW-56	9-21-06	4	5	83.5	68.5-78.5	64	60	2.98
HMW-57	9-19-06	4	5	84	69-79	66	63	2.90
HMW-58	9-14-06	4	5	84	69-79	65	59	2.87
HMW-59	10-2-06	4	5	83	68-78	65	62	3.47
HMW-60	10-10-06	4	5	83	68-78	66	63	3.08
HMW-61	10-6-06	4	5	83	68-78	66	63	2.65
HMW-62	9-7-06	4	0	79	68.5-78.5	65	61	2.97

TABLE 3-3. NEW MONITOR WELL CONSTRUCTION DETAILS

Well I.D.	Date Completed	Casing Diameter inches	Sump feet	Total Depth As Constructed feet bgs	Screened Interval feet bgs	Top of Sand Pack feet bgs	Top of Bentonite Seal feet bgs	Length of Casing Stick-Up
HMW-63	9-11-06	4	5	83	68-78	65	61	2.84
HMW-64	10-11-06	4	5	83	68-78	66	63	2.87
HMW-65	10-4-06	4	5	80	65-75	59	56	3.06

The well casing and riser for the monitor wells installed for this investigation consisted of new threaded, flush joint, PVC Schedule 40 pipe of 4-inch nominal inside diameter. With the exception of HMW-62, a 5 ft section of riser pipe (sand trap), with a bottom cap, was constructed at the screen base of each well. Heaving sands near total depth prevented installation of the sand trap section in HMW-62. Screen and riser sections were joined by threaded flush-joint couplings to form water-tight unions that retain 100% of the strength of the material. Solvent glues, cements, or adhesive tapes were not used to join sections of pipe and screen.

The well screen for the groundwater monitor wells consisted of new, threaded, flush joint, nominal 4-inch diameter PVC. Field slotted or cut screen was not used. The slot size for the well screen used is 0.010 inch so that it would be compatible with the sand pack material. A 2 ft to 6 ft seal consisting of bentonite chips was placed into the annular space between the riser and boring wall. The bentonite seal was installed above the filter pack and hydrated with either formation water or potable water as needed. The bentonite seal was emplaced between the riser pipe and auger as the auger was lifted out of the boring. Filter pack material consisted of clean, washed, well graded, rounded to subrounded silica sand. Grain size (10-20 mesh size) was selected so as to exclude the majority of the material in the aquifer. The filter pack was placed below the base of the sand trap to at least 2 ft above the top of the screened interval. The filter pack was put in place between the riser pipe and auger as the auger was lifted out of the boring.

Upon completion of the well, a PVC cap was installed to help prevent material from entering the well. A protective above-grade aluminum shroud with a locking cap was centered around the well. The protective well casing was installed to rise approximately 2.5 ft above ground level. The well surface completions consist of a cement pad with bollards cemented in place. A typical well installation is shown in Figure 3-2.

FIGURE 3-2. TYPICAL NEW MONITOR WELL COMPLETION.

All wells were developed following installation using a 1-gallon bailer and/or a submersible pump. Development consisted of surging and purging water from each well to remove sand, silt and clay left over from installation and to clear the water in order that a representative water sample of the aquifer could be collected. At least three well volumes were removed from each well. Due to slow recharge rate in HMW-53 and HMW-62, potable water was used in the development process for surging. The amount of potable water put into each well was noted so that the same amount would be removed in addition to at least three well volumes of formation water. For these two wells, purging was accomplished using the bailer only due to the slow recharge. Development for all new wells, with the exception of HMW-53 and HMW-62, continued until the pH, temperature, turbidity, and conductance of the groundwater had become relatively stable. Stability was defined as three consecutive sets of temperature and conductance values within $\pm$ 5 percent of each other. The volume of water removed between measurement sets was 1-5 gallons. Development for HMW-53 and HMW-62 continued until the groundwater had cleared prior to continued surging. Due to the action of the bailer (continuous surge when purging) for HMW-53 and HMW-62, physical parameters were not collected.

3.8.5 Groundwater Sampling

Selected monitor wells (new and existing) were sampled using low flow purging and sampling methods (Table B-6, Appendix B). The samples were analyzed for a variety of contaminants depending on the proximity to relevant SWMUs. The analytical data was compared to previously-collected data. The analytical methods used were those appropriate for sampling soil and groundwater under Subtitle C of the Resource Conservation and Recovery Act. These methods include the EPA SW846 7000/8000 series.

Wells which could not sustain low flow purging without going dry were sampled using a no purge method, as discussed in Section 4, below. This method allowed WSMR to collect a more representative sample than purging the well dry and sampling as it recharged. That method exposes the filter pack and well screen to air accelerating biodegradation and volatilization of contaminants

3.8.6 Phase III RFI Specific Site Activities

Table 3-4 lists specific activities conducted at HELSTF during the Phase III RFI on a SWMU by SWMU basis. SWMU identifications in bold indicate locations where specific actions were taken during the Phase III RFI.

3.9 Deviations from Work Plan

Field activities were carried out as specified in the Work Plan (WTS, 2007) with the exception of the items noted below. None of the deviations resulted in material changes to the outcome of the study.

- All drill sites (boring and monitor well) were marked on the ground based on the maps presented in the Work Plan. However, locations were shifted slightly to avoid buried utilities or to provide drill rig access. Final locations were surveyed and recorded.
- Background soil sampling locations were moved substantially (roughly 1,000 ft) to the northwest, relative to the locations marked in the Work Plan. The pre-field mapped locations were too close to disturbed areas.
- One soil boring, SB-17, was relocated to the original HMW-54 monitor well location due to underground utilities.
- SB-12 was omitted entirely due to underground utilities. Remaining borings near this location were deemed adequate to cover site.
- Due to inadequate soil sample size produced with the split spoon, numerous duplicate samples were spread over two sample intervals in the same boring whereas they were originally planned to be taken from one sample interval. The sample intervals were not composited. One set of soil samples for certain required analytes were collected from one interval while the remaining soil samples for the remaining required analytes were collected from the second interval.
- The numerical designations for monitor wells were changed. Since wells HMW51 and 52 already existed [at the HELSTF TSA], numbering of wells for this study began with HMW53.
- Thirteen monitor wells were installed. Original work plan called for nine wells. Additional wells were added at the request of NMED to fill in perceived data gaps.

- HMW-54 pilot hole drilled but hit abandoned water line during overdrill. The boring was abandoned and a new location for HMW-54 was selected approximately 50 feet to south-east.
- HMW-64 monitor well location moved from planned location to parking lot area approximately 100 ft to the east. Planned location was deemed by the project management team to be located too close to an existing well.
- A water balance for the current lagoons (SWMUs 27-30) was not completed. The project management team determined that this was not necessary, since the current lagoons are being replaced with another lagoon system and will be taken off line in 2007. It is expected that once the current lagoons have dried, the upper perched aquifer will begin to dissipate.
- Certain wells, discussed in Section 4, below, were dry during the HELSTF-wide groundwater sampling event and were therefore not sampled. The upper perched wells were dry throughout the campaign; the lower perched wells had not yet recovered from the redevelopment.
- Analytics: All Purge-and-trap alcohols were included in analyses by Method SW8260B, Volatiles by GC-MS; of the direct-inject alcohols, benzyl alcohol was included in analyses by Method SW8270C, semi-volatiles by GC-MS, leaving only ethylene glycol to be analyzed by Method 8015B.
- Where the drilling site was paved, or where otherwise covered with an artificial substrate, no surface sample was collected.

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TABLE 3-4. SPECIFIC SITE ACTIVITIES CONDUCTED DURING THE PHASE III RFI

SWMU	Name	Phase III RFI Activities		History/Issues
		Soil Sample Collection	Monitor Well Installation/Sampling	
23-24	Old Hazardous Waste Tanks	No work was planned or completed related to these two SWMUs.	No work was planned or completed related to these two SWMUs.	There is no history of a release. Furthermore any release from these two tanks would be indistinguishable from those already documented at SWMUs 142 and 154.
25	Waste Accumulation Area	1 - 50 ft soil boring and sample collection completed.	No additional monitor wells installed – existing monitor wells sampled during HELSTF-wide groundwater sample event.	The report of a possible spill of chromate additive (thought to contain hexavalent chromium and zinc) at this location was investigated.
26	Vapor Recovery Unit	No work was planned or completed related to this SWMU.	No work was planned or completed related to this SWMU.	There has been no history of a release, yet the 2006 Annual Fee letter has continued to indicate that corrective action is necessary. Additional sampling is unlikely to confirm or refute a release at this location. The underlying contamination will be addressed by the corrective action activities at the surrounding SWMUs.
27-30	Sanitary Treatment System	No additional soil borings/samples were planned or completed related to this SWMU.	One monitor well installed in the regional aquifer – new and existing monitor wells sampled during HELSTF-wide groundwater sample event.	The mounding of a localized perched zone beneath the lagoons and the presence of various contaminants including chlorinated solvents, fluoride, nitrate, and petroleum hydrocarbons in the surrounding monitor wells further suggests that the liner integrity may be compromised.
31-32	Chemical Waste Tanks	3 - 50 ft soil borings and sample collection completed.	No additional monitor wells or groundwater sampling was planned or completed related to this SWMU.	The tanks were removed according to an approved closure plan but closure will be contingent on documenting the absence of contaminants beneath the tank and the completion of corrective action at the Cleaning Facility (SWMU 142).
33-34	Fluorspar Tank	No additional soil borings/samples were planned or completed related to this SWMU.	Existing monitor wells sampled during HELSTF-wide groundwater sample event.	Fluoride has been detected in a number of unrelated wells implying the need to address this contaminant on a facility wide basis. There is very little data available to assess the contribution of fluoride concentrations from these SWMUs on the groundwater zones beneath HELSTF.
35-36	Ethylene Glycol Tanks	No work was planned or completed related to this SWMU.	No work was planned or completed related to this SWMU.	There was no evidence of a release related to these SWMUs.
37	Waste Oil Accumulation Area at Bldg. 26121	No work was planned or completed related to this SWMU.	No work was planned or completed related to this SWMU.	There was no evidence of a release related to these SWMUs.
38-39	Construction Landfill	No additional soil borings/samples were planned or completed related to this SWMU.	One monitor well installed in the regional aquifer – new and existing monitor wells sampled during HELSTF-wide groundwater sample event.	There was no groundwater monitor well placed downgradient of the landfills in the regional aquifer to properly assess the impact of potential contaminants.
141	Equipment Storage Area	3 - 50 ft soil borings and sample collection completed in conjunction with SWMU 143 and 148 borings.	No additional monitor wells or groundwater sampling was planned or completed related to this SWMU.	There has been no history of a release and the unit has been placed on the list requiring no further action. The area does contain two other SWMUs (143 and 148) however, and will be investigated as it pertains to those sites.
142	Cleaning Facility Sump	5 - 50 ft soil borings and sample collection completed in conjunction with SWMU 154 borings.	One monitor well installed in the regional aquifer – new and existing monitor wells sampled during HELSTF-wide groundwater sample event.	The extent of contamination has not been defined in either the vertical or horizontal direction.
143	Chromate Spill Site	5 - 50 ft soil borings and sample collection completed.	One monitor well installed in the lower perched aquifer – new and existing monitor wells sampled during HELSTF-wide groundwater sample event.	The extent of chromium has not been defined horizontally in the vadose zone. There is evidence to suggest that the regional aquifer may have been impacted by the chromate spill (or nearby sources).
144	LSTC Wastewater Discharge Point	No additional soil borings/samples were planned or completed related to this SWMU. The concentration of metals in the soil from previous investigations will be compared to background levels taken as part of this investigation.	Existing monitor wells sampled during HELSTF-wide groundwater sample event. HELSTF-1 sampled as down-gradient well in regional aquifer.	There is insufficient data to determine whether the measured concentrations of trace metals are at naturally occurring levels. There were no down gradient regional monitor wells to confirm the presence/absence of contaminants in this zone.

TABLE 3-4. SPECIFIC SITE ACTIVITIES CONDUCTED DURING THE PHASE III RFI

SWMU	Name	Phase III RFI Activities		History/Issues
		Soil Sample Collection	Monitor Well Installation/Sampling	
145	Test Cell 4 Lagoon	No additional soil borings/samples were planned or completed related to this SWMU.	One monitor well installed in the regional aquifer – new and existing monitor wells sampled during HELSTF-wide groundwater sample event.	The contribution of this release on the concentration of fluoride in the regional aquifer has not been evaluated since there is no regional groundwater monitor well downgradient of this location.
146	Dry Pond	5 - 50 ft soil borings and sample collection completed.	One monitor well installed in the regional aquifer – new and existing monitor wells sampled during HELSTF-wide groundwater sample event.	The impact of the current and previous discharges to the dry pond on the regional groundwater quality is not known. The source of the acetone soil contamination in the lower perched zone is unknown.
147	Decontamination Pad Underground Tank	Some borings taken as part of the investigation at SWMUs 142 and 154 were located near the former pad location to attempt confirmation/denial of a release from this SWMU.	No additional monitor wells or groundwater sampling was planned or completed related to this SWMU.	The distribution of contaminants beneath the former sump location is not understood.
148	MAR Waste Stabilization Pond	2 - 50 ft soil borings and sample collection completed in conjunction with borings from SWMU 143.	Existing monitor wells sampled during HELSTF-wide groundwater sample event.	The exact depth below the ground surface of the pond bottom is not known. There remains some concern that the pond may have contributed to groundwater contamination in the area. Deeper soil samples are needed and true background levels need to be established for inorganics.
149,151, and 152	Maintenance Bldg. Septic System, Trailer Area Septic System, Property and Supply Bldg Septic System	The concentration of inorganics in the soil and groundwater will be evaluated as part of the overall Phase III RFI.	The concentration of inorganics in the soil and groundwater will be evaluated as part of the overall Phase III RFI.	The background concentrations of naturally occurring inorganics have not been compared to concentrations previously detected at this site.
150	MAR Dump Site	3 - 50 ft soil borings and sample collection completed.	No additional monitor wells or groundwater sampling was planned or completed related to this SWMU.	There was not enough information to determine the effectiveness of the removal action or the remaining vertical and horizontal extent of soil contamination, if any still exist.
154	Systemic Diesel Spill	5 - 50 ft soil borings and sample collection completed.	One monitor well installed in the regional aquifer – new and existing monitor wells sampled during HELSTF-wide groundwater sample event.	The vertical and horizontal extent of contamination was roughly defined during previous investigations. Although previous investigations did not indicate contamination along the pipe run, further investigation is necessary based on historical accounts. The product thickness in the capillary fringe and perched groundwater zone needs to be reevaluated. There are no wel in the regional aquifer directly down of the release.
AOC - WSMR 85	HELSTF Groundwater Study	6 - 50 ft soil borings and sample collection completed in undisturbed locations for background.	Two monitor wells installed in the regional aquifer in background locations – new and existing monitor wells sampled during HELSTF-wide groundwater sample event.	There is insufficient information available to establish background concentrations of inorganic contaminants in the groundwater.
AOC – N	Process Spills at HELSTF	No additional soil borings/samples were planned or completed related to this AOC.	No additional monitor wells or groundwater sampling was planned or completed related to this AOC.	The scope of work under WSMR-85 is comprehensive enough to address various spills from unknown locations. No additional work is proposed.
AOC – Q	Lab Drains	No additional soil borings/samples were planned or completed related to this AOC.	No additional monitor wells or groundwater sampling was planned or completed related to this AOC.	The location and potential contaminants of this AOC preclude the possibility of distinguishing it from the underlying sites, SWMUs 142 and 154. Therefore no work is proposed related to this AOC individually. Any contamination which may have resulted from a release at this AOC would be covered under corrective action at the other two SWMUs.
AOC – V	Pressure Recovery System	No additional soil borings/samples were planned or completed related to this AOC.	No additional monitor wells or groundwater sampling was planned or completed related to this AOC.	There has been no history of a release and the unit has been placed on the list requiring no further action. Therefore no work is proposed related this AOC.

4.0 PHASE III RFI FINDINGS

The underlying purpose of the Phase III RFI was to describe and quantify the impacts of HELSTF past and current activities on the environment. Thus, it is important to distinguish between constituents present at concentrations consistent with background versus those which are elevated due to Army or other actions. WSMR has been following a very straightforward set of procedures to assess the significance of possible contamination at given SWMUs. Much of the following discussion addresses human health considerations, only. Ecological risk analysis follows a parallel track as discussed in Section 6.2.

4.1 Risk Analysis Procedure

Identify Contaminants of Potential Concern (COPCs)

Those constituents identified in the Work Plan that were detected and for which any standard or screening level could be identified were carried forward as COPCs.

Develop Background Values for Relevant Constituents

Background values were identified for soils (surface, subsurface, and discrete depth intervals), as discussed in section 4.2.1. Background water quality values for the regional groundwater system are developed in Section 4.3.1.

Adopt a Conceptual Site Model (CSM)

The CSM incorporates current site conditions [contaminant distribution, site geometry, etc.] and current and future land use to define an appropriate exposure scenario or scenarios. Standard risk analysis equations and procedures can then be used to assess current and future risk to exposed populations. For HELSTF, the findings of the Phase III RFI will help drive the selection of an appropriate CSM. The revised CSM is presented in Section 5.

Determine an Appropriate Exposure Point Concentration (EPC)

EPA (2002) recommends using the average concentration as the appropriate exposure point concentration. However, suitable consideration must be made for uncertainty inherent in the site characterization, given the usual sparseness of the data. Following common practice, the EPC is represented by the 95% upper confidence level of the mean (UCL), rather than the arithmetic mean. Statistical procedures are needed to determine the UCL. The EPA Office of Emergency and Remedial Response has made a software package, ProUCL, available for facilitating the computations. The current version is 3.0 (EPA 2004). WSMR consistently uses this program to determine EPCs. Where the program is able to identify the underlying statistical distribution and, therefore, a single appropriate UCL, the value thereof is reported out. Where no underlying distribution is identified, a series of non-parametric 95% UCLs are offered. The OSWER Directive (EPA 2002) provides a discussion of the possible applicability of each. It is the responsibility of the risk assessor to select a value appropriate to the circumstances.

Begin the Risk Analysis Process

The risk analysis process proceeds through a series of steps.

Compare EPC to background

If the EPC is less than the established background value for the contaminant in question [or if the population of site contaminant concentrations is indistinguishable from the population of background concentrations], then the site observations may be ascribed to background and the investigation terminated. If neither is true, then the analysis is carried forward to the next step.

Compare EPC to appropriate SSLs

The EPC is then compared to the relevant Soil Screening Levels (SSLs) (NMED 2006). These SSLs are chemical- and exposure scenario specific, but based on default exposure factors and toxicity data drawn from the literature. Only if a particular chemical is missing from the NMED documents would WSMR seek a soil screening level elsewhere. The first outside source consulted would be the EPA Region VI guidelines, followed by guidelines published by other Regions.
Where the land surface was covered by pavement or other artificial material, no surface soil samples were collected. The surface materials would need to be removed in order for a pathway to exist. For purpose of evaluating future land use, concentrations of constituents at the 10-foot depth are evaluated against the relevant screening level as a [conservative] measure of risk to future exposed populations.

If the appropriate EPC is equal to or less than the relevant SSL, then the risk posed by site conditions is considered categorically acceptable and no further analysis is warranted. If the appropriate EPC is greater than the relevant SSL, then, again, the analysis is carried forward to the next step. At this point, it is important to remember that, quoting EPA:

> "**SSLs are not national cleanup standards.** SSLs alone do not trigger the need for response actions or define 'unacceptable' levels of contamination in soil. 'Screening,' for the purposes of this guidance, refers to the process of identifying and defining areas, contaminants, and conditions at a particular site that do not require further Federal attention. … Where contamination concentrations equal or exceed the SSLs, further study or investigation, but not necessarily cleanup, is warranted." (EPA, 1996a)

The only action that exceedance of a relevant SSL triggers is initiation of further study or investigation. Sites with concentrations of COPCs above background and relevant SSLs will be carried forward to a future Corrective Measures Study (CMS).

4.2 Soil

Table B-2, Appendix B, lists all soil samples collected for the Phase III RFI. Samples for AOC-85 were collected at background locations. The remaining samples are from locations in potentially contaminated areas. Borings were completed to a depth of 50 ft bgs with samples collected approximately every 10 ft bgs. As mentioned previously, for sites within the Diesel Spill and Central Storage zones, surface samples were not collected due to the asphalt and/or cement soil covering over the site.

Previously, data have been collected and discussed on the basis of individual SWMUs. In order to begin understanding HELSTF as a whole, this discussion will aggregate data into designated zones,

- Background sites;
- Diesel spill zone;
- Central storage zone;
- Wastewater lagoons zone;
- Construction landfill zone; and
- The MAR Dump Site, a SWMU sufficiently isolated to warrant a separate discussion.

The zones are shown on Figures 4-1 through 4-7. Figure 4-1 shows HELSTF in its entirety with each of the SWMUs and zones designated. Each zone is then discussed separately.

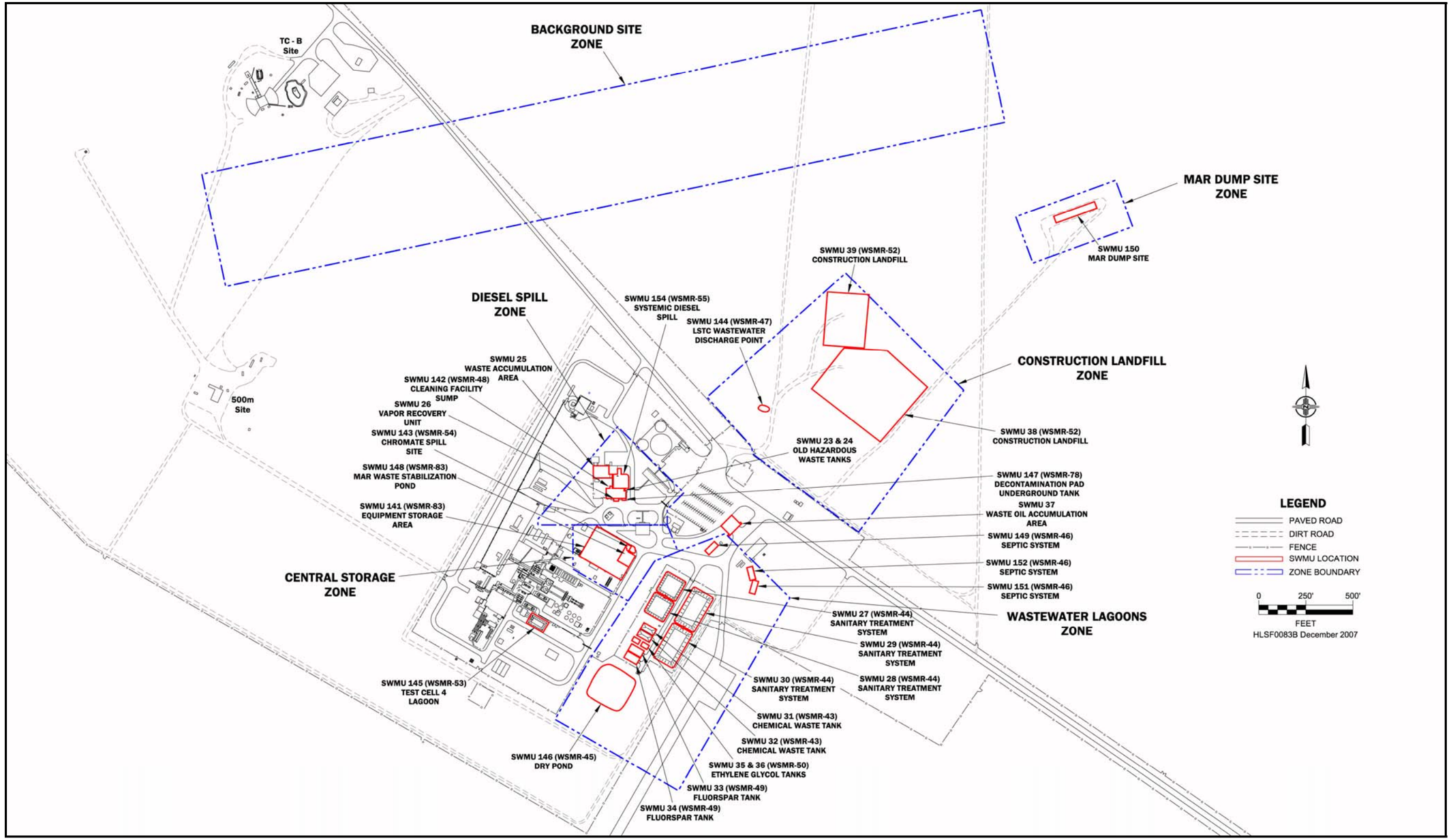

FIGURE 4-1. HELSTF SWMUS AND ZONES OF INVESTIGATION.

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4.2.1 Background Soil Concentrations

Based on *Guidance for Data Quality Assessment Practical Methods for Data Analysis* (EPA/600/R-96/084) (EPA, 2000), WSMR conducted the following statistical evaluation of the background inorganic concentrations data set. A preliminary data review was conducted to include basic statistical quantities (summary statistics). The summary statistics presented include the mean, median, range, standard deviation, type of distribution (normal, log normal, or other), coefficient of variation, and 95% Upper Confidence Level (UCL) of the mean of the data set. These summary statistics were computed using the EPA-distributed program, ProUCL, which was distributed with *Calculating Exposure Point Concentrations at Hazardous Waste Sites* (OSWER 9285.6-10) (EPA, 2002). The ProUCL statistics generated for each data set are included in the electronic copy spreadsheets on the data CD appended to this report.

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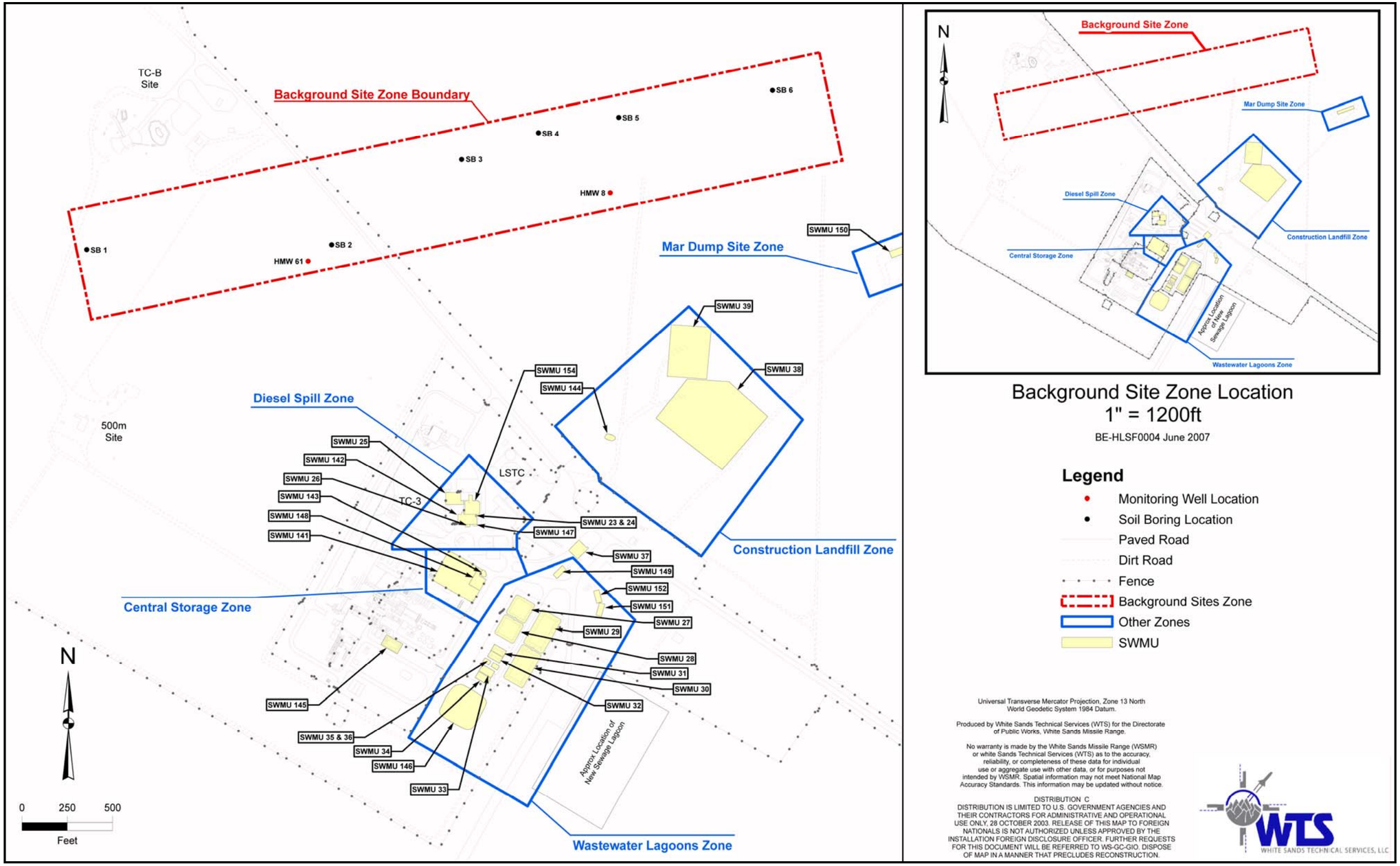


FIGURE 4-2. BACKGROUND ZONE.

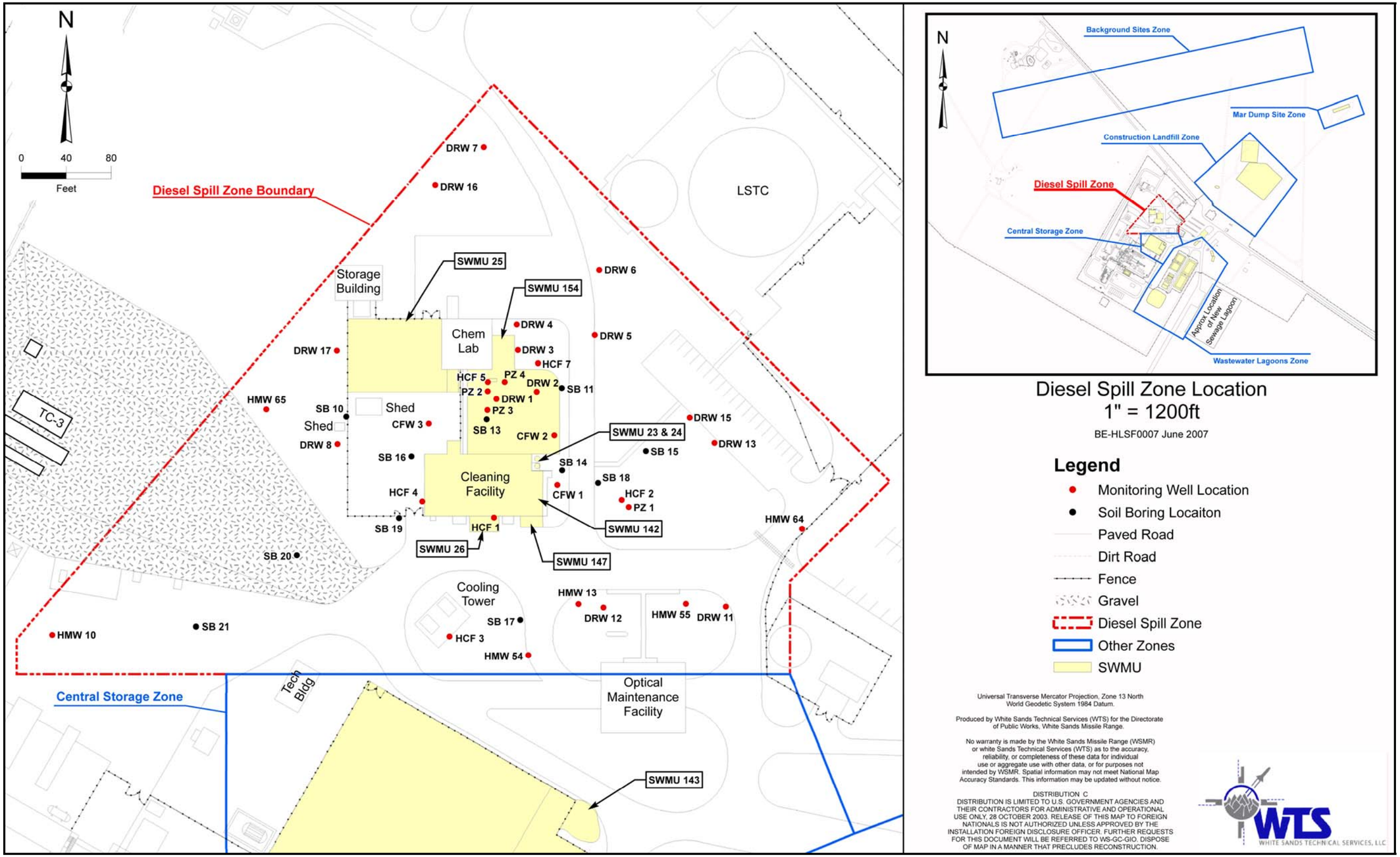


FIGURE 4-3. DIESEL SPILL ZONE.

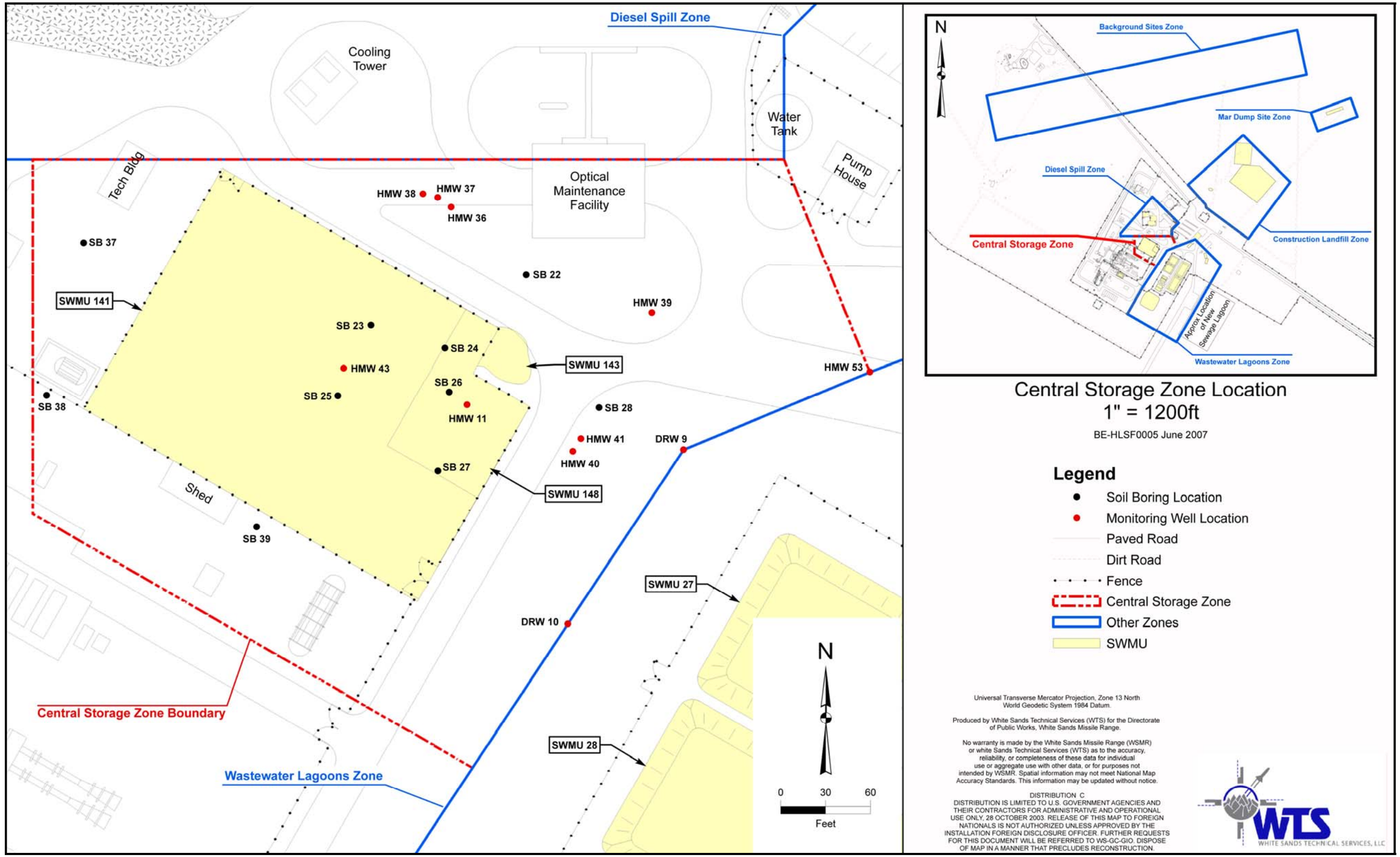


FIGURE 4-4. CENTRAL STORAGE ZONE.

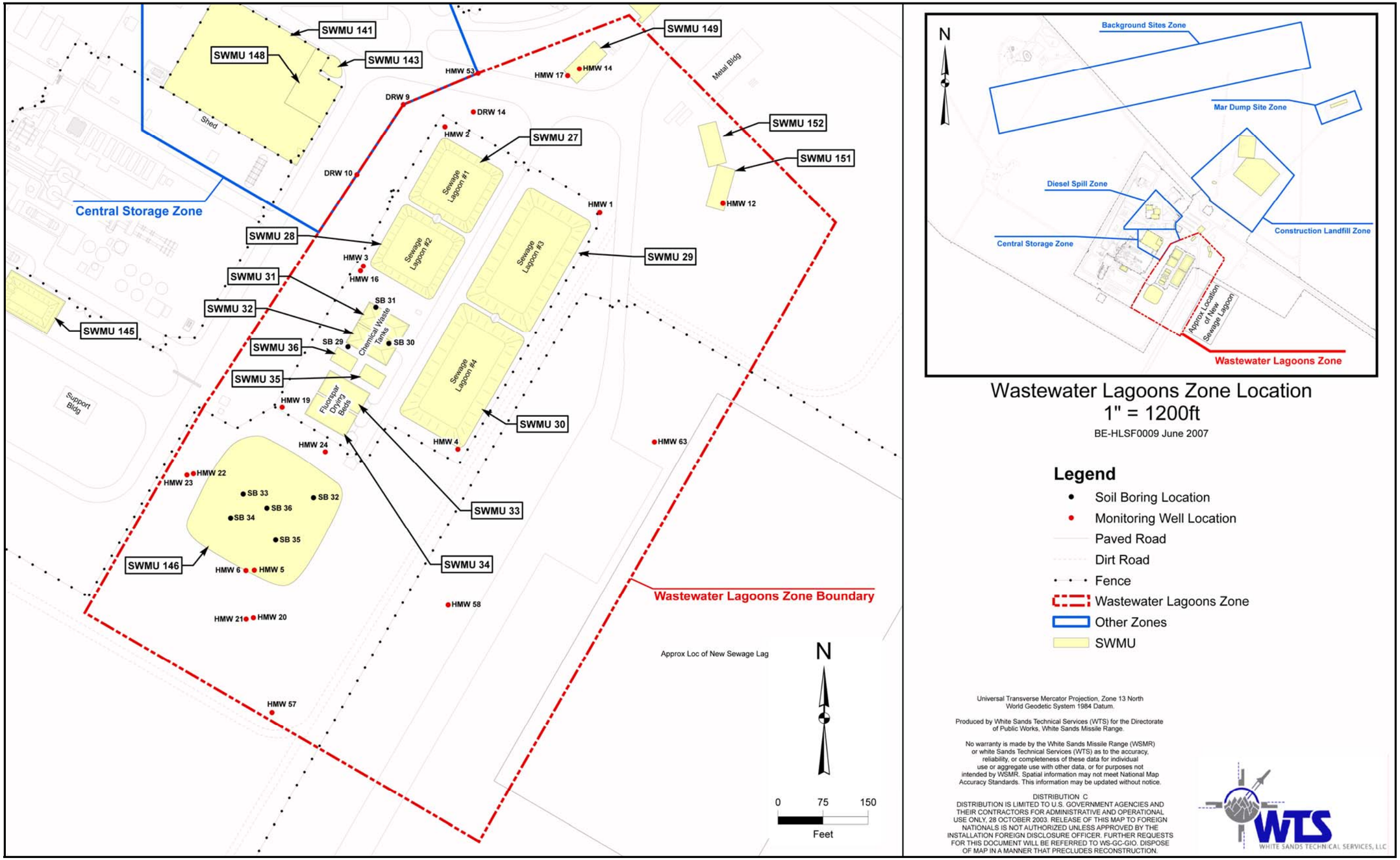


FIGURE 4-5. WASTEWATER LAGOONS ZONE.

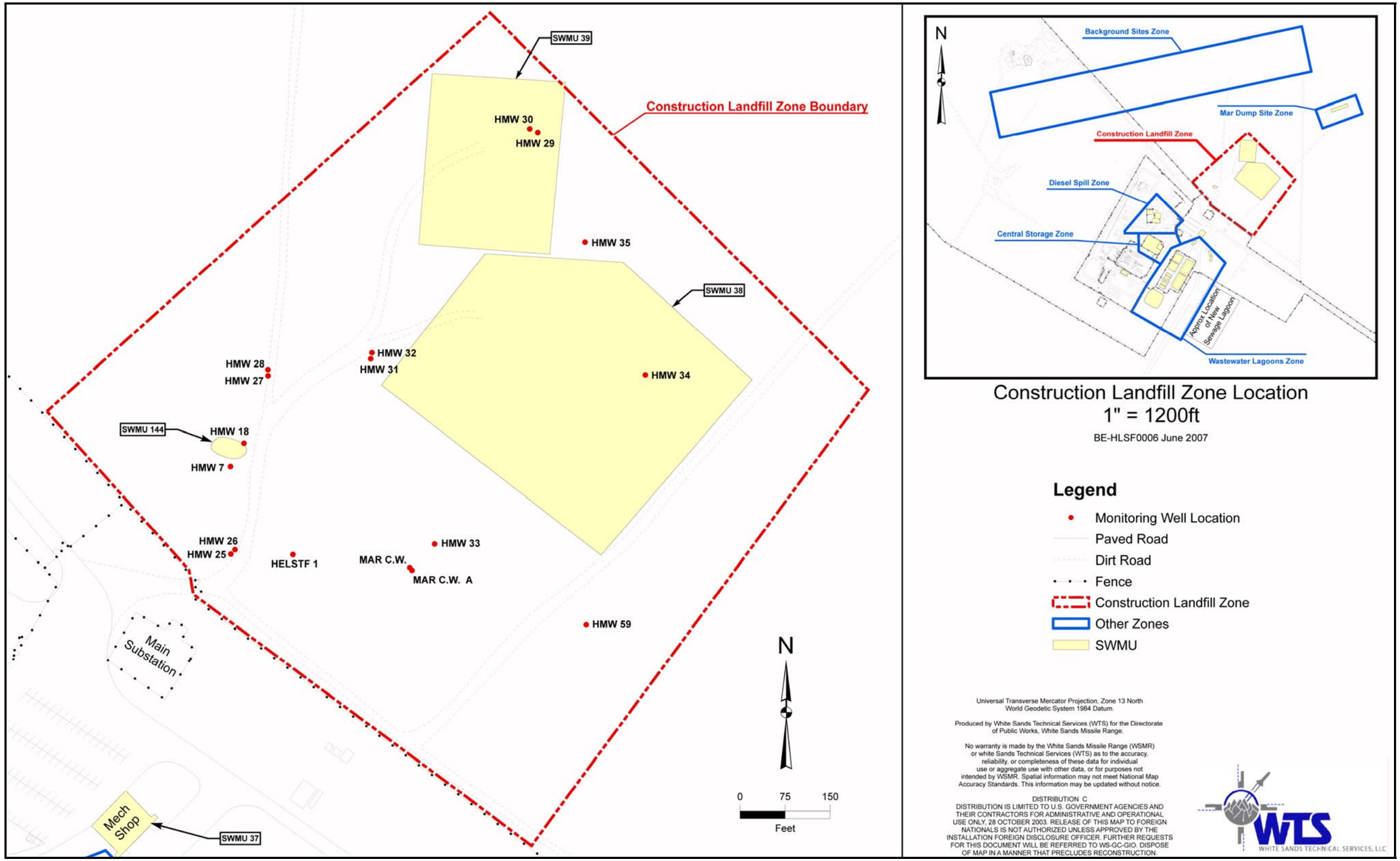


FIGURE 4-6. CONSTRUCTION LANDFILL ZONE.

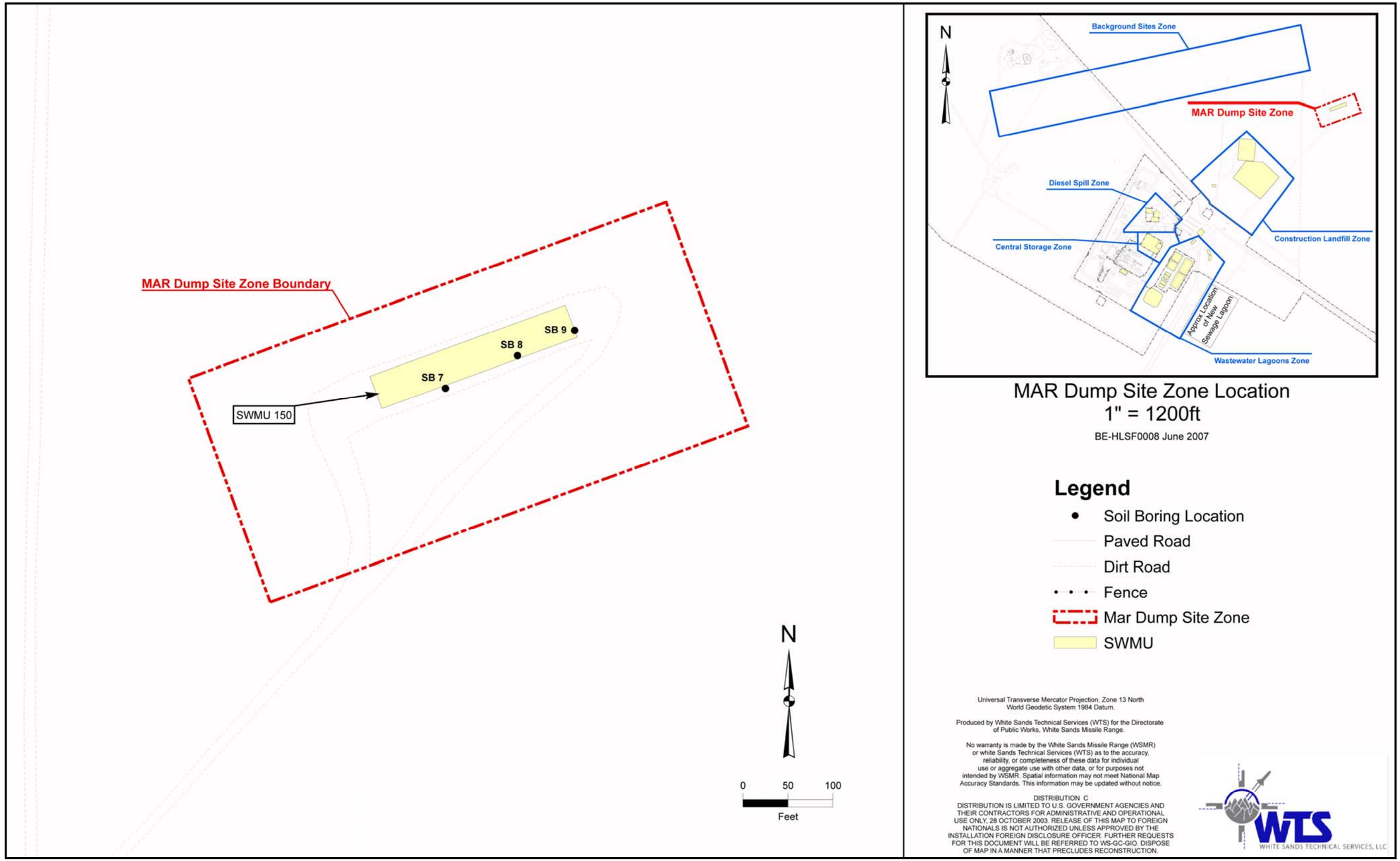


FIGURE 4-7. MAR DUMP SITE ZONE.

Where duplicate samples were collected from the same sample location, the two sample results were averaged and used in the overall statistical analysis of the data. For analytes, including hexavalent chromium, total arsenic, total cadmium, total mercury, total selenium, and total silver, having greater than 50 % non-detects for some or all depths collected, summary statistics and the 95 % UCL statistics were not run for those depths due to validity of the statistics. Table D-1, Appendix D, lists summary statistics for background soil analytes at HELSTF. Proposed background values are as follows:

- 95% UCL, where available, or
- The largest laboratory detection limit, where non-detects constitute more than 50% of the sample set.

These background soil concentrations were compared to detections from the potentially contaminated sites at HELSTF to determine their relationship. No background values were determined for organic contaminants. Sample locations are shown in Figure 4-2.

4.2.2 Occurrence of Selected COPCs

Soils collected at HELSTF were subjected to a broad range of analyses. In order to simplify the discussion of analyses and impacts within each zone, a pre-screening, by analyte, was performed to identify constituents of no further concern. Analytical results for all constituents remain in the appendices.

Of the inorganic constituents, mercury, silver, and selenium were not detected within the project area at the detection levels shown in Table 4-1. A single observation of hexavalent chromium (5.21 mg/kg, slightly above the detection limit, and nearly two orders of magnitude below the residential soil screening level of 234 mg/kg) occurred at a depth of 20 ft bgs in soil boring 15 within the Diesel Spill zone. Since there were no other detections, the constituent was not evaluated further.

TABLE 4-1. INORGANIC CONSTITUENTS NOT DETECTED

Constituent	Detection Limit(mg/kg)
Hexavalent Chromium *	0.4-5
Mercury (Hg)	0.04
Silver (Ag)	0.05-0.2
Selenium (Se)	1

* A single observation of hexavalent chromium (5.21 mg/kg, slightly above the detection limit) occurred at a depth of 20 ft bgs in soil boring 15 within the Diesel Spill zone. Since there were no other detections, the constituent was not evaluated further.

Further, the maximum occurrences of barium, cadmium, copper, lead, zinc, and nitrate are at levels substantially below their respective most restrictive New Mexico Soil Screening Levels (SSLs) (NMED, 2006) and were reported, but not further addressed herein. The maximum values, together with the relevant screening levels, are shown in Table 4-2.

TABLE 4-2. INORGANIC CONSTITUENTS OCCURRING SUBSTANTIALLY BELOW THEIR RELEVANT SSLS

Constituent (mg/kg)	Maximum Observed Result	Borehole Number	Depth (ft)	NMED Residential SSL*	NMED DAF20 SSL*
Barium (Ba)	1.56×10^3	30	30 – 31	1.56×10^4	6.03×10^3
Cadmium (Cd)	2.36	30	49 – 50	39.0	27.5
Copper (Cu)	14.4	27	40 – 41	3.13×10^3	1.03×10^3
Lead (Pb)	40	27	40 – 41	400	NE
Zinc (Zn)	102	30	49 – 50	2.35×10^4	1.36×10^4
Nitrate (NO_3 as N)	44.9	21	30 – 31	1.0×10^5	3.35×10^2

* From NMED, 2006
NE = Not established

Both arsenic and chromium are further discussed in relation to the various zones, below. Finally, phosphorous, potassium, and sodium are unregulated.

Fraction organic carbon (FOC) is a special case. It is not a contaminant, but rather a measure of the organic content of the geologic material. Organic matter content (measured by FOC) is an indication of the ability of the material to retain organic constituents. FOC data were gathered in case there was a requirement to model movement and retention of organic contaminants.

Similarly, many organic constituents were not detected. In particular, no ethylene glycol (a constituent requested by NMED) was detected within the project area. Detections are discussed in the separate sections, below.

4.2.3 Soil Concentrations in Designated Zones

4.2.3.1 Diesel Spill Zone

The Diesel Spill Zone (Figure 4-3) encompasses the Waste Accumulation Area (SWMU 25), the Cleaning Facility Sump (SWMU 142), and the Systemic Diesel Spill (SWMU 154). During the Phase III RFI, WSMR completed soil borings HLSF-0085-SB-010 through HLSF-0085-SB-021. Soil boring HLSF-0085-SB-012 was not completed due to the presence of buried utilities across the site. Borings were completed to a depth of 50 ft bgs with samples collected approximately every 10 ft bgs. Surface samples were not collected due to the asphalt and/or cement covering over the site. Samples for each boring, depending on the associated SWMU (Table 4-3), were analyzed for total phosphorus, total chromium, hexavalent chromium, total sodium, total zinc, ethylene glycol, VOC, SVOC, DRO, GRO, FOC, and nitrate-nitrite. Results of the sampling event are included in Table D-2, Appendix D.

TABLE 4-3. DIESEL SPILL ZONE SOIL SAMPLE LOCATIONS AND ANALYTICAL PROGRAM

Soil Boring	Related SWMU	Analyses
13 – 19	SWMU 142	P, Cr6+, Cr, Pb, Na, Zn, ethylene glycol, VOC with PTA, SVOC, DRO, GRO, TOC
11, 15, 19 – 21	SWMU 154	NO3-NO2, P, Cr6+, Cr, Pb, Na, Zn, ethylene glycol, VOC with PTA, SVOCs, DRO, GRO, TOC
10	SWMU 25	Cr6+, Cr, Zn, TOC, VOC, DRO, GRO

Of the potential contaminants detected, only DRO was detected above residential screening levels (NMED TPH Screening Guidelines) in the samples collected at the Diesel Spill Site. DRO was detected at a highest concentration of 10,800 mg/kg at a depth of 40 ft bgs in SB 11. The NMED TPH Screening Guideline (Residential Direct Exposure for Diesel #2) is 520 mg/kg.

With one exception, all of the detected organics came from the area of the diesel spill and all are typical constituents of diesel fuel. The highest concentration of each is shown in Table 4-4, together with potentially relevant soil screening levels. As a means of screening out contaminants of potential concern (COPCs), the highest concentration observed (without regard for depth of occurrence) is compared both to a Residential Soil Screening Level and to a DAF20 [based on scenario of transport to an aquifer 20 feet below the zone of contamination, which is roughly the separation between the lower perched zone {where the diesel occurs} and the regional aquifer system]. If the highest concentration is below both these levels, then the constituent is considered of no further concern.

TABLE 4-4. ORGANIC COMPOUNDS DETECTED IN DIESEL SPILL ZONE

Constituent (mg/kg)	CAS	Detection Limit	Reporting Limit	Maximum Observed Result	Soil Boring and Depth (ft)		NMED Soil Screening Levels *	
							Residential SSL	DAF20
1,2,4-Trimethylbenzene	95-63-6	0.535	0.010	**6.70**	11	40 – 42	58	**1.42**
1,3,5-Trimethylbenzene	108-67-8	2.1	0.010	**2.66**	11	40 – 42	25	**0.355**
1-Methylnaphthalene	90-12-0	0.0417	0.25	55.80	11	40 – 42	NE	NE
2-Methylnaphthalene	91-57-6	0.03386	0.25	71.30	11	40 – 42	NE	NE
Acenaphthene	83-32-9	0.0745	0.25	3.10	11	40 – 42	3,730	54.9
Anthracene	120-12-7	0.0378	0.25	10.60	11	40 – 42	22,000	1,620
Benzene	71-43-2	0.644	0.010	0.24	11	40 – 42	10.3	54.9
Dibenzofuran	132-64-9	0.0274	0.25	2.44	19	30 – 31	142	2.87
Diphenylamine	122-39-4	0.0471	0.25	1.63	19	30 – 31	1,500 **	-
Ethylbenzene	100-41-4	0.376	0.010	4.06	14	20 – 22	128	20.2
Fluorene	86-73-7	0.0435	0.25	6.38	11	40 – 42	26,600	58.5
Isopropylbenzene (Cumene)	98-82-8	1.3	0.010	3.10	14	20 – 22	271	82.1
m,p-Xylene	1330-20-7	0.714	0.010	0.20	11	30 – 32	82	2.06
Naphthalene	91-20-3	4.41	0.050	**12.90**	11	40 – 42	79.5	**0.394**
n-Butylbenzene	104-51-8	0.979	0.010	5.28	14	20 – 22	62.1	5.4
n-Propylbenzene	103-65-1	0.421	0.010	5.27	14	20 – 22	62.1	5.4
o-Xylene	95-47-6	0.679	0.010	0.37	11	40 – 42	99.5	81.4
p-Isopropyltoluene	99-87-6	0.679	0.010	1.77	14	20 – 22	7,820 ***	-
Pyrene	129-00-0	0.1507	0.25	1.42	11	40 – 42	2,290	373
sec-Butylbenzene	135-98-8	0.632	0.010	**5.57**	14	20 – 22	60.2	**4.33**

Bolded entries exceed the relevant NMED DAF20 screening levels
NE = Not established
* From NMED, 2006, except as noted
**EPA Region VI SSL
***Calculated from Rfd = 0.1

All constituents were reported below their relevant residential soil screening level. **Bolded** entries, however, are above the relevant DAF20. These four constituents were evaluated further.

No chlorinated hydrocarbons/solvents were detected in the soils. All the organic constituents present appear to be from diesel fuel. Further remediation of the diesel fuel and its constituents will be addressed in a subsequent Corrective Measures Study (CMS). Inorganics detected include total chromium and hexavalent chromium [single occurrence]. All inorganics were detected at concentrations below their respective NMED Residential SSLs.

In summary, COPCs for the Diesel Spill Zone appear all related to the diesel fuel, itself: TPH and three benzene-containing SVOCs. It is noted that naphthalene is also used as a solvent. Consequently, the cleaning facility may also be a source of this constituent.

4.2.3.2 Central Storage Zone

The Central Storage Zone (Figure 4-4) encompasses the Equipment Storage Area (SWMU 141), the Chromate Spill Site (SWMU 143), and the MAR Waste Stabilization Pond (SWMU 148). During the Phase III RFI, WSMR completed soil borings HLSF-0085-SB-022 through HLSF-0085-SB-028 and HLSF-0085-SB-037 through HLSF-0085-SB-039. Borings were completed to a depth of 50 ft bgs with samples collected approximately every 10 ft bgs. Surface samples were not collected due to the asphalt and/or cement soil covering over the site. Samples for each boring, depending on associated SWMU

(Table 4-5), were analyzed for total phosphorus, the RCRA 8 metals, total copper, hexavalent chromium, total sodium, total zinc, ethylene glycol, VOC, SVOC, DRO, GRO, FOC, and nitrate-nitrite. Results of the sampling event are included in Table D-3, Appendix D.

TABLE 4-5. CENTRAL STORAGE ZONE SOIL SAMPLE LOCATIONS AND ANALYTICAL PROGRAM

Soil Boring	Related SWMU	Analyses
37 – 39	SWMU 141	RCRA 8 metals, VOC, DRO, GRO
22 – 24, 26, 28	SWMU 143	RCRA 8 metals, NO3-NO2, P, Cr6+, Cu, Na, Zn, ethylene glycol, VOC with PTA, SVOC, DRO, GRO, TOC
25, 27	SWMU 148	RCRA 8 metals, NO3-NO2, P, Cr6+, Cu, Na, Zn, ethylene glycol, VOC with PTA, SVOCs, DRO, GRO, TOC

With the exception of arsenic (discussed below), inorganics were detected at concentrations below their respective NMED Residential SSLs. Several chromium detections were above their respective background concentrations, indicating a potential effect of chromium contamination at the site. However, all chromium results (highest detect = 15.6 mg/kg in SB26, 40 ft depth) were well below the NMED residential SSL of 210 mg/kg.

Of the potential contaminants detected in the samples collected at the Central Storage Zone, only total arsenic was detected above both residential screening levels (NMED SSLs) and background concentrations. Total arsenic was detected at a highest concentration of 8.81 mg/kg at a depth of 50 ft bgs in SB27. No arsenic was detected at a depth closer to the surface than 20 ft bgs. The NMED Residential SSL (3.9 mg/kg) and Industrial/Site Worker SSL (17.7 mg/kg) are based on an exposure scenario to contamination from 0-2 ft bgs. The Construction Worker SSL is 85.2 mg/kg and is based on an exposure scenario of 0-10 ft bgs. Since no arsenic was detected within the relevant depth intervals, this COPC will not be further addressed.

The only organic detected was Di-n-octylphthalate. It was detected in two samples at the 40 ft (SB24) and 50 ft (SB25) intervals at a highest concentration of 0.594 mg/kg (reporting limit = 0.25 mg/kg). The EPA Region VI Human Health Screening Level for Di-n-octylphthalate is 2,400 mg/kg.

In summary, the COPCs for the Central Storage Zone remain limited to chromium only, based on previous studies. No new COPCs were identified in this phase.

4.2.3.3 Wastewater Lagoons Zone

The Wastewater Lagoons Zone contains the wastewater lagoons, themselves, the former site of the chemical waste tanks and the Dry Pond (Figure 4-5). The former site of the chemical waste tanks and the Dry Pond were investigated during the RFI and are discussed, separately, below. Since no new soil samples were collected at the Wastewater Lagoons, discussion of them will be based on pre-existing data.

The Chemical Waste Tanks (SWMUs 31-32) are included within the Wastewater Lagoons Zone (Figure 4-5). WSMR completed soil borings HLSF-0085-SB-029 through HLSF-0085-SB-031. Borings were completed to a depth of 50 ft bgs with samples collected approximately every 10 ft bgs. Surface samples were collected at the site. Samples for each boring (Table B-4, Appendix B), were analyzed for total phosphorus, the RCRA 8 metals, hexavalent chromium, total potassium, total sodium, total zinc, ethylene glycol, VOC, DRO, GRO, FOC, and benzyl alcohol. Of the potential contaminants analyzed, only various metals were detected. Results of the sampling event are included in Table D-4, Appendix D.

Total arsenic was the only analyte detected above residential screening levels (NMED SSLs) and background concentrations in the samples collected at the Chemical Waste Tanks. Total arsenic was

detected at a highest concentration of 8.94 mg/kg at a depth of 50 ft bgs in SB 31. No arsenic was detected above its NMED Residential SSL (3.9 mg/kg) at a depth closer to the surface than 20 ft bgs. As discussed previously, since no arsenic was detected within the relevant depth intervals, this COPC will not be further addressed.

In summary, no COPCs exist to carry forward relative to the site of the former Chemical Waste Tanks.

The Dry Pond (SWMU 146) is considered part of the Wastewater Lagoons Zone (Figure 4-5). WSMR completed soil borings HLSF-0085-SB-032 through HLSF-0085-SB-036. Borings were completed to a depth of 50 ft bgs with samples collected approximately every 10 ft bgs. Surface samples were collected at the site. Samples for each boring (Table B-4, Appendix B), were analyzed for total phosphorus, the RCRA 8 metals, hexavalent chromium, total potassium, total sodium, total zinc, ethylene glycol, VOC, DRO, GRO, FOC, and benzyl alcohol. Of the potential contaminants analyzed, only various metals and FOC were detected. Results of the sampling event are included in Table D-5, Appendix D.

There were no detections of VOCs, DRO or GRO. Total arsenic was the only analyte detected above residential screening levels (NMED SSLs) and background concentrations in the samples collected at the Dry Pond. Total arsenic was detected at a highest concentration of 11.6 mg/kg at a depth of 20 ft bgs in SB 33. No arsenic was detected above its NMED Residential SSL at a depth closer to the surface than 20 ft bgs. The NMED Residential SSL is 3.9 mg/kg. The NMED Residential SSL and Industrial/Site Worker SSL (17.7 mg/kg) are based on an exposure scenario to contamination from 0-2 ft bgs. The Construction Worker SSL is 85.2 mg/kg and is based on an exposure scenario of 0-10 ft bgs.

In summary, no apparent human health issues exist relative to the Dry Pond Site. Eco-risk is discussed in Section 6.

4.2.3.4 Construction Landfill Zone

The Construction Landfill and nearby SWMUs comprise the Construction Landfill Zone (Figure 4-6). However, since no new soil samples were collected, discussion of this zone in subsequent sections will be based on pre-existing data.

4.2.3.5 MAR Dump Site

The MAR Dump Site (SWMU 150) (Figure 4-7) is sufficiently removed from the other SWMU areas at HELSTF to be considered separately. WSMR completed soil borings HLSF-0085-SB-007 through HLSF-0085-SB-009. Borings were completed to a depth of 50 ft bgs with samples collected approximately every 10 ft bgs. Surface samples were collected at the site. Samples for each boring (Table B-4, Appendix B), were analyzed for the nitrate-nitrite, RCRA 8 metals, hexavalent chromium, VOC, and FOC. Of the potential contaminants analyzed, nitrate-nitrite, FOC, total arsenic, total chromium, total barium, and total lead were detected. Results of the sampling event are included in Table D-6, Appendix D.

Total arsenic was the only analyte detected above residential screening levels and background concentrations in the samples collected at the MAR Dump Site. Total arsenic was detected at a highest concentration of 4.46 mg/kg at a depth of 40 ft bgs. No arsenic was detected above its NMED Residential SSL at a depth closer to the surface than 40 ft bgs. The NMED Residential SSL is 3.9 mg/kg. The NMED Residential SSL and Industrial/Site Worker SSL (17.7 mg/kg) are based on an exposure scenario to contamination from 0-2 ft bgs. The Construction Worker SSL is 85.2 mg/kg and is based on an exposure scenario of 0-10 ft bgs. As discussed above, since no arsenic was detected within the relevant depth intervals, this COPC will not be further addressed. The Phase III sampling confirms the clean closure as reported in Dow (1997).

4.3 Groundwater

This section discusses the results of the synoptic water quality sampling event conducted during December 2006 and January 2007. For many wells, this was the first and only sampling event or the first event in a number of years. For those COPCs identified in newly-constructed wells, a confirmatory event will be incorporated into future monitoring events. For some constituents, notably organics such as isopropyl

alcohol, detections were sporadic or singular. An additional event would be required to confirm or refute the presence of these chemicals.

4.3.1 Determination of Background Groundwater Quality

Background (upgradient) water quality is relevant only for the regional aquifer system at HELSTF. There is no background for the perched systems. Two monitor wells completed in the regional aquifer were designated as background wells. These were HMW08 (existing) and HMW61 (installed for this investigation). For this program, HMW08 was sampled once and HMW61 was sampled in duplicate for the parameters shown on Table 4-6, below.

TABLE 4-6. ANALYTE LIST -- BACKGROUND GROUNDWATER SAMPLES

Analyte	Detection Limit	Reporting Limit	Units
Bicarbonate Alkalinity	4	4	mg/L*
Bromide	0.214	1	mg/L
Carbonate Alkalinity	1	1	mg/L*
Chloride	0.0181	0.5	mg/L
Dissolved Arsenic	0.0036	0.005	mg/L
Dissolved Barium	0.004	0.01	mg/L
Dissolved Cadmium	0.000577	0.001	mg/L
Dissolved Chromium	0.00357	.005	mg/L
Dissolved Copper	0.00127	0.005	mg/L
Dissolved Lead	0.00398	0.005	mg/L
Dissolved Potassium	0.0297	0.5	mg/L
Dissolved Selenium	0.00556	0.01	mg/L
Dissolved Silver	0.000199	0.002	mg/L
Dissolved Sodium	1.06	50	mg/L
Dissolved Zinc	0.003	0.005	mg/L
Fluoride	0.0119	0.2	mg/L
Hydroxide Alkalinity	1	1	mg/L*
Nitrate-N	0.053	1	mg/L
Nitrite-N	0.064	1	mg/L
pH	-	-	s.u.
Specific Conductance	-	-	µmhos/cm
Sulfate	0.0485	0.5	mg/L
Total Alkalinity	2.38	4	mg/L*
Total Arsenic	0.00489	0.01	mg/L
Total Barium	0.005	0.01	mg/L
Total Cadmium	0.000268	0.001	mg/L
Total Chromium	0.564	0.564	mg/L
Total Copper	0.00127	0.005	mg/L
Total Dissolved Solids	5	5	mg/L
Total Lead	0.0031	0.005	mg/L
Total Mercury	0.0000217	0.0002	mg/L
Total Organic Carbon	0.382	1	mg/L
Total Phosphorous	0.0229	0.05	mg/L
Total Potassium	0.0297	0.5	mg/L
Total Selenium	0.097	0.097	mg/L
Total Silver	0.000274	0.002	mg/L
Total Sodium	2.21	50	mg/L
Total Zinc	0.000666	0.005	mg/L
* as Ca CO3			

Of these, certain constituents were not detected in either sample, as listed in Table 4-7, below. Background for these constituents will be treated as “not detected at the analytical limit shown.”

TABLE 4-7. ANALYTES NOT DETECTED – BACKGROUND GROUNDWATER SAMPLES	
Analyte	
Bromide	Nitrite-N
Carbonate Alkalinity	Total Arsenic
Dissolved Arsenic	Total Barium
Dissolved Barium	Total Cadmium
Dissolved Cadmium	Total Copper
Dissolved Copper	Total Lead
Dissolved Lead	Total Mercury
Dissolved Selenium	Total Phosphorous
Dissolved Silver	Total Silver
Dissolved Zinc	Total Zinc
Hydroxide Alkalinity	

In addition, HMW08 has been sampled since 2000 for a variety of parameters for multiple programs. Analytes detected at some time during the monitoring period are shown on Table 4-8. The constituents shown in ***bold italics*** are supported by only one or two observations and should be considered as not well established.

TABLE 4-8. ANALYTICAL DETECTIONS FROM LONG-TERM OBSERVATIONS OF MONITOR WELL HMW08

Analyte	Reporting Limit	Mean	Units
Ammonia	*0.1*	*0.85*	*mg/L*
Bicarbonate Alkalinity	5	223	mg/L*
Bromide	*10*	*195*	*mg/L*
Chemical Oxygen Demand	50	75	mg/L
Chloride	10	1030	mg/L
Dissolved Beryllium	*0.004*	*0.012*	*mg/L*
Dissolved Boron	0.75	1.34	mg/L
Dissolved Calcium	2	449	mg/L
Dissolved Lead	*0.011*	*0.0113*	*mg/L*
Dissolved Lithium	*0.11*	*0.54*	*mg/L*
Dissolved Magnesium	2	584	mg/L
Dissolved Manganese	0.2	0.40	mg/L
Dissolved Molybdenum	0.022	0.055	mg/L
Dissolved Nickel	*0.011*	*0.012*	*mg/L*
Dissolved Potassium	5	93	mg/L
Dissolved Selenium	0.022	0.049	mg/L
Dissolved Silica	1	19.1	mg/L
Dissolved Sodium	5	2400	mg/L
Dissolved Strontium	0.4	7.35	mg/L
Dissolved Uranium	*0.005*	*0.006*	*mg/L*
Dissolved Vanadium	*0.011*	*0.021*	*mg/L*
Diesel Range Organics	*5*	*25.8*	*mg/L*

TABLE 4-8. ANALYTICAL DETECTIONS FROM LONG-TERM OBSERVATIONS OF MONITOR WELL HMW08

Analyte	Reporting Limit	Mean	Units
Fluoride	1	2.22	mg/L
Hexavalent Chromium	*0.05*	*0.061*	*mg/L*
Nitrate-N	0.1	32	mg/L
pH		7.71	s.u.
Specific Conductance		11800	µmhos/cm
Sulfate	5	6920	mg/L
Total Alkalinity	5	221	mg/L*
Total Aluminum	*0.1*	*0.137*	*mg/L*
Total Arsenic	*0.003*	*0.012*	*mg/L*
Total Boron	*0.5*	*1.50*	*mg/L*
Total Calcium	*0.3*	*355*	*mg/L*
Total Chromium	*0.02*	*0.02*	*mg/L*
Total Cobalt	*0.01*	*0.015*	*mg/L*
Total Dissolved Solids	50	15100	mg/L
Total Iron	*0.04*	*0.075*	*mg/L*
Total Lithium	*0.1*	*0.47*	*mg/L*
Total Magnesium	*2*	*580*	*mg/L*
Total Manganese	*0.01*	*0.53*	*mg/L*
Total Molybdenum	*0.03*	*0.071*	*mg/L*
Total Nickel	*0.02*	*0.034*	*mg/L*
Total Phosphorous	0.05	0.146	mg/L
Total Potassium	2	61.5	mg/L
Total Selenium	*0.03*	*0.041*	*mg/L*
Total Silica	*0.2*	*20.25*	*mg/L*
Total Sodium	8	2600	mg/L
Total Strontium	*0.01*	*7.95*	*mg/L*
Total Uranium	*0.02*	*0.028*	*mg/L*
Total Zinc	*0.01*	*0.024*	*mg/L*

* as CaCO3

Given these data, estimates of background concentrations (Table 4-9) are formed in the following manner:

- Only constituents specified in the current investigation are considered;
- If a constituent is found in both wells, the background concentration is the mean of the observations from the two wells;
- If the analytical determination of a dissolved species is greater than the determination of the total species, the larger number is adopted.
- If a constituent is found in one well, but not detected in the other, the background concentration is the mean of observations from the well where it is detected.
- If a constituent is found in neither well, then the background concentration is considered to be “less than the reporting limit.”

These concentrations were used to compare with observations from within the HELSTF industrial area, itself.

TABLE 4-9. FINAL BACKGROUND GROUNDWATER QUALITY DETERMINATIONS		
Analyte	**Value**	**Units**
Total And Bicarbonate Alkalinity	214	mg/L*
Carbonate And Hydroxide Alkalinity	< 1	mg/L
Bromide	195	mg/L
Chloride	2220	mg/L
Total And Dissolved Arsenic	< 0.01	mg/L
Total And Dissolved Barium	< 0.01	mg/L
Total And Dissolved Cadmium	< 0.01	mg/L
Total And Dissolved Chromium	0.6	mg/L
Total And Dissolved Copper	< 0.005	mg/L
Total And Dissolved Lead	0.0113	mg/L
Total Mercury	< 0.0002	mg/L
Total Phosphorous	< 0.05	mg/L
Total And Dissolved Potassium	84	mg/L
Dissolved Selenium	0.072	mg/L
Total And Dissolved Silver	< 0.002	mg/L
Dissolved Sodium	2870	mg/L
Fluoride	2.04	mg/L
Nitrate-N	82.5	mg/L
Ph	7.48	s. u.
Specific Conductance	14725	µmhos/cm
Sulfate	7295	mg/L
Total Arsenic	0.012	mg/L
Total Dissolved Solids	15650	mg/L
Total Organic Carbon	2.5	mg/L
Total Selenium	0.076	mg/L
Total Sodium	3030	mg/L
Total Zinc	0.024	mg/L
* as $CaCO_3$		

4.3.2 Upper Perched Wells

Monitor wells at HELSTF screened in the upper perched water bearing zone (Table 4-8 and Figures 4-8 and 4-9) address the area beneath the sewage lagoons to portions of the equipment storage yard. The upper perched zone is apparently absent from the balance of the HELSTF site. This observation supports the thesis that the upper perched zone is supported by leakage from the current Wastewater Treatment Lagoons. Water samples were collected and analyzed for water quality, various dissolved ions, ammonia, various total and dissolved metals. Analytical detections for upper perched samples are shown in Appendix D, Table D-7.

TABLE 4-10. SAMPLED MONITOR WELLS IN UPPER PERCHED WATER BEARING ZONE

Well Name	Zone	Primary SWMU Site
HMW17	Central Storage Zone	Chromate Spill Site
HMW36	Central Storage Zone	Chromate Spill Site
HMW40	Central Storage Zone	Chromate Spill Site
HMW01	Wastewater Lagoons	HELSTF Sewage Lagoons
HMW02	Wastewater Lagoons	HELSTF Sewage Lagoons
HMW03	Wastewater Lagoons	HELSTF Sewage Lagoons
HMW04	Wastewater Lagoons	HELSTF Sewage Lagoons
HMW24	Wastewater Lagoons	Fluorospar Tanks

Certain wells, listed in Table 4-9, were dry at the time of sampling. Shallow wells that have dried since installation provide evidence that, once the source is cut off, the perched zones dissipate. This is clearly the case with the wells completed around the LSTC Wastewater Discharge Point (Oryx Pit), which has not received water in a number of years.

TABLE 4-11. DRY MONITOR WELLS IN UPPER PERCHED WATER BEARING ZONE

Well Name	Zone	Primary SWMU Site
HMW18b	Construction Landfill	LSTC Wastewater Discharge Point
HMW25	Construction Landfill	LSTC Wastewater Discharge Point
HMW27	Construction Landfill	LSTC Wastewater Discharge Point
HMW05	Wastewater Lagoons	Dry Pond
HMW19	Wastewater Lagoons	Fluorospar Tanks
HMW22	Wastewater Lagoons	Dry Pond

Of the wells that were successfully sampled, most displayed substantial concentrations of chloride, fluoride, nitrate, sulfate, sodium, and total dissolved solids (TDS). HMW04, associated with the sewage lagoons, displayed a concentration of 1,1-dichloroethene of 5.4 µg/L, roughly 10 % above the WQCC standard of 5 µg/L. HMW24, near the fluorospar tanks, displayed selenium concentration roughly twice the WQCC standard of 0.05 mg/L. Notably, none of the wells associated with the chromate spill site displayed elevated chromium concentrations.

4.3.3 Lower Perched Wells

Monitor wells screened in the lower perched water bearing zone (Table 4-12 and Figures 4-8 and 4-10) address the area beneath the bulk of HELSTF. Water samples were collected and analyzed for water quality, various dissolved ions, ammonia, various total and dissolved metals, and volatile and semivolatile organics. Analytical detections for lower perched samples are shown in Appendix D, Table D-8.

TABLE 4-12. SAMPLED MONITOR WELLS IN LOWER PERCHED WATER BEARING ZONE

Well Name	Zone	Primary SWMU Site
DRW09	Central Storage Zone	Chromate Spill Site
DRW10	Central Storage Zone	Chromate Spill Site
HMW11	Central Storage Zone	Chromate Spill Site
HMW37	Central Storage Zone	Chromate Spill Site
HMW38	Central Storage Zone	Chromate Spill Site
HMW39	Central Storage Zone	Chromate Spill Site
HMW41	Central Storage Zone	Chromate Spill Site
HMW43	Central Storage Zone	Chromate Spill Site
HMW53	Central Storage Zone	Chromate Spill Site
HMW07	Construction Landfills Zone	LSTC Wastewater Discharge Point
HMW26	Construction Landfills Zone	LSTC Wastewater Discharge Point
HMW31	Construction Landfills Zone	Construction Landfills
HMW33	Construction Landfills Zone	Construction Landfills
DRW05	Diesel Spill Zone	Systemic Diesel Spill
DRW06	Diesel Spill Zone	Systemic Diesel Spill
DRW07	Diesel Spill Zone	Systemic Diesel Spill
DRW08	Diesel Spill Zone	Systemic Diesel Spill
DRW11	Diesel Spill Zone	Systemic Diesel Spill
DRW12	Diesel Spill Zone	Systemic Diesel Spill
DRW13	Diesel Spill Zone	Systemic Diesel Spill
HCF02	Diesel Spill Zone	Cleaning Facility Sump
HMW10	Diesel Spill Zone	Systemic Diesel Spill
HMW15	none	HELSTF Groundwater Study
HMW12	Wastewater Lagoons Zone	HELSTF Sewage Lagoons
HMW14	Wastewater Lagoons Zone	HELSTF Sewage Lagoons
HMW23	Wastewater Lagoons Zone	Dry Pond
HMW09		Test Cell 4 Lagoon
HMW45		Test Cell 4 Lagoon

Certain wells, listed in Table 4-11, were dry at the time of sampling. Those wells associated with the cleaning facility and the systemic diesel spill likely had not recovered from the monitor well rehabilitation effort. Rehabilitation consisted of surging and vigorously pumping or bailing wells to remove accumulated sediment and improve sampling characteristics. In some cases, this activity locally evacuated the water from the perched system. Those located elsewhere on the facility likely are dry from dissipation of the perched system at that location.

TABLE 4-13. DRY MONITOR WELLS IN LOWER PERCHED WATER BEARING ZONE

Well Name	Zone	Primary SWMU Site
HMW28	Construction Landfills Zone	LSTC Wastewater Discharge Point
CFW01	Diesel Spill Zone	Cleaning Facility Sump
CFW02	Diesel Spill Zone	Cleaning Facility Sump
CFW03	Diesel Spill Zone	Cleaning Facility Sump
CFW04	Diesel Spill Zone	Cleaning Facility Sump
DRW01	Diesel Spill Zone	Systemic Diesel Spill
DRW02	Diesel Spill Zone	Systemic Diesel Spill
DRW03	Diesel Spill Zone	Systemic Diesel Spill
DRW04	Diesel Spill Zone	Systemic Diesel Spill
HCF01	Diesel Spill Zone	Cleaning Facility Sump
HCF03	Diesel Spill Zone	Cleaning Facility Sump
HMW13	Diesel Spill Zone	Cleaning Facility Sump
HMW06b	Wastewater lagoons Zone	Dry Pond
HMW20	Wastewater lagoons Zone	Dry Pond
HMW21	Wastewater lagoons Zone	Dry Pond
HMW44		Test Cell 4 Lagoon
HMW46		Test Cell 4 Lagoon

Of the wells that were successfully sampled, most displayed substantial concentrations of chloride, fluoride, nitrate, sulfate, sodium, and total dissolved solids (TDS). Analytical detections are shown in Appendix D, Table D-8. Observations within each zone are provided below.

Diesel Spill Zone

Within the Diesel Spill Zone (Figure 4-3), Monitor Well HCF02 displays detectable concentrations of several components of diesel fuel. Historically, other lower perched wells (dry this time) also displayed diesel constituents. The lower perched aquifer is the known locus of the diesel spill and has been the object of remediation efforts in the past. This site will be further addressed in the CMS. Monitor Well DRW12 displays a selenium (total and dissolved) concentration of 0.1 mg/L; historically the selenium concentration in this well has averaged 0.23 mg/L.

Monitor Wells DRW05-08, 12, and 13 also display concentrations of chlorinated hydrocarbons, likely originating from the Cleaning Facility Sump. Any remediation of the diesel spill will also address the solvents present in the perched water.

Central Storage Zone

The Central Storage Zone is shown in Figure 4-4. Monitor Wells HMW38, 39, and 41 display detectable concentrations of chlorinated hydrocarbons (solvents). Based on their physical separation from the site of the sump, it is unclear how solvents in HMW39 and 41 can be related to the Cleaning Facility Sump leak. If removal of the current wastewater lagoons does not cause the perched aquifer in this area to dissipate, the occurrence of the solvents will need to be further investigated.

Chromium is also present in a number of lower perched wells in the zone, substantiating the need to address the chromium spill in the CMS.

Construction Landfill Zone

The Construction Landfill is shown in Figure 4-6. Monitor Wells HMW07, 26, 31, and 33 display detectable quantities of trichloroethylene (TCE), selenium, and chromium. With the exception of HMW31, the chromium detections are roughly equivalent to background. HMW33 is the only well with a long sampling history. Previous sampling events for this well are consistent with the current data.

4.3.4 Regional Aquifer Wells

Monitor wells at HELSTF screened in the regional aquifer (Table 4-14 and Figures 4-8 and 4-11) address the area beneath and adjacent to the complete HELSTF site. HMW08 and HMW61 were utilized to determine regional background groundwater quality. Groundwater samples were collected and analyzed for water quality, various dissolved ions, ammonia, various total and dissolved metals, and volatile and semivolatile organics. Analytical detections for regional samples are shown in Appendix D, Table D-9.

Regional aquifer wells within and adjacent to the HELSTF industrial area reflect, for the most part, the quality of the regional system, which is elevated in alkalinity, chloride, fluoride, nitrate, sulfate, sodium, and TDS. Notably, Monitor Well DRW14, which is in the wastewater lagoons zone, appears elevated in many constituents, including the COPCs nitrate and chromium. Based on the water table maps (see Section 4.2.5), DRW14 is impacted by drainage from the lower perched water bearing zone.

TABLE 4-14. REGIONAL MONITOR WELLS SAMPLED

Well Name	Zone	Primary SWMU Site
HMW08	Background	HELSTF Groundwater Study [Background]
HMW61	Background	HELSTF Groundwater Study [Background]
HELSTF1	Construction Landfills Zone	LSTC Wastewater Discharge Point
HMW29	Construction Landfills Zone	Construction Landfills
HMW30	Construction Landfills Zone	Construction Landfills
HMW32	Construction Landfills Zone	Construction Landfills
HMW34	Construction Landfills Zone	Construction Landfills

TABLE 4-14. REGIONAL MONITOR WELLS SAMPLED		
Well Name	**Zone**	**Primary SWMU Site**
HMW35	Construction Landfills Zone	Construction Landfills
HMW59	Construction Landfills Zone	Construction Landfills
DRW15	Diesel Spill Zone	Systemic Diesel Spill
DRW16	Diesel Spill Zone	Systemic Diesel Spill
DRW17	Diesel Spill Zone	Systemic Diesel Spill
HMW54	Diesel Spill Zone	Cleaning Facility Sump
HMW55	Diesel Spill Zone	Systemic Diesel Spill
HMW62	Diesel Spill Zone	Cleaning Facility Sump
HMW64	Diesel Spill Zone	Systemic Diesel Spill
HMW65	Diesel Spill Zone	Systemic Diesel Spill
DRW14	Wastewater Lagoons Zone	HELSTF Sewage Lagoons
HMW57	Wastewater Lagoons Zone	Dry Pond
HMW58	Wastewater Lagoons Zone	HELSTF Sewage Lagoons
HMW63	Wastewater Lagoons Zone	HELSTF Sewage Lagoons
HMW56		Test Cell 4 Lagoon
HMW60		HELSTF Groundwater Study

Monitor wells on the downgradient side of the site, HMW57-60 and 62-63, display no chemical impact from site operations. An exception is the occurrence of TCE in HMW62.

4.3.5 Site Groundwater Conditions

A series of hydraulically interrelated, discontinuous, perched water-bearing zones have been identified at HELSTF. Based on information gathered, the perched zones are suspected to have been caused by multiple wastewater or surface water recharge points located at HELSTF. However, as surmised, the main point of recharge for the perched zones is the sewage lagoons (SWMUs 27-30). The perched areas are probably the result of the combination of lateral discontinuity of stratigraphic units and varying degrees of hydraulic conductivities. Depths to the perched units vary significantly across HELSTF, apparently due to the laterally discontinuous transmissive zones (such as sand). A cross-section of the water bearing zones at HELSTF is shown in Figure 4-8.

In general, infiltrating water appears to perch on shallow impermeable zones, then travel laterally to the limit of those perching layers. When water flows off the shallow perching layers, it continues moving vertically to greater depths, until it encounters another perching layer. There, the process repeats. The overall pattern is one of a shallow perched water bearing zone (Upper Perched Zone) (from approximately 12 ft to 20 ft bgs), a deeper perched water bearing zone (Lower Perched Zone) (from approximately 22 ft to greater than 48 ft bgs), and a regional aquifer (beginning at 67 ft bgs). The perched zones should not be thought of as solid water bodies but more likely as multiple water bodies at similar depths.

4.3.5.1 Upper Perched Water Bearing Zone

A contour map (Figure 4-9) of the potentiometric surface within the upper perched water bearing zone indicates the highest water level is centered beneath the sewage lagoons, specifically beneath lagoon #1 and lagoon #2. Water elevation in the upper perched zone ranges from a high of 3,942 ft (12 ft bgs) in HMW-2 to a low of 3,933 ft (20.33 ft bgs) in HMW-4. Note that the water elevations shown in Figure 4-9 are in meters. The geologic interpretation software, RockWorks™, requires that all three dimensions be in the same units. Since the horizontal locations are identified by UTM coordinates, in meters, depths were converted to meters to be consistent.

Due to the variability of shallow geologic materials beneath the site, water flow direction within the perched zones appears to vary significantly across HELSTF. However, the upper perched zone appears to flow radially from the potentiometric high beneath the lagoons. As evidenced by monitoring wells screened within the upper perched zone and from the presence/absence of water bearing zones noted during the drilling of deeper wells, the upper perched zone is laterally discontinuous and is generally confined to the area north of the dry pond, east of the equipment storage yard, south of the cleaning facility, and west of

the septic leach fields (Figure 4-1). Thus, the upper perched zone is generally absent at increasing distances from the sewage lagoon recharge area, suggesting that that there is a relationship between the lagoons and the perched zones. These conclusions are based on previous sampling history as well as the Phase III observations.

Evidence of this relationship can be found in boring logs and depth to water measurements in monitoring wells surrounding the lagoons. When aquifer thickness measurements (based on wetted zones noted in the HELSTF lithologic logs) are plotted as interval data on a three-dimensional diagram using Rockworks™(Figure 4-8), the hydraulic relationship between the upper perched (light blue coloration) and lower perched (medium blue coloration) water bearing zones can be seen.

The upper perched wells (HMW-25 and HMW-27) around the LSTC Wastewater Discharge Point (Figure 4-1) are dry indicating the source for the LSTC discharge has been diverted and the remaining water has infiltrated to below the screened interval in those wells. Additionally, upper perched wells south and east of the Dry Pond are also dry. Lower perched wells near these dry upper perched zone wells still produce water.

4.3.5.2 Lower Perched Water Bearing Zone

A contour map (Figure 4-10) of water levels within the lower perched water bearing zone indicates the highest water level is centered northeast of Sewage Lagoon #1 and the water storage tank. Water elevation in the lower perched zone ranges from a high of 3,931 ft (22 ft bgs) in HMW-53 to a low of 3,910 ft (48 ft bgs) in HMW-15. The water elevations shown in Figure 4-10 are in meters. The geologic interpretation software, RockWorks™, requires that all three dimensions be in the same units. Since the horizontal locations are identified by UTM coordinates, in meters, depths were converted to meters to be consistent. Flow in the lower perched zone is generally in a radial pattern away from the locus of the highest water level mentioned above.

The lower perched water bearing zone appears present, but still likely laterally discontinuous, across much of the HELSTF site as evidenced by monitoring wells screened in the lower perched water bearing zone and from water bearing zones noted in lithologic logs of the deeper drilled regional monitoring wells. Localized highs mapped in Figure 4-10 could represent additional recharge sources such as leaking water mains or to variations in elevation of perching layers. In the case of the LSTC wastewater discharge point, discharge was from the LSTC cooling tower which occurred over several years from the 1960's to approximately 2000. Flow to the LSTC wastewater discharge point (SWMU 144) has been rerouted to the sewage lagoons.

4.3.5.3 Regional Aquifer

A contour map (Figure 4-11) of groundwater levels within the regional aquifer indicates a trend of higher to lower groundwater levels from northwest to southeast. Groundwater elevation in the regional groundwater aquifer across the site ranges from a high of 3,889 ft (67 ft bgs) in HMW-61 to a low of 3,880 ft (75 ft bgs) in HMW-60. The groundwater elevations shown in Figure 4-11 are in meters. The geologic interpretation software, RockWorks™, requires that all three dimensions be in the same units. Since the horizontal locations are identified by UTM coordinates, in meters, depths were converted to meters to be consistent. Additionally, a three-point problem was completed using depth to groundwater in monitoring wells HMW-8, HMW-56, and HMW-60. The groundwater flow direction was calculated to be on the 165 degree azimuth (southeast). As a check, a second three-point problem was completed using wells HMW-56, HMW-59, and HMW-61. Results indicate flow direction to be on the 150 degree azimuth (southeast).

The potential for a relationship exists between the lower perched groundwater zone and the regional aquifer in the vicinity of the diesel spill (south of the cleaning facility and east of the cooling towers) as mapped using water bearing zones noted in lithologic logs from the various drilling operations at HELSTF.

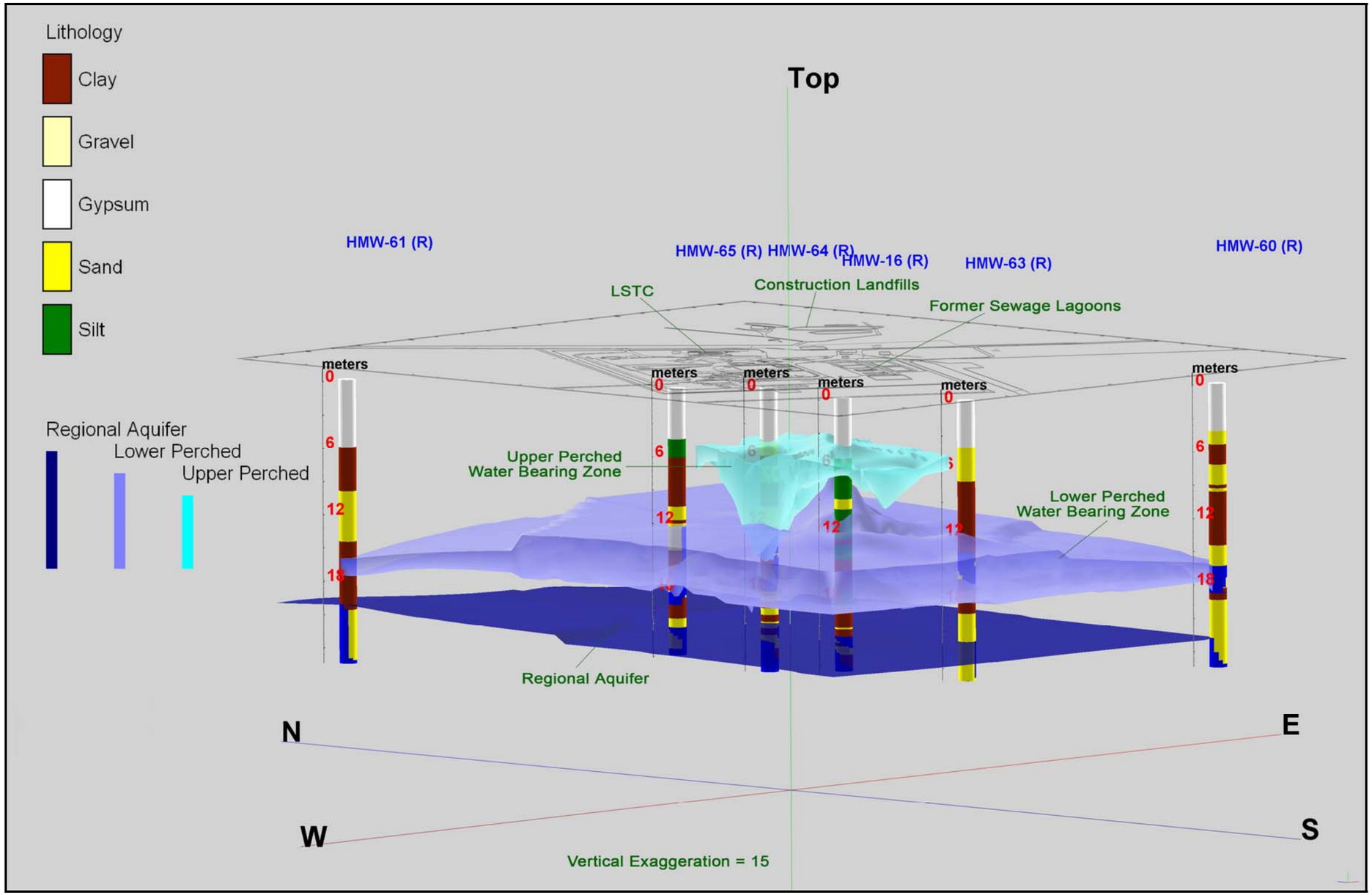


FIGURE 4-8. WATER BEARING ZONES AT HELSTF.
Area of the Upper Perched Zone shown in light blue.
Area of the Lower Perched Zone shown in medium blue.
Regional Aquifer shown in dark blue.

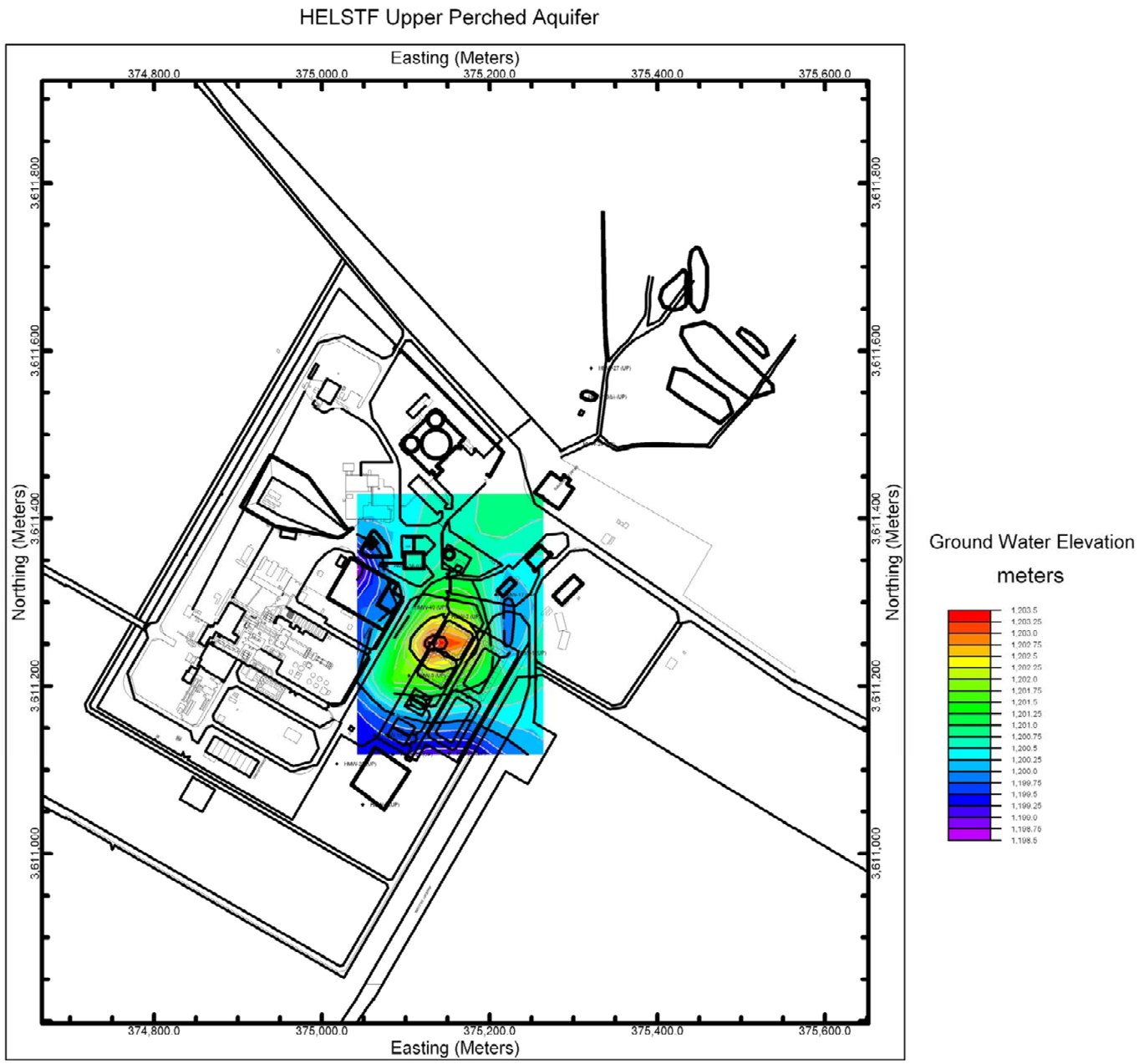


FIGURE 4-9. HELSTF UPPER PERCHED ZONE CONTOUR MAP.

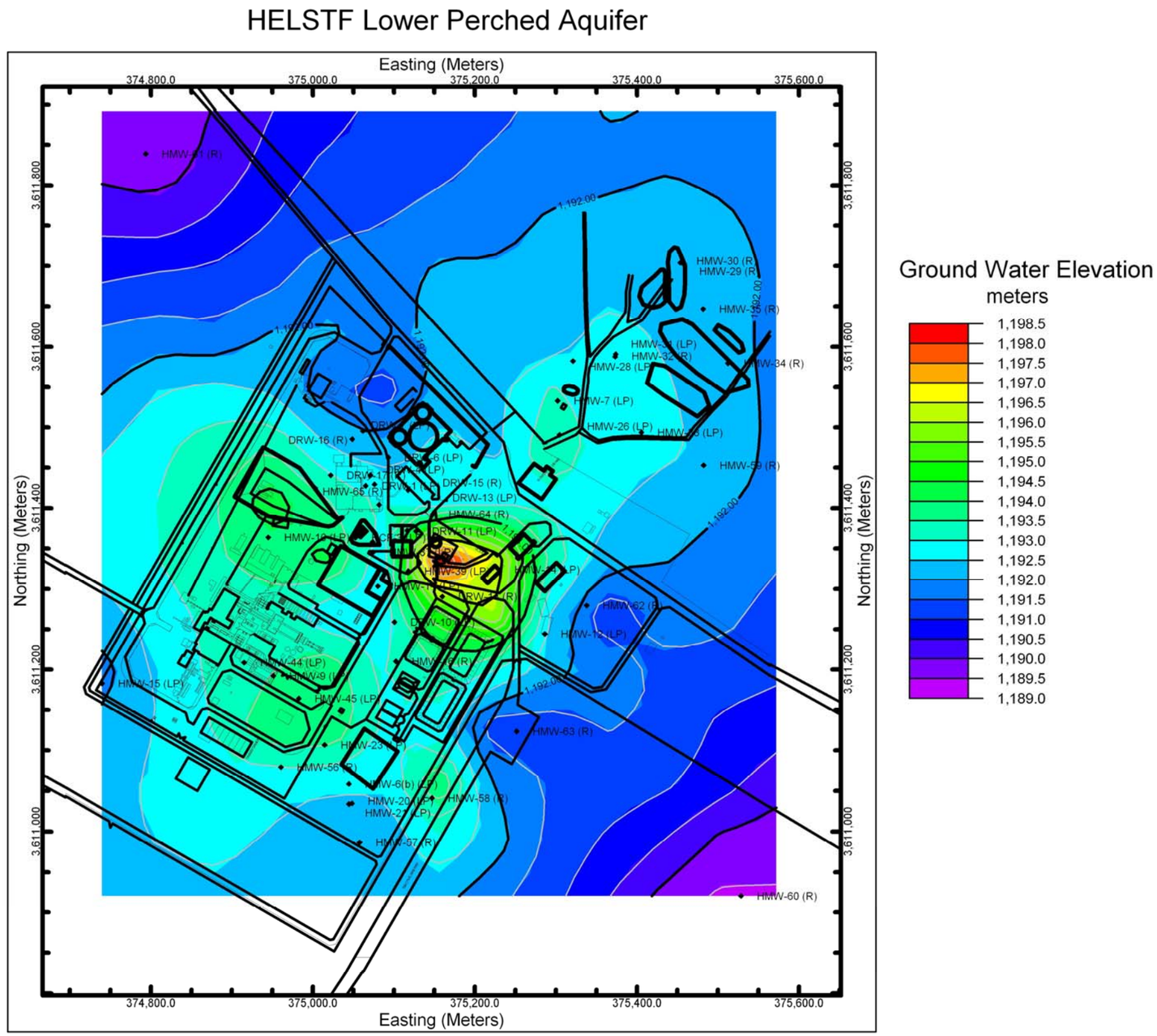


FIGURE 4-10. HELSTF LOWER PERCHED ZONE CONTOUR MAP.

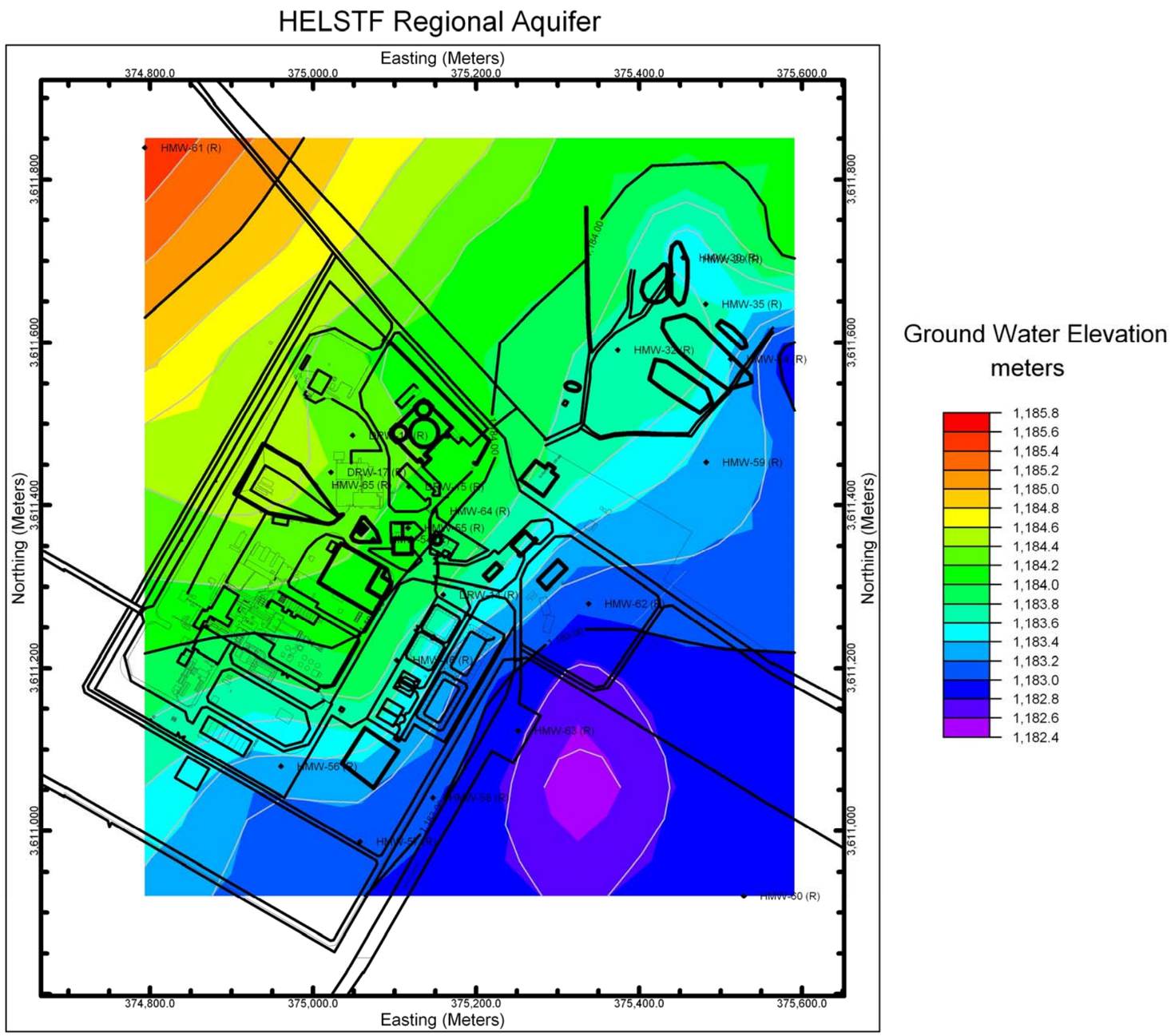
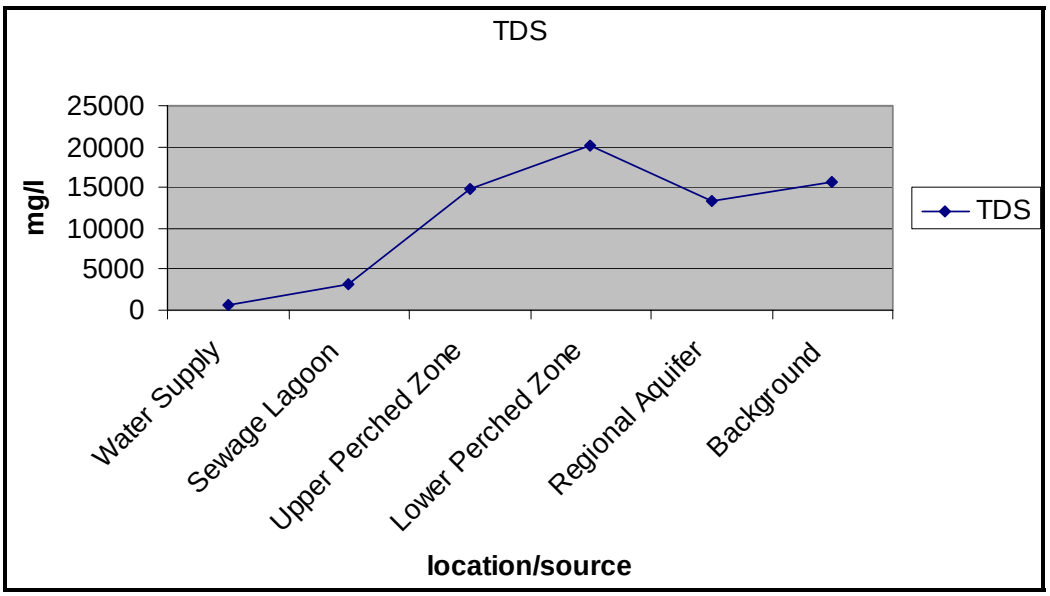


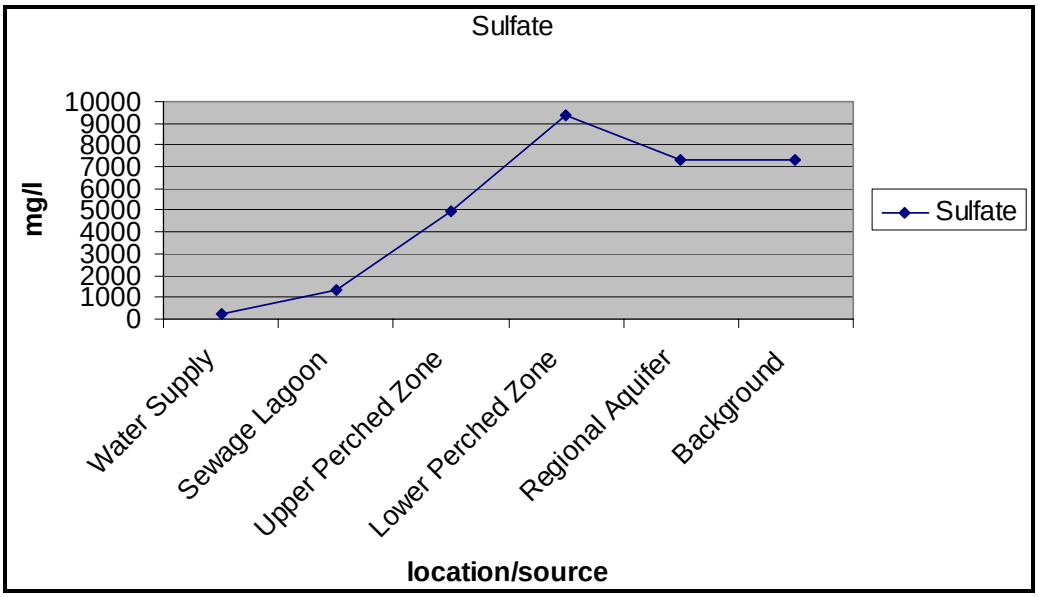
FIGURE 4-11. HELSTF REGIONAL AQUIFER CONTOUR MAP.

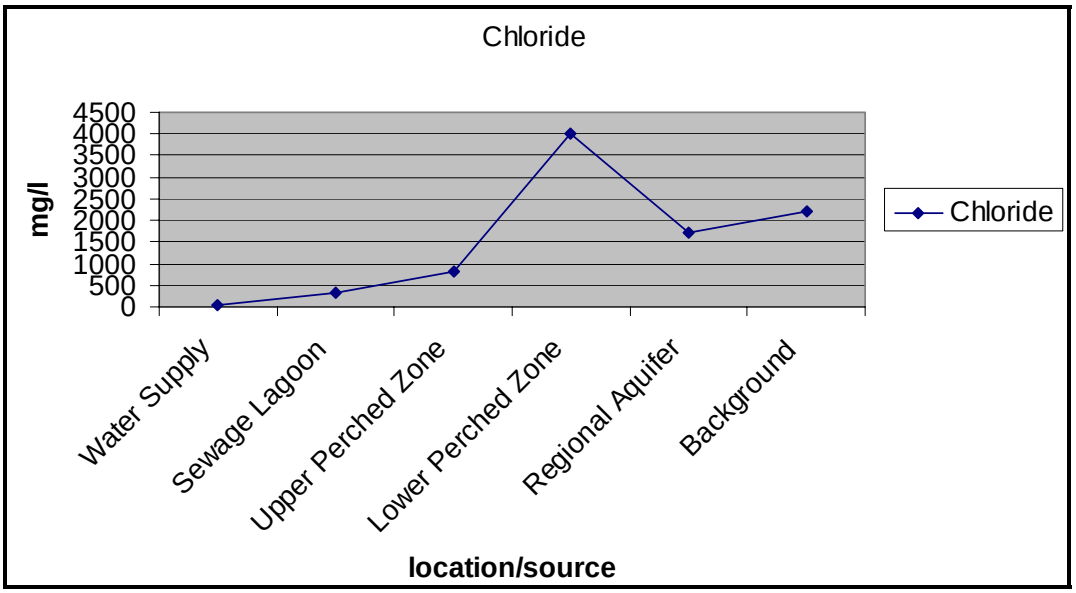
4.3.5.4 Trend of Water Quality Parameters

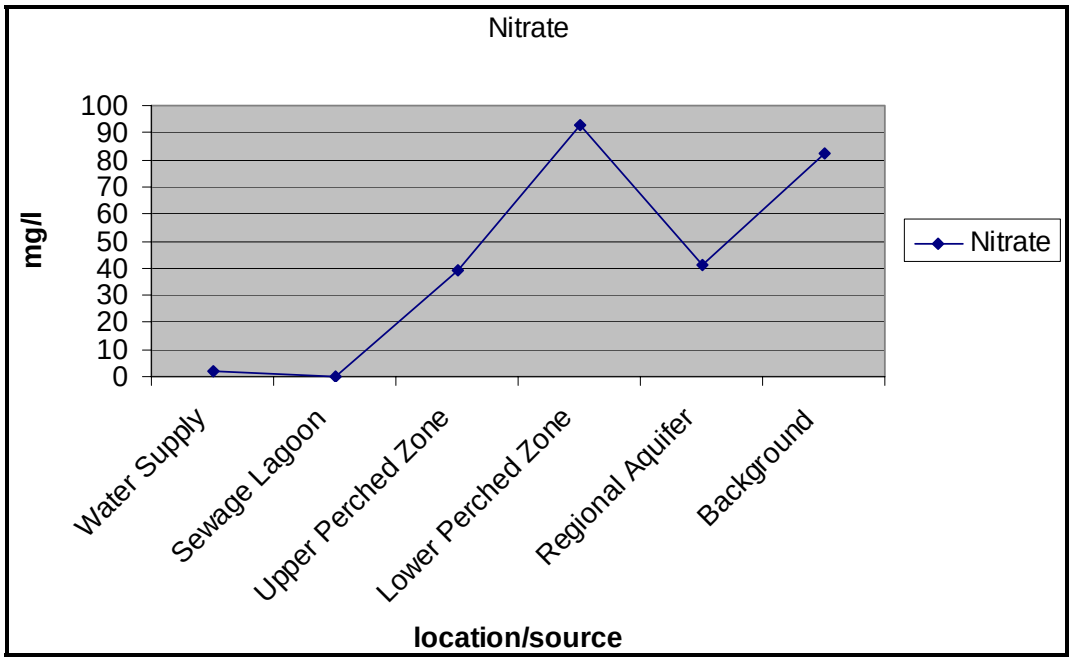
The trend of water quality parameters is further evidence that the infiltration from the sewage lagoons is driving recharge to the perched water bearing zones and is also potentially affecting the regional aquifer.

Concentrations of water quality parameters were graphed according to their source and water bearing zone in which they were sampled. Concentrations were graphed for TDS, sulfate, chloride, and nitrate from water supply well (MAR-1, 2, and/or 3, as discussed in Section 2.5.3) sampling (2004-2005); average of surface water samples from Sewage Lagoon #1 (2005-2006); average of concentrations in monitoring wells screened in the upper perched zone (2006); average of concentrations in monitoring wells screened in the lower perched zone (2006); and average of concentrations in monitoring wells screened in the regional aquifer (2006). As stated previously, the system consists of a shallow perched water bearing zone (Upper Perched Zone)-(from approximately 12 ft to 20 ft bgs), a deeper perched water bearing zone (Lower Perched Zone)-(from approximately 22 ft to greater than 48 ft bgs), and a regional aquifer (beginning at 67 ft bgs). The perched zones should not be thought of as solid water bodies but more likely as multiple water bodies at similar, but not identical, depths.









The graphs clearly show low concentrations of TDS, sulfate, chloride, and nitrate detected in samples from the HELSTF water supply. Concentrations of those parameters are shown to become on average more concentrated in the wastewater lagoon area(possibly from evaporative loss and/or from discharge of process water from the reverse osmosis (R/O) unit). Following infiltration from the lagoon area to the subsurface, a marked increase in concentration of all parameters is seen on average from water sampled in the upper perched zone. A similar increase from water sampled in the upper perched to the lower perched zone is also noted. An average of concentrations of these parameters in the regional aquifer is noted to decrease from the 'high' seen in the lower perched zone to concentrations approaching those noted in the upper perched zone. It is surmised that, as the fresher water from the sewage lagoons percolates through the upper gypsum layers, it gradually becomes more saline as dissolution of the gypsum occurs. The decrease in average concentrations from the lower perched zone to the regional aquifer may show that the perched zones have not had much effect on the regional aquifer.

The Phase III RFI water quality data was plotted and contoured on Rockworks ™ by water bearing zones. The figures attached in Appendix D show contoured data for TDS, sulfate, chloride, and nitrate from the December 2006 sampling event. Due to the majority of upper perched wells centered around the lagoons, the highest concentrations of the parameters are as we would expect, centered around the lagoons. The greater spread of wells screened in the lower perched zone and regional aquifer tend to give a better picture of these common ion concentrations. These common ions tend to spike near to the lagoons in the lower perched zone and also in the regional aquifer. The highest concentrations of these ions occur in the lower perched zone. Concentrations tend to decrease away from the lagoons in both of the perched zones monitored. Established background concentrations for the regional aquifer from this Phase III RFI indicate levels of TDS, sulfate, and chloride similar to the average detected in the regional aquifer beneath the HELSTF site.

4.3.5.5 Recharge Sources

Apart from the sewage lagoons and the LSTC wastewater discharge point, additional sources of recharge to the perched water bearing zones are suspected, but not known. The current lagoons (SWMUs 27-30) have been replaced (August 2007). WSMR expects that the sewage lagoons (SWMUs 27-30) will dry up following changeover to the new lagoons and the perched water bearing zones will dissipate. It is probable that the lagoons are driving current conditions of groundwater at the site. It is evident based on analysis of groundwater thicknesses and detection of common ions that the lagoons are the major factor influencing perched groundwater at HELSTF. The trend of common ion concentrations decreasing away from the lagoons could be related to other recharge sources such as leaking water mains away from the lagoons or could be related to mineralization as the more saline water moves out from the lagoon source into the deeper non-gypsiferous layers beneath. Based on the current data, this is not well understood.

Continued water level monitoring is expected to provide data that should show a trend of decreasing water levels and drying of upper perched monitoring wells extending outward to drying of lower perched monitoring wells as infiltrated groundwater flows down and away from the laterally discontinuous aquitards (clay layers). As water from the lagoons dissipates and wells go dry, other potential localized sources for recharge may become more apparent if evidence in perched wells continues to maintain historic water levels.

4.4 Discussion of SWMU-Specific Findings

Due to the potential for commingling of contamination from SWMU sites at HELSTF, WSMR has taken a holistic approach to determining contamination beneath HELSTF. This approach has led to a division of HELSTF into zones as previously discussed. Additionally, there are SWMU-specific issues that the Work Plan identifies for the Phase III RFI. This section addresses those issues.

4.4.1 SWMU 25 Waste Storage Area

A fenced area measuring 50 feet X 100 feet is located northwest of the cleaning facility and was used for storage of spent degreasing solvents in 55-gallon drums. The area is located on a paved surface (asphalt) and drums were stored on pallets. The area is designated as SWMU 25. Wastes were reportedly stored for less than 90 days. Operation of the site began in 1984 and was still operational during the 1988 RFA and 1990 Ground-Water Quality Survey. During 2001 and 2002, the area was used as a sorting yard for wastes awaiting analysis and a storage area for non-hazardous wastes. This site lies within the Diesel Spill Zone, but was specifically mentioned in the Work Plan in response to NMED comments.

The follow-up investigation of a possible spill of chromate additive (thought to contain hexavalent chromium and zinc) was planned for and conducted during the Phase III RFI at SWMU 25. SB-10 was completed at the reported location of the spill and analyzed for various analytes including hexavalent chromium, total chromium, and zinc. Hexavalent chromium was not detected in samples from this boring location. Table 4-15 shows a comparison of results of suspected contaminants (total chromium and total zinc) from samples collected during the Phase III RFI to their respective background values (from Appendix D, Table D-1) and residential SSLs.

TABLE 4-15. SWMU 25. COMPARISON OF METALS DETECTED DURING THE PHASE III RFI TO BACKGROUND CONCENTRATIONS AND RESIDENTIAL SSLS

Sample ID	Sample Depth ft	Total Chromium Detection mg/kg	Background Concentration mg/kg	NMED Residential SSL mg/kg	Total Zinc Detection mg/kg	Background Concentration mg/kg	NMED Residential SSL mg/kg
HLSF-0085-SB-010 (0.0-0.5)	surface	ND	1.02	210	ND	5.01	23,500
HLSF-0085-SB-010 (10.0-11.0)	10-11	2.17	4.48	210	3.88	21.49	23,500
HLSF-0085-SB-010 (20.0-22.0)	20-22	14.3	7.14	210	39.2	21.64	23,500
HLSF-0085-SB-010 (30.0-31.0)	30-31	5.6	9.30	210	18.5	30.71	23,500
HLSF-0085-SB-010 (40.0-41.0)	40-41	17.3	4.76	210	50.7	20.21	23,500
HLSF-0085-SB-010 (49.0-50.0)	49-50	13	15.56	210	43.3	44.20	23,500

Both total chromium and total zinc were detected at concentrations above their respective background values at the 20-22 ft and 40-41 ft sample depths. However, it is expected that these detections are not indicative of a spill at this location. Since no detection is much above background, there is no clear-cut evidence of a spill at all. In any event, the highest detection for total chromium is 17.3 mg/kg which is well below the residential screening level of 210 mg/kg for total chromium (EPA Region VI). The highest detection of total zinc (50.7 mg/kg), while above background, is also well below its NMED residential SSL of 23,500 mg/kg.

Other detections in SB-10 samples that are not related to any known or suspected releases from SWMU 25 include several organics including: sec-butylbenzene, n-butylbenzene, naphthalene, isopropylbenzene, GRO, DRO, and 1,2,4-trimethylbenzene. All of these detections were at the 20-22 ft sample depth and were well below their respective residential SSLs. These organic detections are likely related to the nearby diesel spill.

4.4.2 SWMU 26 Vapor Recovery Unit

The vapor recovery unit was located on the south side of the Cleaning Facility (Building 26131) and has been designated as SWMU 26. The unit was constructed of plate metal, fiberglass, and Plexiglas. Vapors, including sodium hydroxide, phosphoric acid, methyl ethyl ketone and isopropyl alcohol, from cleaning baths were scrubbed by water in the recovery unit. The water was sent to the chemical waste tanks (SWMUs 31-32) and the air was vented to the atmosphere. The system was in operation from 1984 until 1998 when it was replaced with a similar unit that is still in operation.

There have been no data collected specifically related to this SWMU, which lies within the Diesel Spill Zone. Surrounding wells and borings are related to SWMUs 142 (Cleaning Facility Sump) and 154 (Systemic Diesel Spill) which underlie the unit and contain similar contaminants of concern. Due to its location over the area affected by SWMUs 142 and 154, it is unlikely that potential contamination related to SWMU 26 could be distinguished from the underlying contamination from the other SWMUs if it had leaked. Similarly, the potential contamination will be addressed by the investigation for SWMUs 142 and 154. There has been no history of a release from this site and should be eligible for NFA under the condition that the underlying contamination from SWMUs 142 and 154 is addressed.

4.4.3 SWMUs 38 and 39 (CCWS-75, formerly WSMR-52) Construction Landfills

The RFA conducted in 1988 indicated that the landfills may have been used as early as the 1960s. The 1990 report by USAEHA indicated that they were used from the early 1980s until 1990. Review of aerial photographs and other project documents supports the conclusion that they were confined to the area currently designated as such. Types of wastes reportedly buried in the landfill include wood, piping material, paper, and insulation. The 1988 RFA by A. T. Kearney, Inc. reports that excavated soil from a 12 June 1986 release of chromated water at Test Cell 1 was deposited in the construction landfills.

During the Phase III RFI, a regional down gradient well (HMW-59) was installed and sampled, along with existing monitor wells, to help determine if the regional groundwater has been impacted by the construction landfills. The regional groundwater was analyzed for contaminants of concern including metals and VOCs. No contaminants of concern or VOCs were detected. Results from the current and past regional groundwater sampling indicate there has been no impact.

Additionally, as part of the Phase III RFI, a comparison of soil inorganic detections from the Phase II RFI to background concentrations and NMED residential SSLs was completed and is shown in Table 4-16. Results of the comparison indicate that individual detections of arsenic, barium, chromium, and lead were at concentrations exceeding the established background concentrations. However, of these analytes, only arsenic was detected at concentrations exceeding its NMED residential SSL. All of the exceeding detections were at depths greater than the 0-2 ft depth for the residential exposure scenario. During the Phase I RFI six surface samples collected. Arsenic was not detected. For both Phase I and Phase II, samples were collected at locations distributed across the site.

Thus, there is no chemical evidence of groundwater impacts from the landfills. NMED has identified SWMUs 38 and 39 as operating units requiring closure. The issue of landfill closure measures required will be addressed in the CMS.

4.4.4 SWMU 144 (CCWS-02, formerly WSMR-47) LSTC Wastewater Discharge Point

The LSTC Wastewater Discharge Point is a rock-filled irregularly shaped pit surrounded by thick brush. It had been used since the 1960's for accepting discharge from the Laser System Test Center (LSTC) building (formerly the MAR building). As part of the original construction, a sump and discharge pump were installed in the basement of Bldg. 26129 to collect and eject chiller coil condensate, water drained periodically from the building fire sprinkler system, and blowdown from the cooling tower water treatment system. The water from this sump was pumped to a french drain located outside the HELSTF fence several hundred yards from the building. Because of the soil characteristics in the area of the french drain, the discharged water dissolved the gypsiferous soil sufficiently to cause subsidence of the original drain, which resulted in fracturing of the drain pipe just upstream of the french drain. SWMU 144 is the resulting pit and associated rubble. It is considered part of the Construction Landfill Zone.

As provided in the Phase III Work Plan (WTS 2007), no soil samples were collected for the Phase III RFI at SWMU 144. However, past metals detections were compared to background concentrations determined during this Phase III RFI. Table 4-17 (Phase I RFI data) and Table 4-18 (Phase II RFI data) detail the results of this comparison.

Based on the Phase I and Phase II RFI data, arsenic, barium, chromium, selenium, and silver occurrences at SWMU 144 are not uniformly at or below background concentrations. However, arsenic was the only metal detected that exceeded the current NMED residential SSL of 3.9 mg/kg. All arsenic detections were below the NMED SSL for industrial land use (17.7 mg/kg) and construction worker land use (85.2 mg/kg) and all of the reported arsenic detections were below the 0-2 ft exposure depth used for residential land use. All other metals detections were well below their respective residential SSLs.

The discharge to SWMU 144 has been rerouted to the sewage lagoons. A site visit during the Phase III RFI field work noted that the discharge has ceased to SWMU 144. Other indications on site that waste water is no longer discharged to this site is the dying vegetation and the dry upper perched monitoring wells.

The vertical extent of VOC contamination from SWMU 144 is presumed to extend to the lower perched water zone since wells screened in the lower perched zone (HMW07, HMW26, and HMW28) indicate the presence of VOCs. Monitor Well HELSTF-1 was sampled during the Phase III RFI to help determine whether the regional aquifer has been impacted by the previous discharges at SWMU 144. HELSTF-1 has a extending from the water table to 20 feet below. Sampling results indicate that there may be minor impact to the regional groundwater, since TCE was detected at a concentration of 35.5 µg/L. The WQCC standard for TCE is 100 µg/L. No other VOCs or contaminants of concern were detected from this regional down gradient well.

Analytical results of the lower perched wells around SWMU 144 indicate that several VOCs, including TCE, 1,1-dichloroethene, chloroform, and trichlorofluoromethane were detected at concentrations below their respective WQCC standards.

Dissolved chromium (highest detect 0.673 mg/L) and dissolved selenium (highest detect 0.262 mg/L) were detected exceeding their WQCC standards of 0.05 mg/L. This SWMU lies immediately adjacent to the C&D Landfills and will be considered with them in the future CMS.

TABLE 4-17. SWMU 144 SOILS DATA. COMPARISON OF METALS DETECTED DURING THE PHASE I RFI TO BACKGROUND CONCENTRATIONS AND RESIDENTIAL SSLS

All values in mg/kg		Arsenic [SSL = 3.9]		Barium [SSL = 15,800]		Lead [SSL = 400]	
Phase I RFI Sample ID	Sample Depth	Phase I Arsenic Detect	Phase III RFI BG As	Phase I Barium Detect	Phase III RFI BG Ba	Phase I Lead Detect	Phase III RFI BG Pb
144B1S010	10	1.7	< 2	67	72.38	ND	7.10
144B1S010B	10	2.1	< 2	73	72.38	ND	7.10
HMW7S010	10	0.71	< 2	**100**	72.38	18	**7.10**
HMW7S015	15	0.62	5.58	ND	47.61	5.1	18.76
HMW7S020	20	3.2	5.58	**99**	47.61	ND	18.76
HMW7S025	25	**4.2**	3.19	44	72.47	ND	15.82
HMW7S030	30	1.5	3.19	**84**	72.47	10	15.82
HMW7S035	35	1.6	3.55	30	62.04	ND	12.04

Note: for 15, 25, and 35 ft intervals, the background comparison value of the 20, 30, and 40 ft depths was used, respectively. The Phase III RFI calculated background at 10 ft intervals.
Bold Background Level or SSL exceeded by detection.
ND = Not detected; detection limit unknown.

TABLE 4-18. SWMU 144 SOILS DATA. COMPARISON OF METALS DETECTED DURING THE PHASE II RFI TO BACKGROUND CONCENTRATIONS AND RESIDENTIAL SSLS

Phase II RFI Sample ID All values in mg/kg	Sample Depth	Phase II Arsenic Detect	Phase III RFI BG As	NMED Residential SSL for As	Phase II Barium Detect	Phase III RFI BG Ba	NMED Residential SSL for Ba	Phase II Lead Detect	Phase III RFI BG Pb	NMED Residential SSL for Pb
0014MW26(039.0)	39	**4.86**	3.55	3.9	**90.0**	62.04	15,600	6.43	12.04	400
0014MW27(018.5)	18.5	**7.41**	5.58	3.9	**182**	47.62	15,600	6.30	18.76	400
0014MW28(038.0)	38	**15.7**	3.55	3.9	**143**	62.04	15,600	**14.3**	12.04	400
Phase II RFI Sample ID All values in mg/kg	**Sample Depth**	**Phase II Chromium Detect**	**Phase III RFI BG Cr**	**EPA Rg. 6 Residential SSL for Cr**	**Phase II Silver Detect**	**Phase III RFI BG Ag**	**NMED Residential SSL for Ag**	**Phase II Selenium Detect**	**Phase III RFI BG Se**	**NMED Residential SSL for Se**
0014MW26(039.0)	39	**6.91**	4.76	210	<6.49	< 0.2	391	<3.26	NE	391
0014MW27(018.5)	18.5	**12.0**	7.14	210	12	< 0.2	391	<3.03	NE	391
0014MW28(038.0)	38	**13.1**	4.76	210	<5.26	< 0.2	391	3.47	NE	391

Note: The Phase III RFI calculated background at 10 ft intervals. The value of the closest background interval was used for comparison.
Bold Background Level or SSL exceeded by detection.
NE = Not established.

TABLE 4-16. SWMU 38-39 SOILS DATA. COMPARISON OF METALS DETECTED DURING THE PHASE II RFI TO BACKGROUND CONCENTRATIONS AND RESIDENTIAL SSLS

All values in mg/kg		Arsenic [NMED SSL = 3.9]		Barium [NMED SSL = 15,600]		Cadmium [NMED SSL = 39]		Chromium [NMED SSL = 210]		Lead [NMED SSL = 400]		Mercury [NMED SSL = 23]		Selenium [NMED SSL = 391]		Silver [NMED SSL = 391]	
		Phase II Arsenic Detect	Phase III RFI BG Arsenic	Phase II Barium Detect	Phase III RFI BG Barium	Phase II Cadmium Detect	Phase III RFI BG Cadmium	Phase II Chromium Detect	Phase III RFI BG Chromium	Phase II Lead Detect	Phase III RFI BG Lead	Phase II Mercury Detect	Phase III RFI BG Mercury	Phase II Selenium Detect	Phase III RFI BG Selenium	Phase II Silver Detect	Phase III RFI BG Silver
3839HA01(000.0)	0	2.8	< 2	**194**	18.74	5.81	<0.05	<26.4	1.02	14.9	<1	0.0528	<0.04	<2.64	< 1	<26.4	<0.2
3839MW29(018.0)	18	4.39	5.58	**123**	47.61	<1.59	<0.05	<7.94	7.14	4.1	18.76	<0.0274	<0.04	<3.43	< 1	21	<0.2
3839MW29(038.0)	38	**12.6**	3.55	50	62.04	<1.20	<0.05	**6.2**	4.76	5.86	12.04	<0.024	<0.04	<2.99	< 1	13	<0.2
3839MW29(058.0)	58	3.57	NE	52.1	NE	<1.03	NE	<5.15	NE	5.07	NE	<0.0207	<0.04	<2.58	NE	<5.15	NE
3839MW29(078.0)	78	24.4	NE	204	NE	<1.16	NE	21.6	NE	15.7	NE	<0.0233	NE	<2.91	NE	44	NE
3839MW30(098.0)	98	3.2	NE	193	NE	<1.15	NE	10.9	NE	10.1	NE	0.0276	NE	<2.87	NE	<5.75	NE
3839MW31(019.0)	19	4.11	5.58	**112**	47.61	<1.19	<0.05	6	7.14	4.23	18.76	<0.0238	<0.04	<2.98	< 1	18.9	<0.2
3839MW31(039.0)	39	**12.5**	3.55	**99.3**	62.04	<1.19	<0.05	**14.9**	4.76	7.58	12.04	<0.0231	<0.04	<2.89	< 1	<5.95	<0.2
3839MW32(059.0)	59	28.2	NE	154	NE	<1.28	NE	29.4	NE	25.2	NE	<0.0255	NE	<3.19	NE	<6.41	NE
3839MW32(079.0)	79	14.3	NE	116	NE	<1.19	NE	22.6	NE	15	NE	<0.0238	NE	<2.98	NE	17.9	NE
3839MW33(019.0)	19	**5.97**	5.58	**89.5**	47.61	<1.22	<0.05	7.63	7.14	5.21	18.76	<0.0245	<0.04	<3.06	< 1	<6.10	<0.2
3839MW33(039.0)	39	**15**	3.55	**87.7**	62.04	<1.20	<0.05	**16**	4.76	**15.4**	12.04	<0.0240	<0.04	<3.00	< 1	<6.02	<0.2
3839MW34(019.0)	19	**6.26**	5.58	**102**	47.61	<1.27	<0.05	5.5	7.14	4.97	18.76	<0.0253	<0.04	10.6	< 1	7.89	<0.2
3839MW34(039.0)	39	**20.8**	3.55	25	62.04	<1.20	<0.05	**14**	4.76	8.13	12.04	<0.0241	<0.04	6.33	< 1	<6.02	<0.2
3839MW34(059.0)	59	6.75	NE	94	NE	<1.04	NE	5.5	NE	8.95	NE	<0.0208	NE	4.4	NE	<5.21	NE
3839MW34(079.0)	79	5.5	NE	37.2	NE	<1.14	NE	<5.68	NE	6.63	NE	<0.0228	NE	4.49	NE	<5.68	NE
3839MW35(019.0)	19	**8.11**	5.58	**98.6**	47.61	<1.19	<0.05	7.12	7.14	3.84	18.76	<0.0238	<0.04	<2.97	< 1	9.66	<0.2
3839MW35(039.0)	39	**35.8**	3.55	**78.4**	62.04	<1.10	<0.05	**14.4**	4.76	4.36	12.04	<0.0221	<0.04	3.04	< 1	8.07	<0.2
3839MW35(059.0)	59	3.06	NE	78.4	NE	<1.01	NE	<5.05	NE	4.03	NE	<0.0201	NE	<2.51	NE	<5.05	NE
3839MW35(079.0)	79	2.87	NE	65.4	NE	<1.12	NE	<5.62	NE	7.32	NE	<0.0225	NE	<2.82	NE	<5.62	NE
3839SB01(004.0)	4	<3.00	< 2	**51.7**	18.74	<6.01	<0.05	<30.0	1.02	3.58	NE	<0.0240	NE	<3.00	< 1	<30.0	<0.2
3839SB01(008.0)	8	<3.03	< 2	56.9	72.38	<6.05	<0.05	<30.3	4.48	<3.03	7.1	<0.0242	<0.04	<3.03	< 1	<30.3	<0.2
3839SB01(014.0)	14	<3.24	< 2	57.1	72.38	<6.48	<0.05	<32.4	4.48	<3.24	7.1	<0.0259	<0.04	<3.24	< 1	<32.4	<0.2
3839SB01(019.0)	19	<3.19	5.58	**148**	47.61	<6.38	<0.05	<31.9	7.14	4.44	18.76	<0.0255	<0.04	<3.19	< 1	<31.9	<0.2
3839SB02(006.0)	6	<3.01	NE	44.6	72.38	<6.02	<0.05	<30.1	4.48	<3.01	7.1	<0.0241	<0.04	<3.01	< 1	<30.1	<0.2
3839SB02(009.0)	9	17.3	NE	**75.3**	72.38	<6.17	<0.05	<30.9	4.48	<3.09	7.1	<0.0247	<0.04	4.51	< 1	<30.9	<0.2
3839SB02(014.0)	14	13.4	NE	**88.6**	72.38	<6.33	<0.05	<31.6	4.48	<3.16	7.1	<0.0253	<0.04	<3.16	< 1	<31.6	<0.2
3839SB02(019.0)	19	**17.5**	5.58	**164**	47.61	<6.20	<0.05	<31.0	7.14	4.65	18.76	<0.0248	<0.04	7.46	< 1	<31.0	<0.2
3839SB03(004.0)	4	13.3	< 2	**56.8**	18.74	<6.09	<0.05	<30.4	1.02	<3.04	<1	<0.0244	<0.04	5.97	< 1	<30.4	<0.2
3839SB03(008.0)	8	13.4	< 2	**144**	72.38	<5.97	<0.05	<29.9	4.48	3.24	7.1	<0.0239	<0.04	5.15	< 1	<29.9	<0.2
3839SB03(020.0)	20	**14**	5.58	**131**	47.61	<6.14	<0.05	<30.7	7.14	3.83	18.76	<0.0246	<0.04	7	< 1	<30.7	<0.2
3839SB03(027.0)	27	**12**	3.19	33.3	72.47	<6.17	<0.05	<30.9	9.3	<3.09	15.82	<0.0247	<0.04	4.33	< 1	<30.9	<0.2
3839SB04(004.0)	4	11.6	< 2	**64.7**	18.74	<5.99	<0.05	<29.9	1.02	4.87	<1	<0.024	<0.04	6.8	< 1	<29.9	<0.2
3839SB04(012.0)	12	11.2	< 2	<30.0	72.38	<6.01	<0.05	<30.0	4.48	<3.00	7.1	<0.0240	<0.04	8.46	< 1	<30.0	<0.2
3839SB04(015.0)	15	**13**	5.58	**139**	47.61	<6.54	<0.05	<32.7	7.14	<3.27	18.76	<0.0262	<0.04	<3.27	< 1	<32.7	<0.2
3839SB04(019.0)	19	**7.69**	5.58	**151**	47.61	<6.04	<0.05	<30.2	7.14	3.09	18.76	<0.0242	<0.04	<3.02	< 1	<30.2	<0.2
3839SB05(004.0)	4	17.5	< 2	<30.8	18.74	<6.16	<0.05	<30.8	1.02	<3.08	<1	<0.0246	<0.04	<3.08	< 1	<30.8	<0.2
3839SB05(008.0)	8	12.7	< 2	56.4	72.38	<6.55	<0.05	<32.8	4.48	<3.28	7.1	<0.0262	<0.04	<3.28	< 1	<32.8	<0.2
3839SB05(014.0)	14	11.1	< 2	50	72.38	<6.25	<0.05	<31.2	4.48	<3.12	7.1	<0.0250	<0.04	6.59	< 1	<31.2	<0.2
3839SB05(019.0)	19	**6.19**	5.58	**89**	47.61	<6.45	<0.05	<32.2	7.14	<3.22	18.76	<0.0258	<0.04	<3.22	< 1	<32.2	<0.2
3839SB06(004.0)	4	14	< 2	<30.9	18.74	<6.17	<0.05	<30.9	1.02	<3.09	<1	<0.0247	<0.04	11.4	< 1	<30.9	<0.2
3839SB06(009.0)	9	9.5	< 2	42.4	72.38	<6.42	<0.05	<32.1	4.48	<3.21	7.1	<0.0257	<0.04	5.39	< 1	<32.1	<0.2
3839SB06(014.0)	14	10	< 2	<32.7	72.38	<6.54	<0.05	<32.7	4.48	<3.27	7.1	<0.0262	<0.04	<3.27	< 1	<32.7	<0.2
3839SB06(019.0)	19	**10.2**	5.58	**104**	47.61	<6.38	<0.05	<31.9	7.14	3.28	18.76	<0.0255	<0.04	<3.19	< 1	<31.9	<0.2
3839SB07(004.0)	4	9.29	< 2	<30.2	18.74	<6.03	<0.05	<30.2	1.02	<3.02	<1	<0.0241	<0.04	<3.02	< 1	<30.2	<0.2
3839SB07(009.0)	9	7.53	< 2	66.3	72.38	<6.21	<0.05	<31.0	4.48	**13**	7.1	0.0273	<0.04	<3.10	< 1	<31.0	<0.2
3839SB07(014.0)	14	11.6	< 2	65.6	72.38	<6.28	<0.05	<31.4	4.48	<3.14	7.1	<0.0251	<0.04	<3.14	< 1	<31.4	<0.2
3839SB07(019.0)	19	**7.55**	5.58	**110**	47.61	<6.37	<0.05	<31.8	7.14	3.07	18.76	<0.0255	<0.04	<3.18	< 1	<31.8	<0.2
3839SB08(004.0)	4	<2.88	< 2	**75.8**	18.74	<5.77	<0.05	<28.8	1.02	7.75	<1	0.0265	<0.04	<2.88	< 1	32.9	<0.2
3839SB08(009.0)	9	<3.02	< 2	57.1	72.38	<6.04	<0.05	<30.2	4.48	<3.02	7.1	0.0278	<0.04	<3.02	< 1	38.6	<0.2
3839SB08(014.0)	14	<3.14	< 2	59.5	72.38	<6.27	<0.05	<31.4	4.48	<3.14	7.1	0.0288	<0.04	<3.14	< 1	33.1	<0.2
3839SB08(019.0)	19	<3.08	5.58	**134**	47.61	<6.16	<0.05	<30.8	7.14	<3.08	18.76	<0.0247	<0.04	<3.08	< 1	47.5	<0.2

Note: The Phase III RFI calculated background at 10 ft intervals. The value of the closest background interval was used for comparison.
NE Not established. Background samples were not collected below the 50 foot depth during the Phase III RFI.
Bold Background Level or SSL exceeded by detection.

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4.4.5 SWMU 145 (WSMR-53) Test Cell 4 Lagoon

The Test Cell 4 Lagoon, located in the western portion of the central HELSTF facility, was constructed in 1988. The lagoon was used once in 1989 in an attempt to contain30,000 gallons of sodium fluoride wastewater. It had a single 6-mil Hypalon© liner with no secondary containment. The liner integrity appeared to be compromised when the water level dropped two feet in less than 3 days after the wastewater entered the lagoon. The lagoon was not used again. The liner and contaminated soil were removed in 1996 (DOW, 1996). The floor of the excavation was sampled to verify removal of contamination, then backfilled and the entire area was paved to prevent migration of related contaminants. WSMR provided the NMED with the Dow report on 22 September 1997. WSMR submitted a petition for no further action in January 2000 and June 2001. The petition was denied by the NMED on 11 March 2002 because a final RFI report and ecological risk assessment is required (Frischkorn, 2002).

Since it was possible that the potential groundwater contamination extended to the regional groundwater table, HMW-56 was installed and sampled during the Phase III RFI to help determine whether the regional aquifer has been impacted by SWMU 145. The regional groundwater was analyzed for contaminants of concern including metals and VOCs. No metals of concern or VOCs were detected. Results from the regional groundwater indicate there has been no impact. The lower perched wells, HMW-09 and HMW-45, were sampled for potential impacts. Several contaminants of concern were detected including chloroform (10.2 µg/L), isopropyl alcohol (62.2 µg/L), and total chromium (0.011 mg/L). These detections are below their respective WQCC standards. Based on these results, there appears to be only a minor impact to the perched groundwater beneath SWMU 145. Impacted soils at the site were remediated in 1996 (DOW, 1996). The ecological risk assessment presented in Section 6 concludes that further ecological assessment is not warranted at this time..

4.4.6 SWMU 146 (CCWS-03, formerly WSMR-45) Dry Pond

The Dry Pond is a 120 by 120 by 7 foot deep, unlined surface impoundment constructed about 1981. It is considered part of the Wastewater Lagoons Zone. The pond received non-sewage wastewater (nature unknown) from the Test Cell 2 Mechanical Building (26115) and overflow from treated wastewater from the sewage lagoons (SWMU 27 thru 30). The presence of solvents discovered during the previous investigations in the various perched zones warranted further evaluation during the Phase III RFI. Five soil borings were completed during the Phase III RFI and soil samples collected and analyzed for a wide range of VOCs and inorganics. Results of the soil investigation are detailed in Section 4.1. Based on those results, no impacts to the soil were determined.

A monitoring well (HMW-57) was installed and sampled in the regional aquifer downgradient from this SWMU (Figure 4-5) to help determine whether it has been impacted by the previous discharges. Additional groundwater samples were collected from existing nearby monitoring wells to determine impacts to the perched zones around the sewage lagoon/dry pond area. Groundwater quality of the perched zone of the sewage lagoon/dry pond area is discussed in Section 4.2.2. A negligible impact to the regional groundwater may have occurred based on sample results from HMW-57. Isopropyl alcohol (64.6 µg/L) is the only organic compound detected. No WQCC or EPA Region VI standards have been set for isopropyl alcohol. No inorganic contaminants of concern from this site including metals were detected. Fluoride was detected just above the WQCC standard of 1.6 mg/L at 1.65 mg/L. The background concentration for fluoride in the regional aquifer was determined to be 2.04 mg/L (Table 4-7).

In summary, there is no chemical evidence of groundwater impacts from the dry pond. The issue of corrective measures required will be addressed in the CMS, together with decommissioning of the sewage lagoons.

4.4.7 SWMU 147 (WSMR-78) Decontamination Pad

The decontamination pad was constructed in 1982 and had a sump measuring 3 ft by 5 ft by 6.5 ft (deep), with an open top, grate, and steel cover. The sump has since been filled with concrete. The site of the former pad is within the Diesel Spill Zone. The pad was used for cleaning large pieces of equipment that were too large to be cleaned in the HELSTF Cleaning Facility (SWMU 142). Accumulated wastewater was periodically removed from the tank and disposed. The sump was filled with concrete in April 1996 to prevent its continued use. A current photograph of the SWMU is provided in Section 6 (Photograph 6-17).

Organic and inorganic contaminants were detected in soil beneath this SWMU during the previous RFIs. As part of the Phase III RFI, soil borings were completed and samples collected as part of the investigation at SWMUs 142 and 154 due to its location in their vicinity. Likely contaminants from SWMU 147 are related to contaminants from the HELSTF Cleaning Facility (SWMU 142). For this reason, investigation and possible future action at SWMU 147 is linked to the overall investigation of the Diesel Spill Zone (investigation detailed in Section 4.2.3.1). Results of the soil sampling effort indicate no contaminants of concern detected at concentrations above NMED residential SSLs at depths of the residential exposure scenario of 0-2 ft bgs.

4.4.8 SWMU 148 (WSMR-83) MAR Waste Stabilization Pond

The MAR waste stabilization pond received the wastewater generated by the former MAR facilities. The site of the former pond is within the Central Storage Zone. It was constructed in 1962 and consisted of an unlined pond with an earthen berm. The pond measured 110 feet by 130 feet and 7 feet deep. It was backfilled and graded during the construction of the existing HELSTF facilities in 1981. SWMUs 27 - 30 were constructed as a replacement. The area was paved with asphalt in 1990 and currently houses the equipment storage area (SWMU 141). A current photograph of the SWMU is provided in Section 6 (Photograph 6-18). Potential contaminants associated with SWMU 148 include those associated with sanitary sewage and industrial wastewater.

For the Phase III RFI, two soil borings (SB 25 and 27, Figure 4-4) were completed and sampled in conjunction with samples collected for the chromate spill site (SWMU 143) and the equipment storage area (SWMU 141) to identify whether contamination may have originated from this SWMU. Due to the areal overlap of these sites, they were combined for discussion as the Central Storage Zone (Section 4.1.3.2). Results of the soil sampling effort indicate that no potential contaminant was detected at concentrations above both background concentrations and NMED residential SSLs. No detected constituents were at concentrations above the residential SSL. Additionally, groundwater samples were collected from nearby wells to assist in the evaluation of the character and extent of contamination from SWMU 148 and the overlapping SWMUs in the Central Storage Zone. Results of the groundwater sampling were detailed in Section 4.3.3. Of the wells that were sampled, most displayed substantial concentrations of chloride, fluoride, nitrate, sulfate, sodium, and TDS. The data do not suggest SWMU 148 as a source of groundwater contamination.

4.4.9 SWMUs 149, 151, and 152 (WSMR-46) Septic Tank Leach Fields

There are three septic systems in use at the main HELSTF complex, all located outside the previously designated zones. They include the systems that serve the maintenance building, the trailer area and property/supply building. The maintenance building septic system (SWMU 149) has been in use since the 1960s and consists of a 200-gallon septic tank and a drainage field measuring approximately 30 ft by 70 ft. There are two subsurface 4-inch drainage lines measuring 30 feet in length. The septic systems for the trailer area (SWMU 151) and property and supply building (SWMU 152), constructed in the early 1980s, are plumbed together. The trailer area system (SWMU 151) serviced the office trailers that used to occupy the location.

Since the trailers were removed, the property and supply building has been the only facility to utilize either system. Both systems were constructed in the early 1980s and have a drain field measuring approximately 40 ft by 110 ft. There has been no documented history of a release at these SWMUs.

Groundwater at the site has been sampled and discussed as related to SWMUs 143 and 148. Of the wells that were sampled, most displayed substantial concentrations of chloride, fluoride, nitrate, sulfate, sodium, and TDS. The data do not suggest these SWMUs as a source of groundwater contamination.

The Phase III RFI called for a comparison of the concentration of inorganics detected in the soil during the previous RFI to background concentrations determined from the Phase III RFI sample collection. Table 4-19 lists soil sample results from the Phase I RFI compared to the appropriate background concentrations and NMED SSLs. No samples were collected for the Phase II RFI.

TABLE 4-19. SWMU 149, 151, AND 152 SOILS DATA. COMPARISON OF METALS DETECTED DURING THE PHASE I RFI TO BACKGROUND CONCENTRATIONS AND RESIDENTIAL SSLS

All values in mg/kg		Arsenic [NMED SSL = 3.9]		Barium [NMED SSL = 15,800]		Lead [NMED SSL = 400]	
Phase I RFI Sample ID	Sample Depth	Phase I Arsenic Detect	Phase III RFI BG As	Phase I Barium Detect	Phase III RFI BG Ba	Phase I Lead Detect	Phase III RFI BG Pb
HMW17SO05	5	0.78	< 2	ND	72.38	ND	7.10
HMW17SO15	15	1.4	5.58	**77**	47.61	ND	18.76
HMW17SO20	20	2.7	5.58	**400**	47.61	7.1	18.76
HMW17SO20B	20	2.0	5.58	**120**	47.61	5.6	18.76
HMW17SO25	25	0.92	3.19	66	72.47	8.2	15.82
HMW17SO30	30	2.6	3.19	ND	72.47	9.9	15.82
151B1SO05	5	0.94	< 2	ND	72.38	ND	7.10
151B1SO10	10	ND	< 2	ND	72.38	ND	7.10
151B1SO15B	15	1.2	5.58	**97**	47.61	ND	18.76
151B1SO20	20	2.0	5.58	**93**	47.61	7.0	18.76
151B1SO25	25	3.2	3.19	34	72.47	6.4	15.82
151B1SO30	30	**5.4**	3.19	**93**	72.47	5.1	15.82
152B1SO10	10	ND	< 2	ND	72.38	ND	7.10
152B1SO15	15	0.80	5.58	**99**	47.61	ND	18.76
152B1SO20	20	0.77	5.58	**60**	47.61	ND	18.76
152B1SO25	25	**7.4**	3.19	**89**	72.47	8.6	15.82
152B1SO30	30	**4.1**	3.19	**76**	72.47	7.6	15.82

Note: for 5, 15, and 25 ft intervals, the background comparison value of the 10, 20, and 30 ft depths was used, respectively. The Phase III RFI calculated background at 10 ft intervals.
Bold Background Level or SSL exceeded by detection.
ND = Not detected, detection limit unknown.

Several arsenic and barium sample concentrations from the Phase I RFI exceeded their respective Phase III RFI background levels. However, no barium detections exceeded the NMED residential SSL. Three arsenic detections exceeded the NMED residential SSL of 3.9 mg/kg. The highest arsenic detection was 7.4 mg/kg at a depth of 25 ft bgs. All of the residential SSL exceedences were at depths greater than 20 ft bgs. The pathway for direct contact with residential land use is within 0-2 ft bgs. There is no impact from this site based on these sample results.

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5.0 REVISED CONCEPTUAL SITE MODEL

The results of the Phase III RFI enable WSMR to revise and refine the HELSTF Conceptual Site Model.

5.1 Hydrogeologic Setting

A series of hydraulically interrelated, discontinuous, perched water-bearing zones are present in the subsurface at HELSTF. Based on information gathered, the perched zones are suspected to have been caused by multiple wastewater or surface water recharge points located at HELSTF. However, evidence indicates that the main source of recharge for the perched zones is the sewage lagoons (SWMUs 27-30, WSMR-44, CCWS-79). The perched areas are probably the result of the combination of lateral discontinuity of stratigraphic units and varying degrees of hydraulic conductivities. Three water bearing zones are known: upper perched water bearing zone; lower perched water bearing zone; and the regional aquifer (Figure 4-8).

The potentiometric surface within the upper perched water bearing zone indicates the highest water level is centered beneath the sewage lagoons (SWMUs 27-30), specifically beneath lagoons 1 and 2, which are the lagoons that first receive wastewater (Figure 4-9). Ground water elevation in the upper perched zone ranges from a high of 3,942 ft (12 ft bgs) to a low of 3,933 ft (20 ft bgs). Due to the variability of shallow geologic materials beneath the site, groundwater flow direction within the perched zones appears to vary significantly across HELSTF. However, the upper perched zone appears to flow radially from the potentiometric high beneath the lagoons. The upper perched zone is generally absent at increasing distances from the sewage lagoon recharge area, again suggesting that that there is a relationship between lagoons and the perched zones.

Within the lower perched water bearing zone, results of the investigations at HELSTF indicate that the highest water level is centered immediately north of sewage lagoon 1 (Figure 4-10). Water elevation in the lower perched zone ranges from a high of 3,931 ft (22 ft bgs) to a low of 3,910 ft (48 ft bgs). Flow in the lower perched zone is generally in a radial pattern away from the locus of the highest water level mentioned above. The lower perched water bearing zone appears laterally continuous across much of the HELSTF site as evidenced by monitoring wells screened in the lower perched water bearing zone and from water bearing zones noted in lithologic logs of the deeper drilled regional monitoring wells. Localized highs mapped near the dry pond (SWMU 146, WSMR-45, CCWS-03), LSTC wastewater discharge point (SWMU 144, WSMR-47, CCWS-02), Test Cell 4 area (SWMU 145, WSMR-53), and Test Cell 2 area could represent additional recharge sources such as leaking water mains or could be due to variations in elevation of perching layers.

Groundwater levels within the regional aquifer indicate a trend of higher to lower groundwater from northwest to southeast Figure 4-11). Groundwater elevation in the regional aquifer across the site ranges from a high of 3,889 ft (67 ft bgs) to a low of 3,880 ft (75 ft bgs). The potential for a relationship exists between the lower perched water bearing zone and the regional aquifer in the vicinity of the diesel spill, SWMU 154 (WSMR-55) (immediately south of the cleaning facility, SWMU 142, WSMR-48, CCWS-05). Evidence for this relationship exists not only in water levels from the monitoring wells screened in the various water bearing zones but also from noted water bearing zones as described in lithologic logs from the various drilling operations at HELSTF.

Apart from the sewage lagoons (SWMUs 27-30) and the LSTC wastewater discharge point (SWMU 144), additional sources of recharge to the perched water bearing zones are suspected, but not known. The sewage lagoons (SWMUs 27-30) were replaced in August 2007. WSMR expects that, once the sewage lagoons (SWMUs 27-30) dry up following change over to the new lagoons, the perched water bearing zones will dissipate. It is evident based on analysis of water thicknesses and detection of common ions that the lagoons are the major factor influencing perched water at HELSTF. Continued water level monitoring is expected to provide data that should show a trend of decreasing water levels and drying of upper perched monitoring wells extending outward to drying of lower perched monitoring wells as infiltrating water flows down and away from the laterally discontinuous aquitards (clay layers). As water from the lagoons dissipates and wells go dry, other potential localized sources for recharge may become apparent if perched zones persist.

5.2 Nature and Extent of Contamination

The bulk of contamination at HELSTF is located beneath the Diesel Spill Zone, which contains the HELSTF Cleaning Facility Sump (SWMU 142, WSMR-48, CCWS-05) and the Systemic Diesel Spill (SWMU 154, WSMR-55). Lesser amounts of contamination exist beneath the Central Storage Zone, which contains the Chromate Spill Site (SWMU 143, WSMR-54).

5.2.1 Diesel Spill Zone

The Diesel Spill Zone encompasses the Waste Accumulation Area (SWMU 25), the Cleaning Facility Sump (SWMU 142), and the Systemic Diesel Spill (SWMU 154). During this Phase III RFI, WSMR completed 11 soil borings to a depth of 50 ft bgs with samples collected approximately every 10 ft bgs. As discussed in Section 4.2,3, of the potential contaminants detected in soil, only DRO was detected at concentrations of concern in the samples collected at the Diesel Spill Site. DRO was detected at a highest concentration of 10,800 mg/kg at a depth of 40 ft bgs. The extent of diesel fuel contamination within soil at HELSTF is shown in Figure 5-1 in conjunction with the perched water bearing zones and the regional aquifer.

With one exception, all of the detected organics in soils came from the area of the diesel spill and all are constituents of diesel fuel. The diesel-related constituents, 1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene, naphthalene, and sec-butylbenzene, were detected above their relevant DAF20 (Table 4-3), supporting a continuing concern for the regional aquifer quality. No chlorinated hydrocarbons (solvents) were detected in the soils. Inorganics detected in soil include total chromium and hexavalent chromium [single occurrence].

Within the Diesel Spill Zone, Monitor Well HCF02 displays detectable concentrations of several components of diesel fuel. Historically, other lower perched wells (dry during the Phase III RFI sampling event) also displayed diesel constituents and free product. The lower perched water bearing zone is the known locus of the diesel fuel product and has been the object of remediation efforts in the past. This site will be further addressed in the CMS. The apparent areal extent of diesel fuel product, based on reported thicknesses of product in monitoring wells measured in September 2005, is shown in Figure 5-2. Monitor Wells DRW05-08, 12, and 13 also display concentrations of chlorinated hydrocarbons originating from the Cleaning Facility Sump. Any remediation of the diesel spill will also address the solvents present in the perched water bearing zone.

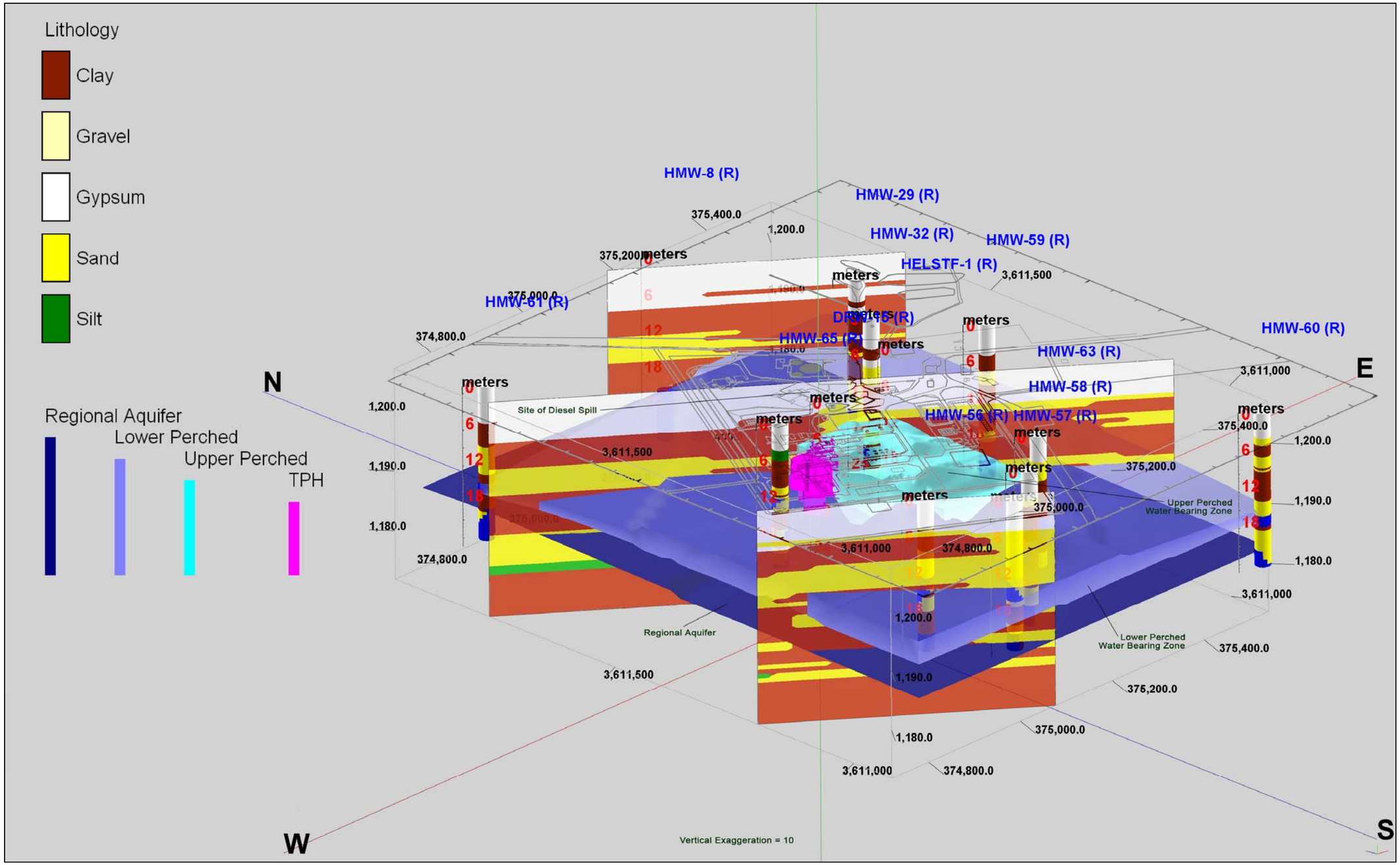

FIGURE 5-1. SUBSURFACE HELSTF DIAGRAM.

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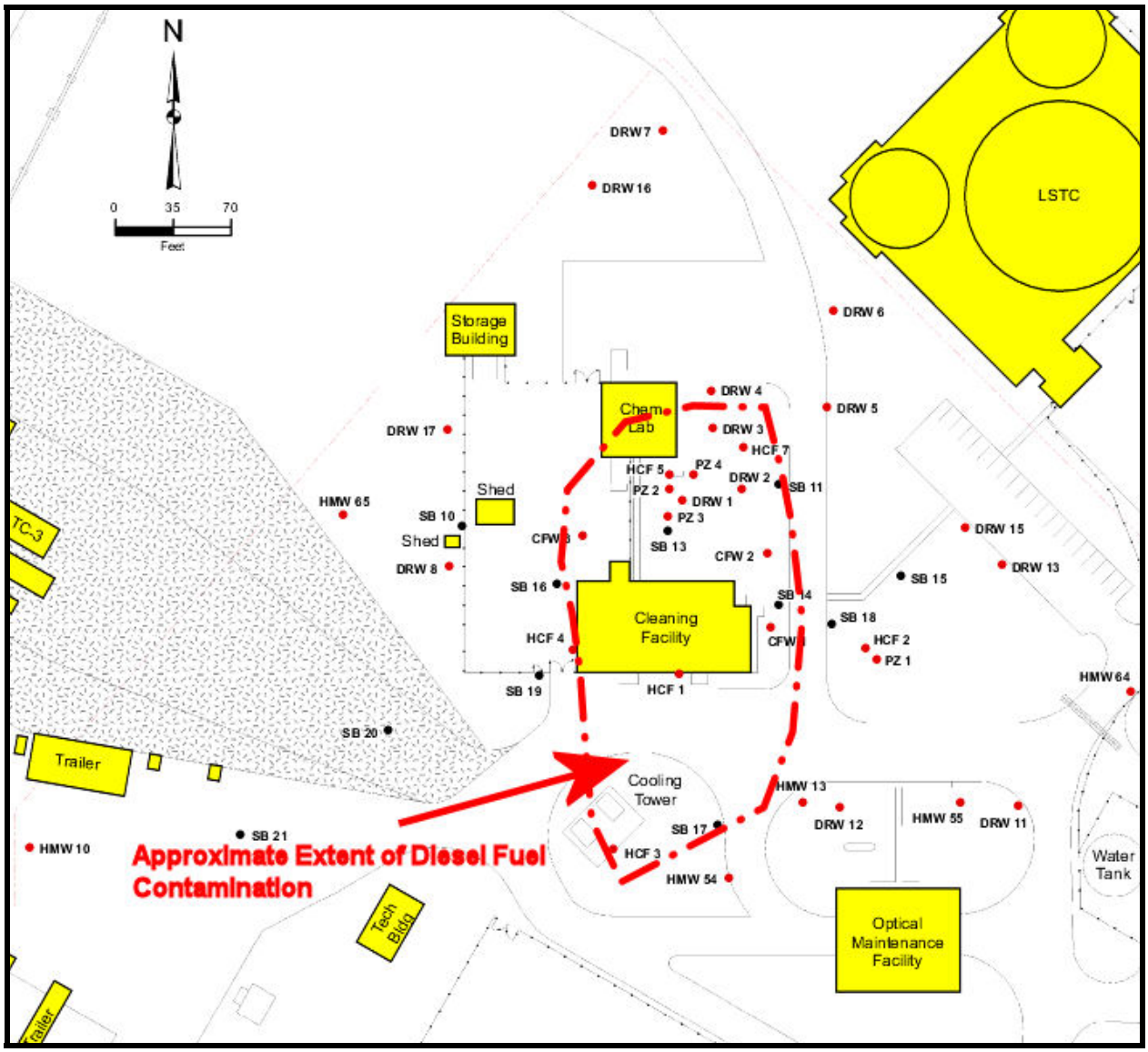

FIGURE 5-2. PLAN MAP OF AREAL EXTENT OF DIESEL FUEL SOIL CONTAMINATION.

5.2.2 Central Storage Zone

The Central Storage Zone encompasses the Equipment Storage Area (SWMU 141, WSMR-83), the Chromate Spill Site (SWMU 143, WSMR-54), and the MAR Waste Stabilization Pond (SWMU 148, WSMR-83). During this Phase III RFI, WSMR completed 10 soil borings to a depth of 50 ft bgs with samples collected approximately every 10 ft. Surface samples were not collected due to the asphalt and/or cement soil covering over the site.

Inorganics detected in soil samples include arsenic and total chromium. Chromium was detected at a highest concentration of 17.1 mg/kg in SB27 at a depth of 40 ft bgs. Several chromium detections were above their respective background concentrations indicating a potential effect of chromium contamination at the site.

Total arsenic was detected at a highest concentration of 8.81 mg/kg at a depth of 50 ft bgs in SB27. No arsenic was detected at a depth closer to the surface than 20 ft bgs. Since no arsenic was detected within the depth intervals relevant to human health, it is recommended this COPC not be further addressed. Chromium is also present in a number of lower perched wells in the central storage zone, substantiating

the need to address the chromium spill in the CMS. Extent of chromium contamination is shown in Figure 5-3. Monitor Wells HMW38, 39, and 41 display detectable concentrations of chlorinated hydrocarbons (solvents). Given the physical separation between the wells and the sump, it is unclear how solvents in HMW39 and 41 can be related to the Cleaning Facility Sump leak. If removal of the current wastewater lagoons does not cause the perched aquifer in this area to dissipate, the occurrence of the solvents will need to be further investigated. Chlorinated hydrocarbons were not detected within soil samples from the central storage area. Based on the available evidence, the source of the chlorinated hydrocarbons is unknown.

As discussed in Section 4.4.8, results of the Phase III RFI sample collection indicate that contamination within the central storage zone is not related to the equipment storage area (SWMU 141) or the MAR waste stabilization pond (SWMU 148). Chromium contamination is indicative of the Chromium Spill Site (SWMU 143).

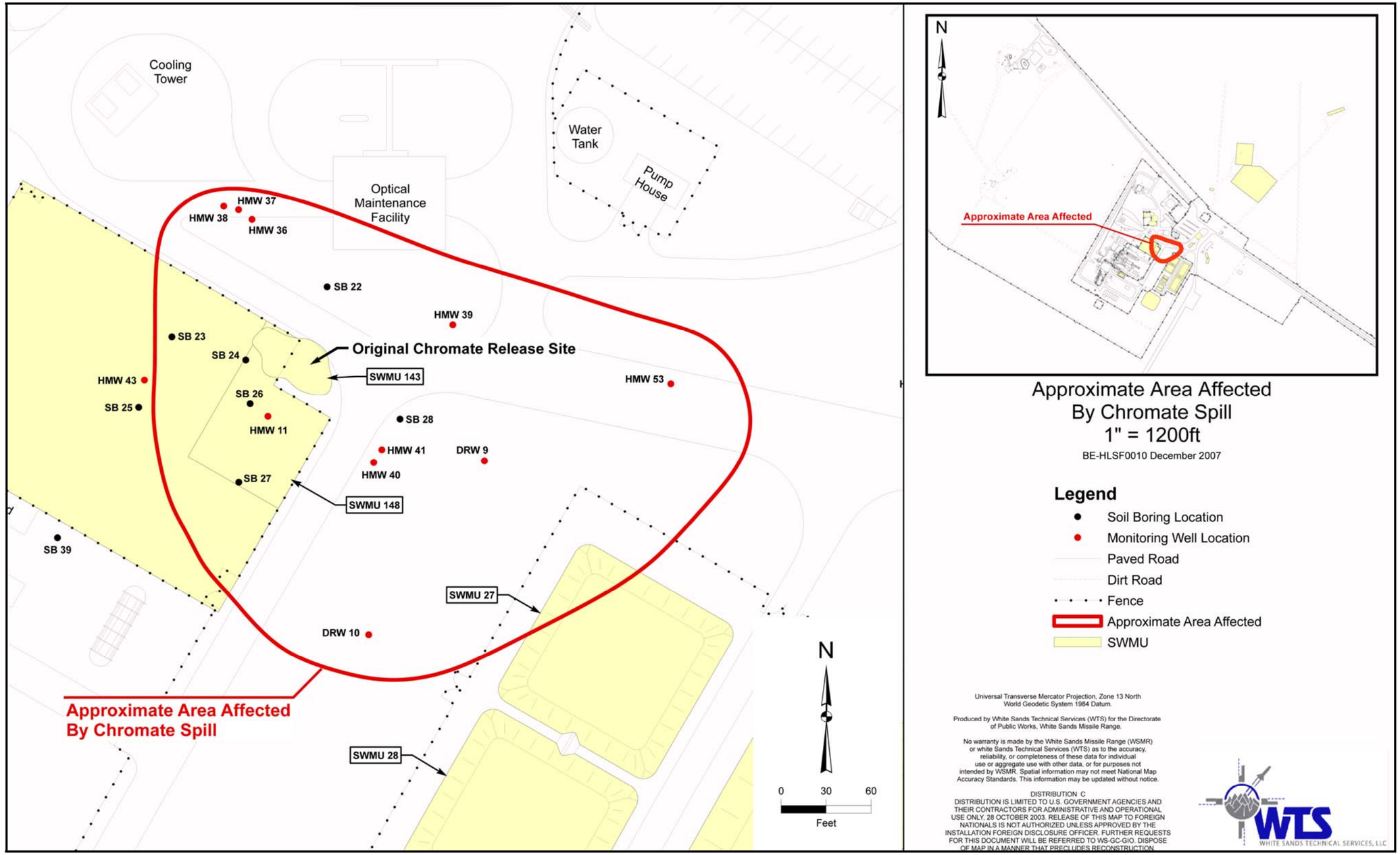

FIGURE 5-3. PLAN MAP EXTENT OF CONTAMINATION FROM THE CHROMATE SPILL SITE.

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6.0 SITE ASSESSMENTS

6.1 Human Health Screening Level Assessment

Review of the analytical data presented in Section 4 and that from previous investigations reveals no human health risks posed by current soil or groundwater conditions at HELSTF. COPCs in soil that exceed NMED or other SSLs all occur outside the depths specified for residential, industrial, or construction worker exposure scenarios. Similarly, COPCs in the two perched water-bearing zones have no pathways leading to human health exposure. Finally, the regional aquifer at HELSTF is not used for consumption.

While not contributing to current exposure, two situations in the lower perched water-bearing zone will be further addressed in the future CMS. These are the presence of chromium near the site of the Chromate Spill; and the presence of diesel fuel and its constituents from the Systemic Diesel Spill, together with commingled solvents from the Cleaning Facility Spill. COPCs associated with these events have the potential for future impacts to the regional aquifer.

While not posing a threat to human health, the HELSTF Construction Landfills (SWMUs 38 and 39, WSMR-52, CCWS-75) are categorized as operating units requiring closure under RCRA, as specified by NMED.

6.2 Ecological Screening Level Assessment

The Solid Waste Management Units (SWMU) at HELSTF fit into two basic categories, 1) disturbed natural areas that show some characteristics of the surrounding desert matrix, and 2) infrastructure in the form of developed land that now includes buildings, parking lots, and containment structures.

Category 1 Sites are disturbed natural areas that have vegetation or exposed water will expectedly have flora and fauna present. If contaminants are present, there could be a contaminant pathway to these organisms. For these SWMU sites, a Screening Level Ecological Risk Assessment (SLERA) site assessment checklist was completed (Appendix F). For those SWMU sites where a SLERA was completed, a decision was made based on the SLERA “Exclusion Criteria Decision Tree” as to whether an exclusion should be granted or denied for further ecological risks assessment. The decision for exclusion for each SWMU site is discussed for each SWMU below. For those SWMUs where a potential pathway for ecological exposure to contamination was found, and thus receiving an ‘exclusion denied’ decision, appropriate comparisons were made to established ecological screening levels. For SWMUs receiving the ‘exclusion granted’ decision, no further ecological assessment was completed.

Category 2 Sites are infrastructure sites that will not be expected to provide any potential pathway to flora or fauna. As part of the SLERA, a biological survey was performed and determined that the Category 2 SWMU sites located within the main HELSTF test area are covered with asphalt or cement and do not contain natural habitat features. Thus, there are no apparent concerns for organisms or habitats at these Category 2 SWMU sites. As specified in NMED guidance (NMED 2005), further action on the SLERA is not required because these areas could not support a viable ecological habitat. A SLERA Site Assessment Checklist is not required for these SWMU sites and is not included in this report. The biological survey for all of the SWMUs at HELSTF follows and includes both Category 1 and Category 2 SWMU sites as described above.

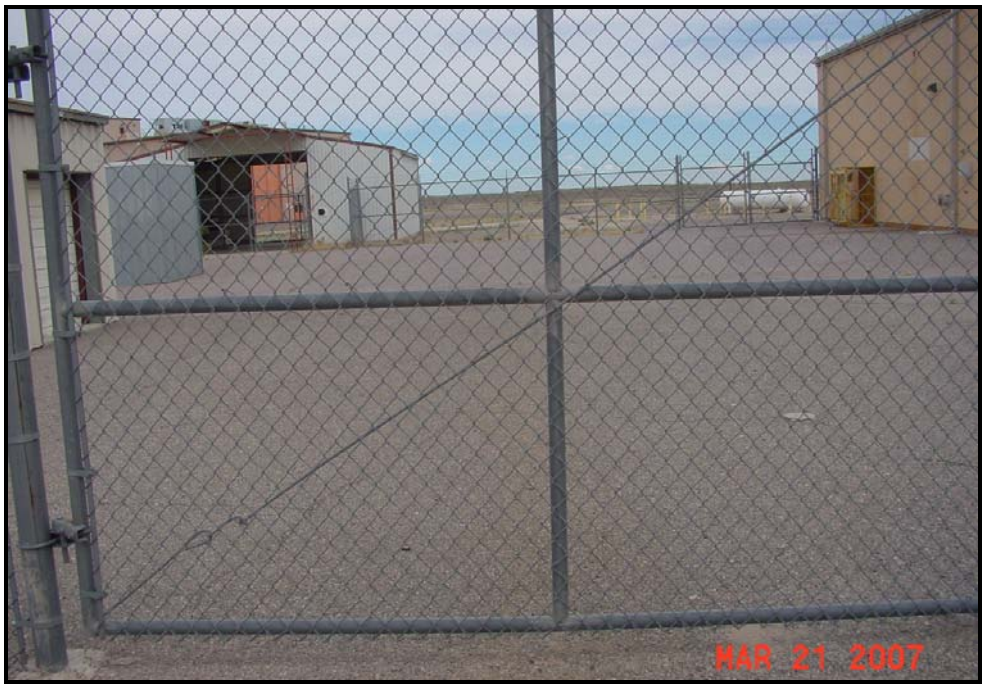
6.2.1 SWMUs 23 and 24 Hazardous Waste Tanks (Category 2)

This small concrete containment area (Photograph 6-1) is located adjacent to a cinder block building and is a component of the HELSTF developed area. No contaminant pathway to organisms exists at this site. A SLERA Site Assessment Checklist is not required for this site because the area could not support a viable ecological habitat.

PHOTOGRAPH 6-1. SWMUS 23 AND 24.

6.2.2 SWMU 25 Waste Accumulation Site (Category 2)

This SWMU (Photograph 6-2), a large paved parking lot enclosed by a chain link fence, is a component of the HELSTF developed area. No contaminant pathway to organisms exists at this SWMU site. A SLERA Site Assessment Checklist is not required for this site because the area could not support a viable ecological habitat.



PHOTOGRAPH 6-2. SWMU 25 WASTE ACCUMULATION SITE.

6.2.3 SWMU 26 Vapor Recovery Unit (Category 2)

This vapor recovery unit (Photograph 6-3) located on a concrete pad beside a cinder block building is a component of the HELSTF developed area. No contaminant pathway to organisms exists at this site. A SLERA Site Assessment Checklist is not required for this site because the area could not support a viable ecological habitat.

PHOTOGRAPH 6-3. SWMU 26 VAPOR RECOVERY UNIT.

6.2.4 SWMUs 27 through 30 Sewage Lagoons (WSMR-44, CCWS-79)(Category 1)

There are four open sewage lagoons (Photographs 6-4 and 6-5) located within the HELSTF developed area. These lagoons attract a wide array of wildlife, including terrestrial mammals and birds including waterfowl and shorebirds. Some aquatic vegetation, mainly cattails (*Typha latifolia*), is growing in the lagoons. A pathway may exist at this site to animals that drink from or feed on animals living in the lagoons. A SLERA was completed for this site and is attached in Appendix F. The contaminants of concern have been detected in the lagoon water (discharge monitoring) and upper perched water during the Phase III RFI. Plant receptors could come in contact with the surface water in the lagoon and potentially the upper perched water through root contact. Based on the Phase III RFI, the contaminants of concern in the upper perched zone at the site are 1.1-dichloroethene (5.43 mg/L), Fluoride (11.2 mg/L), and nitrate (162 mg/L). Monitor well DRW14, a regional aquifer well inferred to be heavily impacted by drainage from the perched zones, displays chromium at a concentration of (2.04 mg/L).

Based on the SLERA Checklist, an exclusion should be denied for further ecological assessment at this time. The SWMU 27-30 lagoons have been replaced (August 2007) and following evaporation of the surface water and drying of the upper perched zone, no future ecological contact with surface water or groundwater is expected. The status of these SWMUs will be revisited following full decommissioning and will be addressed in the CMS.

PHOTOGRAPH 6-4. SWMUS 27 AND 28. SEWAGE LAGOONS 1 AND 2.

PHOTOGRAPH 6-5. SWMUS 29 AND 30. SEWAGE LAGOONS 3 AND 4.

6.2.5 SWMUs 31 and 32 Chemical Waste Tanks (WSMR-43)(Category 1)

These two sites are storage sites (Photograph 6-6) that historically held chemical waste storage tanks. They are currently dry open earthen tanks with sparse vegetation including a few saltcedar (*Tamarix ramosissima*), and narrow-leaf peppergrass (*Lepidium alyssoides*). A SLERA was completed for this site and is attached in Appendix F. Based on results of the Phase III RFI soil sampling event conducted in October 2006, only chromium was detected of the suspected contaminants. Chromium was detected at a highest concentration of 3.18 mg/kg at a depth of less than 5 ft bgs. No VOCs or SVOCs were detected. Due to the COC concentration in the surface soil, it is expected that potential receptors could come in contact, therefore exposure pathways are complete.

Based on the SLERA Checklist, the site would not be excluded from further ecological assessment. Therefore, a comparison to appropriate ecological SSLs (EPA March 2005) was completed. The ecological screening levels for chromium (EPA March 2005) list an SSL for mammalian wildlife at 34 mg/kg and for avian wildlife at 26 mg/kg. An SSL for plants was not listed. The highest chromium detected was below these screening values, therefore, further ecological assessment is not warranted at this time for chromium.

PHOTOGRAPH 6-6. SWMUS 31 AND 32 CHEMICAL WASTE TANKS (REMOVED)(LOOKING SOUTH).

6.2.6 SWMUs 33 and 34 Fluorospar Tanks (WSMR-49) (Category 2)

These two sites are identical open concrete tanks and are part of the developed area of HELSTF. No vegetation exists at the location of these tanks. No contaminant pathway to organisms exists at this site. A SLERA Site Assessment Checklist is not required for this site because the area could not support a viable ecological habitat.

PHOTOGRAPH 6-7. SWMUS 33 AND 34 FLUOROSPAR TANKS.

6.2.7 SWMUs 35 and 36 Former Ethylene Glycol Tanks (Category 1)

These two SWMUs (Photograph 6-8) are now an open raised berm with a two-track road over the top indicating periodical vehicular traffic. The tanks (formerly two ASTs) are no longer present on site. No contaminants are known from this site and there is no expected pathway to organisms. A SLERA was completed for this site and is attached in Appendix F. There are no contaminants of concern associated with this SWMU. The tanks were removed and disposed in 1989. No releases were reported. Any ethylene glycol released to the environment would have rapidly biodegraded, since ethylene glycol is easily biodegraded. Based on the SLERA Checklist, an exclusion should be granted for further ecological assessment at this time.

PHOTOGRAPH 6-8. SWMUS 35 AND 36 FORMER ETHYLENE GLYCOL TANKS.

6.2.8 SWMU 37 Waste Oil Accumulation Site. (Category 2)

This site (Photograph 6-9) consists of a building and is a component of the HELSTF developed area. No contaminant pathway to organisms exists at this site. A SLERA Site Assessment Checklist is not required for this site because the area could not support a viable ecological habitat.

PHOTOGRAPH 6-9. SWMU 37 WASTE OIL ACCUMULATION SITE.

6.2.9 SWMUs 38 and 39 Construction Landfills (WSMR-52, CCWS-05)(Category 1)

These SWMUs (Photograph 6-10) are located several hundred meters southeast of the main HELSTF developed area. Vegetation is typical of that growing in disturbed areas and is currently comprised primarily of bare ground with scattered four-wing saltbush (*Atriplex canescens*) and a mixture of dropseed grasses including alkali sacaton (*Sporobolus airoides*), and sand dropseed (*S. cryptandris*). A complete exposure pathway to soil (arsenic) is present on site. The potential exists for soil contact. Arsenic was detected at a highest concentration of 17.5 mg/kg at 4 ft bgs during the Phase II RFI. A complete exposure pathway to soil exists for arsenic. Based on the SLERA Checklist, an exclusion should be denied for further ecological assessment at this time. Based on this exclusion denied decision, a comparison to appropriate ecological SSLs (EPA 2005) was completed. The Ecological Soil Screening Levels for Arsenic (EPA 2005) list an ecological SSL for plants at 18 mg/kg, for avian wildlife at 43 mg/kg, and for mammalian wildlife at 46 mg/kg. The highest arsenic detected is below these screening values, therefore, further ecological assessment is not warranted at this time.

PHOTOGRAPH 6-10. SWMUS 38-39 CONSTRUCTION LANDFILLS (LOOKING EAST).

6.2.10 SWMU 141 Equipment Storage Area. (Category 2)

SWMU 141 (Photograph 6-11) is a large paved parking lot/storage area enclosed by a tall chain link fence. This site is a component of the HELSTF developed area. No contaminant pathway to organisms exists at this site. A SLERA Site Assessment Checklist is not required for this site because the area could not support a viable ecological habitat.

PHOTOGRAPH 6-11. SWMU 141 EQUIPMENT STORAGE AREA.

6.2.11 SWMU 142 Cleaning Facility. (Category 2)

This SWMU (Photograph 6-12) is a cinder block building with a paved surface. This site is component of the HELSTF developed area. No contaminant pathway to organisms exists at this site. A SLERA Site Assessment Checklist is not required for this site because the area could not support a viable ecological habitat.

PHOTOGRAPH 6-12. SWMU 142 CLEANING FACILITY.

6.2.12 SWMU 143 Chromate Spill Site (WSMR-54)(Category 2)

This SWMU (Photograph 6-13) is comprised of a small sand-box site within SWMU 141 and is a component of the HELSTF developed area. No contaminant pathway to organisms exists at this site. A SLERA Site Assessment Checklist is not required for this site because the area could not support a viable ecological habitat.

PHOTOGRAPH 6-13. SWMU 143 CHROMATE SPILL SITE.

6.2.13 SWMU 144 LSTC Wastewater Discharge Point (WSMR-47, CCWS-02)(Category 1)

This SWMU (Photograph 6-14) is located just east of the developed area associated with HELSTF. The site was historically a wastewater discharge site. Currently the site consists of a small (under ½ acre) dense stand of invasive salt cedar (*Tamarisk ramosisima*) surrounded by a matrix of four-winged saltbush (*Atriplex canascens*) and dropseed grasses (*Sporobolus* sp.). Contamination at this site is restricted to deep underground. No potential contaminant pathway to organisms is expected at this site. A SLERA was completed for this site and is attached in Appendix F. Based on the SLERA Checklist, an exclusion should be granted for further ecological assessment at this time.

PHOTOGRAPH 6-14. SWMU 144 LSTC WASTEWATER DISCHARGE POINT (LOOKING EAST).

6.2.14 SWMU 145 Test Cell 4 Lagoon (WSMR-53)(Category 2)

This SWMU (Photograph 6-15) is currently a paved parking lot and is a component of the HELSTF developed area. No contaminant pathway to organisms exists at this site. A SLERA Site Assessment Checklist is not required for this site because the area could not support a viable ecological habitat.

PHOTOGRAPH 6-15. SWMU 145 TEST CELL 4 LAGOON.

6.2.15 SWMU 146 Dry Pond (WSMR-45, CCWS-03)(Category 1)

This SWMU (Photograph 6-16) is a man-made earthen tank with signs of recent soil disturbance from vehicles used during the Phase III RFI soil investigation. A dense grove of saltcedar (*Tamarix ramosissima*) covers about one third of the area of the tank providing nesting and roosting habitat for birds, and cover for small mammals including cottontail (*Sylvilagus auduboni*) and jack rabbits (*Lepus californcus*). A SLERA was completed for this site and is attached in Appendix F. Based on data from the Phase III RFI, arsenic (highest concentration 2.68 mg/kg) and chromium (highest concentration 3.93 mg/kg) concentrations in the surface soil cannot be ruled out as background. Contaminants in perched upper and lower water bearing zone may be attributed to the sewage lagoons (SWMUs 27-30). There is a complete exposure pathway for soils at the site. Based on the SLERA Checklist, the site would not be excluded from ecological assessment. Therefore, a comparison to appropriate ecological SSLs (EPA 2005) was completed. The Ecological Soil Screening Levels for Arsenic (EPA 2005) list an ecological SSL for plants at 18 mg/kg, for avian wildlife at 43 mg/kg, and for mammalian wildlife at 46 mg/kg. The highest arsenic detected is below these screening values; therefore, further ecological assessment is not warranted at this time for arsenic. The ecological screening levels for chromium (EPA March 2005) list an SSL for mammalian wildlife at 34 mg/kg and for avian wildlife at 26 mg/kg. An SSL for plants was not listed. The highest chromium detected is below these screening values; therefore, further ecological assessment is not warranted at this time for chromium.

PHOTOGRAPH 6-16. SWMU 146 DRY POND.

6.2.16 SWMU 147 Decontamination Pad (WSMR-78)(Category 2)

This SWMU (Photograph 6-17) is a concrete pad with a plastic cleaning solution container. The site is a component of the HELSTF developed area. No contaminant pathway to organisms exists at this site. A SLERA Site Assessment Checklist is not required for this site because the area could not support a viable ecological habitat.

PHOTOGRAPH 6-17. SWMU 147 DECONTAMINATION PAD.

6.2.17 SWMU 148 MAR Waste Stabilization Pond (WSMR-83)(Category 2)

This SWMU (Photograph 6-18) is a large paved storage/parking area that is a component of the HELSTF developed area. No contaminant pathway to organisms exists at this site. A SLERA Site Assessment Checklist is not required for this site because the area could not support a viable ecological habitat.

PHOTOGRAPH 6-18. SWMU 148 MAR WASTE STABILIZATION POND.

6.2.18 SWMU 149 Septic System (WSMR-46)(Category 1)

This SWMU (Photograph 6-19) is currently a small disturbed fenced-in area with sparse vegetation, primarily narrow-leaf peppergrass (*Lepidium alyssoides*). No contaminants are known from this site and there is no expected pathway to organisms. Based on the Phase I RFI, there are no contaminants of concern associated with this site. There are no known chemical releases from this site. Groundwater does not discharge into receptor habitats. Based on the SLERA Checklist (Appendix F), an exclusion should be granted for further ecological assessment at this time.

PHOTOGRAPH 6-19. SWMU 149 SEPTIC SYSTEM.

6.2.19 SWMU 150 MAR Dump Site (Category 1)

This SWMU (Photograph 6-20) is located approximately ½ mile northeast of the main HELSTF developed area. Vegetation is typical of that growing in disturbed areas and is currently comprised primarily of bare ground with scattered narrow-leaf peppergrass (*Lepidium alyssoides*) four-wing saltbush (*Atriplex canescens*) and snakeweed (*Gutierrezia sarothrae*). Based on results of the Phase III RFI, suspected contaminants of concern at the site include chromium (Highest detection 9.06 mg/kg) and lead (Highest detection 17.3 mg/kg) in the surface soil at the site. In 1996 the site was excavated and wastes were removed for disposal elsewhere. Excavation continued until apparently native soils were encountered and debris and discolored soil no longer remained. Confirmation of sufficient excavation was accomplished by collecting soil samples from the floor of the excavation. The site was backfilled with material from a local borrow area (Dow 1997). It is likely the chromium and lead detections are from the fill material. It is possible that the potential COCs in the surface soil could reach receptors via dispersion through fugitive dust or through direct exposure. There is a complete exposure pathway at this site. Based on the SLERA Checklist (Appendix F), the site would not be excluded from further ecological assessment. Therefore, a comparison to appropriate ecological SSLs was completed. The ecological screening levels for chromium (EPA 2005a) list an SSL for mammalian wildlife at 34 mg/kg and for avian wildlife at 26 mg/kg. An SSL for plants was not listed. The highest chromium detected is below these screening values, therefore, further ecological assessment is not warranted at this time for chromium.

The ecological screening levels for lead (EPA 2005b) list an SSL for plants at 120 mg/kg, invertebrates at 1,700 mg/kg, avian wildlife at 11 mg/kg, and mammalian wildlife at 56 mg/kg. Of the screening levels for lead, the highest surface detection exceeds the SSL for avian wildlife. Further ecological assessment for avian wildlife with respect to lead contamination is warranted.

PHOTOGRAPH 6-20. SWMU 150 MAR DUMP SITE (LOOKING NORTHWEST).

6.2.20 SWMU 151 Septic System (WSMR-46)(Category 1)

This SWMU (Photograph 6-21) is a small area of thick brush and an old underground septic tank located within the midst of the HELSTF developed area. This site consists of a single salt cedar (*Tamarisk ramosisima*), and a small dense cluster of four-winged saltbush (*Atriplex canascens*) encircled by a 4-strand barbed wire fence. No surface contaminants are known from this site and there is no expected pathway to organisms. A SLERA was completed for this site and is attached in Appendix F. Based on the Phase I RFI, there are no contaminants of concern associated with this site. There are no known chemical releases from this site. Groundwater does not discharge into receptor habitats. Based on the SLERA Checklist, an exclusion should be granted for further ecological assessment at this time.

PHOTOGRAPH 6-21. SWMU 151 SEPTIC SYSTEM (LOOKING SOUTHWEST).

6.2.21 SWMU 152 Septic System (WSMR-46)(Category 1)

This SWMU (Photograph 6-22) is located adjacent to SWMU 151 within the HELSTF developed area. Vegetation within the small fenced enclosure is typical of that growing in disturbed areas and is currently comprised primarily of narrow-leaf peppergrass (*Lepidium alyssoides*). No contaminants are known from this site and there is no expected pathway to organisms. A SLERA was completed for this site and is attached to Appendix F. Based on the Phase I RFI, there are no contaminants of concern associated with this site. There are no known chemical releases from this site. Groundwater does not discharge into receptor habitats. Based on the SLERA Checklist, an exclusion should be granted for further ecological assessment at this time.

PHOTOGRAPH 6-22. SWMU 152 SEPTIC SYSTEM.

6.2.22 SWMU 154 Systemic Diesel Spill (WSMR-55)(Category 2)

This SWMU (Photograph 6-23) consists of an asphalt parking area and building that are components of the HELSTF developed area. No contaminant pathway to organisms exists at this site. A SLERA Site Assessment Checklist is not required for this site because the area could not support a viable ecological habitat.

PHOTOGRAPH 6-23. SWMU 154 SYSTEMIC DIESEL SPILL.

TABLE 6-1. SUMMARY OF ECOLOGICAL SCREENING ASSESSMENTS

SWMU	Ecological Category*	SLERA Completed	Contaminants of Concern	Potential Receptors	Exclusion for Further Eco Risk Assessment	Conclusion
23-24 / Hazardous Waste Tanks	2	Not required. The site could not support a viable ecological habitat.	N/A	None.	No further ecological risk assessment is required.	A SLERA was not required for this site. This site could not support a viable ecological habitat.
25 / Waste Accumulation Site	2	Not required. The site could not support a viable ecological habitat.	N/A	None.	No further ecological risk assessment is required.	A SLERA was not required for this site. This site could not support a viable ecological habitat.
26 / Vapor Recovery Unit	2	Not required. The site could not support a viable ecological habitat.	N/A	None.	No further ecological risk assessment is required.	A SLERA was not required for this site. This site could not support a viable ecological habitat.
27-30 / Sewage Lagoons	1	SLERA included in Appendix F.	1.1-dichloroethene, fluoride, and nitrate.	terrestrial mammals, birds, and aquatic vegetation	Exclusion Denied.	It is expected that the pathway to exposure will no longer be complete following drying of the lagoons. The status of these SWMUs will be revisited in the CMS.
31-32 / Chemical Waste Tanks	1	SLERA included in Appendix F.	chromium	terrestrial mammals, birds, and terrestrial vegetation.	No further ecological assessment required. Chromium below EPA (2005) ecological SSLs.	No ecological risk was determined for this site.
33-34 / Fluorospar Tanks	2	Not required. The site could not support a viable ecological habitat.	N/A	None.	No further ecological risk assessment is required.	A SLERA was not required for this site. This site could not support a viable ecological habitat.
35-36 / Former Ethylene Glycol Tanks	1	SLERA included in Appendix F.	None.	None.	No further ecological risk assessment is required.	No ecological risk was determined for this site.

TABLE 6-1. SUMMARY OF ECOLOGICAL SCREENING ASSESSMENTS

SWMU	Ecological Category*	SLERA Completed	Contaminants of Concern	Potential Receptors	Exclusion for Further Eco Risk Assessment	Conclusion
37 / Waste Oil Accumulation Site	2	Not required. The site could not support a viable ecological habitat.	N/A	None.	No further ecological risk assessment is required.	A SLERA was not required for this site. This site could not support a viable ecological habitat.
38-39 / Construction Landfills	1	SLERA included in Appendix F.	arsenic	terrestrial mammals, birds, and terrestrial vegetation.	No further ecological assessment required. Arsenic below EPA (2005) ecological SSLs.	No ecological risk was determined for this site.
141 / Equipment Storage Area	2	Not required. The site could not support a viable ecological habitat.	N/A	None.	No further ecological risk assessment is required.	A SLERA was not required for this site. This site could not support a viable ecological habitat.
142 / Cleaning Facility	2	Not required. The site could not support a viable ecological habitat.	N/A	None.	No further ecological risk assessment is required.	A SLERA was not required for this site. This site could not support a viable ecological habitat.
143 / Chromate Spill Site	2	Not required. The site could not support a viable ecological habitat.	N/A	None.	No further ecological risk assessment is required.	A SLERA was not required for this site. This site could not support a viable ecological habitat.
144 / LSTC Wastewater Discharge Point	1	SLERA included in Appendix F.	N/A	None.	No further ecological risk assessment is required.	Contamination associated with this site is deep underground. No pathways for ecological exposure exist.
145 / Test Cell Four Lagoon	2	Not required. The site could not support a viable ecological habitat.	N/A	None.	No further ecological risk assessment is required.	A SLERA was not required for this site. This site could not support a viable ecological habitat.
146 / Dry Pond	1	SLERA included in Appendix F.	arsenic and chromium	terrestrial mammals, birds, and terrestrial vegetation.	No further ecological assessment required. Arsenic and chromium below EPA (2005) ecological SSLs.	No ecological risk was determined for this site.
147 / Decontaminati on Pad	2	Not required. The site could not support a viable ecological habitat.	N/A	None.	No further ecological risk assessment is required.	A SLERA was not required for this site. This site could not support a viable ecological habitat.
148 / MAR Waste Stabilization Pond	2	Not required. The site could not support a viable ecological habitat.	N/A	None.	No further ecological risk assessment is required.	A SLERA was not required for this site. This site could not support a viable ecological habitat.
149 / Septic System	1	SLERA included in Appendix F.	None.	None.	No further ecological risk assessment is required.	No ecological risk was determined for this site.
150 / MAR Dump Site	1	SLERA included in Appendix F.	chromium and lead	terrestrial mammals, birds, and terrestrial vegetation	No further ecological assessment required for arsenic. Arsenic below EPA (2005) ecological SSLs. Lead result was above its SSL. Further ecological assessment for lead required.	Further ecological assessment for lead required.
151 / Septic System	1	SLERA included in Appendix F.	None.	None.	No further ecological risk assessment is required.	No ecological risk was determined for this site.
152 / Septic System	1	SLERA included in Appendix F.	None.	None.	No further ecological risk assessment is required.	No ecological risk was determined for this site.
154 / Diesel Spill Area	2	Not required. The site could not support a viable ecological habitat.	N/A	None.	No further ecological risk assessment is required.	A SLERA was not required for this site. This site could not support a viable ecological habitat.

* Category 1 – Disturbed natural area that may be expected to have flora and/or fauna present.
* Category 2 – Sites within the HELSTF infrastructure that would not be expected to provide pathways to flora or fauna.
N/A Not Applicable.

7.0 SUMMARY AND CONCLUSIONS

7.1 Summary

The purpose of the Phase III RFI was to present a comprehensive evaluation of all previously known contaminant releases and their associated risks at HELSTF. The expectation is that this comprehensive evaluation will lead to identification of final corrective action measures. The Phase III RFI was conducted under an NMED-approved work plan titled "Revised Phase III RFI Work Plan – HELSTF Sites [Construction Landfill (SWMUs 38 and 39) – IRP ID WSMR-52; Chromate Spill Site (SWMU 143) – WSMR-54; Systemic Diesel Spill (SWMU 154) – WSMR-55; and HELSTF Groundwater – WSMR-85]" (WTS, 2007). For this Phase III RFI of HELSTF, WSMR has:

- Established new baseline elevations for existing and new monitor wells and soil borings;
- Inspected and rehabilitated available existing monitor wells;
- Installed 13 new groundwater monitor wells;
- Collected and analyzed soil samples from 38 borings at eight SWMUs to a depth of 50 feet, each;
- Sampled and analyzed groundwater from available monitor wells [new and old]; and
- Organized and interpreted the results of the investigation.

The conclusions and recommendations stemming from the Phase III RFI are presented below.

7.2 Conclusions

The findings of the Phase III RFI confirmed and reinforced WSMR's prior understanding of HELSTF. As a result of the findings of the Phase III RFI, both the hydrogeologic setting and the distribution of contaminants are considered well enough known to proceed to a corrective measures study phase.

The hydrogeologic setting consists of a series of perched water bearing zones above a brackish to saline regional aquifer. To date, the regional aquifer displays minimal impacts of HELSTF operations. The natural quality of the underlying groundwater precludes its direct use for human or animal consumption. The perched zones are fed and maintained by leakage from HELSTF operations, primarily the existing wastewater lagoons. When these lagoons are fully decommissioned, the expectation is that the perched zones will largely dissipate. The rate of dissipation and its completeness cannot be predicted.

The contaminant distribution largely reflects the impacts of two significant spills – the Systemic Diesel Spill (and the commingled spill from the Chemical Waste Tank) and the Storage Yard Chromate Spill, as discussed in Section 5. The findings of this study, together with previous data, will form the basis of a future Corrective Measures Study (CMS).

Issues identified in the Work Plan (WTS 2007) relative to known SWMUs and the HELSTF Site as a whole were addressed in this investigation. Based on findings of this Phase III RFI effort, there appears to be little contamination or other negative impacts from the HELSTF Construction Landfill or other SWMUs. For those SWMUs requiring no remediation, a petition for No Further Action (NFA) should be pursued.

The conclusions are summarized in Table 7-1, below.

TABLE 7-1. CONCLUSIONS AND RECOMMENDATIONS

SWMU/AOC/Zone	Recommendation	Basis
Diesel Spill Zone, including SWMUs 142 (WSMR-48, CCWS-05) and154 (WSMR-55)	Carry forward to CMS	Observed contamination
Chromate Spill Site (SWMU 143, WSMR-54)	"	Observed contamination and historical record

TABLE 7-1. CONCLUSIONS AND RECOMMENDATIONS		
SWMU/AOC/Zone	**Recommendation**	**Basis**
Construction Landfill (SWMUs 38 & 39, WSMR-52, CCWS-75)	“	Historical record
Wastewater lagoons (SWMUs 27-30, WSMR-44, CCWS-79)	Monitor water levels only	Observe effects of decommissioning
Balance of HELSTF Site, including SWMUs • 23 and 24: Old hazardous waste tanks • 25: Waste accumulation area • 26: Vapor recovery unit • 31, 32 (WSMR-43): Chemical waste tanks • 33, 34 (WSMR-49): Fluorospar tanks • 35, 36 (WSMR-50): Ethylene glycol tanks • 37: Waste oil accumulation area • 141 (WSMR-83): Equipment storage area • 144 (WSMR-47, CCWS-03): LSTC wastewater discharge point • 145 (WSMR-53): Test cell 4 lagoon • 146 (WSMR-45, CCWS-03): Dry pond • 147 (WSMR-78): Decontamination pad underground tank • 148 (WSMR-83): MAR waste stabilization pond • 149, 151, 152 (WSMR-46): Septic systems • 150: MAR dump site and AOCs • N: Process spills • Q: Lab drains • V: pressure recovery system	Monitor only. Prepare NFA petitions, as appropriate	Findings of this report

REFERENCES

ASI/Tetra Tech, 1997. *Final Groundwater Remedial Action Plan, HELSTF SWMUs 142-143-154, White Sands Missile Range, New Mexico.* Pasadena (California): Tetra Tech, Inc.

A.T. Kearney, Inc., 1988. *RCRA Facility Assessment PR/VSI Report, White Sands Missile Range, White Sands, New Mexico.* Alexandria (Virginia): A.T. Kearney, Inc.

Basabilvazo, G.T., Myers, R.G. and Nickerson, E.L., 1994. *Geohydrology of the High Energy Laser System Test Facility Site, White Sands Missile Range, Tularosa Basin, South-Central New Mexico.* Albuquerque (New Mexico): U.S. Geological Survey. Water-Resources Investigations Report 93-4192.

Creel and Hawley, 2001. Bobby J. Creel and John W. Hawley, *Water Resources of the Border Region of New Mexico*. New Mexico Water Resources Research Institute and Hawley GeoMatters.

Dow, 1997. *Close Out Report, SWMU 150, MAR Dump Site.* Rockville (Maryland): Dow Environmental.

Environmental Science & Engineering Incorporated (ESE), 1996. *Groundwater Quality Investigation for the Monitoring Well Program at White Sands Missile Range, New Mexico.* Phoenix (Arizona).

EPA 1989. *Risk Assessment Guidance for Superfund Volume I, Part A, Human Health Evaluation Manual. [*RAGS A] OSWER 9285.7-02B, EPA/540/I-89/009. December 1989.

EPA 1991. *Role of the Baseline Risk Assessment in Superfund Remedy Selection Decisions*. OSWER Directive 9355.0-30. Office of Emergency and Remedial Response U.S. Environmental Protection Agency. April 1991.

EPA 1996a. *Soil Screening Guidance: Technical Background Document*, Second Edition. Publication 9355.4-17A, Office of Emergency and Remedial Response U.S. Environmental Protection Agency. May 1996.

EPA 1996b. *Soil Screening Guidance: Users Guide.* Second Edition. EPA/540/R-95/018. July 1996.

EPA 2002. *Calculating Upper Confidence Limits for Exposure Point Concentrations at Hazardous Waste Sites*. OSWER 9285.6-10. Office of Emergency and Remedial Response U.S. Environmental Protection Agency. December 2002. AND its accompanying software package, ProUCL.

EPA 2004. *ProUCL Version 3.0 – Computer Program and accompanying Users Guide.* EPA/600/R04/079. April 2004.

EPA 2005a. *Ecological Soil Screening Levels for Chromium*, Interim Final. OSWER Directive 9285.7-66. U. S. Environmental Protection Agency. March 2005

EPA 2005b. *Ecological Soil Screening Levels for Lead*, Interim Final. OSWER Directive 9285.7-70. U. S. Environmental Protection Agency. March 2005.

International Technology Corporation (ITC), 1992a. *Final RCRA Facility Investigation (RFI) Report, Appendix I Sites, White Sands Missile Range, New Mexico.* Houston (Texas): ITC.

ITC, 1992b. *Final RCRA Facility Investigation (RFI) Report, Appendix II, III and IV Sites, White Sands Missile Range, New Mexico.* Houston (Texas): ITC.

ITC, 1992c. *Final HELSTF Groundwater Assessment, White Sands Missile Range, New Mexico.* Houston (Texas): ITC.

ITC, 1993. *HELSTF Cleaning Facility RCRA Well Installation Data Report.* Houston (Texas): ITC.

Kottlowski, F.E., Flower, R.H., Thompson, M.L., and Foster, R.W., 1956. *Stratigraphic Studies of the San Andres Mountains, New Mexico*. Socorro, NM: New Mexico Bureau of Mines and Mineral Resources.

Kelly, T.E. and Hearne, G.A., 1976. The Effects of Groundwater Development on the Water Supply of the Post Headquarters Area, White Sands Missile Range, New Mexico: U.S. Geological Survey Open File Report 72-308.

MEVATEC, 1998. *White Sands Missile Range, Range-Wide Environmental Impact Statement.* WSMR (New Mexico): MEVATEC. WSMREIS-1.

MEVATEC, 2001. *High Energy Laser System Test Facility Groundwater Study and Conceptual Modeling.* WSMR (New Mexico): MEVATEC. WS-ES-EC-0052.

NMED, 2002. Frischkorn, C., 2002. [New Mexico Environment Department] Correspondence to Thomas A. Ladd. *RE: Three (3) Petitions for Class III Modifications*, Director, Environment and Safety Directorate, WSMR, NM 88002. 11 March.

NMED 2005. *Guidance for Assessing Ecological Risks Posed by Chemicals: Screening-Level Ecological Assessment*,

NMED 2006. *Technical Background Document for Development of Soil Screening Levels*, Revision 4.0. New Mexico Environment Department Hazardous Waste Bureau and Ground Water Quality Bureau. June 2006.

Neher, R.E. and O. F. Bailey, 1976. *Soil Survey of the White Sands Missile Range, New Mexico*. Washington D.C.: USDA Soil Conservation Service.

Orr, B. R., and R. G. Myers, 1986. *Water resources in the basin-fill deposits of the Tularosa Basin, New Mexico*. U. S. Geological Survey Water Resources Investigations Report no. 85-419. Washington D. C.: U. S. Geological Survey. 94 pp.

Seager, W.R., 1981. *Geology of Organ Mountains and Southern San Andres Mountains, New Mexico*. Socorro, NM. New Mexico Bureau of Mines and Mineral Resources.

Seager, W.R., Hawley, J.W., Kottlowski, F.E. and Kelly, S.A., 1987. *Geology of the East Half of the Las Cruces and Northeast El Paso 1 Degree x 2 Degree sheets, New Mexico*: Socorro, New Mexico Bureau of Mines and Mineral Resources Map 57.

Sverdrup Environmental, Inc. (SEI), 1994. *Phase-II RCRA Facility Investigation Report, Appendix I, II, III and IV sites. White Sands Missile Range, New Mexico.* St. Louis (Missouri): SEI.

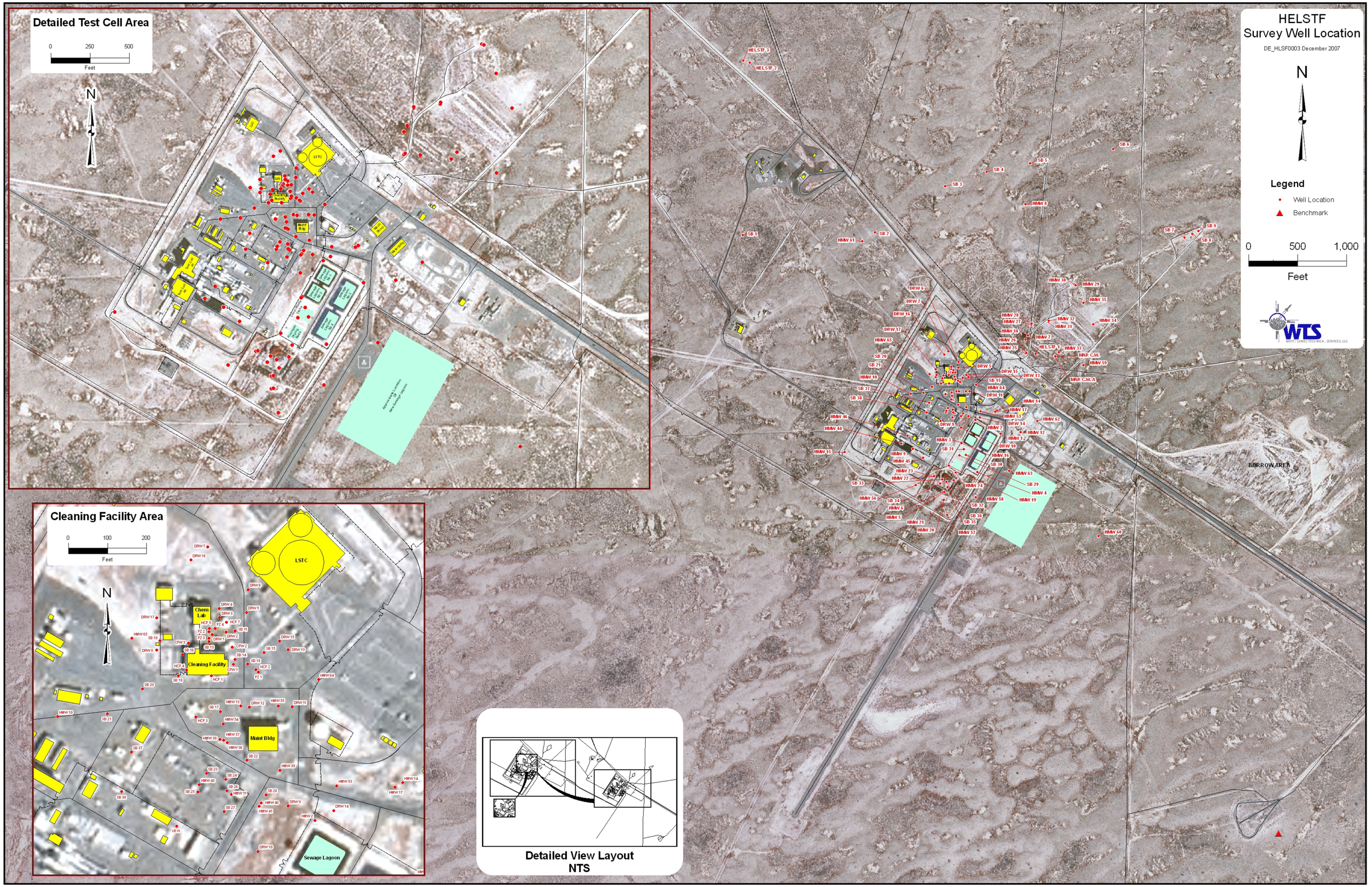
USAEHA, 1990. Ground-Water Quality Survey No. 38-26-0368-90, High Energy Laser Systems Test Facility, White Sands Missile Range, New Mexico, 23-27 July 1990. September 1990.

U.S. Army, 1975a. *Environmental Impact Assessment, High Energy Laser System Test Facility.* WSMR (New Mexico): WSMR.

U. S. Army Corps of Engineers (USACE), 1989. *Environmental Assessment of the High Energy Laser Systems Test Facility (HELSTF) at White Sands Missile Range, New Mexico.* Ft. Worth (Texas): USACE.

WSMR, 1998. *White Sands Missile Range, Range-Wide Environmental Impact Statement.* WSMR (New Mexico)

WTS, 2007. *Revised Phase III RFI Work Plan – HELSTF Sites [Construction Landfill (SWMUs 38 and 39) – IRP ID WSMR-52; Chromate Spill Site (SWMU 143) – WSMR-54; Systemic Diesel Spill (SWMU 154) – WSMR-55; and HELSTF Groundwater – WSMR-85].*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Cleaning Facility
Maint Bldg
Sewage Lagoon
BORROW AREA
Detailed View Layout
NTS

Table A-1. HELSTF SWMU Summary Table.

SWMU Designation	IRP ID	SWMU Name	Status	Site Description
23-24	NA	Old Hazardous Waste Tanks Old Hazardous Waste Tanks	Omitted from HSWA Permit. Site remains on Table A.2 of the Annual Unit Audit indicating No Further Action required. Omitted from HSWA Permit. Site remains on Table A.2 of the Annual Unit Audit indicating No Further Action required.	Two tanks were used for accumulation of hazardous waste generated in the cleaning facility (Bldg 26131) between 1981 and 1985. The tanks were fiberglass-lined metal containers. The waste was periodically emptied and transferred to the NASA Lagoons located on the west side of the San Andres Mountains, north of Organ. In March 1984 permission was granted to dispose of the waste in the evaporation tank (SWMU-90) at the WSMR Hazardous Waste Disposal Facility (Ferrari, 1984). SWMU 23 was a 5,000-gallon above ground storage tank. SWMU 24 was a 2,100-gallon above ground storage tank set on a concrete pad (Davies, 1983). Both were located on the eastern side of the Cleaning Facility Building (Figure 6-1 and Photograph 6-1). The 5,000-gallon tank was later used for storage of cleaning reagents until approximately 1989. The tanks were eventually moved to the surplus material storage area as reported in the July 1990 Ground-Water Quality Survey.
25	NA	Waste Accumulation Area	Omitted from HSWA Permit. Site remains on Table A.2 of the Annual Unit Audit indicating No Further Action required.	A fenced area measuring 50 feet X 100 feet is located northwest of the cleaning facility and was used for storage of spent degreasing solvents in 55-gallon drums. The area is located on a paved surface (asphalt) and drums were stored on pallets. Wastes were reportedly stored for less than 90 days. Operation of the site began in 1984 and was still operational during the 1988 RFA and 1990 Ground-Water Quality Survey. During 2001 and 2002 the area was used as a sorting yard for wastes awaiting analysis and a storage area for non-hazardous wastes. After reviewing aerial photographs and visiting the site, it appears that the area extends to the south edge of the cleaning facility.
26	NA	Vapor Recovery Unit	Site listed in Table A.1 of the Annual Unit Audit. Need to move to NFA list, Table A.2. RFI to continue as part of \diesel fuel leak, SWMU 154.	The vapor recovery unit was located on the south side of the Cleaning Facility (Building 26131). The unit was constructed of plate metal, fiberglass and plexiglass. Vapors, including sodium hydroxide, phosphoric acid, methyl ethyl ketone and isopropyl alcohol, from cleaning baths were scrubbed by water in the recovery unit. The water was sent to the chemical waste tanks (SWMUs 31-32) and the air was vented to the atmosphere. The system was in operation from 1984 until 1998 when it was replaced with a similar unit that is still in operation.
27-30	WSMR-44 now CCWS-79	Sanitary Treatment System	Active site. Final RFI report and ecological risk assessment is required.	The sanitary treatment system initially consisted of an unlined sewage lagoon built with an earthen berm in 1962. The site is currently referred to as the MAR Waste Stabilization Pond SWMU 148). The stabilization pond[1] was replaced by a polyethylene lined, two cell, total evaporation lagoon in 1981 (Photograph 6-5). It was constructed of an earthen berm and had a total operating volume of approximately 1.3 million gallons. They are now referred to as SWMUs 27 and 28. The two additional sewage lagoons became operational in 1984 (Photograph 6-6). They are now known as SWMUs 29 and 30. The waste water is aerated by subsurface injection aeration pumps and sequentially treated in each of the four Hypalon-lined lagoons (A.T. Kearney, Inc., 1988). The liquid is spray aerated in the last lagoon (SWMU 30). NMED issued a discharge permit (DP-297) on October 31, 1983. The discharge permit was renewed on July 31, 1987. Since then, the discharge permit has not been renewed due to the Army's assertion that Sovereign Immunity applies in this instance.

SWMU Designation	IRP ID	SWMU Name	Status	Site Description
31-32	WSMR-43	Chemical Waste Tank	RCRA closure will be coordinated with the RFI process at the cleaning facility, SWMU 142.	The cleaning facility was originally constructed in 1982 with a single walled drain line for transferring waste from a sump (SWMU 142) to a 2,100 gallon tank (SWMU 24) on the outside of the building. After the facility began operations in 1983 it quickly became apparent that the tank volume would be inadequate for handling the volume of waste produced. The facility decided to construct a hazardous waste treatment tank system similar to that used at the NASA White Sands Test Facility. The chemical waste tanks would be used for containment and evaporative treatment of chromated de-ionized water and hazardous waste generated at the HELSTF Cleaning Facility. The design included a double walled drain line (1,000 feet in length) to carry the wastewater from the Cleaning Facility sump to the chemical waste tanks. The drain line consisted of a 3-inch diameter reinforced thermosetting resin (RTRP) service pipe encased by a 6-inch diameter RTRP secondary containment pipe. Construction was completed in April 1985 and included identical side-by-side tanks located near the sanitary treatment system lagoons. The tanks were above grade and were constructed of reinforced concrete. Each had an industrial grade 45 mil Hypalon liner with a leak detection system and was covered by a 6-inch layer of ballast sand. The tanks were decontaminated and demolished in February 1992 according to an approved closure plan (ASI, 1992). During demolition of the tank it was discovered that the Hypalon liner had been compromised. Review of the project file has not yielded any documentation indicating the condition of the underlying soils beneath the concrete structure.
33-34	WSMR-49	Fluorspar Tank	Site placed in Table A.2 of the Annual Unit Audit for no further action. HRMB determined tanks require a RCRA Operating Permit.	The fluorspar (CaF_2) tanks constructed in 1984 consist of two 30 by 60 foot concrete tanks that extend 2 to 4 feet below grade. The tanks served as drying beds for fluorspar sludge that was generated by an emission control scrubber at the Pressure Recovery System (AOC-V). The sludge is transported to the drying beds thru a 4-inch polyvinyl chloride (PVC) pipe. The dried sludge was periodically collected and hauled off site for disposal.
35-36	WSMR-50	Ethylene Glycol Tanks	Omitted from HSWA Permit. Site remains on Table A.2 of the Annual Unit Audit. No Further Action required.	The ethylene glycol tanks were portable units constructed of steel and less than 500 gallons in capacity. During the visual site inspection for the 1988 RFA, one of the tanks was located west of the chemical waste tanks (SWMUs 31 and 32) while the other was south of the sanitary treatment system (SWMU 30). The tanks were filled when the compressor system at HELSTF developed a problem and ethylene glycol had to be removed. This reportedly only happened once. The tanks were disposed of in 1989 thru the Holloman Air Force Defense Reutilization Marketing Organization (DRMO).
37	NA	Waste Oil Accumulation Area at Bldg. 26121	Omitted from HSWA Permit. Site remains on Table A.2 of the Annual Unit Audit. No Further Action required.	The waste oil accumulation area was located in Building 26121. Waste oil was collected from HELSTF vehicles and equipment and placed in 55-gallon drums. The drums were stored on a concrete pad under a roof. The drums were periodically picked up and transferred to the WSMR Main Post waste oil tank (SWMU 8).
38-39	WSMR-52 now CCWS-75	Construction Landfill	NMED requiring closure and post-closure care activities. Final RFI and ecological risk assessment is required.	The Construction Landfills are located east of the LSTC building in a flat grassland area. There were three separate locations at HELSTF suspected to have received solid waste. Types of wastes reportedly buried in the landfill include wood, piping material, paper, and insulation. The 1988 RFA by A.T. Kearney, Inc. suggests that excavated soil from a June 12, 1986 release of chromated water at Test Cell 1 was deposited in the construction landfills. The release was described in greater detail in the description of the sanitary treatment system (SWMUs 27 thru 30).
141	WSMR-83	Equipment Storage Area	Unit removed from Annual Unit Audit Fee assessment No Further Action required.	The equipment storage area (aka Boneyard) was established during construction of the existing HELSTF facilities in 1982. Previous to that time, it was the location of the MAR waste stabilization Pond (SWMU 148). The photo history shows that the waste pond had been graded over by 1982 but had not yet been established as the boneyard. As early as 1986, photographic evidence shows that it had been fenced in and was being used for storage. It is currently used to store spare hardware and materials employed in the HELSTF facility operations. According to the 1990 Ground-Water Quality Survey, it previously stored drums of chemicals, scrubber liquors and waste oils for limited periods of time. The area is a flat, fenced yard approximately 1.2 acres in size. It was paved in 1990. In December 1989, during excavation of the storage yard in preparation for paving, a previously unknown spill of Entec 300 was discovered in the east corner of the yard (Hayslett, 1990a). This location is now identified as the Chromate Spill Site (SWMU 143).

SWMU Designation	IRP ID	SWMU Name	Status	Site Description
142	WSMR-48 now CCWS-05	Cleaning Facility Sump	Under the WSMR monitoring well program. Further investigations and ecological risk assessment required.	The construction of the structural portion of the HELSTF Cleaning Facility (HCF) was completed in 1982. Plumbing, wiring and other internal construction activities were completed in March 1983. A 28,000 cubic foot per minute fume scrubber system (SWMU 26) was installed for quality control and hygiene reasons. Testing of the scrubber system began in April 1983 and full scale operations at the HCF commenced in June 1983. HELSTF became fully operational in the fall of 1985. The HCF is charged with washing and cleaning valves, pipes and equipment for laser and support related operations. The facility consists of a gross cleaning room (or pre-clean room), final cleaning room, packaging room and storage shelters in a fenced storage yard. The spent solvents and cleaning solutions used at the facility were dumped from the vats to an open trench which drained into a holding sump. Originally, the sump pumped the material into a 2,100 gallon hazardous waste tank (SWMUs 23) on the outside of the building. Construction of new tanks was completed in April 1985. During the interim, a 5,000 gallon storage tank (SWMU 24) was used for storage of hazardous waste in addition to the 2,100 gallon tank. The tanks were periodically emptied and the waste transported in either a 1,200 or 1,600 gallon tank truck to the NASA White Sands Test Facility (WSTF) for treatment and disposal. In addition to the cleaning solutions and solvents, scrubber water from the vapor recovery unit (SWMU 26) was emptied into the sump when requiring a change-out.
143	WSMR-54	Chromate Spill Site	Under the WSMR monitoring well program. Further investigations and ecological risk assessment required.	The chromate spill is located in the east corner of the equipment storage area (Photograph 6-26 and 6-27). The area is a flat, fenced yard approximately 1.2 acre in size. It was paved in 1990. The spill was discovered in December 1989 when the storage yard was being excavated in preparation for paving. The yard has since been identified as SWMU 141. The spill was most likely the result of mishandling operations which resulted in the spill of approximately 55-gallons of Entec 300 (corrosion inhibitor containing hexavalent chromium and zinc) about 1982 or 1983. An insitu Gaseous Reduction demonstration project was completed at the site in 1998 to convert hexavalent chromium to trivalent chromium. The demonstration reportedly reduced as much as 70 percent of the hexavalent chromium to trivalent chromium in the upper 30 feet of soils.
144	WSMR-47 now CCWS-02	LSTC Wastewater Discharge Point	Annual Unit Audits continue to list SWMU as requiring corrective action. Final RFI report and ecological risk assessment required. Background soil study required to rule out arsenic as contaminant.	The LSTC Wastewater Discharge Point (also referred to as the Oryx Pit) is a rock-filled irregularly shaped pit surrounded by thick brush. It had been used since the 1960's for accepting discharge from the Laser System Test Center (LSTC) building (formerly the MAR building). As part of the original construction, a sump and discharge pump were installed in the basement of Bldg. 26129 to collect and eject chiller coil condensate, water drained periodically from the building fire sprinkler system, and blowdown from the cooling tower water treatment system. The water from the sump was pumped to a french drain located outside the HELSTF fence several hundred yards from the building. Because of the soil characteristics in the area of the french drain, the discharged water dissolved the gypsiferous soil sufficiently to cause subsidence of the original drain, which resulted in fracturing of the drain pipe just upstream of the french drain. As a result of the water discharge through the fractured pipe the hole was created and became a hazard to personnel and wildlife.
145	WSMR-53	Test Cell 4 Lagoon	Annual Unit Audits continue to list SWMU as requiring corrective action. Final RFI report and ecological risk assessment required.	The test cell 4 lagoon was constructed in 1988. The lagoon was used once in 1989 to treat 30,000 gallons of sodium fluoride wastewater. It had a single 6-mil hypalon liner with no secondary containment. The liner integrity appeared to be compromised when the water level dropped two feet in less than 3 days after the wastewater entered the lagoon.
146	WSMR-45 now CCWS-03	Dry Pond	Annual Unit Audits continue to list SWMU as requiring corrective action. Final RFI report and ecological risk assessment required. Background soil study required to rule out arsenic as contaminant.	The Dry Pond is a 120 by 120 by 7 foot deep, unlined surface impoundment constructed about 1981. The pond reportedly received non-sewage wastewater from the Test Cell 2 Mechanical Building (26115) and overflow from treated wastewater from the sewage lagoons (SWMU 27 thru 30). The pond continues to receive water thru the discharge pipe (presumably from building 26115). The ongoing discharge has dissolved the underlying gypsum soils creating a cavity that readily takes in the effluent. The discharge point is surrounded by thick brush. As a result the pond does not contain any of the effluent, thus giving it the name "Dry Pond".
147	WSMR-78	Decontamination Pad	Annual Unit Audits continue to list SWMU requiring corrective	The decontamination pad was constructed in 1982 and had a sump measuring 3 ft by 5 ft by 6.5 ft

SWMU Designation	IRP ID	SWMU Name	Status	Site Description
		Underground Tank	action. Further investigations required by the NMED.	(deep), with an open top, grate and steel cover. The 1990 RFA and Phase I RFI reports indicated that the pad emptied into an underground tank from a drain in the bottom of the pad. The size, construction and exact location of the underground tank were not provided. Later it was determined from construction drawings that the pad emptied into the adjacent sump (which may have been referred to as a tank in the RFA) and that it was connected to an above ground tank (SEI, 1994). The pad was used for cleaning large pieces of equipment that could not be cleaned in the HELSTF Cleaning Facility (SWMU 142). Accumulated wastewater was periodically removed from the tank and disposed. The sump was filled with concrete in April 1996 to prevent its continued use.
148	WSMR-83	MAR Waste Stabilization Pond	Annual Unit Audits continue to list SWMU requiring corrective action. Final RFI report and ecological risk assessment required.	The MAR waste stabilization pond received the wastewater generated by the former MAR facilities. It was constructed in 1962 and consisted of an unlined pond with an earthen berm. The pond measured 110 feet by 130 feet and 7 feet deep. It was backfilled and graded during the construction of the existing HELSTF facilities in 1981. The area was paved with asphalt in 1990 and currently houses the equipment storage area (SWMU 141). Potential contaminants associated with SWMU 148 include those associated with sanitary sewage and industrial wastewater.
149,151, and 152	WSMR-46	Maintenance Bldg. Septic System Trailer Area Septic System Property and Supply Bldg. Septic Sys.	Active site. Unit listed in Table A.2 of the Annual Unit Audits requiring no further action. No corrective action required by the NMED.	There are three septic systems in use at the main HELSTF complex. They include the systems that serve the maintenance building, the trailer area and property and supply building. The maintenance building septic system (SWMU 149) has been in use since the 1960s and consists of a 200 gallon septic tank and a drainage field measuring approximately 30 ft by 70 ft. There are two subsurface 4-inch drainage lines measuring 30 feet in length. The septic systems for the trailer area (SWMU 151) and property and supply building (SWMU 152) are plumbed together. The trailer area system serviced the office trailers that used to occupy the location. Since the trailers were removed, the property and supply building has been the only facility to utilize either system. Both systems were constructed in the early 1980s and have a drain field measuring approximately 40 ft by 110 ft.
150	NA	MAR Dump Site	Annual Unit Audits continue to list SWMU requiring corrective action. Final RFI report and ecological risk assessment required.	There is very little information regarding the MAR Dump Site. When discovered, it was an open trench approximately 225 ft by 35 ft by 8 ft deep. A spoil pile about 40 feet from the trench is believed to be the soils excavated during the trench construction. It is presumed that the trench was used as a landfill in the 1960s and early 1970s during the operation of the MAR facility. The materials in the trench have been recovered and the hole backfilled.
154	WSMR-55	Systemic Diesel Spill	Under the WSMR monitoring well program. Further investigations and ecological risk assessment required.	A 30,000 gallon underground storage tank (UST) was installed at the staging area on the east side of Test Cell #2 in late 1979 or early 1980. Two inch fuel oil supply steel piping connected it to the Test Cell #2 area (approximately 120 ft to the south) and to the Cleaning Facility (approximately 360 ft to the east-northeast). The lines shared a similar route and were buried concurrently with water mains, communication cables, high voltage electrical lines, and high-pressure gas piping. The tank supplied No. 2 fuel oil to a gas turbine generator at Test Cell No. 2 and boilers at the Cleaning Facility. The UST was removed in April 1988 as part of a facility wide tank replacement program when above ground storage of fuel became the preferred material handling practice. There is no additional information available regarding the condition of the tank or surrounding soils. A release of diesel fuel from the supply line for the cleaning facility boilers was discovered in 1990 during an investigation of the Cleaning Facility Sump (SWMU 142). The release was attributed to aggressive alkaline soils corroding the steel pipe. The original estimate of the product loss provided to the EPA by WSMR was 175,000 gallons. Later estimates revised this figure down to 100,000 gallons. A Diesel Recovery System was constructed between November 1994 and January 1995 in accordance with an IRM work plan. The system is composed of a network of eleven skimming wells. As of October 2003, approximately 4,615 gallons of diesel have been recovered with the pumping system. Due to a marked decline in product recovery, the system is no longer in operation.

SWMU Designation	IRP ID	SWMU Name	Status	Site Description
AOC - WSMR 85	WSMR-85	HELSTF Groundwater Study	Site wide RFI and ecological risk assessment to be conducted.	WSMR-85 was established through the Installation Restoration Program (IRP) to enable funding of a comprehensive groundwater study of all contaminant releases at HELSTF. The need became evident following the submittal of the Phase II RFI Report when the NMED requested an evaluation of HELSTF as a whole rather than solely as individual SWMUs. Monitoring wells used to measure background concentrations of contaminants are included here since they are not associated with any specific SWMU.
AOC – N	NA	Process Spills at HELSTF	Remains listed as non-billable corrective action unit in the Annual Unit Audits.	On June 12, 1986, an operator error reportedly lead to the release of approximately 1,750 gallons of cooling water containing hexavalent chromium. All soil having chromium content greater than 5 ppm chromium was supposedly removed, drummed, and shipped off-site by DRMO. Documentation on the extent of clean-up required is not available. According to the spill report, some chromate contaminated soil was placed in the HELSTF Landfill (SWMUs 38-39). Another spill reportedly occurred on an unknown date, probably in July 1986. The spill was chromate-containing liquid from a leaking drum. Approximately 30 gallons were spilled. No further information is available regarding clean-up activities (A.T. Kearney, Inc., 1988).
AOC – Q	NA	Lab Drains	Listed in Table A.1 of the Annual Unit Audit requiring corrective action. Remains listed as non-billable corrective action unit	The HELSTF lab is located north of Building S26131 [Cleaning Faclity] performs various chemical analyses to support the HELSTF missions. It was reported that minor amounts of lab chemicals were flushed down the lab drains. It is believed the drains are connected by piping to the Chemical Waste Tanks (SWMU Nos. 31-32). Prior to the construction of the chemical waste tanks the drains were either connected to the sanitary treatment ponds or the effluent was collected and transferred to the ponds (A.T. Kearney, Inc., 1988).
AOC – V	NA	Pressure Recovery System	Removed from the HSWA operating permit. Site remains on Table A.2 of the Annual Unit Audit indicating no further action.	The pressure recovery system removes fluoride-containing compounds from the gases generated by the deuterium fluoride chemical laser. The effluent gases pass through a scrubber device. The device contains plastic saddles. As the gases pass through the scrubber, a countercurrent of dilute aqueous sodium hydroxide neutralizes the hydrogen fluoride. The removal efficiency for hydrogen fluoride is reported to be approximately 80 to 90%. The scrubber fluids are then treated with calcium hydroxide to produce fluorspar (CaF_2). The fluorspar is dried in the fluorspar tanks (SWMU Nos. 33-34).

APPENDIX B

Investigation Data

Table B-1. Well Inforamtion.

Well Name	Correction	UTM Northing Brass Cap	UTM Easting Brass Cap	Elevation feet Brass Cap	Elevation feet TOC	Stickup	DTW TOC 12/2006	Water Table Elevation	Top of Screen TOC	Bottom of Screen TOC	Well TD As Measured TOC	Aquifer	Well Name
CFW-01*	HCF-06	3,611,404.3210	375,081.6810	3,956.7648	3,958.9369	2.1721	46.6	3,912.34	37.1721	57.1721	62.5	LP	CFW-1
CFW-02	HCF-09	3,611,417.8430	375,080.8720	3,956.6329	3,959.0296	2.3967	47.37	3,911.66	36.8967	56.8967	62.21	LP	CFW-2
CFW-03*	HCF-08	3,611,420.9400	375,046.8520	3,957.2038	3,959.4529	2.2491	47.16	3,912.29	36.2491	46.2491	51.8	LP	CFW-3
CFW-04*	HCF-04	3,611,399.9430	375,045.0940	3,957.1329	3,959.7908	2.6579	46.79	3,913.00	37.6579	57.6579	59.98	LP	CFW-4
DRW-01*		3,611,427.6060	375,065.1690	3,956.8043	3,958.2900	1.4857	43.4	3,914.89	36.4857	56.4857	59.91	LP	DRW-1
DRW-02*		3,611,429.5520	375,076.1050	3,956.4998	3,957.9160	1.4162	47.37	3,910.55	36.4162	56.4162	60.45	LP	DRW-2
DRW-03*		3,611,440.8280	375,070.9920	3,956.9027	3,958.4038	1.5011	45.27	3,913.13	36.5011	56.5011	61.6	LP	DRW-3
DRW-04*		3,611,447.8090	375,070.6760	3,956.8052	3,958.2790	1.4738	43.06	3,915.22	36.4738	56.4738	61.05	LP	DRW-4
DRW-05		3,611,444.8580	375,091.8200	3,955.6097	3,957.2735	1.6638	43.84	3,913.43	36.6638	56.6638	61.21	LP	DRW-5
DRW-06		3,611,462.5660	375,093.0480	3,956.3382	3,958.2074	1.8692	45.42	3,912.79	36.8692	56.8692	61.55	LP	DRW-6
DRW-07		3,611,495.7700	375,061.7490	3,955.9653	3,958.1117	2.1464	46.88	3,911.23	37.1464	57.1464	62.55	LP	DRW-7
DRW-08		3,611,415.4580	375,022.1140	3,956.3707	3,958.3550	1.9843	44.91	3,913.45	36.9843	56.9843	63.07	LP	DRW-8
DRW-09		3,611,294.1730	375,124.2450	3,953.2410	3,955.2509	2.0099	35.02	3,920.23	37.0099	57.0099	62.91	LP	DRW-9
DRW-10		3,611,258.7750	375,100.7270	3,953.6533	3,955.8971	2.2438	39.51	3,916.39	37.2438	57.2438	62.97	LP	DRW-10
DRW-11		3,611,371.2850	375,127.3460	3,956.5687	3,958.1031	1.5344	43.45	3,914.65	36.5344	56.5344	62.43	LP	DRW-11
DRW-12		3,611,371.0430	375,094.1780	3,956.5165	3,958.0549	1.5384	44.41	3,913.64	36.5384	56.5384	62.21	LP	DRW-12
DRW-13		3,611,415.7700	375,124.2750	3,954.8828	3,956.9997	2.1169	43.3	3,913.70	37.1169	57.1169	63.2	LP	DRW-13
DRW-14		3,611,290.5140	375,159.7160	3,953.1071	3,955.3979	2.2908	71.57	3,883.83	67.2908	87.2908	91.99	R	DRW-14
DRW-15		3,611,422.5100	375,117.5450	3,955.4272	3,957.1660	1.7388	72.16	3,885.01	66.7388	86.7388	92.67	R	DRW-15
DRW-16		3,611,485.6120	375,048.6040	3,955.3580	3,957.7339	2.3759	72.45	3,885.28	67.3759	87.3759	92.81	R	DRW-16
DRW-17		3,611,440.6470	375,021.9500	3,955.6877	3,957.8788	2.1911	72.29	3,885.59	67.1911	87.1911	92.91	R	DRW-17
HCF-01*		3,611,395.5590	375,064.5060	3,957.0333	3,959.4851	2.4518	46.04	3,913.45	42.4518	62.4518	64.52	LP	HCF-1
HCF-02		3,611,400.3560	375,099.1110	3,956.1855	3,956.8933	0.7078	35.62	3,921.27	25.7078	50.7078	58.77	LP	HCF-2
HCF-03*		3,611,363.2960	375,052.4610	3,955.8354	3,957.1240	1.2886	38.8	3,918.32	31.2886	56.2886	58.1	LP	HCF-3
HELSTF-01		3,611,488.5650	375,333.7010	N/A	3,953.5301	unk	69.75	3,883.78	70	90	102.15	R	HELSTF-1
HELSTF-02		3,612,394.2640	374,442.9160	N/A	3,952.6705	unk	unk	unk	80	500	520	R	HELSTF-2
HELSTF-03		3,612,400.9530	374,422.6880	N/A	3,952.6675	unk	unk	unk	80	500	520	R	HELSTF-3
HMW-01		3,611,239.5110	375,223.8210	3,953.2701	3,954.4509	1.1808	17.88	3,936.57	11.1808	21.1808	23.23	UP	HMW-1
HMW-02		3,611,282.9570	375,145.3380	3,954.7787	3,955.7898	1.0111	13.36	3,942.43	10.0111	20.0111	21.41	UP	HMW-2
HMW-03		3,611,212.4770	375,103.9310	3,954.9501	3,956.0408	1.0907	13.74	3,942.30	11.0907	21.0907	22.5	UP	HMW-3
HMW-04		3,611,119.7580	375,151.8850	3,954.3020	3,955.4444	1.1424	21.47	3,933.97	13.1424	23.1424	24.59	UP	HMW-4
HMW-05		3,611,058.5530	375,048.7220	3,954.2620	3,955.6187	1.3567	Dry	Dry	17.3567	27.3567	unk	UP	HMW-5
HMW-07		3,611,533.0090	375,302.0910	3,952.8486	3,954.1364	1.2878	39.88	3,914.26	21.2878	46.2878	48.84	LP	HMW-7
HMW-08		3,611,953.7330	375,301.5870	3,957.9749	3,959.7569	1.782	75.79	3,883.97	76.982	101.982	99.75	R	HMW-8
HMW-09		3,611,192.2780	374,951.1760	3,958.1638	3,959.3581	1.1943	43.75	3,915.61	34.1943	59.1943	61.78	LP	HMW-9
HMW-10		3,611,363.7110	374,944.8320	3,959.6991	3,959.5271	-0.172	43.15	3,916.38	33.828	48.828	50.91	LP	HMW-10
HMW-11		3,611,303.2780	375,080.2270	3,955.7666	3,957.5079	1.7413	45.28	3,912.23	48.7413	63.7413	65.92	LP	HMW-11
HMW-12		3,611,244.1940	375,286.2610	3,952.9842	3,954.4581	1.4739	32.61	3,921.85	38.9739	43.9739	46.67	LP	HMW-12
HMW-13		3,611,372.0030	375,087.4170	3,956.6147	3,957.9005	1.2858	43.62	3,914.28	33.2858	43.2858	49.09	LP	HMW-13
HMW-14		3,611,312.2630	375,213.4770	3,953.0644	3,954.5533	1.4889	29.24	3,925.31	40.4889	45.4889	50.83	LP	HMW-14
HMW-15		3,611,182.8890	374,739.8010	3,958.5924	3,959.9575	1.3651	49.82	3,910.14	49.3651	64.3651	64.4	LP	HMW-15
HMW-16*		3,611,210.1220	375,102.5050	3,955.0219	3,956.1840	1.1621	71.81	3,884.37	72.1621	77.1621	81.75	R	HMW-16
HMW-17		3,611,308.7260	375,207.5410	3,952.7790	3,954.3793	1.6003	17.8	3,936.58	21.6003	26.6003	29.91	UP	HMW-17
HMW-19*		3,611,141.0360	375,062.8110	3,954.8539	3,956.1239	1.27	21.09	3,935.03	11.27	21.27	23.01	UP	HMW-19
HMW-20		3,611,034.4810	375,048.2640	3,954.5135	3,957.0090	2.4955	Dry	Dry	21.9955	36.9955	unk	UP	HMW-20
HMW-21		3,611,033.7720	375,044.5460	3,954.9163	3,957.5089	2.5926	44.71	3,912.80	51.5926	61.5926	61.95	LP	HMW-21
HMW-22		3,611,107.2850	375,017.7970	3,954.0322	3,956.2998	2.2676	Dry	Dry	11.2676	26.2676	unk	UP	HMW-22

Table B-1. Well Inforamtion.

Well Name	Correction	UTM Northing Brass Cap	UTM Easting Brass Cap	Elevation feet Brass Cap	Elevation feet TOC	Stickup	DTW TOC 12/2006	Water Table Elevation	Top of Screen TOC	Bottom of Screen TOC	Well TD As Measured TOC	Aquifer	Well Name
HMW-23		3,611,106.6440	375,014.5440	3,954.1272	3,956.6700	2.5428	39.35	3,917.32	38.5428	48.5428	48.3	LP	HMW-23
HMW-24		3,611,118.4160	375,084.6530	3,953.9302	3,956.3492	2.419	21.6	3,934.75	28.419	38.419	40.81	UP	HMW-24
HMW-25		3,611,488.7860	375,302.2650	3,953.2962	3,955.6413	2.3451	Dry	Dry	11.8451	21.8451	22.36	UP	HMW-25
HMW-26		3,611,491.0600	375,304.3860	3,953.3501	3,955.9782	2.6281	40.64	3,915.34	40.6281	50.6281	51.2	LP	HMW-26
HMW-27		3,611,579.0980	375,321.1400	3,952.6150	3,955.1950	2.58	Dry	Dry	12.08	22.08	22.24	UP	HMW-27
HMW-28*		3,611,582.1870	375,321.0440	3,952.8218	3,955.3318	2.51	43.94	3,911.39	35.01	50.01	46.87	LP	HMW-28
HMW-29		3,611,702.1750	375,457.7950	3,955.0862	3,957.5162	2.43	73.71	3,883.81	70.43	80.43	80.8	R	HMW-29
HMW-30		3,611,704.0260	375,453.7080	3,954.9395	3,957.4595	2.52	74.67	3,882.79	94.52	109.52	109.23	R	HMW-30
HMW-31		3,611,587.6110	375,373.1290	3,955.1306	3,957.5006	2.37	44.42	3,913.08	37.37	52.37	52.71	LP	HMW-31
HMW-32		3,611,590.7100	375,373.8010	3,954.9901	3,957.4401	2.45	73.63	3,883.81	76.45	91.45	92.33	R	HMW-32
HMW-33		3,611,493.9110	375,405.5340	3,953.0388	3,955.3788	2.34	42.34	3,913.04	37.34	52.34	53.01	LP	HMW-33
HMW-34		3,611,579.4910	375,512.2990	3,955.4449	3,957.6249	2.18	75.08	3,882.54	77.18	92.18	92.77	R	HMW-34
HMW-35		3,611,646.7200	375,481.7210	3,954.9328	3,957.3528	2.42	73.57	3,883.78	65.92	85.92	87	R	HMW-35
HMW-36		3,611,343.4090	375,077.0000	3,955.3324	3,957.7877	2.4553	19.38	3,938.41	13.4553	23.4553	24	UP	HMW-36
HMW-37		3,611,345.3830	375,074.2690	3,955.6467	3,958.1305	2.4838	37.92	3,920.21	29.4838	44.4838	45.31	LP	HMW-37
HMW-38		3,611,346.1080	375,071.2610	3,955.9713	3,958.3749	2.4036	44.65	3,913.72	54.4036	64.4036	63.88	LP	HMW-38
HMW-39		3,611,321.9990	375,117.8120	3,954.7954	3,957.4253	2.6299	44.54	3,912.89	54.6299	64.6299	65.02	LP	HMW-39
HMW-40		3,611,293.8460	375,101.7400	3,953.4649	3,955.7356	2.2707	19.11	3,936.63	30.2707	40.2707	40.95	UP	HMW-40
HMW-41		3,611,296.4350	375,103.3870	3,953.4451	3,955.7590	2.3139	42.91	3,912.85	51.3139	61.3139	61.47	LP	HMW-41
HMW-43		3,611,310.7020	375,055.1330	3,956.4230	3,959.0501	2.6271	41.65	3,917.40	55.1271	65.1271	65.67	LP	HMW-43
HMW-44		3,611,208.6010	374,915.0700	3,958.1515	3,960.5473	2.3958	Dry	Dry	29.3958	44.3958	44.97	LP	HMW-44
HMW-45		3,611,164.3100	374,982.5890	3,956.3122	3,958.6596	2.3474	41.73	3,916.93	39.3474	49.3474	50.21	LP	HMW-45
HMW-53		3,611,309.9480	375,162.1310	3,954.1207	3,956.4577	2.337	24.8	3,931.66	32.337	42.337	47.86	LP	HMW-53
HMW-54		3,611,358.2010	375,073.8130	3,956.2630	3,958.8847	2.6217	73.69	3,885.19	71.6217	81.6217	86.3	R	HMW-54
HMW-55		3,611,372.0550	375,116.5080	3,956.1603	3,959.1356	2.9753	74.09	3,885.05	71.9753	81.9753	87.02	R	HMW-55
HMW-56		3,611,079.2050	374,960.5660	3,955.5449	3,958.5248	2.9799	76.62	3,881.90	71.4799	81.4799	87.05	R	HMW-56
HMW-57		3,610,986.6270	375,057.6510	3,953.9477	3,956.8483	2.9006	75.61	3,881.24	71.9006	81.9006	87.73	R	HMW-57
HMW-58		3,611,040.9230	375,146.9760	3,954.0271	3,956.8940	2.8669	75.88	3,881.01	71.8669	81.8669	87.89	R	HMW-58
HMW-59		3,611,453.0100	375,482.3240	3,953.9692	3,957.4392	3.47	74.88	3,882.56	71.47	81.47	87.73	R	HMW-59
HMW-60		3,610,920.6560	375,528.4820	3,956.2722	3,959.3486	3.0764	78.4	3,880.95	71.0764	81.0764	87.35	R	HMW-60
HMW-61		3,611,838.8810	374,793.6110	3,956.2247	3,958.8770	2.6523	69.11	3,889.77	70.6523	80.6523	87	R	HMW-61
HMW-62		3,611,279.4040	375,337.9460	3,955.6858	3,958.6552	2.9694	76.81	3,881.85	71.4694	81.4694	82.71	R	HMW-62
HMW-63		3,611,123.4520	375,251.5010	3,952.9344	3,955.7784	2.844	74.21	3,881.57	70.844	80.844	86.65	R	HMW-63
HMW-64		3,611,392.5030	375,147.9870	3,954.3105	3,957.1852	2.8747	72.28	3,884.91	70.8747	80.8747	87.06	R	HMW-64
HMW-65		3,611,424.7640	375,002.8280	3,956.3147	3,959.3794	3.0647	73.82	3,885.56	68.0647	78.0647	82.69	R	HMW-65

Survey Data from the Phase III RFI (2006-2007)

* DTW data from 9/2006. Well was dry after development in 12/2006 or data was not collected in 12/2006.

AQUIIFER DESIGNATIONS:

UP	Upper Perched
LP	Lower perched
R	Regional

Table B-2. HELSTF Soil Boring Locations

Soil Boring	UTM Northing	UTM Easting	Elevation
1	3,611,858.0940	374,421.4550	3,950.1796
2	3,611,866.2830	374,833.1040	3,958.6117
3	3,612,009.8170	375,051.6760	3,963.9829
4	3,612,054.9630	375,180.9870	3,963.0532
5	3,612,080.9790	375,315.8490	3,959.3655
6	3,612,126.3360	375,574.4820	3,958.3577
7	3,611,850.8460	375,796.4440	3,957.6483
8	3,611,861.7990	375,820.7920	3,957.3001
9	3,611,870.3230	375,840.1430	3,956.8857
10	3,611,422.7740	375,024.4780	3,955.3132
11	3,611,430.5560	375,082.9030	3,955.6090
13	3,611,422.0630	375,062.5250	3,956.5852
14	3,611,408.2880	375,082.9880	3,955.8176
15	3,611,413.5560	375,105.6890	3,954.5825
16	3,611,412.1120	375,042.1650	3,956.8358
17	3,611,367.6880	375,071.6290	3,956.2630
18	3,611,404.8810	375,092.7170	3,955.0009
19	3,611,395.4350	375,038.7980	3,956.3289
20	3,611,385.2770	375,011.0860	3,957.8788
21	3,611,365.9240	374,983.7570	3,958.6270
22	3,611,329.6580	375,092.2530	3,955.1260
23	3,611,319.4980	375,060.7030	3,955.7318
24	3,611,314.7840	375,075.7250	3,955.6363
25	3,611,305.1050	375,053.9520	3,955.9380
26	3,611,305.8540	375,076.6050	3,955.5287
27	3,611,289.8160	375,074.3050	3,955.5524
28	3,611,302.6970	375,107.0800	3,953.5719
29	3,611,171.6910	375,096.1390	3,951.2473
30	3,611,173.3470	375,116.9100	3,950.8362
31	3,611,191.6920	375,110.3160	3,950.6927
32	3,611,095.1840	375,078.6890	3,950.2110
33	3,611,097.0180	375,043.0820	3,950.3042
34	3,611,084.9320	375,036.7120	3,950.2164
35	3,611,073.8340	375,059.5290	3,950.3129
36	3,611,089.9040	375,055.0620	3,949.6563
37	3,611,336.1830	375,002.2750	3,957.3215
38	3,611,305.1890	374,994.7420	3,956.4545
39	3,611,284.2790	375,034.5540	3,956.1459

Table B-3. HELSTF Well Rehabilitation

Well #	Date	Re-Development Method	DTW TOC Pre-Rehab	TD TOC Pre-Rehab	1 Well Volume Pre-Rehab gal	DTW TOC Post-Rehab*	TD TOC Post-Rehab	1 Well Volume Post-Rehab gal	Parameters	Increased Productivity?	Notes
HMW-19	9/8/2006	Surge and Bail	21.09	23.01	0.3	21.09	22.97	0.3	None Taken	No	Well bails dry after 0.3 gal. Slow Recharge. No overall change.
HMW-16	9/8/2006	Surge and Pump	71.81	81.75	1.6	77.92	79.92	0.6	None Taken	No	Need current DTW measurement to determine outcome. DTW post-rehab reflects slow recharge. Well bails dry after 1 gal. Recharged 0.5 gal in 23 minutes.
HMW-09	9/8/2006	Surge and Pump	44.79	62.1	2.8	43.75	61.78	2.9	Stabilized	Yes	Well volume increased. Well goes dry at 20 gal with pump. Recharged in 16 minutes.
HMW-45	9/8/2006	Surge and Pump	43.44	52.34	5.8	41.73	50.21	5.5	Stabilized	Yes	DTW decreased. Well volume decreased. TD decreased? Well kept up with 10 gpm pump.
DRW-10	9/9/2006	Surge and Pump	37.83	63.25	16.5	39.51	62.97	15.31	Not Stabilized	No	Well did not fully recharge in 3 months following rehab.
HMW-41	9/9/2006	Surge and Pump	43.62	61.54	11.7	42.91	61.47	12.11	Stabilized	Yes	Well Volume increased. Well goes dry at 30 gal with pump. Recharged in 6 minutes.
DRW-09	9/11/2006	Surge and Pump	33.54	66.6	21.5	35.02	62.91	18.21	Not Stabilized	No	Well did not fully recharge in 3 months following rehab.
HMW-40	9/11/2006	Surge and Pump	17.65	40.81	15.12	19.11	40.95	14.26	Not Stabilized	No	Well did not fully recharge in 3 months following rehab. Well goes dry at 14 gal. Recharges 10 gal in 25 minutes.
HMW-39	9/11/2006	Surge and Pump	45.31	69.25	15.6	44.54	65.02	13.37	Stabilized	Yes	Well went dry pumping after 60 gal. Fast recharge after 10 minutes.
HMW-02	9/12/2006	Surge and Pump	9.81	21.51	7.6	13.36	21.41	5.26	Stabilized	No	Well went dry pumping after 30 gal. Recharge after 26 minutes 20 gal. Well did not fully recharge after 3 months.
HMW-03	9/12/2006	Surge and Pump	10.63	22.6	7.8	13.74	22.5	5.72	Stabilized	No	Well went dry pumping after 30 gal. Recharge after 27 minutes 15 gal. Well did not fully recharge after 3 months.
HMW-01	9/12/2006	Surge and Bail	18.51	23.27	3.1	17.88	23.23	3.49	Stabilized	Yes	Well went dry after bailing 4 gal. Slow recharge. Recharged 2 gal after nearly 1 hour. Well fully recharged same day with net increase in well volume.
HMW-04	9/12/2006	Surge and Bail	22.54	24.6	1.3	21.47	24.59	2.04	Stabilized	Yes	Well went dry after bailing 1 gal. Slow recharge. Recharged 1 liter after nearly 1 hour. Well fully recharged same day with net increase in well volume.
HMW-17	9/12/2006	Surge and Pump	12.36	29.96	2.8	17.8	29.91	1.97	Stabilized	Potential	Well went dry after 12.5 gal. Recharged 2 gallons approximately 15 minutes. Final measure DTW same day was 13 ft. 3 months later was 17.8 ft. DTW dropped drastically.
DRW-14	9/13/2006	Surge and Pump	71.3	96.73	16	71.57	91.99	13.33	Stabilized	No	Well TD decreased. Well volume decreased. Well went dry after 60 gal. Well recharged 18 gal after 1 hour.
HMW-14	9/13/2006	Surge and Pump	31.43	41.29	1.6	29.24	50.83	3.52	Stabilized	Yes	Well TD increased. Well volume increased. Well went dry after 7.5 gal. Recharges 2.5 gal after 11 minutes.
HMW-36	9/13/2006	Surge and Pump	13.41	24.09	6.9	19.38	23.99	3.01	Stabilized	Potential	Well did not go dry after 30 gal. Final measure DTW same day was 13 ft. 3 months later was 19.38 ft. DTW dropped drastically.
HMW-37	9/13/2006	Surge and Pump	39.5	45.4	3.8	37.92	45.31	4.82	Stabilized	Yes	DTW decreased. Well volume increased. Well did not go dry after 25 gal. Well recovered same day.
HMW-38	9/13/2006	Surge and Pump	45.51	64	12	44.65	63.85	12.53	Stabilized	Yes	DTW decreased. Well volume increased. Well did not go dry after 97 gal. Well recovered same day.
HMW-08	9/14/2006	Surge and Pump	75.28	101.65	4.2	75.79	99.75	3.9	Stabilized	No	No discernable change. Well volume slightly decreased. Well went dry at 20 gal. Well recharged 5 gal in nearly 1 hour.
HMW-43	9/14/2006	Surge and Pump	42.64	67.8	16.4	41.65	65.67	15.68	Stabilized	No	Well volume decreased. Well TD decreased. DTW decreased. Well pumped dry at 18 gal. Recharged 5 gal in 6 minutes.

Table B-3. HELSTF Well Rehabilitation

Well #	Date	Re-Development Method	DTW TOC Pre-Rehab	TD TOC Pre-Rehab	1 Well Volume Pre-Rehab gal	DTW TOC Post-Rehab*	TD TOC Post-Rehab	1 Well Volume Post-Rehab gal	Parameters	Increased Productivity?	Notes
HMW-11	9/14/2006	Surge and Pump	46.73	66.7	3.2	45.28	65.92	3.36	Stabilized	Yes	Well volume increased slightly. Well TD decreased. DTW decreased. Well pumped dry at 14.5 gal. Well recharged 4.5 gal in 10 minutes.
HMW-13	9/15/2006	Surge and Bail	43.62	49.09	0.8	48.7	49.02	0.05	Not Stabilized	No	Well final DTW was from same day. Well not measured 3 months later. Did not recover same day. Well bails dry at 0.8 gal. Recharged 0.8 gal in 50 minutes.
DRW-12	9/15/2006	Surge and Pump	46.38	65.5	12.4	44.41	62.21	11.62	Not Stabilized	No	Well volume decreased. Well TD decreased. DTW decreased. Well pumped dry at 26.5 gal.
DRW-11	9/15/2006	Surge and Pump	42.97	65.24	14.5	43.45	62.43	12.39	Not Stabilized	No	Well volume decreased. Well TD decreased. DTW decreased. Well pumped dry at 27 gal. Recharged 10 gal in 30 minutes.
HMW-10	9/18/2006	Surge and Pump	43.59	50.9	1.19	43.15	50.91	1.26	Stabilized	Potential	Well DTW slightly decreased. Well TD no change. Well pumped dry at 40 gal. Recharged 10 gal in 15 minutes.
DRW-08	9/18/2006	Surge and Pump	45.81	66.51	13.5	44.91	63.07	11.85	Stabilized	No	Well TD decreased. Well volume decreased. DTW decreased. Well went dry after 18 gal. Well recharged 18 gal in 12 minutes.
DRW-17	9/19/2006	Surge and Pump	72.6	98.25	16.7	72.29	92.91	13.46	Stabilized	No	Well TD decreased. Well volume decreased. DTW decreased slightly. Well did not go dry after 96 gal. Well nearly recovered same day.
DRW-07	9/19/2006	Surge and Pump	47.5	64.49	11	46.88	62.55	10.23	Stabilized	No	Well TD decreased. Well volume decreased. DTW decreased slightly. Well did not go dry after 60 gal. Well recovered same day.
DRW-16	9/19/2006	Surge and Pump	73	83.33	6.7	72.45	92.81	13.3	Stabilized	Yes	Well TD increased. Well volume increased. Well went dry after 30 gal. Recharges 24 gal after 1 hour.
DRW-06	9/19/2006	Surge and Pump	46.28	65.43	12.5	45.42	61.55	10.5	Stabilized	No	Well TD decreased. Well volume decreased. DTW decreased. Well went dry after 15 gal. Recharged 15 gal in 1 hour. Well recovered same day.
DRW-05	9/19/2006	Surge and Pump	44.28	59.94	10.2	43.84	61.21	11.34	Stabilized	Yes	Well TD increased. Well volume increased. DTW decreased. Well pumped dry at 37 gal. Well recharged 15 gal after 35 minutes.
DRW-15	9/19/2006	Surge and Pump	71.96	94.89	14.9	72.16	92.67	13.39	Stabilized	No	Well TD decreased. Well volume decreased. DTW had not fully recovered after 3 months. Well pumped dry at 28 gal. Well recharged 2 gal after 20 minutes.
DRW-13	9/20/2006	Surge and Pump	44.26	67.09	14.9	43.3	63.2	13	Stabilized	No	Well TD decreased. Well volume decreased. DTW decreased. Well pumped dry at 30 gal. Well recharged 7 gal in 28 minutes.
HCF-2	9/20/2006	Surge and Pump	31.72	55.69	15.6	35.62	58.77	15.1	None Taken	Yes	However, well DTW had not fully recovered after 3 months. Well TD increased. Pumped dry after 10 gal. Recharged 9 gal in 30 minutes.
HCF-1	9/20/2006	Surge and Pump	46.04	67.11	13.7	Dry	64.52	Dry	None Taken	No	Well dry 3 months following rehab. Well TD decreased.
HCF-3	9/20/2006	Surge and Pump	40.96	60.55	14.2	Dry	58.1	Dry	None Taken	No	Well dry 3 months following rehab. Well TD decreased.
DRW-1	9/21/2006	Surge and Pump	43.4	62.92	13.1	Dry	59.91	Dry	None Taken	No	Well dry 3 months following rehab. Well TD decreased.
DRW-2	9/21/2006	Surge and Pump	47.37	65.68	14.4	Dry	60.45	Dry	None Taken	No	Well dry 3 months following rehab. Well TD decreased.
DRW-3	9/21/2006	Surge and Pump	45.27	65.21	13.7	Dry	61.6	Dry	None Taken	No	Well dry 3 months following rehab. Well TD decreased.
DRW-4	9/21/2006	Surge and Pump	43.06	64.3	13.8	Dry	61.05	Dry	None Taken	No	Well dry 3 months following rehab. Well TD decreased.
CFW-2	9/21/2006	Surge and Pump	46.18	65.21	12.4	Dry	62.21	Dry	Stabilized	No	Well dry 3 months following rehab. Well TD decreased.
CFW-1	9/21/2006	Surge and Pump	46.6	65.28	12.4	Dry	62.5	Dry	Stabilized	No	Well dry 3 months following rehab. Well TD decreased.
CFW-4	9/22/2006	Surge and Pump	46.79	63.44	10.8	Dry	59.98	Dry	Stabilized	No	Well dry 3 months following rehab. Well TD decreased.
CFW-3	9/22/2006	Surge and Pump	47.16	53.02	6.3	Dry	51.8	Dry	None Taken	No	Well dry 3 months following rehab. Well TD decreased.

Table B-3. HELSTF Well Rehabilitation

Well #	Date	Re-Development Method	DTW TOC Pre-Rehab	TD TOC Pre-Rehab	1 Well Volume Pre-Rehab gal	DTW TOC Post-Rehab*	TD TOC Post-Rehab	1 Well Volume Post-Rehab gal	Parameters	Increased Productivity?	Notes
HMW-30	9/22/2006	Surge and Pump	74.33	109.29	22.8	74.67	109.23	22.6	Stabilized	No	No discernable change. Well volume slightly decreased. Well went dry at 20 gal. Well recharged 16 gal in 10 minutes.
HMW-29	9/22/2006	Surge and Pump	73.24	80.82	4.9	73.71	80.8	4.6	Stabilized	No	No discernable change. Well volume slightly decreased. Removed 41 gallons. Well recovered same day.
HMW-32	9/25/2006	Surge and Pump	73.45	95.72	14.5	73.63	92.33	12.2	None Taken	No	Well TD decreased. Well volume decreased. DTW increased. Well pumped dry at 16 gal. Well recharged 7 gal in nearly 2 hours.
HMW-31	9/25/2006	Surge and Pump	44.52	54.07	6.2	44.42	52.71	5.41	Stabilized	No	Well TD decreased. Well volume decreased. DTW decreased slightly. Well pumped dry at 8 gal. Well recharged 7 gal in nearly 18 minutes.
HMW-28	9/25/2006	Surge and Bail	43.94	46.87	1.9	45.13	46.82	1.1	None Taken	Unknown	Well not sampled or measured 3 months after. Final well measurements taken immediately following redevelopment. Well had not yet fully recovered. Well TD no discernable change.
HMW-26	9/25/2006	Surge and Pump	41.44	51.01	6.2	40.64	51.2	6.9	Stabilized	Yes	Well TD increased slightly. Well volume increased.
HELSTF-1	9/25/2006	Surge and Pump	69.72	104.28	22.5	69.75	102.15	21.1	Stabilized	No	No discernable change. Well volume slightly decreased. Well TD decreased.
HMW-07	9/26/2006	Surge and Pump	40.28	48.85	1.3	39.88	48.84	1.46	Stabilized	Yes	DTW decreased slightly. No discernable change in TD. 12 gallons purged (9 well volumes) w/out going dry.
HMW-33	9/26/2006	Surge and Pump	42.59	53.03	6.8	42.34	53.01	6.96	Stabilized	Yes	DTW decreased slightly. No discernable change in TD. Well went dry after 10 gal. Recharged 8 gal after nearly 1 hour.
HMW-35	9/26/2006	Surge and Pump	73.42	87	8.8	73.57	87	8.8	Stabilized	No	No discernable change. Well did not go dry after 60 gal. Well recovered same day.
HMW-21	9/26/2006	Surge and Pump	45.77	62.05	10.6	44.71	61.95	11.26	Stabilized	Yes	Well volume increased. Well TD no discernable change. DTW decreased. Well did not pump dry. Well fully recovered same day.
HMW-34	9/26/2006	Surge and Pump	74.92	92.8	11.66	75.08	92.77	11.55	Stabilized	No	No discernable change with TD, DTW, and well volume. Well pumped dry at 20 gal. Recharged overnight 8 gal. Does not appear to have fully recovered after 3 months.
HMW-24	9/27/2006	Surge and Pump	22.95	40.96	11.7	21.6	40.81	12.5	None Taken	Yes	No discernable change in TD. DTW has decreased with increase in well volume. Well pumped dry after 9 gal. Recharged 7 gal overnight. Still slow recharge.
HMW-23	9/27/2006	Surge and Pump	40.51	48.03	4.9	39.35	48.3	5.84	Stabilized	Yes	TD increased slightly. DTW has decreased slightly with increase in well volume. Well pumped dry after 15 gal. Recharged 10 gal overnight. Slow recharge.
HMW-12	9/28/2006	Surge and Pump	33.52	46.75	2.1	32.61	46.67	2.29	Stabilized	Yes	TD decreased slightly. DTW has decreased with increase in well volume.
HMW-15	9/28/2006	Surge and Pump	50.63	69.82	3.1	49.82	69.98	3.3	Stabilized	Yes	TD increased slightly. DTW has decreased slightly with increase in well volume. Removed 18 gal w/out going dry.

* DTW taken approximately 3 months following rehab.

Table B-4. Phase III RFI Soil Sample Locations and Analytical Program.

Soil Boring	Related SWMU	Sample Number	Analyses	Northing UTM NAD 83	Easting UTM NAD 83	Elevation
1	AOC 85	HLSF-0085-SB-001 (0.5-1.0)	RCRA 8 metals, NO3-NO2, P, Cr6+, Cu, K, Na, Zn, TOC	3,611,858.0940	374,421.4550	3,950.1796
		HLSF-0085-SB-001 (10.0-10.5)				
		HLSF-0085-SB-001 (20.0-20.5)				
		HLSF-0085-SB-001 (30.0-30.5)				
		HLSF-0085-SB-001 (40.0-40.5)				
		HLSF-0085-SB-001 (49.5-50.0)				
2	AOC 85	HLSF-0085-SB-002 (0.5-1.0)	RCRA 8 metals, NO3-NO2, P, Cr6+, Cu, K, Na, Zn, TOC	3,611,866.2830	374,833.1040	3,958.6117
		HLSF-0085-SB-002 (10.0-10.5)				
		HLSF-0085-SB-002 (20.0-20.5)				
		HLSF-0085-SB-002 (30.0-30.5)				
		HLSF-0085-SB-002 (40.0-40.5)				
		HLSF-0085-SB-002 (49.5-50.0)				
3	AOC 85	HLSF-0085-SB-003 (0.5-1.0)	RCRA 8 metals, NO3-NO2, P, Cr6+, Cu, K, Na, Zn, TOC	3,612,009.8170	375,051.6760	3,963.9829
		HLSF-0085-SB-003 (10.0-10.5)				
		HLSF-0085-SB-003 (20.0-20.5)				
		HLSF-0085-SB-003 (30.0-30.5)				
		HLSF-0085-SB-003 (40.0-40.5)				
		HLSF-0085-SB-003 (49.5-50.0)				
4	AOC 85	HLSF-0085-SB-004 (0.5-1.0)	RCRA 8 metals, NO3-NO2, P, Cr6+, Cu, K, Na, Zn, TOC	3,612,054.9630	375,180.9870	3,963.0532
		HLSF-0085-SB-004 (10.0-10.5)				
		HLSF-0085-SB-004 (20.0-20.5)				
		HLSF-0085-SB-004 (30.0-30.5)				
		HLSF-0085-SB-004 (40.0-40.5)				
		HLSF-0085-SB-004 (49.5-50.0)				
5	AOC 85	HLSF-0085-SB-005 (0.5-1.0)	RCRA 8 metals, NO3-NO2, P, Cr6+, Cu, K, Na, Zn, TOC	3,612,080.9790	375,315.8490	3,959.3655
		HLSF-0085-SB-005 (10.0-10.5)				
		HLSF-0085-SB-005 (20.0-20.5)				
		HLSF-0085-SB-005 (30.0-30.5)				
		HLSF-0085-SB-005 (40.0-40.5)				
		HLSF-0085-SB-005 (49.5-50.0)				
6	AOC 85	HLSF-0085-SB-006 (0.5-1.0)	RCRA 8 metals, NO3-NO2, P, Cr6+, Cu, K, Na, Zn, TOC	3,612,126.3360	375,574.4820	3,958.3577
		HLSF-0085-SB-006 (10.0-10.5)				
		HLSF-0085-SB-006 (20.0-20.5)				
		HLSF-0085-SB-006 (30.0-30.5)				
		HLSF-0085-SB-006 (40.0-40.5)				
		HLSF-0085-SB-006 (49.5-50.0)				
37	SWMU 141	HLSF-0085-SB-037 (10.0-11.0)	8 RCRA metals, VOC, DRO, GRO	3,611,336.1830	375,002.2750	3,957.3215
		HLSF-0085-SB-037 (20.0-21.0)				
		HLSF-0085-SB-037 (30.0-31.0)				
		HLSF-0085-SB-037 (40.0-41.0)				
		HLSF-0085-SB-037 (49.0-50.0)				
38	SWMU 141	HLSF-0085-SB-038 (10.0-11.0)	8 RCRA metals, VOC, DRO, GRO	3,611,305.1890	374,994.7420	3,956.4545
		HLSF-0085-SB-038 (20.0-21.0)				
		HLSF-0085-SB-038 (30.0-32.0)				
		HLSF-0085-SB-038 (40.0-41.0)				

Soil Boring	Related SWMU	Sample Number	Analyses	Northing UTM NAD 83	Easting UTM NAD 83	Elevation
		HLSF-0085-SB-038 (49.0-50.0)				
39	SWMU 141	HLSF-0085-SB-039 (10.0-11.0)	8 RCRA metals, VOC, DRO, GRO	3,611,284.2790	375,034.5540	3,956.1459
		HLSF-0085-SB-039 (20.0-21.0)				
		HLSF-0085-SB-039 (30.0-31.0)				
		HLSF-0085-SB-039 (40.0-41.0)				
		HLSF-0085-SB-039 (49.0-50.0)				
13	SWMU 142	HLSF-0085-SB-013 (10.0-11.0)	P, Cr6+, Cr, Pb, Na, Zn, ethylene glycol, VOC with PTA, SVOC, DRO, GRO, TOC	3,611,422.0630	375,062.5250	3,956.5852
		HLSF-0085-SB-013 (20.0-21.0)				
		HLSF-0085-SB-013 (30.0-31.0)				
		HLSF-0085-SB-013 (40.0-41.0)				
		HLSF-0085-SB-013 (49.0-50.0)				
14	SWMU 142	HLSF-0085-SB-014 (10.0-12.0)	P, Cr6+, Cr, Pb, Na, Zn, ethylene glycol, VOC with PTA, SVOC, DRO, GRO, TOC	3,611,408.2880	375,082.9880	3,955.8176
		HLSF-0085-SB-014 (20.0-22.0)				
		HLSF-0085-SB-014 (30.0-31.0)				
		HLSF-0085-SB-014 (40.0-41.0)				
		HLSF-0085-SB-014 (45.0-46.0)				
		HLSF-0085-SB-014 (49.0-50.0)				
16	SWMU 142	HLSF-0085-SB-016 (10.0-11.0)	P, Cr6+, Cr, Pb, Na, Zn, ethylene glycol, VOC with PTA, SVOC, DRO, GRO, TOC	3,611,412.1120	375,042.1650	3,956.8358
		HLSF-0085-SB-016 (20.0-21.0)				
		HLSF-0085-SB-016 (30.0-31.0)				
		HLSF-0085-SB-016 (40.0-41.0)				
		HLSF-0085-SB-016 (45.0-46.0)				
		HLSF-0085-SB-016 (49.0-50.0)				
17	SWMU 142	HLSF-0085-SB-017 (10.0-11.0)	P, Cr6+, Cr, Pb, Na, Zn, ethylene glycol, VOC with PTA, SVOC, DRO, GRO, TOC			
		HLSF-0085-SB-017 (20.0-21.0)				
		HLSF-0085-SB-017 (30.0-31.0)				
		HLSF-0085-SB-017 (41.0-42.0)				
		HLSF-0085-SB-017 (50.0-52.0)				
18	SWMU 142	HLSF-0085-SB-018 (10.0-11.0)	P, Cr6+, Cr, Pb, Na, Zn, ethylene glycol, VOC with PTA, SVOC, DRO, GRO, TOC	3,611,404.8810	375,092.7170	3,955.0009
		HLSF-0085-SB-018 (20.0-21.0)				
		HLSF-0085-SB-018 (30.0-31.0)				
		HLSF-0085-SB-018 (40.0-41.0)				
		HLSF-0085-SB-018 (49.0-50.0)				
22	SWMU 143	HLSF-0085-SB-022 (10.0-11.0)	RCRA 8 metals, NO3-NO2, P, Cr6+, Cu, Na, Zn, ethylene glycol, VOC with PTA, SVOC, DRO, GRO, TOC	3,611,329.6580	375,092.2530	3,955.1260
		HLSF-0085-SB-022 (20.0-22.0)				
		HLSF-0085-SB-022 (31.0-32.0)				
		HLSF-0085-SB-022 (40.0-41.0)				
		HLSF-0085-SB-022 (49.0-50.0)				
23	SWMU 143	HLSF-0085-SB-023 (10.0-11.0)	RCRA 8 metals, NO3-NO2, P, Cr6+, Cu, Na, Zn, ethylene glycol, VOC with PTA, SVOC, DRO, GRO, TOC	3,611,319.4980	375,060.7030	3,955.7318
		HLSF-0085-SB-023 (20.0-21.0)				
		HLSF-0085-SB-023 (30.0-31.0)				
		HLSF-0085-SB-023 (40.0-41.0)				
		HLSF-0085-SB-023 (49.0-50.0)				
24	SWMU 143	HLSF-0085-SB-024 (10.0-11.0)	RCRA 8 metals, NO3-NO2, P, Cr6+, Cu, Na, Zn, ethylene glycol, VOC with PTA, SVOC, DRO, GRO, TOC	3,611,314.7840	375,075.7250	3,955.6363
		HLSF-0085-SB-024 (20.0-21.0)				
		HLSF-0085-SB-024 (30.0-31.0)				
		HLSF-0085-SB-024 (40.0-41.0)				

Soil Boring	Related SWMU	Sample Number	Analyses	Northing UTM NAD 83	Easting UTM NAD 83	Elevation
		HLSF-0085-SB-024 (49.0-50.0)				
26	SWMU 143	HLSF-0085-SB-026 (10.0-11.0)	RCRA 8 metals, NO3-NO2, P, Cr6+, Cu, Na, Zn, ethylene glycol, VOC with PTA, SVOC, DRO, GRO, TOC	3,611,305.8540	375,076.6050	3,955.5287
		HLSF-0085-SB-026 (20.0-21.0)				
		HLSF-0085-SB-026 (30.0-32.0)				
		HLSF-0085-SB-026 (40.0-41.0)				
		HLSF-0085-SB-026 (49.0-50.0)				
28	SWMU 143	HLSF-0085-SB-028 (15.0-16.0)	RCRA 8 metals, NO3-NO2, P, Cr6+, Cu, Na, Zn, ethylene glycol, VOC with PTA, SVOC, DRO, GRO, TOC	3,611,302.6970	375,107.0800	3,953.5719
		HLSF-0085-SB-028 (20.0-21.0)				
		HLSF-0085-SB-028 (30.0-31.0)				
		HLSF-0085-SB-028 (40.0-41.0)				
		HLSF-0085-SB-028 (49.0-50.0)				
32	SWMU 146	HLSF-0085-SB-032 (0.5-1.0)	RCRA 8 metals, P, Cr6+, K, Na, Zn, ethylene glycol, VOC with PTA, DRO, GRO, TOC, benzyl alcohol	3,611,095.1840	375,078.6890	3,950.2110
		HLSF-0085-SB-032 (10.0-11.0)				
		HLSF-0085-SB-032 (20.0-21.0)				
		HLSF-0085-SB-032 (30.0-31.0)				
		HLSF-0085-SB-032 (40.0-41.0)				
		HLSF-0085-SB-032 (49.0-50.0)				
33	SWMU 146	HLSF-0085-SB-033 (0.5-1.0)	RCRA 8 metals, P, Cr6+, K, Na, Zn, ethylene glycol, VOC with PTA, DRO, GRO, TOC, benzyl alcohol	3,611,097.0180	375,043.0820	3,950.3042
		HLSF-0085-SB-033 (10.0-11.0)				
		HLSF-0085-SB-033 (20.0-21.0)				
		HLSF-0085-SB-033 (30.0-31.0)				
		HLSF-0085-SB-033 (40.0-42.0)				
		HLSF-0085-SB-033 (49.0-50.0)				
34	SWMU 146	HLSF-0085-SB-034 (0.5-1.0)	RCRA 8 metals, P, Cr6+, K, Na, Zn, ethylene glycol, VOC with PTA, DRO, GRO, TOC, benzyl alcohol	3,611,084.9320	375,036.7120	3,950.2164
		HLSF-0085-SB-034 (10.0-11.0)				
		HLSF-0085-SB-034 (20.0-21.0)				
		HLSF-0085-SB-034 (30.0-31.0)				
		HLSF-0085-SB-034 (40.0-41.0)				
		HLSF-0085-SB-034 (49.0-50.0)				
35	SWMU 146	HLSF-0085-SB-035 (0.5-1.0)	RCRA 8 metals, P, Cr6+, K, Na, Zn, ethylene glycol, VOC with PTA, DRO, GRO, TOC, benzyl alcohol	3,611,073.8340	375,059.5290	3,950.3129
		HLSF-0085-SB-035 (10.0-11.0)				
		HLSF-0085-SB-035 (20.0-21.0)				
		HLSF-0085-SB-035 (30.0-31.0)				
		HLSF-0085-SB-035 (40.0-41.0)				
		HLSF-0085-SB-035 (49.0-50.0)				
36	SWMU 146	HLSF-0085-SB-036 (0.5-1.0)	RCRA 8 metals, P, Cr6+, K, Na, Zn, ethylene glycol, VOC with PTA, DRO, GRO, TOC, benzyl alcohol	3,611,089.9040	375,055.0620	3,949.6563
		HLSF-0085-SB-036 (10.0-11.0)				
		HLSF-0085-SB-036 (20.0-22.0)				
		HLSF-0085-SB-036 (30.0-31.0)				
		HLSF-0085-SB-036 (40.0-41.0)				
25	SWMU 148	HLSF-0085-SB-025 (10.0-11.0)	RCRA 8 metals, NO3-NO2, P, Cr6+, Cu, Na, Zn, ethylene glycol, VOC with PTA, SVOCs, DRO, GRO, TOC	3,611,305.1050	375,053.9520	3,955.9380
		HLSF-0085-SB-025 (20.0-21.0)				
		HLSF-0085-SB-025 (30.0-31.0)				
		HLSF-0085-SB-025 (40.0-41.0)				
27	SWMU 148	HLSF-0085-SB-027 (10.0-12.0)	RCRA 8 metals, NO3-NO2, P, Cr6+, Cu, Na, Zn, ethylene glycol, VOC with PTA, SVOCs, DRO, GRO,	3,611,289.8160	375,074.3050	3,955.5524
		HLSF-0085-SB-027 (15.0-16.0)				
		HLSF-0085-SB-027 (20.0-21.0)				

Soil Boring	Related SWMU	Sample Number	Analyses	Northing UTM NAD 83	Easting UTM NAD 83	Elevation
		HLSF-0085-SB-027 (30.0-31.0)	TOC			
		HLSF-0085-SB-027 (40.0-41.0)				
		HLSF-0085-SB-027 (49.0-50.0)				
7	SWMU 150	HLSF-0085-SB-007 (0.5-1.0)	RCRA 8 metals, NO3-NO2, Cr6+, VOC, TOC	3,611,850.8460	375,796.4440	3,957.6483
		HLSF-0085-SB-007 (10.0-11.0)				
		HLSF-0085-SB-007 (20.0-21.0)				
		HLSF-0085-SB-007 (30.0-31.0)				
		HLSF-0085-SB-007 (40.0-41.0)				
		HLSF-0085-SB-007 (49.0-50.0)				
8	SWMU 150	HLSF-0085-SB-008 (0.5-1.0)	RCRA 8 metals, NO3-NO2, Cr6+, VOC, TOC	3,611,861.7990	375,820.7920	3,957.3001
		HLSF-0085-SB-008 (10.0-11.0)				
		HLSF-0085-SB-008 (20.0-21.0)				
		HLSF-0085-SB-008 (30.0-31.0)				
		HLSF-0085-SB-008 (40.0-41.0)				
		HLSF-0085-SB-008 (49.0-50.0)				
9	SWMU 150	HLSF-0085-SB-009 (0.5-1.0)	RCRA 8 metals, NO3-NO2, Cr6+, VOC, TOC	3,611,870.3230	375,840.1430	3,956.8857
		HLSF-0085-SB-009 (10.0-11.0)				
		HLSF-0085-SB-009 (20.0-21.0)				
		HLSF-0085-SB-009 (30.0-31.0)				
		HLSF-0085-SB-009 (40.0-42.0)				
		HLSF-0085-SB-009 (49.0-50.0)				
11	SWMU 154	HLSF-0085-SB-011 (10.0-11.0)	NO3-NO2, P, Cr6+, Cr, Pb, Na, Zn, ethylene glycol, VOC with PTA, SVOCs, DRO, GRO, TOC	3,611,430.5560	375,082.9030	3,955.6090
		HLSF-0085-SB-011 (20.0-21.0)				
		HLSF-0085-SB-011 (30.0-32.0)				
		HLSF-0085-SB-011 (40.0-42.0)				
		HLSF-0085-SB-011 (49.0-50.0)				
15	SWMU 154	HLSF-0085-SB-015 (10.0-11.0)	NO3-NO2, P, Cr6+, Cr, Pb, Na, Zn, ethylene glycol, VOC with PTA, SVOCs, DRO, GRO, TOC	3,611,413.5560	375,105.6890	3,954.5825
		HLSF-0085-SB-015 (20.0-21.0)				
		HLSF-0085-SB-015 (30.0-31.0)				
		HLSF-0085-SB-015 (40.0-41.0)				
		HLSF-0085-SB-015 (49.0-50.0)				
19	SWMU 154	HLSF-0085-SB-019 (10.0-11.0)	NO3-NO2, P, Cr6+, Cr, Pb, Na, Zn, ethylene glycol, VOC with PTA, SVOCs, DRO, GRO, TOC	3,611,395.4350	375,038.7980	3,956.3289
		HLSF-0085-SB-019 (20.0-22.0)				
		HLSF-0085-SB-019 (25.0-26.0)				
		HLSF-0085-SB-019 (30.0-31.0)				
		HLSF-0085-SB-019 (36.0-37.0)				
		HLSF-0085-SB-019 (40.0-41.0)				
		HLSF-0085-SB-019 (49.0-50.0)				
20	SWMU 154	HLSF-0085-SB-020 (10.0-11.0)	NO3-NO2, P, Cr6+, Cr, Pb, Na, Zn, ethylene glycol, VOC with PTA, SVOCs, DRO, GRO, TOC	3,611,385.2770	375,011.0860	3,957.8788
		HLSF-0085-SB-020 (20.0-21.0)				
		HLSF-0085-SB-020 (30.0-31.0)				
		HLSF-0085-SB-020 (40.0-41.0)				
		HLSF-0085-SB-020 (49.0-50.0)				
21	SWMU 154	HLSF-0085-SB-021 (10.0-11.0)	NO3-NO2, P, Cr6+, Cr, Pb, Na, Zn, ethylene glycol, VOC with PTA, SVOCs, DRO, GRO, TOC	3,611,365.9240	374,983.7570	3,958.6270
		HLSF-0085-SB-021 (20.0-21.0)				
		HLSF-0085-SB-021 (20.0-21.0)				
		HLSF-0085-SB-021 (30.0-31.0)				

Soil Boring	Related SWMU	Sample Number	Analyses	Northing UTM NAD 83	Easting UTM NAD 83	Elevation
		HLSF-0085-SB-021 (40.0-41.0)				
		HLSF-0085-SB-021 (49.0-50.0)				
10	SWMU 25	HLSF-0085-SB-010 (10.0-11.0)	Cr6+, Cr, Zn, TOC, VOC, DRO, GRO	3,611,422.7740	375,024.4780	3,955.3132
		HLSF-0085-SB-010 (20.0-22.0)				
		HLSF-0085-SB-010 (30.0-31.0)				
		HLSF-0085-SB-010 (40.0-41.0)				
		HLSF-0085-SB-010 (49.0-50.0)				
29	SWMU 31-32	HLSF-0085-SB-029 (0.5-1.0)	RCRA 8 metals, P, Cr6+, K, Na, Zn, ethylene glycol, VOC with PTA, DRO, GRO, TOC, benzyl alcohol	3,611,171.6910	375,096.1390	3,951.2473
		HLSF-0085-SB-029 (10.0-10.5)				
		HLSF-0085-SB-029 (20.0-21.0)				
		HLSF-0085-SB-029 (30.0-31.0)				
		HLSF-0085-SB-029 (40.0-41.0)				
		HLSF-0085-SB-029 (49.0-50.0)				
30	SWMU 31-32	HLSF-0085-SB-030 (0.5-1.0)	RCRA 8 metals, P, Cr6+, K, Na, Zn, ethylene glycol, VOC with PTA, DRO, GRO, TOC, benzyl alcohol	3,611,173.3470	375,116.9100	3,950.8362
		HLSF-0085-SB-030 (10.0-11.0)				
		HLSF-0085-SB-030 (20.0-22.0)				
		HLSF-0085-SB-030 (30.0-31.0)				
		HLSF-0085-SB-030 (40.0-41.0)				
		HLSF-0085-SB-030 (49.0-50.0)				
31	SWMU 31-32	HLSF-0085-SB-031 (0.5-1.0)	RCRA 8 metals, P, Cr6+, K, Na, Zn, ethylene glycol, VOC with PTA, DRO, GRO, TOC, benzyl alcohol	3,611,191.6920	375,110.3160	3,950.6927
		HLSF-0085-SB-031 (10.0-11.0)				
		HLSF-0085-SB-031 (20.0-21.0)				
		HLSF-0085-SB-031 (30.0-31.0)				
		HLSF-0085-SB-031 (40.0-41.0)				
		HLSF-0085-SB-031 (49.0-50.0)				

TABLE B-5. NEW MONITOR WELL CONSTRUCTION DETAILS

Well I.D.	Date Completed	Casing Diameter inches	Sump feet	Total Depth As Constructed feet bgs	Screened Interval feet bgs	Top of Sand Pack feet bgs	Top of Bentonite Seal feet bgs	Length of Casing Stick-Up
HMW-53	9-15-06	4	5	45	30-40	28	25	2.34
HMW-54	11-27-06	4	5	84	69-79	67	64	2.62
HMW-55	9-27-06	4	5	84	69-79	60	58	2.98
HMW-56	9-21-06	4	5	83.5	68.5-78.5	64	60	2.98
HMW-57	9-19-06	4	5	84	69-79	66	63	2.90
HMW-58	9-14-06	4	5	84	69-79	65	59	2.87
HMW-59	10-2-06	4	5	83	68-78	65	62	3.47
HMW-60	10-10-06	4	5	83	68-78	66	63	3.08
HMW-61	10-6-06	4	5	83	68-78	66	63	2.65
HMW-62	9-7-06	4	0	79	68.5-78.5	65	61	2.97
HMW-63	9-11-06	4	5	83	68-78	65	61	2.84
HMW-64	10-11-06	4	5	83	68-78	66	63	2.87
HMW-65	10-4-06	4	5	80	65-75	59	56	3.06

Table B-6. Phase III RFI Water Sample Locations and Analytical Program

Well_Name	Water Zone	Primary SWMU Site	Sample ID	Analyses
DRW09	LP	Chromate Spill Site	HLSF-0085-DRW-009-1206	water quality, NH4, ions, as, ba, cd, cr, pb, hg, se, ag, cu, p, na, zn, VOCs, SVOCs, ethylene glycol, TPH, TOC
DRW10	LP	Chromate Spill Site	HLSF-0085-DRW-010-1206	water quality, NH4, ions, as, ba, cd, cr, pb, hg, se, ag, cu, p, na, zn, VOCs, SVOCs, ethylene glycol, TPH, TOC
HMW11	LP	Chromate Spill Site	HLSF-0085-HMW-011-1206	water quality, NH4, ions, cd, cr, cu, pb, p, ag, na, zn, VOCs, SVOCs, ethylene glycol, TPH, TOC
HMW17	UP	Chromate Spill Site	HLSF-0085-HMW-017-1206	water quality, NH4, ions, cd, cr, cu, pb, p, ag, na, zn, VOCs, SVOCs, ethylene glycol, TPH, TOC
HMW36	UP	Chromate Spill Site	HLSF-0085-HMW-036-1206	water quality, NH4, ions, cd, cr, cu, pb, p, ag, na, zn, VOCs, SVOCs, ethylene glycol, TPH, TOC
HMW37	LP	Chromate Spill Site	HLSF-0085-HMW-037-1206	water quality, NH4, ions, cd, cr, cu, pb, p, ag, na, zn, VOCs, SVOCs, ethylene glycol, TPH, TOC
HMW38	LP	Chromate Spill Site	HLSF-0085-HMW-038-1206	water quality, NH4, ions, cd, cr, cu, pb, p, ag, na, zn, VOCs, SVOCs, ethylene glycol, TPH, TOC
HMW39	LP	Chromate Spill Site	HLSF-0085-HMW-039-1206	water quality, NH4, ions, cd, cr, cu, pb, p, ag, na, zn, VOCs, SVOCs, ethylene glycol, TPH, TOC
HMW40	UP	Chromate Spill Site	HLSF-0085-HMW-040-1206	water quality, NH4, ions, cd, cr, cu, pb, p, ag, na, zn, VOCs, SVOCs, ethylene glycol, TPH, TOC
HMW41	LP	Chromate Spill Site	HLSF-0085-HMW-041-1206	water quality, NH4, ions, cd, cr, cu, pb, p, ag, na, zn, VOCs, SVOCs, ethylene glycol, TPH, TOC
HMW43	LP	Chromate Spill Site	HLSF-0085-HMW-043-1206	water quality, NH4, ions, cd, cr, cu, pb, p, ag, na, zn, VOCs, SVOCs, ethylene glycol, TPH, TOC
HMW53	LP	Chromate Spill Site	HLSF-0085-HMW-053-1206	water quality, NH4, ions, cd, cr, cu, pb, p, ag, na, zn, VOCs, SVOCs, ethylene glycol, TPH, TOC
HMW29	R	Construction Landfills	HLSF-0085-HMW-029-1206	water quality, ions, as, ba, cd, cr, pb, hg, se, ag, zn, VOCs, ethylene glycol, TPH, TOC
HMW30	R	Construction Landfills	HLSF-0085-HMW-030-1206	water quality, ions, as, ba, cd, cr, pb, hg, se, ag, zn, VOCs, ethylene glycol, TPH, TOC
HMW31	LP	Construction Landfills	HLSF-0085-HMW-031-1206	water quality, ions, as, ba, cd, cr, pb, hg, se, ag, zn, VOCs, ethylene glycol, TPH, TOC
HMW32	R	Construction Landfills	HLSF-0085-HMW-032-1206	water quality, ions, as, ba, cd, cr, pb, hg, se, ag, zn, VOCs, ethylene glycol, TPH, TOC
HMW33	LP	Construction Landfills	HLSF-0085-HMW-033-1206	water quality, ions, as, ba, cd, cr, pb, hg, se, ag, zn, VOCs, ethylene glycol, TPH, TOC
HMW34	R	Construction Landfills	HLSF-0085-HMW-034-1206	water quality, ions, as, ba, cd, cr, pb, hg, se, ag, zn, VOCs, ethylene glycol, TPH, TOC
HMW35	R	Construction Landfills	HLSF-0085-HMW-035-1206	water quality, ions, as, ba, cd, cr, pb, hg, se, ag, zn, VOCs, ethylene glycol, TPH, TOC
HMW59	R	Construction Landfills	HLSF-0085-HMW-059-0107	water quality, ions, as, ba, cd, cr, pb, hg, se, ag, zn, VOCs, ethylene glycol, TPH, TOC
DRW05	LP	Systemic Diesel Spill	HLSF-0085-DRW-005-0107	water quality, NH4, ions, cd, cr, cu, pb, p, ag, na, zn, VOCs, SVOCs, ethylene glycol, TPH, TOC

Table B-6. Phase III RFI Water Sample Locations and Analytical Program

Well_Name	Water Zone	Primary SWMU Site	Sample ID	Analyses
DRW06	LP	Systemic Diesel Spill	HLSF-0085-DRW-006-0107	water quality, NH4, ions, cd, cr, cu, pb, p, ag, na, zn, VOCs, SVOCs, ethylene glycol, TPH, TOC
DRW07	LP	Systemic Diesel Spill	HLSF-0085-DRW-007-0107	water quality, NH4, ions, cd, cr, cu, pb, p, ag, na, zn, VOCs, SVOCs, ethylene glycol, TPH, TOC
DRW08	LP	Systemic Diesel Spill	HLSF-0085-DRW-008-0107	water quality, NH4, ions, cd, cr, cu, pb, p, ag, na, zn, VOCs, SVOCs, ethylene glycol, TPH, TOC
DRW11	LP	Systemic Diesel Spill	HLSF-0085-DRW-011-0107	water quality, NH4, ions, cd, cr, cu, pb, p, ag, na, zn, VOCs, SVOCs, ethylene glycol, TPH, TOC
DRW12	LP	Systemic Diesel Spill	HLSF-0085-DRW-012-0107	water quality, NH4, ions, as, ba, cd, cr, pb, hg, se, ag, cu, p, na, zn, VOCs, SVOCs, ethylene glycol, TPH, TOC
DRW13	LP	Systemic Diesel Spill	HLSF-0085-DRW-013-0107	water quality, NH4, ions, cd, cr, cu, pb, p, ag, na, zn, VOCs, SVOCs, ethylene glycol, TPH, TOC
DRW15	R	Systemic Diesel Spill	HLSF-0085-DRW-015-0107	water quality, NH4, ions, cd, cr, cu, pb, p, ag, na, zn, VOCs, SVOCs, ethylene glycol, TPH, TOC
DRW16	R	Systemic Diesel Spill	HLSF-0085-DRW-016-0107	water quality, NH4, ions, cd, cr, cu, pb, p, ag, na, zn, VOCs, SVOCs, ethylene glycol, TPH, TOC
DRW17	R	Systemic Diesel Spill	HLSF-0085-DRW-017-0107	water quality, NH4, ions, cd, cr, cu, pb, p, ag, na, zn, VOCs, SVOCs, ethylene glycol, TPH, TOC
HCF2	LP	Cleaning Facility Sump	HLSF-0085-HCF-002-0107	water quality, NH4, ions, cd, cr, cu, pb, p, ag, na, zn, VOCs, SVOCs, ethylene glycol, TPH, TOC
HMW10	LP	Systemic Diesel Spill	HLSF-0085-HMW-010-0107	water quality, NH4, ions, cd, cr, cu, pb, p, ag, na, zn, VOCs, SVOCs, ethylene glycol, TPH, TOC
HMW54	R	Cleaning Facility Sump	HLSF-0085-HMW-054-0107	water quality, NH4, ions, cd, cr, cu, pb, p, ag, na, zn, VOCs, SVOCs, ethylene glycol, TPH, TOC
HMW55	R	Systemic Diesel Spill	HLSF-0085-HMW-055-0107	water quality, NH4, ions, cd, cr, cu, pb, p, ag, na, zn, VOCs, SVOCs, ethylene glycol, TPH, TOC
HMW62	R	Cleaning Facility Sump	HLSF-0085-HMW-062-1206	water quality, NH4, ions, cd, cr, cu, pb, p, ag, na, zn, VOCs, SVOCs, ethylene glycol, TPH, TOC
HMW64	R	Systemic Diesel Spill	HLSF-0085-HMW-064-0107	water quality, NH4, ions, cd, cr, cu, pb, p, ag, na, zn, VOCs, SVOCs, ethylene glycol, TPH, TOC
HMW65	R	Systemic Diesel Spill	HLSF-0085-HMW-065-0107	water quality, NH4, ions, cd, cr, cu, pb, p, ag, na, zn, VOCs, SVOCs, ethylene glycol, TPH, TOC
HMW08	R	HELSTF Ground Water Study	HLSF-0085-HMW-008-1206	water quality, NH4, ions, as, ba, cd, cr, pb, hg, se, ag, cu, p, k, na, zn, TOC
HMW15	LP	HELSTF Ground Water Study	HLSF-0085-HMW-015-0107	water quality, NH4, ions, as, ba, cd, cr, pb, hg, se, ag, cu, p, k, na, zn, TOC
HMW60	R	HELSTF Ground Water Study	HLSF-0085-HMW-060-1206	water quality, NH4, ions, as, ba, cd, cr, pb, hg, se, ag, cu, p, k, na, zn, TOC
HMW61	R	HELSTF Ground Water Study	HLSF-0085-HMW-061-0107	water quality, NH4, ions, as, ba, cd, cr, pb, hg, se, ag, cu, p, k, na, zn, TOC
HELSTF1	R	LSTC Wastewater Discharge Point	HLSF-0085-HELSTF-001-1206	water quality, as, ba, cd, cr, pb, hg, se, ag, p, na, zn, VOCs, TOC

Table B-6. Phase III RFI Water Sample Locations and Analytical Program

Well_Name	Water Zone	Primary SWMU Site	Sample ID	Analyses
HMW07	LP	LSTC Wastewater Discharge Point	HLSF-0085-HMW-007-0107	water quality, as, ba, cd, cr, pb, hg, se, ag, p, na, zn, VOCs, TOC
HMW26	LP	LSTC Wastewater Discharge Point	HLSF-0085-HMW-026-0107	water quality, as, ba, cd, cr, pb, hg, se, ag, p, na, zn, VOCs, TOC
DRW14	R	HELSTF Sewage Lagoons	HLSF-0085-DRW-014-1206	water quality, NH4, ions, cd, cr, cu, pb, p, ag, na, zn, VOCs, SVOCs, ethylene glycol, TPH, TOC
HMW01	UP	HELSTF Sewage Lagoons	HLSF-0085-HMW-001-1206	water quality, NH4, ions, cd, cr, cu, pb, p, ag, na, zn, VOCs, SVOCs, ethylene glycol, TPH, TOC
HMW02	UP	HELSTF Sewage Lagoons	HLSF-0085-HMW-002-1206	water quality, NH4, ions, cd, cr, cu, pb, p, ag, na, zn, VOCs, SVOCs, ethylene glycol, TPH, TOC
HMW03	UP	HELSTF Sewage Lagoons	HLSF-0085-HMW-003-1206	water quality, NH4, ions, cd, cr, cu, pb, p, ag, na, zn, VOCs, SVOCs, ethylene glycol, TPH, TOC
HMW04	UP	HELSTF Sewage Lagoons	HLSF-0085-HMW-004-1206	water quality, NH4, ions, cd, cr, cu, pb, p, ag, na, zn, VOCs, SVOCs, ethylene glycol, TPH, TOC
HMW12	LP	HELSTF Sewage Lagoons	HLSF-0085-HMW-012-1206	water quality, NH4, ions, cd, cr, cu, pb, p, ag, na, zn, VOCs, SVOCs, ethylene glycol, TPH, TOC
HMW14	LP	HELSTF Sewage Lagoons	HLSF-0085-HMW-014-1206	water quality, NH4, ions, cd, cr, cu, pb, p, ag, na, zn, VOCs, SVOCs, ethylene glycol, TPH, TOC
HMW21	LP	Dry Pond	HLSF-0085-HMW-021-1206	water quality, NH4, ions, as, ba, cd, cr, pb, hg, se, ag, cu, p, na, zn, VOCs, ethylene glycol, TPH, TOC
HMW23	LP	Dry Pond	HLSF-0085-HMW-023-1206	water quality, NH4, ions, as, ba, cd, cr, pb, hg, se, ag, cu, p, na, zn, VOCs, ethylene glycol, TPH, TOC
HMW24	UP	Fluorospar Tanks	HLSF-0085-HMW-024-1206	water quality, NH4, ions, as, ba, cd, cr, pb, hg, se, ag, cu, p, na, zn, VOCs, ethylene glycol, TPH, TOC
HMW57	R	Dry Pond	HLSF-0085-HMW-057-1206	water quality, NH4, ions, as, ba, cd, cr, pb, hg, se, ag, cu, p, na, zn, VOCs, ethylene glycol, TPH, TOC
HMW58	R	HELSTF Sewage Lagoons	HLSF-0085-HMW-058-1206	water quality, NH4, ions, cd, cr, cu, pb, p, ag, na, zn, VOCs, SVOCs, ethylene glycol, TPH, TOC
HMW63	R	HELSTF Sewage Lagoons	HLSF-0085-HMW-063-1206	water quality, NH4, ions, cd, cr, cu, pb, p, ag, na, zn, VOCs, SVOCs, ethylene glycol, TPH, TOC
HMW09	LP	Test Cell 4 Lagoon	HLSF-0085-HMW-009-0107	water quality, ions, cr, ag, zn, VOCs, TOC
HMW45	LP	Test Cell 4 Lagoon	HLSF-0085-HMW-045-0107	water quality, ions, cr, ag, zn, VOCs, TOC
HMW56	R	Test Cell 4 Lagoon	HLSF-0085-HMW-056-0107	water quality, ions, cr, ag, zn, VOCs, TOC
		Water Bearing Zones		
		UP Upper Perched		
		LP Lower Perched		
		R Regional		

APPENDIX C

Logs

On CD only

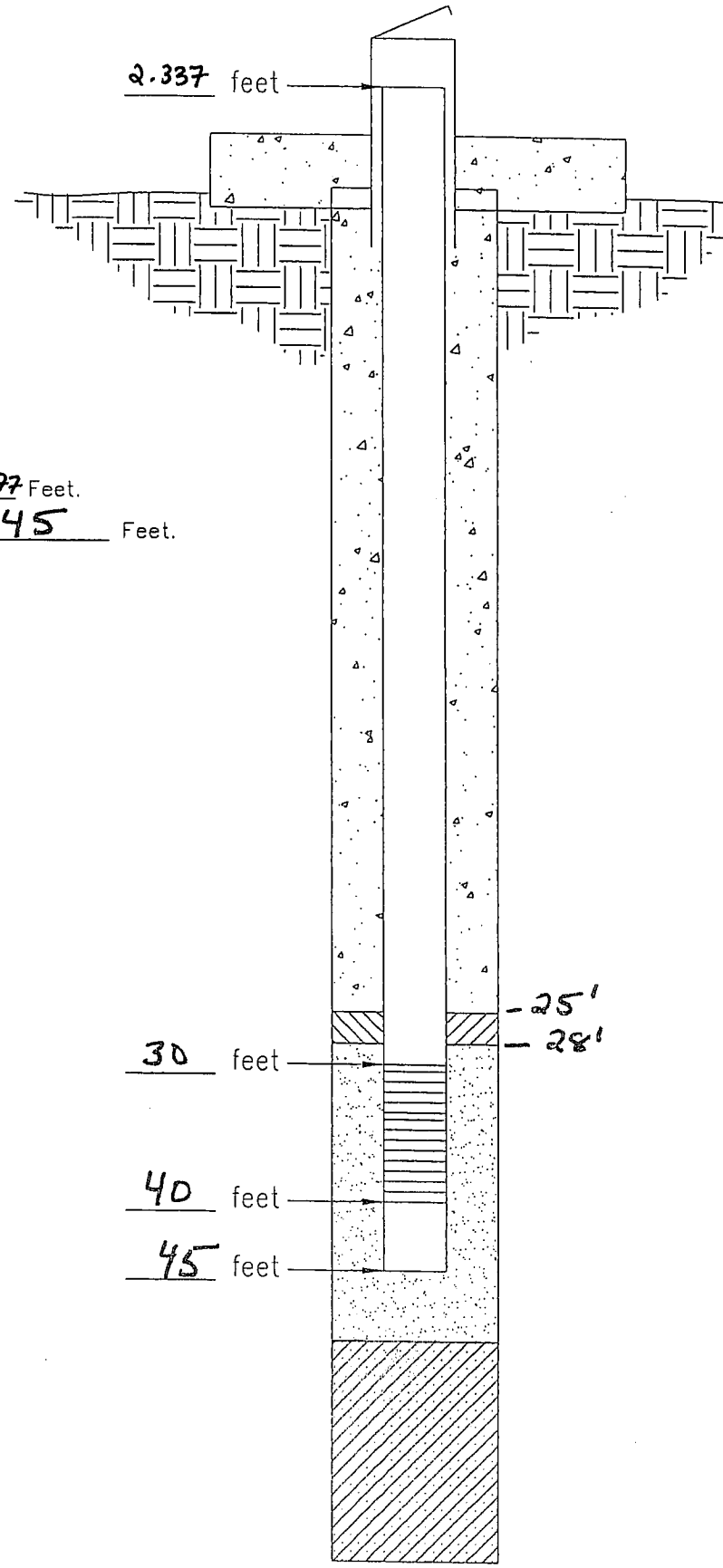
MONITORING WELL CONSTRUCTION DETAILS

WELL NUMBER: HMW-53

WELL NAME: HMW-53

KEYED NOTES:

1. CONCRETE PAD W/ EMBEDDED BRASS MARKER
   ELEVATION 3,954.1267 FEET (NAVD 1988).
   LAT. UTM N 3,611,309.9480
   LONG. UTM E 375,162.1310
2. TOP OF WELL CASING ELEVATION 3,956.4577 Feet.
3. TOTAL DEPTH (feet below top of casing) 45 Feet.
4. CASING DIAMETER 4 Inches.
5. SCREEN INTERVAL (feet below top of casing):
   30 Feet to 40 Feet.



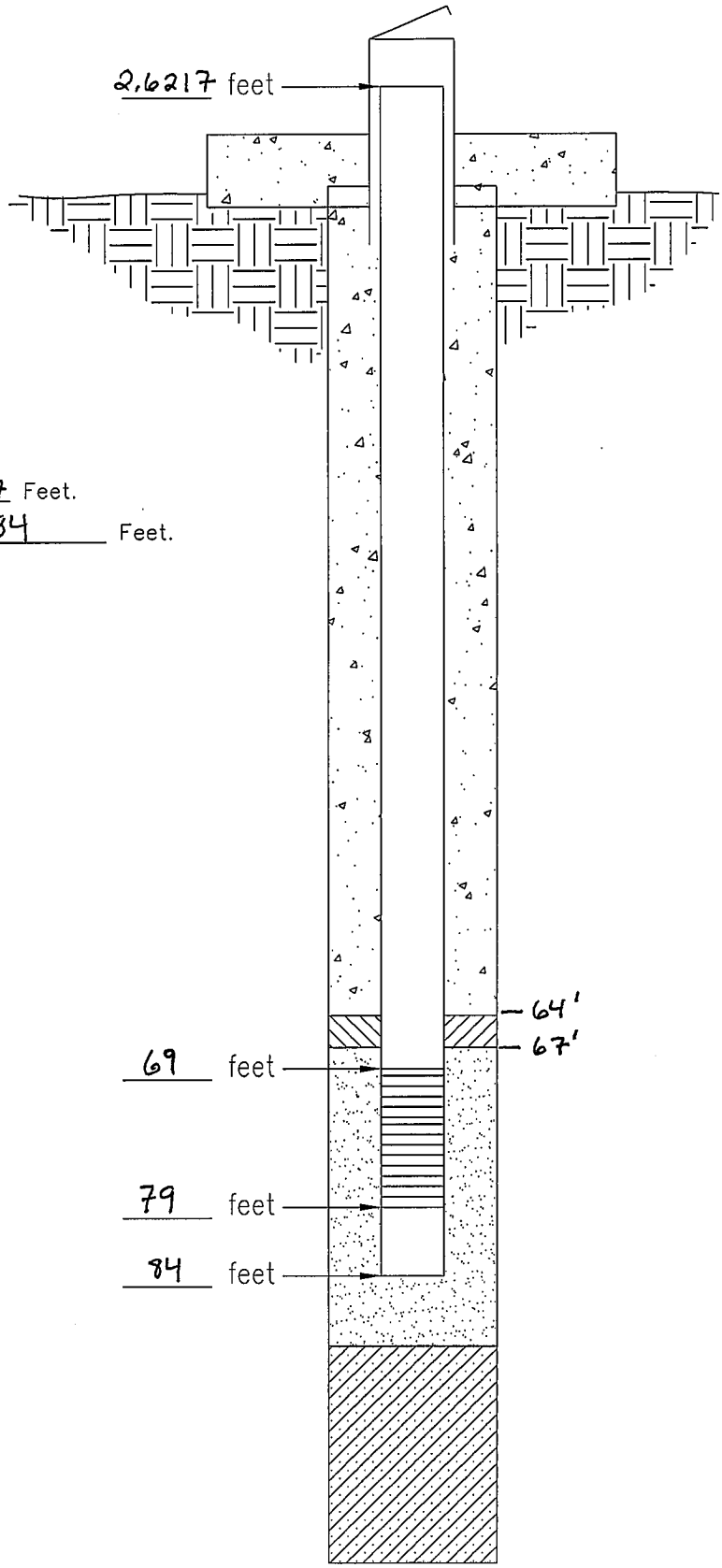
GENERAL NOTES:

1. DRAWING NOT TO SCALE.

MONITORING WELL CONSTRUCTION DETAILS

WELL NUMBER: HMW-54

WELL NAME: HMW-54



KEYED NOTES:

1. CONCRETE PAD W/ EMBEDDED BRASS MARKER
   ELEVATION 3,956.2630 FEET (NAVD 1988).
   LAT. UTM N 3,611,358.2010
   LONG. UTM E 375,073.8130
2. TOP OF WELL CASING ELEVATION 3,958.8847 Feet.
3. TOTAL DEPTH (feet below top of casing) 84 Feet.
4. CASING DIAMETER 4 Inches.
5. SCREEN INTERVAL (feet below top of casing):
   69 Feet to 79 Feet.

GENERAL NOTES:

1. DRAWING NOT TO SCALE.

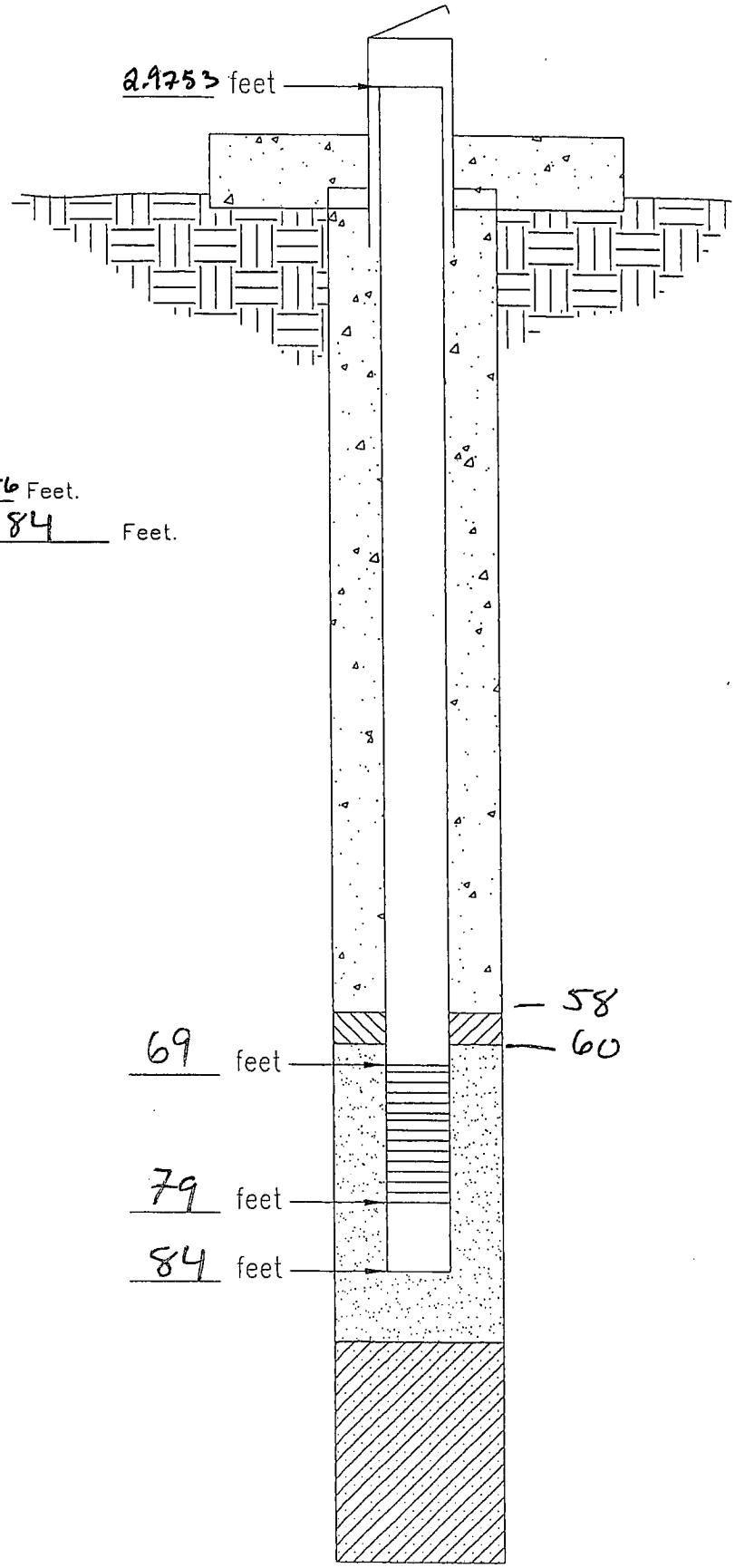
MONITORING WELL CONSTRUCTION DETAILS

WELL NUMBER: HMW-55

WELL NAME: HMW-55

KEYED NOTES:

1. CONCRETE PAD W/ EMBEDDED BRASS MARKER
   ELEVATION 3,956.1603 FEET (NAVD 1988).
   LAT. UTMN 3,611,372.0550
   LONG. UTM E 375,116.5080
2. TOP OF WELL CASING ELEVATION 3,959.1356 Feet.
3. TOTAL DEPTH (feet below top of casing) 84 Feet.
4. CASING DIAMETER 4 Inches.
5. SCREEN INTERVAL (feet below top of casing):
   69 Feet to 79 Feet.



GENERAL NOTES:

1. DRAWING NOT TO SCALE.

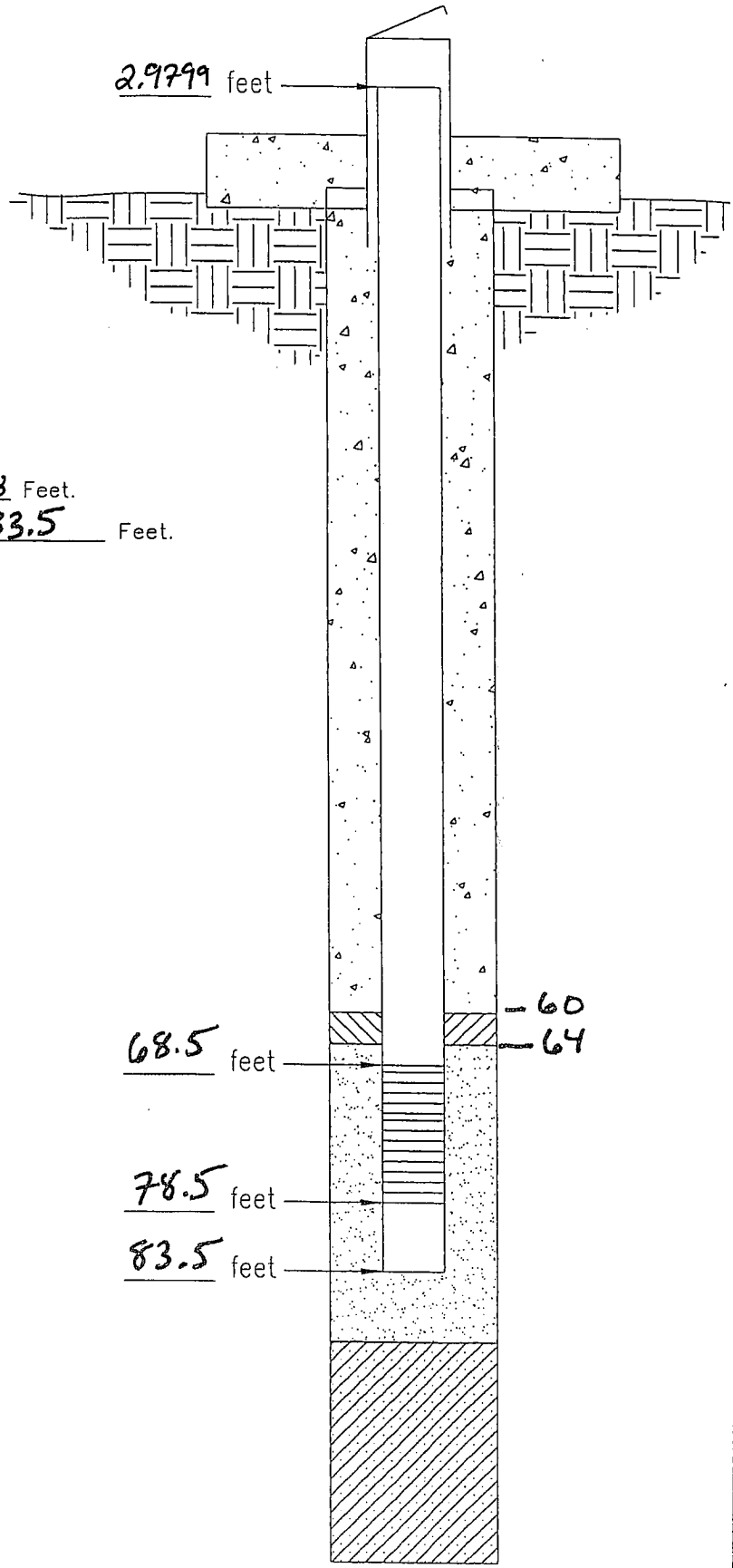
MONITORING WELL CONSTRUCTION DETAILS

WELL NUMBER: HMW-56

WELL NAME: HMW-56

KEYED NOTES:

1. CONCRETE PAD W/ EMBEDDED BRASS MARKER
   ELEVATION 3,955.5449 FEET (NAVD 1988).
   LAT. UTM N 3,611,079.2050
   LONG. UTM E 374,960.5660
2. TOP OF WELL CASING ELEVATION 3,958.5248 Feet.
3. TOTAL DEPTH (feet below top of casing) 83.5 Feet.
4. CASING DIAMETER 4 Inches.
5. SCREEN INTERVAL (feet below top of casing):
   68.5 Feet to 78.5 Feet.



GENERAL NOTES:

1. DRAWING NOT TO SCALE.

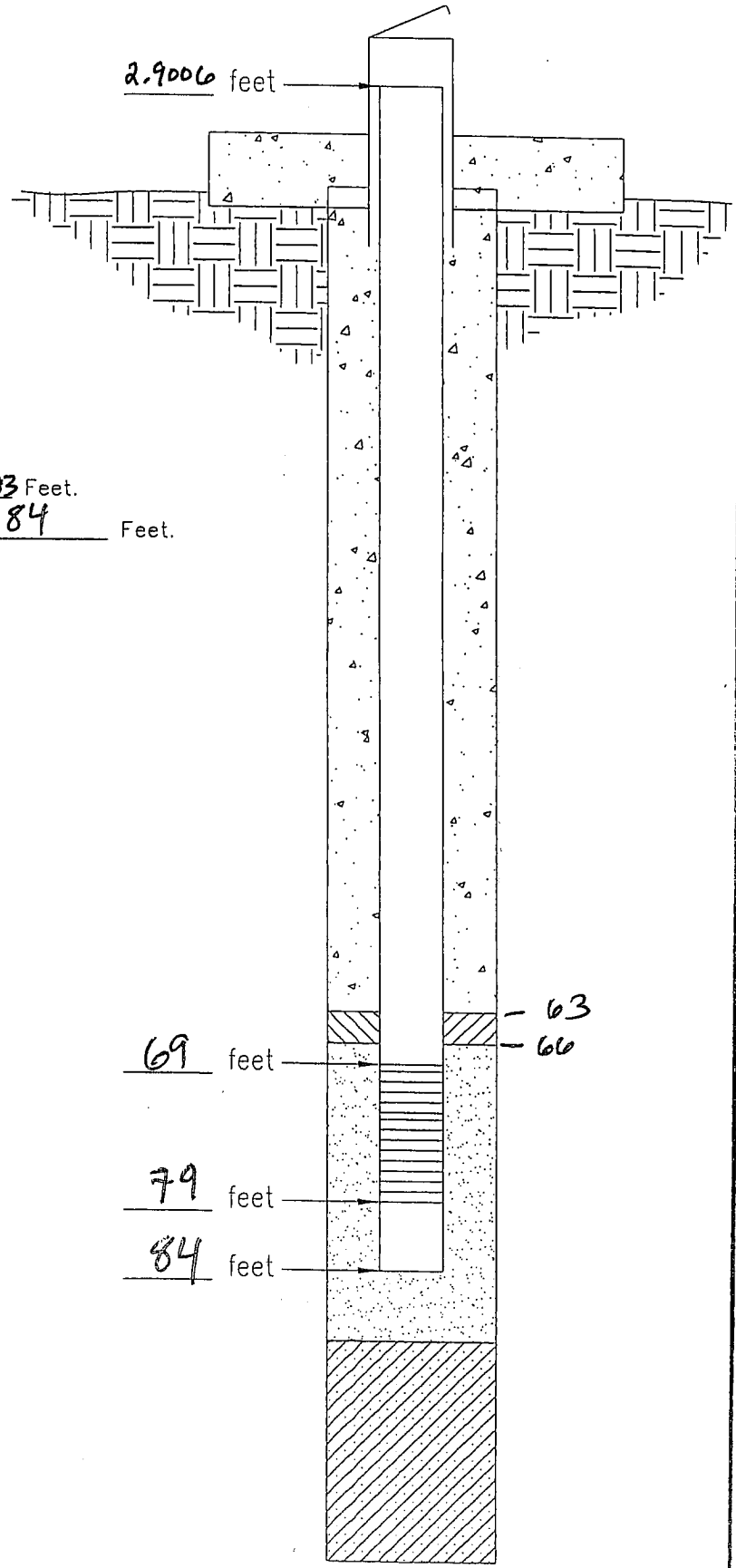
MONITORING WELL CONSTRUCTION DETAILS

WELL NUMBER: HMW-57

WELL NAME: HMW-57

KEYED NOTES:

1. CONCRETE PAD W/ EMBEDDED BRASS MARKER
   ELEVATION 3,953.9477 FEET (NAVD 1988).
   LAT. UTM N 3,610,986.6270
   LONG. UTM E 375,057.6510
2. TOP OF WELL CASING ELEVATION 3,956.8483 Feet.
3. TOTAL DEPTH (feet below top of casing) 84 Feet.
4. CASING DIAMETER 4 Inches.
5. SCREEN INTERVAL (feet below top of casing):
   69 Feet to 79 Feet.



GENERAL NOTES:

1. DRAWING NOT TO SCALE.

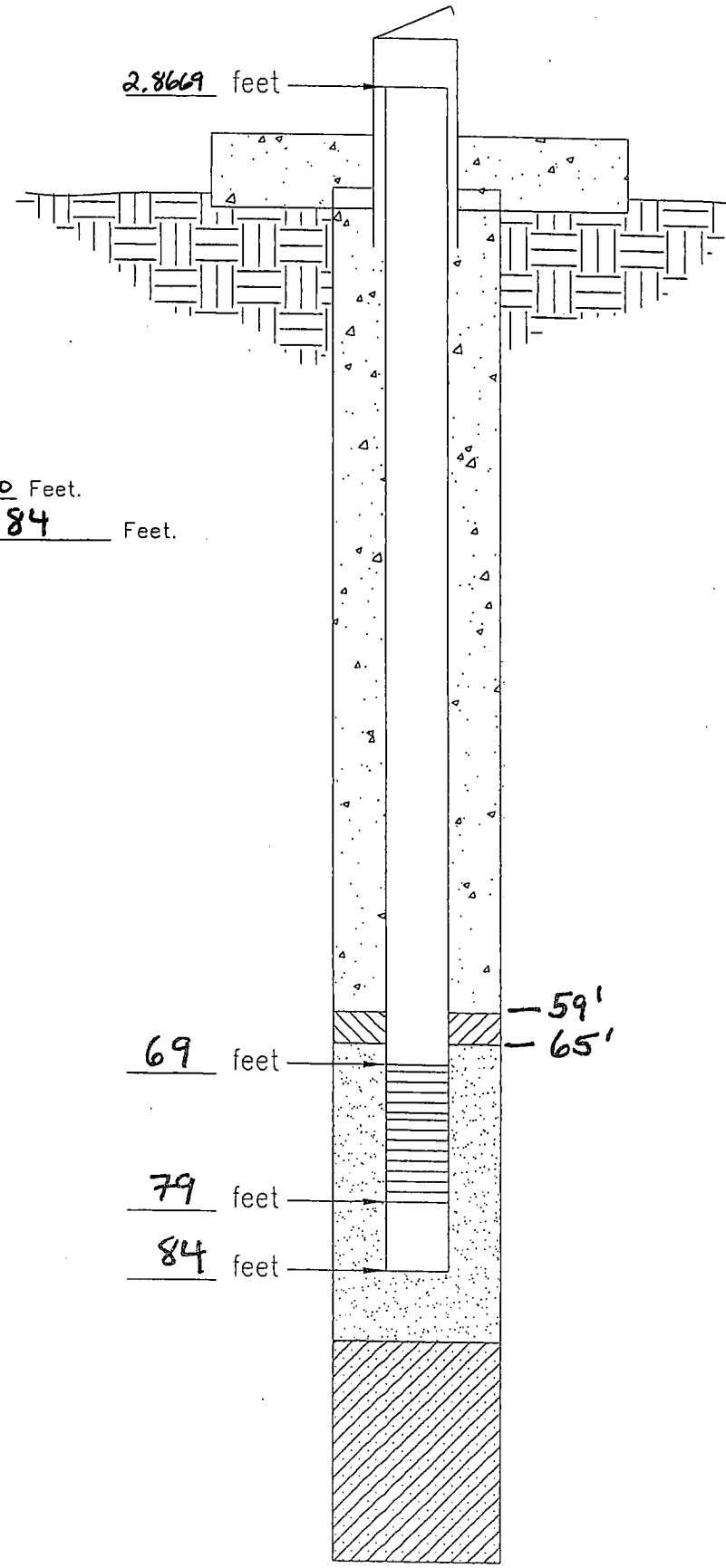
MONITORING WELL CONSTRUCTION DETAILS

WELL NUMBER: HMW-58

WELL NAME: HMW-58

KEYED NOTES:

1. CONCRETE PAD W/ EMBEDDED BRASS MARKER
   ELEVATION 3,954.0271 FEET (NAVD 1988).
   LAT. UTM N 3,611,040.9230
   LONG. UTM E 375,146.9760
2. TOP OF WELL CASING ELEVATION 3,956.8940 Feet.
3. TOTAL DEPTH (feet below top of casing) 84 Feet.
4. CASING DIAMETER 4 Inches.
5. SCREEN INTERVAL (feet below top of casing):
   69 Feet to 79 Feet.



GENERAL NOTES:

1. DRAWING NOT TO SCALE.

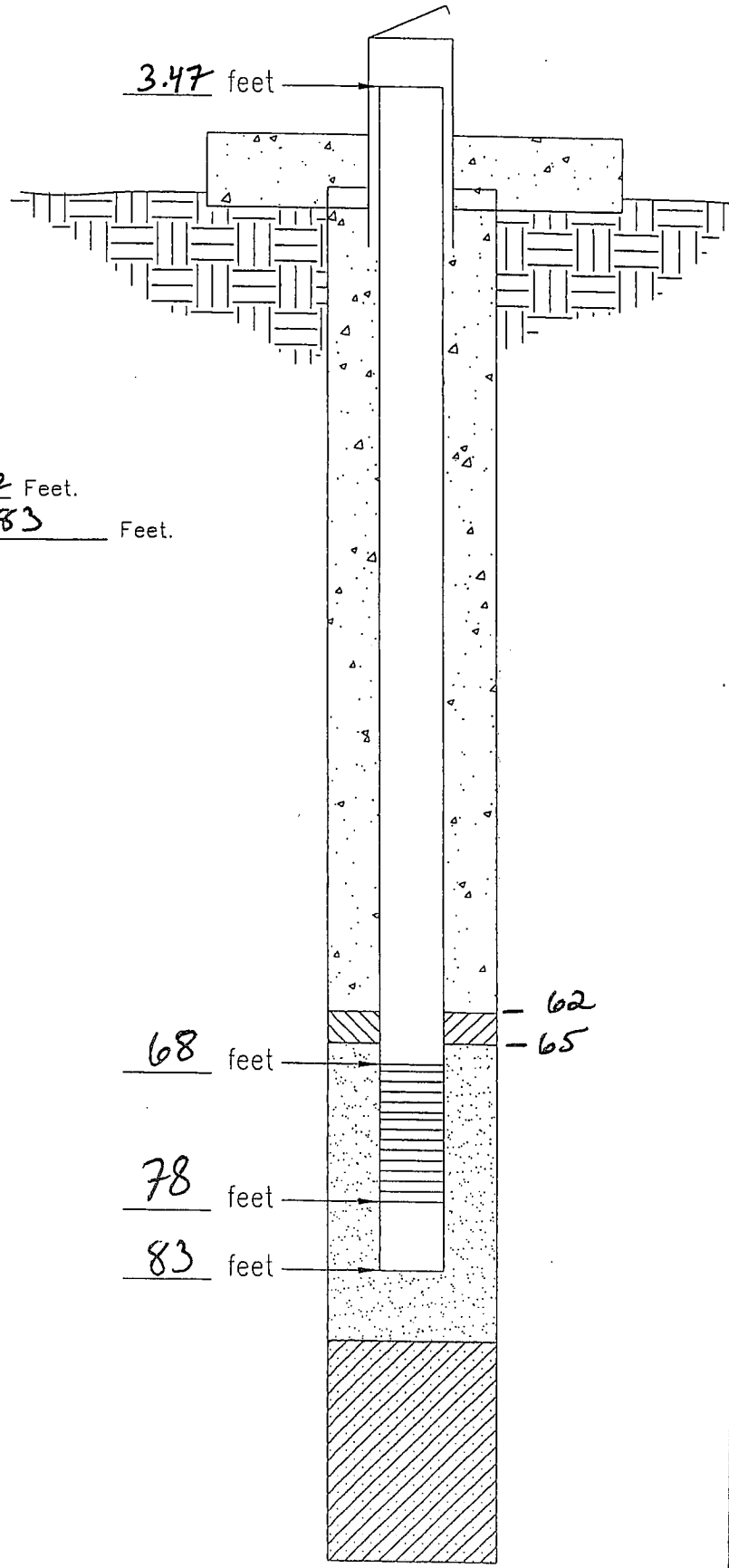
MONITORING WELL CONSTRUCTION DETAILS

WELL NUMBER: HMW-59

WELL NAME: HMW-59

KEYED NOTES:

1. CONCRETE PAD W/ EMBEDDED BRASS MARKER
   ELEVATION 3,953.9692 FEET (NAVD 1988).
   LAT. UTM N 3,611,453.0100
   LONG. UTM E 375,482.3240
2. TOP OF WELL CASING ELEVATION 3,957.4392 Feet.
3. TOTAL DEPTH (feet below top of casing) 83 Feet.
4. CASING DIAMETER 4 Inches.
5. SCREEN INTERVAL (feet below top of casing):
   68 Feet to 78 Feet.



GENERAL NOTES:

1. DRAWING NOT TO SCALE.

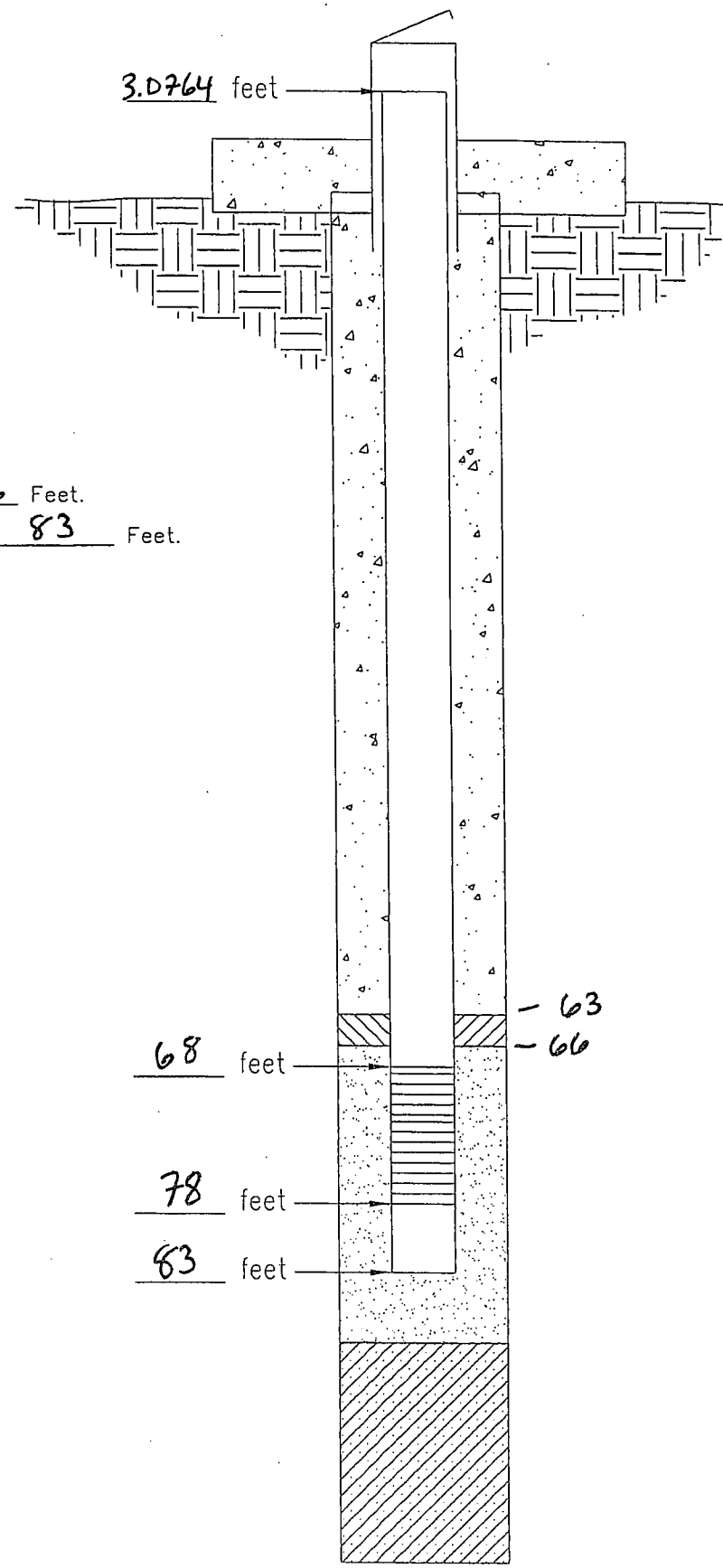
MONITORING WELL CONSTRUCTION DETAILS

WELL NUMBER: HMW-60

WELL NAME: HMW-60

KEYED NOTES:

1. CONCRETE PAD W/ EMBEDDED BRASS MARKER
   ELEVATION 3,956.2722 FEET (NAVD 1988).
   LAT. UTM N 3,610,920.6560
   LONG. UTM E 375,528.4820
2. TOP OF WELL CASING ELEVATION 3,959.3486 Feet.
3. TOTAL DEPTH (feet below top of casing) 83 Feet.
4. CASING DIAMETER 4 Inches.
5. SCREEN INTERVAL (feet below top of casing):
   68 Feet to 78 Feet.



GENERAL NOTES:

1. DRAWING NOT TO SCALE.

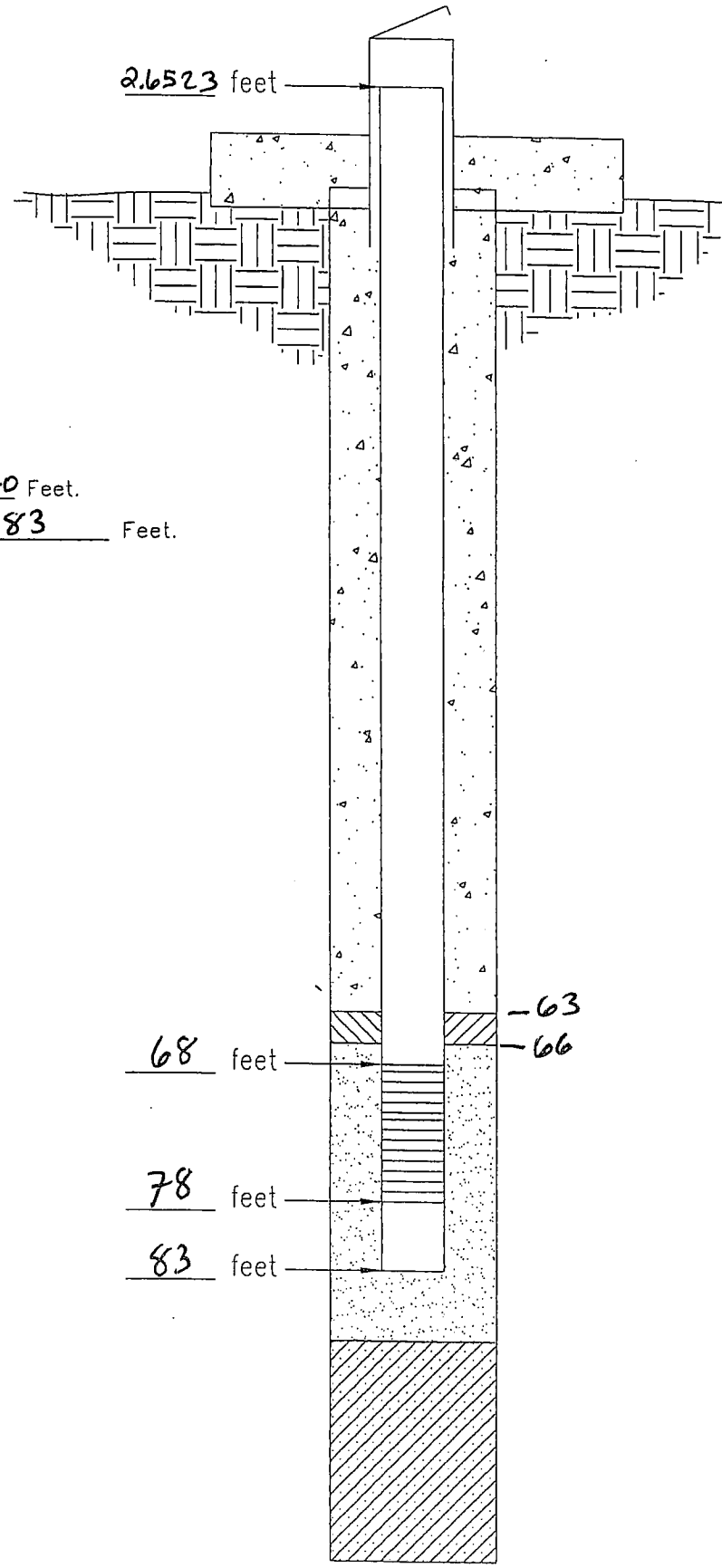
MONITORING WELL CONSTRUCTION DETAILS

WELL NUMBER: HMW-61

WELL NAME: HMW-61

KEYED NOTES:

1. CONCRETE PAD W/ EMBEDDED BRASS MARKER
   ELEVATION 3,956.2247 FEET (NAVD 1988).
   LAT. UTM N 3,611,838.8810
   LONG. UTM E 374,793.6110
2. TOP OF WELL CASING ELEVATION 3,958.8770 Feet.
3. TOTAL DEPTH (feet below top of casing) 83 Feet.
4. CASING DIAMETER 4 Inches.
5. SCREEN INTERVAL (feet below top of casing):
   68 Feet to 78 Feet.



GENERAL NOTES:

1. DRAWING NOT TO SCALE.

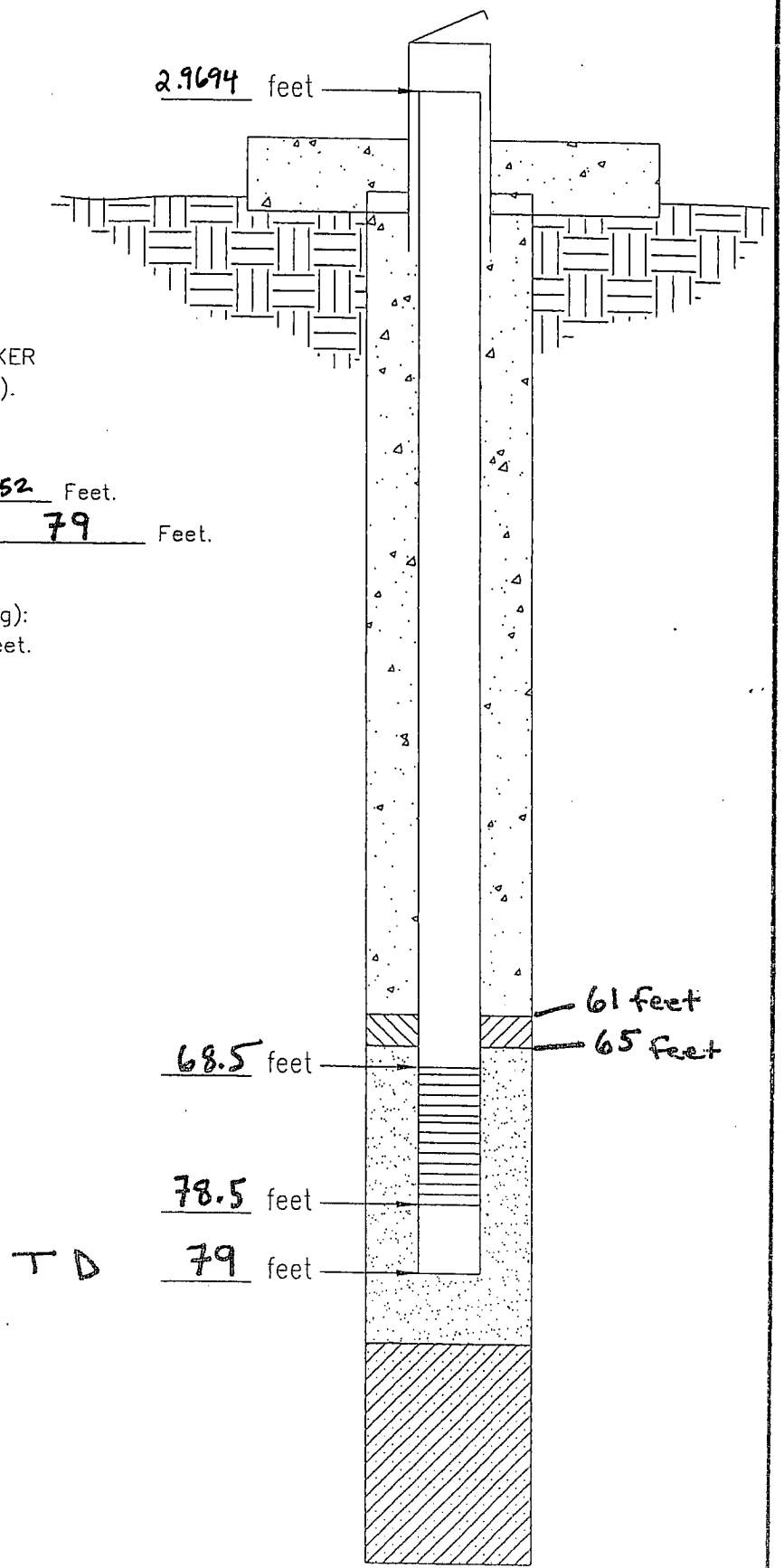
MONITORING WELL CONSTRUCTION DETAILS

WELL NUMBER: HMW-62

WELL NAME: HMW-62

KEYED NOTES:

1. CONCRETE PAD W/ EMBEDDED BRASS MARKER
   ELEVATION 3,955.6858 FEET (NAVD 1988).
   LAT. UTM N 3,611,279.4040
   LONG. UTM E 375,337.946
2. TOP OF WELL CASING ELEVATION 3,958.6552 Feet.
3. TOTAL DEPTH (feet below top of casing) 79 Feet.
4. CASING DIAMETER 4 Inches.
5. SCREEN INTERVAL (feet below top of casing):
   68.5 Feet to 78.5 Feet.



GENERAL NOTES:

1. DRAWING NOT TO SCALE.

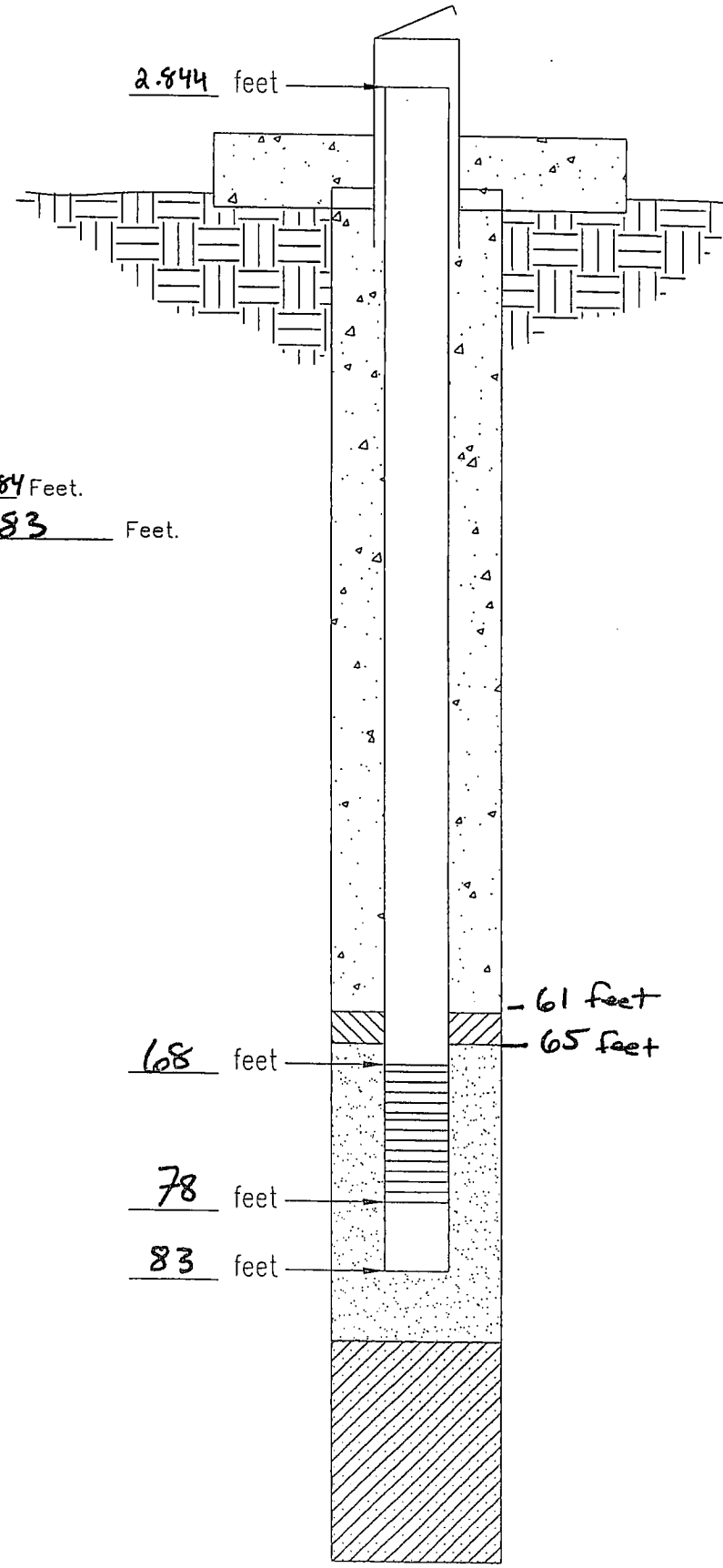
MONITORING WELL CONSTRUCTION DETAILS

WELL NUMBER: HMW-63

WELL NAME: HMW-63

KEYED NOTES:

1. CONCRETE PAD W/ EMBEDDED BRASS MARKER
   ELEVATION 3,952.9344 FEET (NAVD 1988).
   LAT. UTM N 3,611,123.4520
   LONG. UTM E 375,251.5010
2. TOP OF WELL CASING ELEVATION 3,955.7784 Feet.
3. TOTAL DEPTH (feet below top of casing) 83 Feet.
4. CASING DIAMETER 4 Inches.
5. SCREEN INTERVAL (feet below top of casing):
   68 Feet to 78 Feet.



GENERAL NOTES:

1. DRAWING NOT TO SCALE.

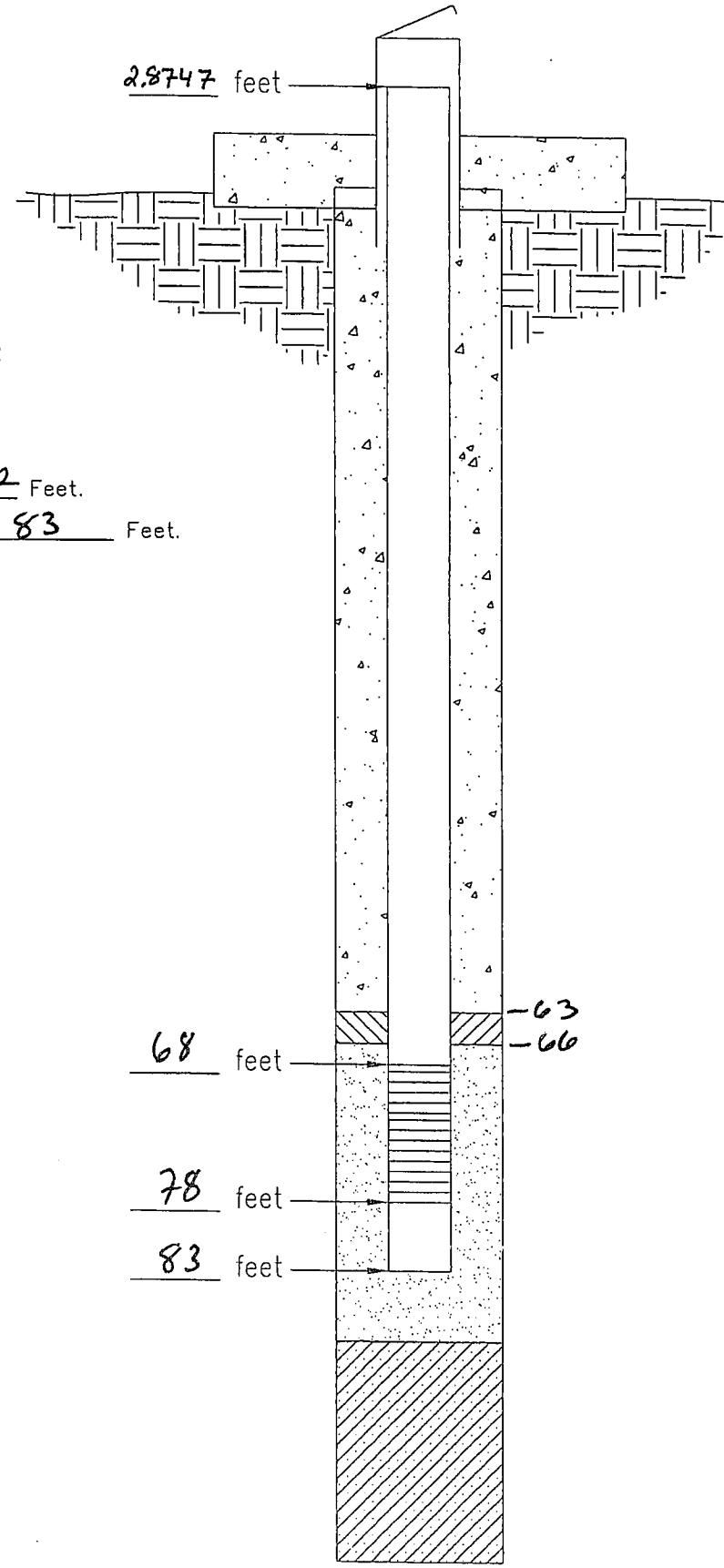
MONITORING WELL CONSTRUCTION DETAILS

WELL NUMBER: HMW -64

WELL NAME: HMW-64

KEYED NOTES:

1. CONCRETE PAD W/ EMBEDDED BRASS MARKER
   ELEVATION 3,954.3105 FEET (NAVD 1988).
   LAT. UTM N 3,611,392.5030
   LONG. UTM E 375,147.9870
2. TOP OF WELL CASING ELEVATION 3957.1852 Feet.
3. TOTAL DEPTH (feet below top of casing) 83 Feet.
4. CASING DIAMETER 4 Inches.
5. SCREEN INTERVAL (feet below top of casing):
   68 Feet to 78 Feet.



GENERAL NOTES:

1. DRAWING NOT TO SCALE.

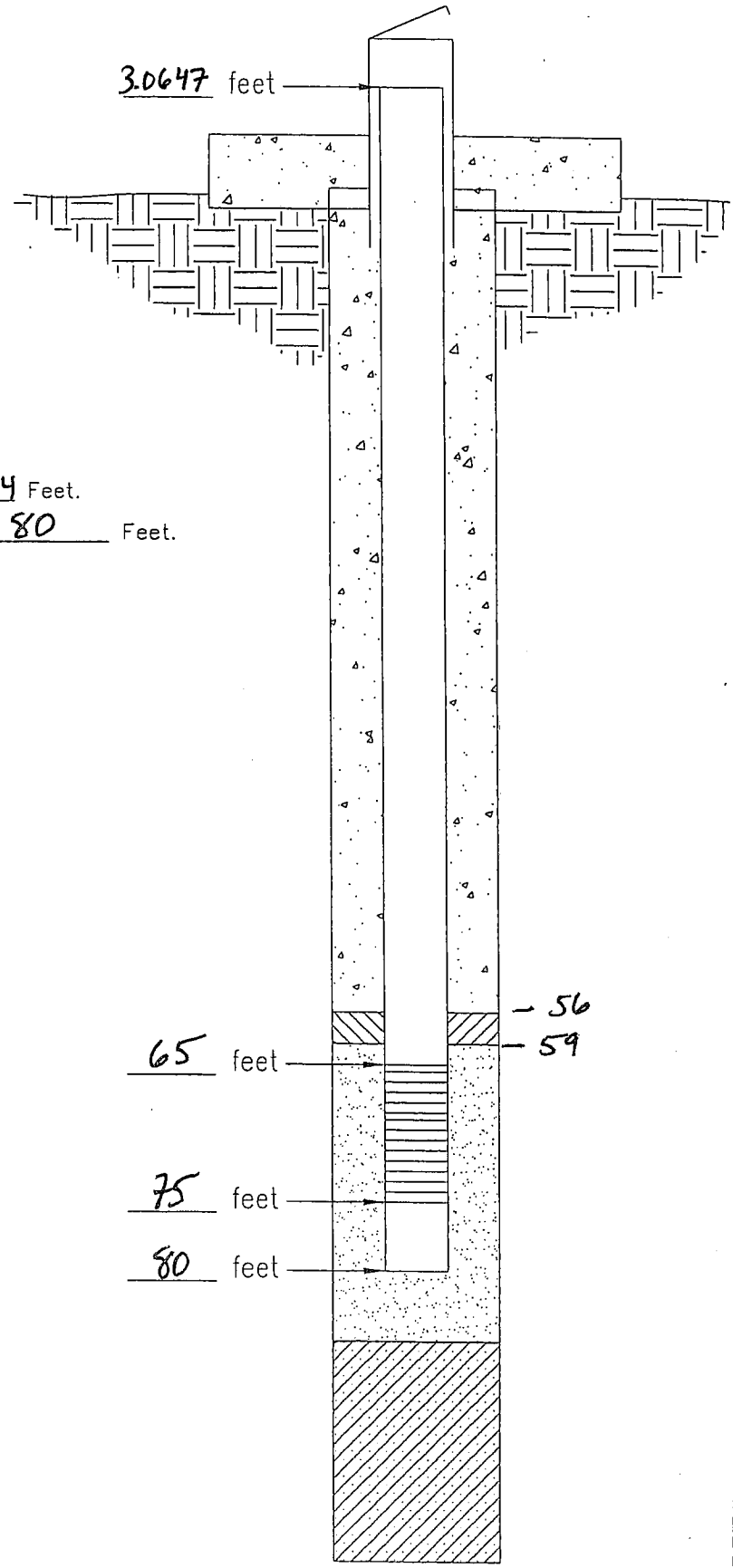
MONITORING WELL CONSTRUCTION DETAILS

WELL NUMBER: HMW-65

WELL NAME: HMW-65

KEYED NOTES:

1. CONCRETE PAD W/ EMBEDDED BRASS MARKER
   ELEVATION 3,956.3147 FEET (NAVD 1988).
   LAT. UTM N 3,611,424.7640
   LONG. UTM E 375,002.8280
2. TOP OF WELL CASING ELEVATION 3,959.3794 Feet.
3. TOTAL DEPTH (feet below top of casing) 80 Feet.
4. CASING DIAMETER 4 Inches.
5. SCREEN INTERVAL (feet below top of casing):
   65 Feet to 75 Feet.



GENERAL NOTES:

1. DRAWING NOT TO SCALE.

DRILLING LOG	DIVISION	INSTALLATION	HOLE No. HMW-53	SHEET No. 1 OF 2

1. PROJECT HELSTF Groundwater Study (TO7)	11. DATUM FOR ELEVATION SHOWN (TBM or MSL)
2. LOCATION (Coordinates or Station)	12. MANUFACTURER'S DESIGNATION OF DRILL CME-75
3. DRILLING AGENCY	13. TOTAL No. OF OVERBURDEN SAMPLES TAKEN — DISTURBED — UNDISTURBED
4. HOLE No. (As shown on drawing title and file number) HMW-53	14. TOTAL NUMBER CORE BOXES
5. NAME OF DRILLER Tierra John Findley	15. ELEVATION GROUND WATER
6. DIRECTION OF HOLE [X] Vertical [ ] Inclined _____ Degrees from Vertical	16. DATE HOLE — STARTED 9-15-06 0853 — COMPLETED 9-15-06
7. THICKNESS OF OVERBURDEN	17. ELEVATION TOP OF HOLE
8. DEPTH DRILLED INTO ROCK	18. TOTAL CORE RECOVERY FOR BORING
9. TOTAL DEPTH OF HOLE 45' — 10. SIZE AND TYPE OF BIT	19. SIGNATURE OF INSPECTOR [signature]

ELEVATION a	DEPTH b (ft)	LEGEND c	CLASSIFICATION OF MATERIALS (description) d	% CORE RECOVERY e	BOX OR SAMPLE NUMBER f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g
	2.5			No Recovery		
	5					Used vacuum extractor 6ft down To check Utilities
	7.5					
	10		ML-Silt w/VF Sand Made up of Gypsum, white N9 Friable, poorly Sorted	100%		50 Blow counts slightly moist
	12.5					Driller saw a lot water coming up at 12 ft — 12 UP
	15		ML-Silt w/ Minor VF Sand (Gypsum) Low plasticity (Soft, malleable) yellowish gray (5Y 8/1)	10%		32 Blow count (remides me of O) of Rock flour
	17.5					
	20		9 In ML-Silt w/VF Sand, minor clay, Rest 14 in SW-SM well graded sand w/silt, Med to fine grain sand poorly Sorted, Pale yellowish brown (10YR 6/2)			50 Blow counts Moist (water blow gravel) Top of Sand layer, Dry at bottom of sand is moist but not as like Top — 3

U.F. Very Fine

Could See Break from Gypsum To Sand layer

Rock color chart by USGS

DRILLING LOG (Continuation Sheet)

INSTALLATION	HOLE No.	SHEET No.
	HMW-53	2 OF 2

1. PROJECT: HELSTF Groundwater Study (TO 7)

11. ELEVATION OF TOP HOLE:

ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (description) d	% CORE RECOVERY e	BOX OR SAMPLE NUMBER f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g
	~~22.5~~					
	25		CL-Lean clay w/ VF Sand Hard to Moderate Plasticity (TBD-Bot) Gypsum X-salt: Scatter Thur core Light Brown (5YR 5/6)	60%		25 Blow count
	27.5					
	30		CL-Lean clay w/ VF Sand Scatter, common Gypsum X-stal Moderate Plasticity, Moderate brown (5YR 4/4)	90%		29 Blow counts Dry
	32.5					
	35		CL-Lean clay w/ Very F Sand For 1st Foot, 2nd Ft has more sand (T) Moderate to low (B) plasticity - ~~Sandy~~ Clayey Sand Near Bottom, Scattr, Scatr Gypsum X-stals. Moderate yellowish brown (10YR 5/4)	100%		20 Blow counts Become more Sandier Brown/red Gypsum becoming less Dry
	37.5					
	40		CL-Lean clay VF Sand, Zones of Gypsum, Moderate to Hard Plasticity, Light Brown (5YR 5/6)	100%		23 Blow count Dry
	42.5					
	45		~~Drilling down to~~ TD ~~45 ft Set Sump~~ CL-Lean clay w/ Sand (VF) Zones Gypsum, Zones Sand (Clay) Moderate To Hard plasticity moderate yellowish Brown (10YR 5/4)	95%		More sand, but is still a clay, Sand Increasing Little moist
	47.5					
	50		TD of well 45 feet.			
	52.5					
	55					

WL at 48.75/55

Stuck

DRILLING LOG	DIVISION	INSTALLATION	HOLE No. HMW-54	SHEET No. 1 OF 3

1. PROJECT HELSTF Groundwater Study	11. DATUM FOR ELEVATION SHOWN (TBM or MSL)
2. LOCATION (Coordinates or Station)	12. MANUFACTURER'S DESIGNATION OF DRILL CME-75
3. DRILLING AGENCY	13. TOTAL No. OF OVERBURDEN SAMPLES TAKEN — DISTURBED — UNDISTURBED
4. HOLE No. (As shown on drawing title and file number) HMW-54	14. TOTAL NUMBER CORE BOXES
5. NAME OF DRILLER Tierra John Findley	15. ELEVATION GROUND WATER
6. DIRECTION OF HOLE [X] Vertical [ ] Inclined _____ Degrees from Vertical	16. DATE HOLE — STARTED — COMPLETED 11-25-06 — 11-27-06
7. THICKNESS OF OVERBURDEN	17. ELEVATION TOP OF HOLE
8. DEPTH DRILLED INTO ROCK	18. TOTAL CORE RECOVERY FOR BORING
9. TOTAL DEPTH OF HOLE 83' — 10. SIZE AND TYPE OF BIT	19. SIGNATURE OF INSPECTOR Bruce T. Dan

ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (description) d	% CORE RECOVERY e	BOX OR SAMPLE NUMBER f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significent) g
	0					Vacuum Excavation Down to 6ft bgs to chek for utilities
	5		No Recovery			
	10		ML-Gypsum silt, yellowish gray (5Y 8/1)	80%		41 Blow Counts Dry
	15		ML-Silt Gypsum w/ Diesel - yellowish gray (5Y 8/1) Bottom 8in - SW-SC - Gypsum Sand w/ little Clay; Middle - Dusky yellow 5Y 6/4 Bottom; Middle - Bluish gray (5B 7/1)	100%		13 Feet - Diesel smelled In cuttings, - Light Bluish gray (5B 7/1); 33 Blow Counts 0.2 VOC - Dry Top Middle - Moist w/ Diesel To Bottom
	20		Top 5in - ML - Bluish gray (5B 7/1) Gypsum Silt; Rest: CL-Lean clay, Light brown (5YR 5/6) w/ (Sand (Fine)) Zoned Gypsum 5 7/1	100%		18 Blow Counts wet Diesel, Top 3in Clay Sandy, Small gas sauny ~~downward~~

DRILLING LOG (Continuation Sheet)	INSTALLATION	HOLE No. HMW-54	SHEET No. 2 OF 3
1. PROJECT HELSTF GW Study	11. ELEVATION OF TOP HOLE		

ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (description) d	% CORE RECOVERY e	BOX OR SAMPLE NUMBER f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g
	25		Interbedded Clay & Sand Top 8in - CL-lean clay w/silt - Blue Sand or towards middle SW-SC - Med grained Sand RTAN to CL w/Sand Increase Sand downward Moderate yellowish brown (10YR 5/4) Low to No Plasticity	100%		27 Blow count Diesel Smell Dry to moist
	30		SW-SC - well graded w/ clay & silt - Minor (Fine to UF) Pale yellowish brown (10YR 6/2) Bottom: SP - poorly graded Sand Moderate yellowish brown (10YR 5/4) No silt, fine to UF grained	85%		50 Blow Counts Top 1ft - Diesel Bottom 1ft - Slight smell Top - wet Bottom moist
	35		CL-Lean clay w/Sand & Silt - For the Top 10 in - w/Gypsum X-3 to 15 & silt (Gypsum mc) outer Rings color yellowish gray (5Y 8/1) Interring Moderate yellowish brown (10YR 5/4) Rest core: SP - poorly graded, Med Sand, No silt - (10YR 5/4)	70%		56 Blow counts Faint Diesel Smell Sand - moist
	40		SW-SM-SC - well graded Sand w/silt & Clay - Moderate yellowish brown (10YR 5/4) 1st Foot 2nd Foot - CL-Lean clay w/Fine Sand Low plasticity, Moderate brown (5YR 4/4) Silt & Sand is localized Top 3 inch, Sand becomes more poorly graded downward (Less Fines) Sorting Improves	Med Size 70%		34 Blow Counts Clay - Dry Sand - moist
	45		Top 3 in - SP - Med grained Sand, Bottom 1/3 Sand Zones & gypsum, Rest CL - Lean clay w/Fine Sand; Sand - Moderate yellowish brown, Clay - Light olive brown (5YR 5/6)	80%		33 Blow Counts Clay - Dry Sand - wet w/ Diesel odor - could be water from above
	50		SP - Med to Fine grain. Moderate yellowish brown (10YR 5/4); Poorly well sorted No silt or Fines.	100%		36 Blow Counts Moist - water blue grains
	55		Top 1ft - SW-SM - Fine grain Sand w/ Minor Clay (SC) near bottom of 1ft grades into CH - Fat clay / Hard, Black organic Sand - moderate yellowish brown - (10YR 5/4) Clay - Light Brown (5YR 5/6	100%		15 Blow Counts Sand - wet to moist

4B'
LP

DRILLING LOG (Continuation Sheet)	INSTALLATION	HOLE No. HMW-54	SHEET No. 3 OF 3
1. PROJECT HELSTF GW Study	11. ELEVATION OF TOP HOLE		

ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (description) d	% CORE RECOVERY e	BOX OR SAMPLE NUMBER f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g
	60		SP - Med grained sand Moderate yellowish brown (10YR 5/4), Saw No fines	100%		24 Blow count Sand wet to moist (Top to Bottom)
	65		SP - Fine to v F grained sand, Moderate yellowish brown (10YR 5/4)	90% ~~80%~~		14 Blow counts wet
	70		SP - Fine to V F grained sand, Moderate yellowish brown (10YR 5/4), Bottom 6 In CL-lean clay w/ Fine Sand, Interbed Wire Sand Layer, Light Brown (5YR 5/4)	100%		Heaving Sands 24 Blow Counts Sand-moist Clay Dry
	75		SP - Fine to very Fine Sand Moderate yellowish brown (10YR 5/4)	70%		19 Blow counts wet
	80					
	85		Hit water pipe @ 8 ft Plan to set well at 83 ft			

DTW - 72
TD ~~84~~ 83

DRILLING LOG	DIVISION	INSTALLATION	HOLE No. HMW-55	SHEET No. 1 OF 3

1. PROJECT: HELSTF Groundwater Study	11. DATUM FOR ELEVATION SHOWN (TBM or MSL):
2. LOCATION (Coordinates or Station):	12. MANUFACTURER'S DESIGNATION OF DRILL: CME-75
3. DRILLING AGENCY:	13. TOTAL No. OF OVERBURDEN SAMPLES TAKEN — DISTURBED: — UNDISTURBED:
4. HOLE No. (As shown on drawing title and file number): HMW-55	14. TOTAL NUMBER CORE BOXES:
5. NAME OF DRILLER: Tierra Rene Sosa	15. ELEVATION GROUND WATER:
6. DIRECTION OF HOLE: [X] Vertical [ ] Inclined _____ Degrees from Vertical	16. DATE HOLE — STARTED: — COMPLETED: 9-25-06 — 9-27-06
7. THICKNESS OF OVERBURDEN:	17. ELEVATION TOP OF HOLE:
8. DEPTH DRILLED INTO ROCK:	18. TOTAL CORE RECOVERY FOR BORING:
9. TOTAL DEPTH OF HOLE: 82' — 10. SIZE AND TYPE OF BIT:	19. SIGNATURE OF INSPECTOR: Bryt. Dan

ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (description) d	% CORE RECOVERY e	BOX OR SAMPLE NUMBER f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g
	0					
			No Recovery			Vacuum excavation Down to 6 ft bgs to check for utilities
	5					
	10		ML Silt w/Sand v.fine grained - composed of gypsum N9 white - has iron staining - rust color mottled	70%		18 blow counts
	15		ML silt w/sand - composed of gyp v. fine gr. sand N9 white has rust staining / mottling	75%		54 blow counts moist ≈ 15.5' dry at bottom Driller noted wet at 17 ft.
	20		CL Lean clay w/ Sand fine to med. gr. abundant gyp. crystals Lt. brown 5YR 6/4 — less sand at bottom	75%		13 blow counts ~~[illegible]~~ wet

UP

DRILLING LOG (Continuation Sheet)	INSTALLATION	HOLE No. HMW-55	SHEET No. 2 OF 3
1. PROJECT HELSTF GW Study	11. ELEVATION OF TOP HOLE		

ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (description) d	% CORE RECOVERY e	BOX OR SAMPLE NUMBER f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significent) g
						UP
	25		6"- CL lean clay w/silt Low Plasticity Lt brown 5YR6/4	50%		25 blow counts
			3"- SW- well graded sand - Fine to med. poorly sorted			Dry
			CL lean clay - low to mod plasticity Lt Brown - 5YR 5/6			
	30		CL Lean clay w/silt+sand v.fine grained - low to mod plasticity Lt brown 5YR 6/4	70%		14 blow counts Dry
	35		CL Sandy lean clay Low plasticity fine grained sand in clay Lt brown 5YR 6/4 less sand - plasticity - low - mod.	50%		22 blow counts dry
	40		CH Fat Clay - mod plasticity Lt brown 5YR 5/6			
			CL Sandy lean clay - fine grained sand to clayey sand - no plasticity			
	45		CL Sandy Lean clay - fine to med grained - low plasticity	75%		29 blow counts - wet
			SW - well graded sand - fine to med.			
			CL Sandy lean clay		Lt brown 5YR 6/4	LP
	50		CL Lean clay ~~CH Fat clay~~ low-mod plasticity Lt Brown 5YR 6/4 - Soft	90%		25 blow counts Dry
			Bottom 6"- CL Sandy Lean clay No plasticity fine gr. sand			
	55		CL Lean clay low-plasticity Pale yellowish brown 10YR 6/2	100%		17 blow counts Dry
			CL lean clay w/silt			

DRILLING LOG (Continuation Sheet)

INSTALLATION	HOLE No.	SHEET No.
	HMW-55	3 OF 3

1. PROJECT: HELSTF GW Study

11. ELEVATION OF TOP HOLE:

ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (description) d	% CORE RECOVERY e	BOX OR SAMPLE NUMBER f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g
	60		SW - Well graded sand fine to med. gr. mostly fine - poorly sorted	100%		Sand - wet 20 blow counts
			Bottom 8" - CL to CH - Lean Clay. no silt - soft - Pale yellowish brown 10 YR 6/2			- Clay - dry
	65		CL Silty Lean clay Soft Low plasticity w/minor fine Sand	100%		Dry 25 blow Counts
			bottom 3" - CL Sandy Lean clay fine gr. Sand Pale yellowish brown	10 YR 6/2		
	70		CL - Sandy lean clay Med to fine Sand, moderate yellowish brown 10YR 5/4, Zones of poorly graded Sand (see count top) SW Low to Mod-erate plasticity	100%		27 blow Counts Moist - see moist blw 8 mins
	75		SW - Well graded Sand w/silt SM w/minor clay SC poorly sorted, Med to VF grained moderate yellowish brown (10YR 5/4) seem like more clay at bottom of core	90%		36 Blow counts wet
	80		CH - Fat clay Top 5 in Hi - Mod Plasticity minor silt, ~~roots 12 inches, start~~ Mod brown 5YR 4/4, wet 12 in SW-SC gypsum Sand w/clay yellowish gray (5 Y 7/2) well graded w/ Sand + clay - Little or no Plasticity Bottom, CH w/ Sand Hi to Mod Plasticity, Moderate brown 5YR 4/4 - Gypsum Layer ~~Pistol~~ Found at Top	100%		27 Blow count
	85					

68-71

DRILLING LOG	DIVISION	INSTALLATION	HOLE No. HMW-56	SHEET No. 1 OF 3

1. PROJECT HELSTF Groundwater Study	11. DATUM FOR ELEVATION SHOWN (TBM or MSL)
2. LOCATION (Coordinates or Station)	12. MANUFACTURER'S DESIGNATION OF DRILL CME-75
3. DRILLING AGENCY	13. TOTAL No. OF OVERBURDEN SAMPLES TAKEN — DISTURBED — UNDISTURBED
4. HOLE No. (As shown on drawing title and file number) HMW-56	14. TOTAL NUMBER CORE BOXES
5. NAME OF DRILLER Tierra Rene Sosa	15. ELEVATION GROUND WATER
6. DIRECTION OF HOLE [X] Vertical [ ] Inclined _____ Degrees from Vertical	16. DATE HOLE — STARTED — COMPLETED 9-20-06 — 9-21-06
7. THICKNESS OF OVERBURDEN	17. ELEVATION TOP OF HOLE
8. DEPTH DRILLED INTO ROCK	18. TOTAL CORE RECOVERY FOR BORING
9. TOTAL DEPTH OF HOLE 83.5 — 10. SIZE AND TYPE OF BIT	19. SIGNATURE OF INSPECTOR Barry T. Dair

ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (description) d	% CORE RECOVERY e	BOX OR SAMPLE NUMBER f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g
	0					Vacuum excavion
	5		No Recovery			
	10		ML Silt - Gypsum N9 white	60%		Hit Refusal after ≈ 1' depth Dry
	15		Top 6" ML - Gypsilt Grades to SM Silty Sand fine to med. grained w/ gyp crystals throughout becomes clayey at bottom.			Dry
	20		Top 3" - ML Gypsum silt N9 white w/ minor sand. CL lean clay Low plasticity Gyp crystals throughout	80% 5YR 4/4 Moderate brown		15 blow counts fine to med. Dry.

DRILLING LOG (Continuation Sheet)	INSTALLATION	HOLE No. HMW-56	SHEET No. 2 OF 3
1. PROJECT HELSTF GW Study	11. ELEVATION OF TOP HOLE		

ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (description) d	% CORE RECOVERY e	BOX OR SAMPLE NUMBER f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g
	25		CL Sandy Lean Clay Gypsum crystals throughout Moderate brown 5YR 4/4 Low to No plasticity Soft			30 blow counts Dry
	30		SP - poorly graded Sand fine grained Qtz sand w/ minor silt. Subrounded grains well sorted Moderate yellowish brown 10YR 5/4	75%		50 Blow counts Dry
	35		SP - poorly graded Sand fine grained Qtz sand w/ minor silt Subrounded grains - mod. well sorted Moderate yellowish brown 10YR 5/4	75%		50 Blow Counts Dry
	40		SP Poorly graded Sand w/ silt fine grained sand - minor medium Subrounded grains mod. well sorted Moderate yellowish brown 10YR 5/4			37 Blow Counts moist
	45		CH Fat clay w/ silt Some gyp crystals at top			
	50		SW - well graded sand TOP Med grained, poorly sorted, Qtz is fine to coarse CL - Sandy lean clay, moderate to high plasticity (holds shape), hard stiff Light brown (5YR 5/6), Sand is friable	100%		25 Blow count Dry
	55		SP Fine to Med grain Sand Poorly graded Sand. Sub-Rounded grains, moderate yellowish brown (10YR 5/4) Little or No Fines	100%	Heavy sands	Sand heaving in to hole, driller will drill to Next Interval. Driller will add to drill down Sample heave up into spoon, wet

55'
LP

DRILLING LOG (Continuation Sheet)	INSTALLATION	HOLE No. HMW-56	SHEET No. 3 OF 3
1. PROJECT HELSTF Groundwater Study	11. ELEVATION OF TOP HOLE		

ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (description) d	% CORE RECOVERY e	BOX OR SAMPLE NUMBER f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g
	60		1st Foot SP - Poorly graded Sand (well grated, Med to Fine Grain.			17 Blow counts pic shows Sand on top of clay wet Sand clay Dry
	62.5		2nd Ft CH - Fat clay Medium Plasticity to Hi plasticity, hard, Breaks, Hard to Swim wire, take a lot work to hand Moderate yellowish brown (10YR5/4)	100%		
	65		CL - Lean clay w Fine Sand Rare Gypsum x-stal, Med to Low Plasticity. clayey sand on top less sand near the bottom Moderate yellowish brown (10YR5/4)	70%		18 Blow counts decrease in sand in amt & particle size Dry
	70		CL - Lean clay w/ Fine Sand Moderate to low plasticity (Soft) Light brown (5YR6/4)	70%		15 Blow counts, mostly Dry, slightly Damp in some areas - More near bottom as visible water
	72.5					
	75		CH - Fat clay w/ Minor Fine Sand (dens) & silt hard, Hi Plasticity, Rest of core CL - Lean clay w/ Sand med to Fine grained, low plasticity (Soft),	75%		22 Blow counts Top clay Dry, Bottom clay is Moist. water blw Sand grains
	77.5					
	80		CL - Lean clay w/ Fine Sand & silt Lg Gypsum x-stals (30 min) Moderate To Low plasticity Moderate yellowish brown (10YR5/4), silt can have a color as dark yellowish orange (10YR6/6)	45%		27 Blow counts moist to Dry in areas depends on Amt of Sand
	82.5		• 10/5 Reaming Augers To 84 ft			
	85		TD 83.10 ft			

PMW Rep 71

DRILLING LOG	DIVISION	INSTALLATION	HOLE No. HMW-57	SHEET No. 1 OF 3

1. PROJECT: HCSSF Groundwater Study	11. DATUM FOR ELEVATION SHOWN (TBM or MSL)
2. LOCATION (Coordinates or Station)	12. MANUFACTURER'S DESIGNATION OF DRILL: CME 75
3. DRILLING AGENCY	13. TOTAL No. OF OVERBURDEN SAMPLES TAKEN — DISTURBED — UNDISTURBED
4. HOLE No. (As shown on drawing title and file number): HMW-57	14. TOTAL NUMBER CORE BOXES
5. NAME OF DRILLER: Tierra Rene Sosa	15. ELEVATION GROUND WATER
6. DIRECTION OF HOLE: [X] Vertical [ ] Inclined ____ Degrees from Vertical	16. DATE HOLE — STARTED — COMPLETED: 9-18-06 — 9-19-06
7. THICKNESS OF OVERBURDEN	17. ELEVATION TOP OF HOLE
8. DEPTH DRILLED INTO ROCK	18. TOTAL CORE RECOVERY FOR BORING
9. TOTAL DEPTH OF HOLE: 84' — 10. SIZE AND TYPE OF BIT	19. SIGNATURE OF INSPECTOR: Brent Davis

ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (description) d	% CORE RECOVERY e	BOX OR SAMPLE NUMBER f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significent) g
	0					Used Vacuum excavator down to 6' to check Utilities.
	5		No Recovery			
	10		ML - Silt w/v. fine sand White (N9) poorly sorted Gypsum sand.			
	15		SW Well graded gypsum sand SM w/silt			
			SW-SM Yellowish gray 5Y 7/2 v. fine grained			
	20		SW-SM Well graded Sand w/silt - fine to medium gr. sand - poorly sorted - sub rounded			

Lt brown 5YR 6/4

DRILLING LOG (Continuation Sheet)	INSTALLATION	HOLE No. HMW-57	SHEET No. 2 OF 3
1. PROJECT HELSTF GW Study	11. ELEVATION OF TOP HOLE		

ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (description) d	% CORE RECOVERY e	BOX OR SAMPLE NUMBER f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g
	25		SW - well graded sand Vfine to med. grained - Qtz. Sand subang to subrounded 10YR 8/2 Very pale orange			
	30		SP-SM - poorly graded sand with silt fine grained sand - Qtz sand Lt brown 5YR 6/4			
	35		SP-SM poorly graded sand w/silt fine grained sand Qtz sand Moderate yellowish brown 10YR 5/4			
	40		No Recovery			
	45		SC Clayey sand V.fine to fine grained sand moderate yellowish brown			- moist - driller noted water in this zone ≈43 - 60
	50		SW - well graded sand w/silt - fine to med. grained well rounded 10YR 5/4 Moderate yellowish brown	100%		25 blow counts wet
	55		SW-SM - well graded sand w/silt - fine to med gr. Clay content increasing downward	100%		20 blow counts moist

43
LP

DRILLING LOG (Continuation Sheet)	INSTALLATION	HOLE No. HMW-57	SHEET No. 3 OF 3
1. PROJECT HELSTF GW Study	11. ELEVATION OF TOP HOLE		

ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (description) d	% CORE RECOVERY e	BOX OR SAMPLE NUMBER f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g
	60		CL lean clay w/ Silt 95% Low plasticity - Light brown 5YR 6/4			23 blow counts dry
	65		CL - Sandy Lean clay 75% No plasticity - Sand fine to med gr. w/silt			53 blow counts
			Bottom 6" - SW - well graded Sand			
	70		SW - fine to med. grained well graded Sand - minor silt - moderate yellowish brown 10YR 5/4			>50 blow counts - refusal - Moist to dry
	75		SW - fine to med gr. Sand well graded Sand 80% Subrounded to rounded			38 blow counts - wet - Sand
			Bottom 6" - CH Fat clay - dry Moderate plasticity Little silt. 10R 5/4 Pale reddish brown			
	80		CH Fat Clay - Low to mod plasticity 75% no silt. Soft clay 10R 5/4 Pale reddish brown			17 blow counts Dry
			TD -			

DRILLING LOG

DIVISION	INSTALLATION	HOLE No. HMW-58	SHEET No. 1 OF 3

1. PROJECT: HELSTF Groundwater	11. DATUM FOR ELEVATION SHOWN (TBM or MSL)
2. LOCATION (Coordinates or Station)	12. MANUFACTURER'S DESIGNATION OF DRILL: CME-75
3. DRILLING AGENCY	13. TOTAL No. OF OVERBURDEN SAMPLES TAKEN — DISTURBED — UNDISTURBED
4. HOLE No. (As shown on drawing title and file number): HMW-58	14. TOTAL NUMBER CORE BOXES
5. NAME OF DRILLER: Tierra — John Findley	15. ELEVATION GROUND WATER
6. DIRECTION OF HOLE: [X] Vertical [ ] Inclined _____ Degrees from Vertical	16. DATE HOLE: 9-12-06 — STARTED: 1330 — COMPLETED: 9-14-06
7. THICKNESS OF OVERBURDEN	17. ELEVATION TOP OF HOLE
8. DEPTH DRILLED INTO ROCK	18. TOTAL CORE RECOVERY FOR BORING
9. TOTAL DEPTH OF HOLE: 84' — 10. SIZE AND TYPE OF BIT	19. SIGNATURE OF INSPECTOR: Barry T. Davis

ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (description) d	% CORE RECOVERY e	BOX OR SAMPLE NUMBER f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g
				No Recovery		Used Vaccum extractor 6ft down To check utilities
	2.5					
	5					
	7.5			No Recovery		
	10		ML v.fine Silt w/ Sand (Gypsum) White (N9), Poorly sorted ~~well sorted~~ (Friable)	65%		
	12.5					
	15		SW - well graded sand (Gypsum) SM - w/ Silt yellowish gray (5Y 8/1) Poorly sorted, med to v.f. Gravel Sand. Made up mostly Gypsum			
	17.5					
	20		CL - Lean clay w/ common Gypsum X-stals, w/ Fine grained Sand. Zones of Gypsum Layers Top 3 inch (Moderate yellow & brown 10YR 5/4), ~~Rest of core sample is~~ Moderate brown (5YR 4/4) Moderate plasticity (To Low)	100%		Sandy at Top 3 inch ~~decreased sand~~ Increase dancual to middle. Last 3 inch Less Sand.

Using Rock color chart — USGS

DRILLING LOG (Continuation Sheet)	INSTALLATION	HOLE No. HMW-58	SHEET No. 2 OF 3
1. PROJECT HELSTF Groundwater (To=7)	11. ELEVATION OF TOP HOLE		

ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (description) d	% CORE RECOVERY e	BOX OR SAMPLE NUMBER f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significent) g
	22.5					
	25		CL - Lean clay, Zones of Gypsum, very soft & mallable Low Plasicity - Top 3 inch Moderate brown (5YR 4/4) - High Plasicity Root & core (Hard, Stiff) & H - Fat clay (Rooted) CH	90% 5 6 Inches		Very Low X-stal of Gypsum In Zones
	27.5					
	30		CL - Lean clay w/silt & Sand - 1st Ft Zones of Gypsum (decreasing) Low Plasicity, Bottom 1 Ft Sand, Hi Plasicity (Hard, Stiff) Moderate Brown (5YR 4/4) Sand Partial Fine grained	100%		moist inside core Low Plasity - soft, mallable Sand through out core, but Lot Brown in 1st Foot It does not hold it shape like 2nd Ft does
	32.5					
	35		CL - Lean clay w/ little Sand/silt, Zones of Gypsum, Hi Plasicity - Stiff hard, hold shape, See more sand at Bottom 4 in. Moderate Brown (5YR 4/4), Sand is Fine grained.	100%		Dry, Little Damp ~~Moist~~ (Driller See) (water), bot it ~~Sandy~~ Dry SD in side core
	37.5					37 LP
	40		CH - Fat clay, Zones of Gypsum, High Plasicity (hard, stiff) Moderate Brown (5YR 4/4) Breaks along Gypsum Zones	100% SD		Moist - Driller hear water at Bottom of auger Gypsum decreasing
9/12	42.5					
	45		CL - Lean clay w/ Sand & Gypsum X-stal (Thru out core) Sand is fine grained	100%		25 Blow counts Cutting are muddy Dry in middle core Gypsum decreasing.
9/13	47.5		CH - Fat clay w/ minor silt (6 Inches) at Bottom of core Light brown (5YR 5/6) Moderate Plasicity (hard, but Some areas are soft)			
	50		CL - Lean clay w/ minor Sand Bottom 1 inch or 2, Sw-Sm Sand w/ Silt, Much grained, med to v. fine grained, poorly sorted, Light Brown (5YR 5/6) very low Plasicity	100%		23 Blow counts Moist in Middle of core SD Sand increases downward Few Gypsum X-stals
	52.5					
	55		CL - Lean clay w/ Sand Bottom 4 in is more Sandy Sandy Lean clay, Light Brown (5YR 5/6) Low to None Plasicity (Top to bottom)	100%		27 Blow counts moist in core (middle) Sand increases downward

DRILLING LOG (Continuation Sheet)	INSTALLATION	HOLE No. HMW-58	SHEET No. 3 OF 3
1. PROJECT HELSTF Groundwater (TO#7)	11. ELEVATION OF TOP HOLE		

ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (description) d	% CORE RECOVERY e	BOX OR SAMPLE NUMBER f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g
	57.5					
	60		CL-Lean clay w/ minor sand & silt moderate Plasticity, Silt Increases downward, Light brown (5YR 6/4) Fine to very Fine grained sand.	100%		1.7 blow counts we believe the sand & silt lens clay are more like sand zones (Lens) very thin (Ribbions) Less Than an Inch. Dry in middle of core
	62.5					
	65		SW-SC - Well graded Sandy Silt w/clay, Med to Fine grained Poorly sorted Zones of core where Ratio clay is Higher. (Lens of clay). Linear so in Middle of core (Silt) Light Brown (5YR 5/6)	90%		50 Blow counts Moist in center of core
	67.5					
	70		SW - Well graded Sand (Lens of clay at the Bottom SC) Poorly sorted, Med to fine grained There a rust color to the sand. There are layers of pale yellowish brown (10YR 6/2) & Dark yellowish orange (10YR 6/6)	50%		Moist at Top of core wet at Bottom of core vis Water b/w grains sometime these colors are mixing together.
	72.5					
	75		SW-SC Well graded Sand w/clay (Silt too), Med to very fine grain sand, Sandy Clay, low to none Plasticity, Poorly sorted. Moderate yellowish brown (10YR 5/4) (Hole is Sand, very soft, Fritable in some areas.	100%		14 Blow counts water b/w sand grains
	77.5					
	80					
	82.5		Sand w/Clay	No recovery		
	85		TD 84'			

Saturation

DRILLING LOG	DIVISION	INSTALLATION	HOLE No. HMW-59	SHEET No. 1 OF 3

1. PROJECT HELSTF Groundwater Study	11. DATUM FOR ELEVATION SHOWN (TBM or MSL)
2. LOCATION (Coordinates or Station)	12. MANUFACTURER'S DESIGNATION OF DRILL CME-75
3. DRILLING AGENCY	13. TOTAL No. OF OVERBURDEN SAMPLES TAKEN — DISTURBED — UNDISTURBED
4. HOLE No. (As shown on drawing title and file number) HMW-59	14. TOTAL NUMBER CORE BOXES
5. NAME OF DRILLER Tierra John Findley	15. ELEVATION GROUND WATER
6. DIRECTION OF HOLE [X] Vertical [ ] Inclined _____ Degrees from Vertical	16. DATE HOLE — STARTED — COMPLETED 9-28-06 — 10-2-06
7. THICKNESS OF OVERBURDEN	17. ELEVATION TOP OF HOLE
8. DEPTH DRILLED INTO ROCK	18. TOTAL CORE RECOVERY FOR BORING
9. TOTAL DEPTH OF HOLE 83' — 10. SIZE AND TYPE OF BIT	19. SIGNATURE OF INSPECTOR Barry T. Dan

ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (description) d	% CORE RECOVERY e	BOX OR SAMPLE NUMBER f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g
	0					Vacuum excavation to 6 ft bgs to Check for Utilities
	5		No Recovery			
	10		ML-silty Sand yellowish gray 5Y 8/1 Fine to med	40%		over 50 Blow counts Hit Refusal Dry
	15		ML-silty Sand yellowish gray 5Y 8/1 & Rare case grayish 10YR 7/4 Fine to med grained	100%		27 Blowcount
	20		CL-Lean clay w/sand (F.-med) common & scattered thru out w/ Gypsum X-stals. Low plasticity yellowish gray 5Y 7/2	100%		16 Blow counts Slightly moist

DRILLING LOG (Continuation Sheet)	INSTALLATION	HOLE No. HMW-59	SHEET No. 2 OF 3
1. PROJECT HELSTF GW Study	11. ELEVATION OF TOP HOLE		

ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (description) d	% CORE RECOVERY e	BOX OR SAMPLE NUMBER f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significent) g
	25		CL - Lean clay w/Sand Low to Moderate plasticity Dusky yellow 5 Y 6/4, Rat & cur	100%		20 Blow count Dry
			SC - Clayey Sand - Sand is Gypsum similar to Tape very Fine to Med grained ~~Yellow 5YR~~			
	30		SP - Poorly graded Sand Mostly Fine Sand w/some Med grains, well sorted Chunky sand particle size Pale yellowish brown (10YR 6/2)	90%		Over 50 Blow counts Hit Refusal Dry
	35		CL - Lean clay w/Sand Gypsum throughout Light brown (5YR 5/6) Sand Gypsum zone in Layers	100%		45 Blow counts Dry
	40		CL - lean clay w/Sand. Mod - Low Plasticity Zones Gypsum approximately 6 in CH - Fat clay moderate Brown 5YR 4/4 moderate to Hi plasticity Sand - Fine to Med grained.	100%		40 Blow counts Dry Sodar, no upper perch water zone
	45		CL - Lean clay, low to Moderate Plasticity. Zones of Sand & Gypsum CH - Fat clay - make up most of core moderate Brown 5YR 4/4 Sand Lens - med to fine grained Moderate yellowish brown (10YR 5/4)	100%		35 Blow counts Dry
	50		CL - lean clay w/Sand Gypsum x-stat throughout Light brown 5YR 5/6 Fine to Med grained Sand	100%		30 Blow counts Dry
	55		CL - Lean clay w/Minor silt & sand Zones of Gypsum Low Plasticity to brown (Friable to hard) Light Brown 5YR 5/6	90%		26 Blow counts Dry

DRILLING LOG (Continuation Sheet)	INSTALLATION	HOLE No. HMW-59	SHEET No. 3 OF 3
1. PROJECT HELSTF GW Study	11. ELEVATION OF TOP HOLE		

ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (description) d	% CORE RECOVERY e	BOX OR SAMPLE NUMBER f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g
	60		SP-poorly graded Sand, Fine to med grained, well-sorted Top half Dark yellowish brown (10YR4/2)	50%		44 Blow counts Dry
			SW-SC end half, well graded Sand w/ clay, poorly sorted. Fine grained, silt + clay moderate yellowish brown (10YR5/4)			
	65		CL- Lean clay w/ Sand Fine sand & minor silt moderate yellowish brown (10YR5/4) Sandier at Top and becomes more clay near Bottom	100%		30 Blow counts may be Slightly moist Feels cool
OMW wells DTW 69'	70		CL- Lean clay w/ sand & silt Top foot moderate brown 5YR4/4 Bottom foot yellowish gray 5Y7/2	100%		23 Blow counts Zones of moister wet zones are sandier areas
	75		SW-SC- Well graded Sand w/ clay (lot of clay but more Sand) Moderate brown 5YR4/4 Poorly Sorted, Fine (mostly) to med. grained	less%		visable water on Sand grains - wet enough clay to hold form a ribbon, but it breaks soon after.
83	80		TD=83			
	85					Regional ONLY

DRILLING LOG	DIVISION	INSTALLATION	HOLE No. HMW-60	SHEET No. 1 OF 3

1. PROJECT HELSTF GW Study	11. DATUM FOR ELEVATION SHOWN (TBM or MSL)
2. LOCATION (Coordinates or Station)	12. MANUFACTURER'S DESIGNATION OF DRILL CME-75
3. DRILLING AGENCY	13. TOTAL No. OF OVERBURDEN SAMPLES TAKEN — DISTURBED — UNDISTURBED
4. HOLE No. (As shown on drawing title and file number) HMW-60	14. TOTAL NUMBER CORE BOXES
5. NAME OF DRILLER Tierra John Findley	15. ELEVATION GROUND WATER
6. DIRECTION OF HOLE ☒ Vertical ☐ Inclined _____ Degrees from Vertical	16. DATE HOLE — STARTED 10-6-06 1500 — COMPLETED 10-10-06
7. THICKNESS OF OVERBURDEN	17. ELEVATION TOP OF HOLE
8. DEPTH DRILLED INTO ROCK	18. TOTAL CORE RECOVERY FOR BORING
9. TOTAL DEPTH OF HOLE 83 ft — 10. SIZE AND TYPE OF BIT	19. SIGNATURE OF INSPECTOR Bruce T. Dunn

ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (description) d	% CORE RECOVERY e	BOX OR SAMPLE NUMBER f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g
	0		No Recovery			Vacuum excavation
	5		ML - Gypsum Silt N4 White	60%		60 blow counts Dry
	10		SW - well grade sand w/ silt (SM), coarse to silt size particles - mostly Made up (Gypsum), mostly, yellowish gray 5Y 8/1 Poorly sorted	90%		47 Blow counts Dry
	15		SW - SC well graded sand w/ clay Mostlled - 8 Inch CH - Fat clay, Lower Alkali's Root is Large 2 and are made up Gypsum x-stals Sand - yellowish gray 5Y 8/1 clay - Light Brown 5YR 5/6	100%		27 Blow counts Dry
	20		CL - Lean clay w/ VF sand Scattered Gypsum x-stals Thru-out Sand Increase Towards Bottom Last Est (1 Ft) SW - SM Well Graded Sand w/ Silt. VF gravel Sand, Poorly sorted - Light brown 5YR 5/6	80%		52 Blow counts Dry

DRILLING LOG (Continuation Sheet)

INSTALLATION	HOLE No.	SHEET No.
	HMW-60	2 OF 3

1. PROJECT: HELSTF Groundwater Study

11. ELEVATION OF TOP HOLE:

ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (description) d	% CORE RECOVERY e	BOX OR SAMPLE NUMBER f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g
	25		SW-SM - well graded Sand, w/silt, VF Grained poorly sorted, greyish orange 10YR 7/4	90%		50 Blow counts Dry
	30		Top 5 inch - SW-SM well graded Sand w/silt, VF Grained, poorly sorted. Next 12 inch - CL - Lean clay w/ VF Sand, No plasticity breaks apart easily, Rest is SW-SM Sand & gain (Interbedded Sand & clay) moderate yellowish brown 10YR 5/4	100%		52 Blow counts Dry Zoned, but Few Gypsum x-tals
	35		CL - Lean clay w/Sand (VF grain) Sand becomes less dominant Zoned Gypsum x-tals More too Became Fewer near bottom Plasticity Increased downward From No plasticity To Low. Moderate yellowish brown 10YR 5/4 on Top to gradual Light brown 5YR 5/6	100%		35 Blow counts Dry
	40		CL - Lean clay w/Sand (VF) Zoned & Scattered Gypsum Few downward in core, Low Plasticity. Light brown 5YR 5/6	100%		23 Blow counts Dry
	45		Top 4 in - CL - Lean clay w/Sand Rest - SW-SM, Very Fine grain sand w/ Minor silt, Poorly Sorted (well graded), clay - moderate brown 5YR 4/4 Sand - Moderate yellowish brown 10YR 5/4	60%		36 Blow Counts
	50		SP - Poorly graded Sand VF grained, well sorted No silt, Sub-Rounded. moderate yellowish brown (10YR 5/4)	50%		64 Blow counts Dry
	55		SP - Poorly graded sand VF grained, well sorted No silt, sub Rounded moderate yellowish brown 10YR 5/4	50%		38 Blow counts Wet

54'
LP

DRILLING LOG (Continuation Sheet)	INSTALLATION	HOLE No. HMW-60	SHEET No. 3 OF 3
1. PROJECT HELSTF Groundwater Study	11. ELEVATION OF TOP HOLE		

ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (description) d	% CORE RECOVERY e	BOX OR SAMPLE NUMBER f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g
	60		Top 6 In - SP - Poorly graded Sand - similar to above sample Rest - CL - Lean clay w/ sand - VF Sand decreases dramatically - Moderate yellowish brown (10YR 5/4)	80%		19 Blowcounts Wet - Sand Moist to Dry in cly
	65		SP - Poorly graded Sand No silt, VF grained, well sorted, Moderate yellowish brown 10YR 5/4	50%		38 Blowcounts Slightly moist - Bottom Dry
	70		SP - Poorly graded Sand No silt, VF. grained, well sorted, Rest below to same brown - Banded Moderate yellowish brown (10YR 5/4)	50%		49 Blowcounts Moist
	75		SP - Poorly graded Sand, No silt, Bottom 1 inch, 3 mm width zoned gypsum, above gypsum Sand is VF grained, below gypsum fine to VF grained. Moderate yellow brown (10YR 5/4)	50%		over 50 Blowcounts Hit Refusal Wet
	80					
	85		Start to set well at 83 ft			

LP

62

68-78

DTW - 70.71

83

Ever Thru - until 20

DRILLING LOG	DIVISION	INSTALLATION	HOLE No. HMW-61	SHEET No. 1 OF 3

1. PROJECT HELSTF Ground water Study	11. DATUM FOR ELEVATION SHOWN (TBM or MSL)
2. LOCATION (Coordinates or Station)	12. MANUFACTURER'S DESIGNATION OF DRILL CME 75
3. DRILLING AGENCY	13. TOTAL No. OF OVERBURDEN SAMPLES TAKEN — DISTURBED — UNDISTURBED
4. HOLE No. (As shown on drawing title and file number) HMW-61	14. TOTAL NUMBER CORE BOXES
5. NAME OF DRILLER Tierra John Findley	15. ELEVATION GROUND WATER
6. DIRECTION OF HOLE ☒ Vertical ☐ Inclined _____ Degrees from Vertical	16. DATE HOLE — STARTED — COMPLETED 10-5-06 — 10-6-06
7. THICKNESS OF OVERBURDEN	17. ELEVATION TOP OF HOLE
8. DEPTH DRILLED INTO ROCK	18. TOTAL CORE RECOVERY FOR BORING
9. TOTAL DEPTH OF HOLE 83' — 10. SIZE AND TYPE OF BIT	19. SIGNATURE OF INSPECTOR Brode T. Dan

ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (description) d	% CORE RECOVERY e	BOX OR SAMPLE NUMBER f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g
	0					Vacuum excavator 6' down
	5		ML- Gypsum silt Yellowish gray 5Y 8/1	70%		41 Blow counts Dry
	10		ML- Gypsum silt w/ clay (2mm) clay - yellowish gray 5Y 7/2 silt - Nrg white	80%		41 Blow counts Dry
	15		ML- Gypsum Silt w/ minor clay Yellowish gray 5Y 8/1	80%		29 Blow counts Dry
	20		ML- Gypsum Silt w/ minor clay grades into a ≈1 ft CL- Sandy lean clay, VFine Sand & Silt, Scattered Thru-out Lg Gypsum X-stals - Light Brown 5YR 5/6	- moderate yellowish brown (10YR 5/4) 100%		39 Blow counts Dry

DRILLING LOG (Continuation Sheet)	INSTALLATION	HOLE No. HMW-61	SHEET No. 2 OF 3
1. PROJECT HELSTF Groundwater Study	11. ELEVATION OF TOP HOLE		

ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (description) d	% CORE RECOVERY e	BOX OR SAMPLE NUMBER f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g
	25		CL-Lean clay w/silt, Moderate brown 5YR 4/4 Scattered Gypsum Thin-out	100%		34 Blow count Dry Gypsum clay
	30		CL-Lean clay w/VF Sand Scattered Gypsum Thin-out core Light brown 5YR 5/6	100%		41 Blow Counts Less Gypsum than above core
	35		SP-poorly graded Sand, Fine to VF grained very pale orange 10YR 8/2	50%		48 Blow counts Dry Featurless
	40		SP-poorly graded Sand, Fine to VF grained gray ish orange 10YR 7/4	55%		50 Blow Counts Dry
	45		SP-Poorly graded Sand VF fine grained, moderate Yellowish brown 10YR 5/4	80%		56 Blow counts Slighty Moist
	50		CL-Lean clay w/minor Sand VF grained. Scattered Gypsum & zones; Thin-out core Moderate yellowish brown 10YR 5/4	100%		34 Blow Counts Dry to Slightly Moist in Sandy areas
	55		CL-Lean clay w/sand interbedded w/SC-clayey Sand - VF grained moderate yellowish brown 10YR 5/4	80%		26 Blow Counts wet in Sandy zones moist in more clayey zones

53'
LP

DRILLING LOG (Continuation Sheet)

INSTALLATION	HOLE No.	SHEET No.
	HMW-61	3 OF 3

1. PROJECT: HELSTF Groundwater Study

11. ELEVATION OF TOP HOLE:

ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (description) d	% CORE RECOVERY e	BOX OR SAMPLE NUMBER f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g
	60		CL-Lean clay w/Sand Low Plasticity, Light Brown 5YR 5/6, Rare Loose Gypsum Nested.	100%		26 Blow Count Dry
	65		CL-Lean clay w/Sand Low Plasicity, Friable-no wire, occasional Zoned Gypsum, Light Brown 5YR 5/6	100%		37 Blowcounts Dry
	70		SW-SC-Well graded Sand w/Clay; Minor Silt Med to Fine grained, Poorly Sorted, moderate yellowish Brown 10YR 5/4	10%		48 Blow Count Wet
	75		SW-SC-Well graded Sand w/Clay, med to VF grained Poorly Sorted Interbedded w/CL-Lean clay sand, silt slow to no Plasicity for Top 16 Inches Rest-CH-Fat clay, hard ~~[illegible]~~ middle Texture, moderate To High plasticity	100%		27 Blowcounts Wet
	80		moderate yellowish brown 10YR 5/4 (Top 16 In) Pale yellowish brown 10YR 6/2 w/Dark yellowish orange 10YR 6/6 or moderate yellowish brown 10YR 4/6 for the CH			
	85		Plan To set well at 83 TD			

Nearest well DTW-69

83

LP 58'

DRILLING LOG	DIVISION	INSTALLATION	HOLE No.	SHEET No.
			HMW-62	1 OF 3

1. PROJECT HELSTF Groundwater Study	11. DATUM FOR ELEVATION SHOWN (TBM or MSL)
2. LOCATION (Coordinates or Station) HELSTF	12. MANUFACTURER'S DESIGNATION OF DRILL CME 75
3. DRILLING AGENCY	13. TOTAL No. OF OVERBURDEN SAMPLES TAKEN — DISTURBED — UNDISTURBED
4. HOLE No. (As shown on drawing title and file number) HMW-62	14. TOTAL NUMBER CORE BOXES
5. NAME OF DRILLER Tierra John Findley	15. ELEVATION GROUND WATER
6. DIRECTION OF HOLE [X] Vertical [ ] Inclined _____ Degrees from Vertical	16. DATE HOLE — STARTED 1440 — COMPLETED 9-7-06 9-6-06
7. THICKNESS OF OVERBURDEN	17. ELEVATION TOP OF HOLE
8. DEPTH DRILLED INTO ROCK	18. TOTAL CORE RECOVERY FOR BORING
9. TOTAL DEPTH OF HOLE 81.5' — 10. SIZE AND TYPE OF BIT	19. SIGNATURE OF INSPECTOR Brent Davis

ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (description) d	% CORE RECOVERY e	BOX OR SAMPLE NUMBER f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significent) g
	0			No Recovery		Used Vacuum excavator 6' down to check for utilities.
	2.5					
	5					
	7.5					
	10		SM Silty Sand, fine grained silty Sand gypsum, Rc: 5Y 8/1 or M: N 8/ Friable Yellowish gray white	70%		10.0-11.5 Ft spoon 50 blow counts for 6 inches hit refusal.
	11.5					
	15		SP Poorly graded Sand Slight Damp, Medium grained well Rounded Sand, color - Yellowish gray (5Y 8/1) Friable			
	17.5					
	20		CL Lean clay Clay w/ Gypsum Sand, Fine grained - Gypsum crystal near bottom - Very coarse grained. color: Light olive gray 5Y 6/			
	21.5					

Rock Chart = Rc
Munsell = M

DRILLING LOG (Continuation Sheet)

INSTALLATION	HOLE No.	SHEET No.
HELSTF	HMW-62	2 OF 3

1. PROJECT: HELSTF TO-7 Groundwater Study

11. ELEVATION OF TOP HOLE:

ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (description) d	% CORE RECOVERY e	BOX OR SAMPLE NUMBER f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significent) g
	22.5					
	25		CL Lean clay Gypsum crystal 10mm at least 20% thru out core	80%		80% Recovery -2 zones of Gypsum
	26.5		Moderate brown 5YR3/4 Damp at Top and becomes dryer near bottom.			
	27.5					Gypsum crystal ave decreasing
	30		CL Lean clay clay w/ Rare Gypsum crystals Layer Moderate brown (5YR 3/4)	80%		
	31.5		Gypsum crystal seen 5% thru out core, Largest crystal 50 mm (20mm)			
	32.5		Gypsum Filling gaps w/in clay upper 4in Damp			
	35		CL Lean clay Clay w/ Very rare Gypsum crystals. Moderate brown 5YR 4/4. crystal are becoming less than 5% composition w/in core. Some silt can be seen in middle of core	80%		Gypsum crystal decreasing size of Gypsum crystal are getting smaller 3mm
	36.5					
	37.5					
	40		Top a med. grained sand (Lens) 2in			
	41.5		CL - Lean clay, Moderate Brown 5YR 4/4, Med Plasticity	20%		-No Gypsum 2 gallon per table water 20% Recovery
	42.5					
	45		Top 6in CL, 6 Inches Silt, well graded sand w/silt: 1inch Gypsum crystals 10mm Long, Then Rtn to CL. 3in. core is Moderate brown 5YR4/4, Sand is moist. Med. grained, Poorly sorted.	100%		
	46.5					
	47.5					47 to 50 Drill said it Dropped fast, appears to have water - poorly sand
	50		CL-Lean clay, no Gypsum Moderate yellowish brown 10YR5/4, feels hard, feels stiff Low plasticity	100%		soft - Clay is comming up Very Soft, appears to have water, Saturated. 50 - 51.5 feet Perch zone - Lots of water
	51.5					
	52.5					
	55		CL-Lean clay 1inch, 4in of Silt well graded sand w/silt, 1ft CL-Lean clay, Sand layer is moist, Med grained, Poorly sorted core is moderate yellowish brown 10YR5/4, Bottom clay is Dry, Rare Large Gypsum (15mm).	90%		
	56.5					

UP
LP
?

using Rock color chart by USGA

DRILLING LOG (Continuation Sheet)	INSTALLATION HELSTF	HOLE No. HMW-62	SHEET No. 3 OF 3
1. PROJECT HELSTF TO-7 Groundwater Study	11. ELEVATION OF TOP HOLE		

ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (description) d	% CORE RECOVERY e	BOX OR SAMPLE NUMBER f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g
	~~57.5~~					
	60		CL- Lean clay w/sand for 7in, CL- Lean clay (no sand) Moderate yellowish brown 10YR 5/4,	90%		middle of core dry
	61.5					
	62.5					
	65		4in on Top SW - Well graded Sand w/Clay, Rest of core is CL- Lean clay; Sand is v.fine w/silt & clay; Poorly sorted Moderate yellowish brown (10YR 5/4) Clay is hard, stiff, ~~[illegible]~~ plasticity Hi	90%		
	66.5					
	67.5					
	70		CL- Lean clay (14in) SW - Well graded Sand w/silt Mostly Med grained, Poorly Sorted Moderate yellowish brown (10YR 5/4),	(Bottom 3in) 80%		Clay, middle of core dry
	71.5					
	72.5					
	75		CL- Lean clay w/sand (3in) SW - Well graded sand (5in) w/Little silt (<5%) Med. grained, poorly Sorted Moderate yellowish brown (10YR 5/4) Rare granules (5mm)	50%		Seems moist
	76.5					
	77.5					
	80		SW - Well graded sand w/ Silt & Gravel; Med grained Sand w/silt & Gravel (15mm) Gravel Rare (1-3 pieces found) Moderate yellowish brown (10YR 4/2), Well Rounded grains Poorly Sorted	80%		wet.
	81.5					
	82.5					
	85					

Due to heaving sands, could not get deeper than 79' for lead auger. Will set well w/out sump. Screen w/ bottom cap at base.

68.5

Screen 10 ft

78.5

DRILLING LOG	DIVISION	INSTALLATION	HOLE No. HMW-63	SHEET No. 1 OF 3

1. PROJECT: HELSTF Ground water Study	11. DATUM FOR ELEVATION SHOWN (TBM or MSL)
2. LOCATION (Coordinates or Station)	12. MANUFACTURER'S DESIGNATION OF DRILL: CME-75
3. DRILLING AGENCY	13. TOTAL No. OF OVERBURDEN SAMPLES TAKEN — DISTURBED — UNDISTURBED
4. HOLE No. (As shown on drawing title and file number): HMW-63	14. TOTAL NUMBER CORE BOXES
5. NAME OF DRILLER: Tierra — John Findley	15. ELEVATION GROUND WATER
6. DIRECTION OF HOLE: [X] Vertical [ ] Inclined ____ Degrees from Vertical	16. DATE HOLE — STARTED: 9-8-06 1030 — COMPLETED: 9-11-06
7. THICKNESS OF OVERBURDEN	17. ELEVATION TOP OF HOLE
8. DEPTH DRILLED INTO ROCK	18. TOTAL CORE RECOVERY FOR BORING
9. TOTAL DEPTH OF HOLE: 84' — 10. SIZE AND TYPE OF BIT	19. SIGNATURE OF INSPECTOR: Barry T. Dan

ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (description) d	% CORE RECOVERY e	BOX OR SAMPLE NUMBER f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g
	0					
	2.5			No Recovery		Used Vaccum excavator 6' down to check for utilities
	5					
	7.5		ML - Silt w/ Sand, Sand is Very fine grained made up of mostly Gypsum Yellowish gray (5Y 8/1)			
	10		ML - Silt w/ Sand Sand is Very fine grained made up of mostly Gypsum Yellowish gray (5Y 8/1)	50%		
	11.5					
	12.5					
	15		SW-SC - Well graded Sand w/ Clay, Light Olive gray (5Y 6/1), Poorly sorted, Med graded Sand, V. Find graded.	100%		
	16.5					
	17.5					
	20		SW - Well graded Sand SM - w/ Silt, Poorly sorted Med graded Sand, Moderate Yellowish Brown (10YR 5/4)			Moist (No visable water) Seems to get Silter as it goes down
	21.5					

Using Rock ~~chart~~ color chart By USGS

DRILLING LOG (Continuation Sheet)	INSTALLATION HELSTF	HOLE No. HMW-63	SHEET No. 2 OF 3
1. PROJECT HELSTF Groundwater Study (To = 7)	11. ELEVATION OF TOP HOLE		

ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (description) d	% CORE RECOVERY e	BOX OR SAMPLE NUMBER f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g
	25		CL- Lean clay, Zones of Gypsum x-stals (10mm) moderate brown (5YR 4/4) is very hard, stiff, low Plasticity	100%		No visible water Possible archaeol/cultural Layer
	27.5					
	30		CL- Lean clay w/Sand Zones of Gypsum (fewer) 5mm) moderate brown (5YR 4/4) is hard, stiff, holds shape well low plasticity; Sand particles are fine to med grained	100%		Gypsum decreasing moist (no visible water) at Top of core
	32					
	32.5					
	35		CL- Lean clay w/sand Zones of Gypsum (10mm size x-stal) Moderate brown (5YR 4/4), clay is hard, stiff, Low Plasticity. CH- Fat Clay near (8 inch at bottom)	100%		Gypsum is decreasing fewer Zones CH- Less sand & silt, smooth
	37					
	37.5					
	40		CH - Fat clay Zones of Gypsum (5mm), moderate brown (5YR 4/4), clay is moderately Plastic, Top is early hammered (1 inch) 1.5 ft takes much more work to handle clay	100%		(Zones) Gypsum is getting Less. (decreasing)
	42					
	42.5					
	45		CL- Lean clay, minor silt Top 4 in has Zones of Gypsum Moderate brown (5YR 4/4), Low Plasticity - Easy work, on Bottom (3 inch), can't form a wire	100%		wet - Visable water LP
	47					
	47.5					
	50		SW-SC - well graded sand (Top 2 inch) w/clay, Zones of Gypsum (20mm) Rest: CL- lean clay; easy to work, minor Zones of silt & sand Moderately plastic, but is stiff, Mod. hard Moderate brown (5YR 4/4) color more →	100%		Gypsum, few by Large. Bottom 2 inch, is softer Pale yellowish brown (10YR 6/2)
	52.5					53 ft visible water coming up from Drill hole & mud
	55		CL- lean clay w/sand & silt, Top 3 in has Large Gypsum x-stal. Sand Increases downward, Fingrained Sand, Poorly Sorted, Moderate Yellowish Brown (10YR 5/4) Low Plasticity - Soft, Malleable forms wire easly	90%		moist inside core

DRILLING LOG (Continuation Sheet)	INSTALLATION	HOLE No. HMW-63	SHEET No. 3 OF 3
1. PROJECT HELSTF Groundwater Study	11. ELEVATION OF TOP HOLE		

ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (description) d	% CORE RECOVERY e	BOX OR SAMPLE NUMBER f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g
	57.5					
	60		CL- Lean clay w/Sand a minor silt. Moderatly Placistic, Slightly hard, holding form together, Malleable Moderate yellowish brown (10YR 5/4)	100%		40 Blowcount Contractor core is solid
	62.5					
	65		SP - Poorly graded Sand; Med - fine grained Sand Fairly well sorted, Pale yellowish Brown (10YR 6/2	25%		Refusal 50 Blowcounts Slightly moist ≈ 6"
	67.5					
	70		SP - Poorly graded Sand Med to fine grained, well sorted See wetness on the grains (moist) Pale yellowish Brown (10YR 6/2)	50%		70 blow counts ≈ 8"; moist
	72.5					
	75		SW - Well graded (SW) w/Silt Poorly sorted, Med to very fine sand Dark Yellowish brown (10YR 4/2)	70%		Wet - visible water
	77.5					
	80		Assume that [redacted] Sand is below 80 feet. Drilled w/hand auger to 84 ft			No Recovery.
	82.5					
	85		DTW 71 ft measured 9-13-06			

68

78

Screen 10 ft

Low Placisty - Easy Malleable
Hi Placisty - Hard, Stiff, Not Malleable

DRILLING LOG	DIVISION	INSTALLATION	HOLE No. HMW-64	SHEET No. 1 OF 3

1. PROJECT HELSTF Ground water Study	11. DATUM FOR ELEVATION SHOWN (TBM or MSL)
2. LOCATION (Coordinates or Station)	12. MANUFACTURER'S DESIGNATION OF DRILL CME-75
3. DRILLING AGENCY	13. TOTAL No. OF OVERBURDEN SAMPLES TAKEN — DISTURBED — UNDISTURBED
4. HOLE No. (As shown on drawing title and file number) HMW-64	14. TOTAL NUMBER CORE BOXES
5. NAME OF DRILLER Tierra John Findley	15. ELEVATION GROUND WATER
6. DIRECTION OF HOLE [X] Vertical [ ] Inclined _____ Degrees from Vertical	16. DATE HOLE — STARTED — COMPLETED 10-11-06 — 10-11-06
7. THICKNESS OF OVERBURDEN	17. ELEVATION TOP OF HOLE
8. DEPTH DRILLED INTO ROCK	18. TOTAL CORE RECOVERY FOR BORING
9. TOTAL DEPTH OF HOLE 83' — 10. SIZE AND TYPE OF BIT	19. SIGNATURE OF INSPECTOR Bruce T. Dan

ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (description) d	% CORE RECOVERY e	BOX OR SAMPLE NUMBER f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g
			No Recovery			Vacuum excavation 6' down to check for utilities
	5					
	10		ML-Silt, Gypsum rock flour, yellowish gray 5Y8/1 & white N9	100%		48 Blow Counts Dry
	15		Top 1ft - ML-Silt, Gypsum Rock flour, yellowish gray 5Y8/1 & white N9, Rest: SW-SM - well graded Sand w/ Silt fine grained Sand, poorly Sorted. yellowish gray (5Y 7/2)	90%		38 Blow Counts Dry at Top becomes Moist near the bottom
	20		Top 3in - ML-Silt Gypsum (same as at 10ft) Rest: CL-Lean clay w/ Scattered Gypsum Y-Stal Thru-out	100%		16 Blow counts Dry

Clay w/ Coarse grain Gypsum Y-stals
Moderate yellowish brown 10YR5/4
clay is soft, Plasticity is Low

DRILLING LOG (Continuation Sheet)	INSTALLATION	HOLE No. HMW-64	SHEET No. 2 OF 3
1. PROJECT HELSTF GW Study	11. ELEVATION OF TOP HOLE		

ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (description) d	% CORE RECOVERY e	BOX OR SAMPLE NUMBER f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g
	25		SW-SC - well graded sand w/ clay, med to fine grained for top 7 inch, moderate yellowish brown 10YR 5/4, Rest - SW-SM well graded sand w/ silt, zoned gypsum x-stals yellowish gray 5Y 7/2, poorly sorted, med grain sand.	60%		49 Blow counts Moist
	30		Top 5 in Middle clay CL - lean clay w/ Gypsum silt Rest: CL - lean clay w/ sand zoned Gypsum, middle clay has yellowish gray 5Y 7/2 & Light Brown 5YR 6/4 clay w/ sand is Light Brown 5YR 5/6	100%		33 Blow counts Dry Plasticity Low
	35		Top 5 in - CL Lean clay w/ sand & minor silt (Gypsum) Rest: SW-SM - well graded sand w/ silt, med to fine grained, moderate yellowish brown (10YR 5/4) clay moderate brown 5YR 3/4 zoned x-stal in clay	60%		50 Blow counts Moist
	40		Top 1 ft - SW-SM well graded med - fine grain sand moderate yellowish brown (10YR 5/4), Rest CL - lean clay w/ silt & zoned gypsum x-stal light brown 5YR 6/4, minor sand	80%		36 Blow counts Driller said hit water wet (sand) Low to medium plasticity clay - moist
	45		Top 1 ft SW-SM (similar to above) - slightly coarser grained, 2nd foot: CL - lean clay w/ sand & minor silt, zoned gypsum moderate yellowish brown (10YR 5/4) clay is hard	100%		28 Blow counts Sand wet Clay - Dry Low to medium plasticity
	50		Top 3 in SW-SM-SC, well (moderate graded) graded sand w/ silt & minor clay, Rest CL - lean clay w/ sand, zones of SW - sand Interbedded of clay and sand throughout core moderate yellowish brown 10YR 5/4	80%		25 Blow counts Sand - wet clay - slightly moist
	55		Top 2 inches - SW-SM-SC well graded sand w/ silt + clay Remainder CL - lean clay - low plasticity Bottom 2 inches - SW-SM-SC	90%		36 Blow counts clay dry sand - moist to wet

41'
LP

Pale yellowish brown 10YR 6/2

DRILLING LOG (Continuation Sheet)

INSTALLATION	HOLE No.	SHEET No.
	HMW-64	3 OF 3

1. PROJECT: HELSTF GW Study

11. ELEVATION OF TOP HOLE:

ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (description) d	% CORE RECOVERY e	BOX OR SAMPLE NUMBER f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g
	60		Top 6in - SW - SC well graded Sand w/ clay minor silt, med grain Sand, grades Into CH Fat clay w/ Modeling Clay Bottom (clay mixing w/ silt) 3in of Bottom - CL - lean clay w/ silt Layering, Banding Planes, - yellowish gray 5Y 7/2	100%		21 Blow Counts Sand-wet Clay - Dry Fat clay - Light Brown 5YR 6/4 Plasticity - High
	65		Intermittently of Sand ~~clay~~ Top - SW - SM, ~~minor~~ silt middle - CL - Lean clay w/ Sand a minor Zoning of silt (yellowish gray 5Y 7/2) Bottom - SW - SM, well graded Sand w/ silt, moist yellowish brown 10YR 5/4	100%		19 Blow counts Sand Top Moist ? - water may be coming from the Top of perch zones Sand Bottom - Dry Clay - Dry - Lean Plasticity
	70		Interbedded Sand & clay Top 3in CL - lean clay w/ silt (silty clay), yellowish gray 5Y 7/2, grades Into SW - SC, well graded Sand w/ clay (9 inch) Return to Clay - CL - lean clay w/ silt (same as Top) Sand - med. grained, poorly sorted.	80%		25 Blow Counts wet - Sand clay - moist
	75		Top 12in SW - SM w/ minor clay, Rest - CL - lean clay w/ sand & silt, Bottom 6in is CH - Fat clay; sand - moist yellowish brown 10YR 5/4, Clay - Light brown 5YR 5/6	100%		27 Blow counts Sand decreases downward Sand Top - wet Clay - Dry
	80					
	85		Plan to Place Well at 83 feet			

(28-78) 83

DRILLING LOG	DIVISION	INSTALLATION	HOLE No. HMW-65	SHEET No. 1 OF 3

1. PROJECT HELSTF Groundwater Study	11. DATUM FOR ELEVATION SHOWN (TBM or MSL)
2. LOCATION (Coordinates or Station)	12. MANUFACTURER'S DESIGNATION OF DRILL CME-75
3. DRILLING AGENCY	13. TOTAL No. OF OVERBURDEN SAMPLES TAKEN — DISTURBED — UNDISTURBED
4. HOLE No. (As shown on drawing title and file number) HMW-65	14. TOTAL NUMBER CORE BOXES
5. NAME OF DRILLER Tierra John Findley	15. ELEVATION GROUND WATER
6. DIRECTION OF HOLE [X] Vertical [ ] Inclined _____ Degrees from Vertical	16. DATE HOLE 10-3-06 — STARTED 0843 — COMPLETED 10-4-06
7. THICKNESS OF OVERBURDEN	17. ELEVATION TOP OF HOLE
8. DEPTH DRILLED INTO ROCK	18. TOTAL CORE RECOVERY FOR BORING
9. TOTAL DEPTH OF HOLE 81' — 10. SIZE AND TYPE OF BIT	19. SIGNATURE OF INSPECTOR [signature]

ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (description) d	% CORE RECOVERY e	BOX OR SAMPLE NUMBER f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g
	0					Vacuum excavation to 6 ft bgs for utilities
	5		No Recovery			
	10		ML-Silt w/Sand Gypsum Silt, at bottom VF-F Sand Yellowish gray 5Y 8/1	100%		45 Blow Counts
	15		Top Sin - ML - Silt w/Sand VF-F Sand. Rest - Gypsum Sand - SW-SC w/Little Clay, coarse grain Gypsum X-stal To medium grained Sand. Well graded w/clay	100%		20 Blow counts Moist Moderate yellowish brown 10YR 5/4
	20		Bottom 3in - SW - Coarse grain Gypsum Sand - w/clay			
			Top 5in ML - Silt w/Sand (VF-F) - Yellowish gray 5Y 8/1 Rest - CL - Lean clay w/Sand (Sand X-stal Gypsum, soft - Low plasticity Moderate yellowish brown (10YR 5/4)			26 Blow counts

DRILLING LOG (Continuation Sheet)

INSTALLATION	HOLE No.	SHEET No.
	HMW-65	2 OF 3

1. PROJECT: HELSTF GW Study

11. ELEVATION OF TOP HOLE:

ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (description) d	% CORE RECOVERY e	BOX OR SAMPLE NUMBER f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g
	25		Top 2in - ML - silt w/sand Yellowish gray 5Y 8/1 Bth - CL - Lean clay - Soft Low Plasticity Rest - Zoned Gypsum x-stals Thur-out CH - fat clay - hard, Moderate Plasticity, Moderate brown 5YR 4/4	100%		42 Blow counts Dry
	30		Top 3in CL - Lean clay, Low to Med. Plasticity Rest - CH - fat clay. Hard, Med To High Plasticity. Zoned Gypsum Thru-out core, Increase downward. at bottom 6in - Moderate Brown 5YR 4/4	100%		36 Blow counts Dry
	35		Top 6½ in CL - Lean clay w/Sand Gypsum x-stal Throughout Rest - SP - Poorly graded Sand ~~Moderately Sorted Sand~~ moderately Sorted Sand, Med to Fine grained, Zoned clay lens Thur-out, Light brown 5YR 5/6	100%		49 Blow counts Slightly moist
	40		Top 2in CL - Lean clay w/Sand Rest - SP - Poorly graded Sand Moderately Sorted - Med to VF Sand - No silt, well Rounded Clay - Moderate brown 5YR 4/4 Sand - Moderate yellowish 10YR 5/4	50%		over 50 Blow counts Hit Refusal wet - visable water in Sand
	45		SW - Well graded Sand w/silt SM & clay SW, Poorly Sorted Med to VF Sand, silt & clay. Vertical burrows or Root casts was Formed, Filled in w/clay	80%		59 blow counts Wet - very
	50		Top 4in - CL - Lean clay w/Sand, low to med. plasticity Middle - CH - Fat clay - hard Stiff, Med to High Plasticity Bottom 1in - CL - Lean clay w/Sand - 1in Sandy lens Seen Below CL. moderate yellowish brown 10YR 5/4	95%		35 Blow counts Dry
	55		CL - Lean clay w/Sand, Soft Low Plasticity, Clayey Sand Sandier in middle of core, but still hold Shape, Moderate Yellowish brown 10YR 5/4	100%		17 Blow counts Moist to wet - Depends on amt of sand

41 LP

DRILLING LOG (Continuation Sheet)	INSTALLATION	HOLE No. HMW-65	SHEET No. 3 OF 3
1. PROJECT HELSTF GW Study	11. ELEVATION OF TOP HOLE		

ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (description) d	% CORE RECOVERY e	BOX OR SAMPLE NUMBER f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g
	60		SP- Sand, Fine to very Fine Moderate Sorted. Poorly graded No silt, Sub Rounded grains See mica, Moderate yellowish brown 10YR5/4, See more clay at very Bottom	100%		27 Blow Counts Wet
	65		CL- Lean clay w/Sand (Fine) Light brown 5YR6/4 Moderate Plasticity, ridged,	100%		23 Blow Count Dry, some area slight moisture.
	70		Top 12in SW-SC - Sand w/ minor clay Well graded, Moderate yellowish brown 10YR5/4, Moderately Sorted Fine to very Fine Sand Rest: CL- Lean clay w/sand Light Brown 5YR6/4 & Pale yellowish brown 10YR6/2	80%		34 Blow Counts Sand - wet clay - Dry & moderate plasticity
	75		SW - Well graded Sand w/ Minor clay - SC, Little silt (SM) Bottom 2in - CL - Lean clay w/ Sand, Very Fine - Fine Sand, Sub Rounded. Clay - Low to No Plasticity Moderate yellowish brown 10YR5/4	70%		32 Blow counts Wet Driller see heaving Sands
	80		Set well at 81'			
	85					

LP

64

67?
well @ HMW-17
DTW = 71

DRILLING LOG	DIVISION	INSTALLATION	HOLE No. SB-01	SHEET No. 1 OF 2

1. PROJECT HELSTF Phase III RFI	11. DATUM FOR ELEVATION SHOWN (TBM or MSL)
2. LOCATION (Coordinates or Station)	12. MANUFACTURER'S DESIGNATION OF DRILL
3. DRILLING AGENCY	13. TOTAL No. OF OVERBURDEN SAMPLES TAKEN — DISTURBED — UNDISTURBED
4. HOLE No. (As shown on drawing title and file number) SB-01	14. TOTAL NUMBER CORE BOXES
5. NAME OF DRILLER Raba Kistner	15. ELEVATION GROUND WATER
6. DIRECTION OF HOLE ☒ Vertical ☐ Inclined _____ Degrees from Vertical	16. DATE HOLE — STARTED 11-01-06 0745 — COMPLETED 1100
7. THICKNESS OF OVERBURDEN	17. ELEVATION TOP OF HOLE
8. DEPTH DRILLED INTO ROCK	18. TOTAL CORE RECOVERY FOR BORING
9. TOTAL DEPTH OF HOLE 50' — 10. SIZE AND TYPE OF BIT 6" Φ HSA	19. SIGNATURE OF INSPECTOR T. Thompson

ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (description) d	% CORE RECOVERY e	BOX OR SAMPLE NUMBER f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significent) g	Blow Count
					SB-001 (0.5-1.0)		
	5	ML	Gypsum silt	50	—	Dry	100 @ 1 ft
	10	ML	Gyp. silt light brown silt	100	SB-001 (10-10.5)	Moist	17
	15	CL-ML SP-SM	silty clay w 5% gyp crystals fine sand w/ silt @ 16.5	100	—	Moist	44
	20	CL-ML	silty clay (brown) w/ 20% gyp cry.	100	SB-001 (20-20.5)	Moist	45
	25	CL-ML	silty clay (brown) 10% gyp cry.	100	—	Moist Dry @ 26.7'	47
	30	ML	silt (brown) w/ 5% gyp cry.	100	SB-001 (30-30.5)	Dry	75
	35	SP	very fine sand	50	SB-101 (30-30.5) —	Dry	105
	40	SP	v. fine sand w/ some silt	70	SB-001 (40-40.5)	Dry	64

DRILLING LOG (Continuation Sheet)	INSTALLATION	HOLE No. SB-01	SHEET No. 2 OF 2
1. PROJECT HELSTF Phase III RFI	11. ELEVATION OF TOP HOLE		

ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (description) d	% CORE RECOVERY e	BOX OR SAMPLE NUMBER f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g	Blow Count
	45	SP	v. fine sand w/ some silt	60	—	Dry	110
	50	SP SC	v. fine sand w/ silt clayey sand @ 49.5'	70	SB-001 (49.5-50)	Moist	74

DRILLING LOG	DIVISION	INSTALLATION	HOLE No. SB-02	SHEET No. 1 OF 2

1. PROJECT HELSTF Phase III RFI	11. DATUM FOR ELEVATION SHOWN (TBM or MSL)
2. LOCATION (Coordinates or Station)	12. MANUFACTURER'S DESIGNATION OF DRILL
3. DRILLING AGENCY	13. TOTAL No. OF OVERBURDEN SAMPLES TAKEN — DISTURBED — UNDISTURBED
4. HOLE No. (As shown on drawing title and file number) SB-02	14. TOTAL NUMBER CORE BOXES
5. NAME OF DRILLER Raba Kistner	15. ELEVATION GROUND WATER
6. DIRECTION OF HOLE ☒ Vertical ☐ Inclined _____ Degrees from Vertical	16. DATE HOLE 10-13-06 — STARTED 1015 — COMPLETED 1445
7. THICKNESS OF OVERBURDEN	17. ELEVATION TOP OF HOLE
8. DEPTH DRILLED INTO ROCK	18. TOTAL CORE RECOVERY FOR BORING
9. TOTAL DEPTH OF HOLE 50' — 10. SIZE AND TYPE OF BIT 6" Φ HSA	19. SIGNATURE OF INSPECTOR J. Thompson

ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (description) d	% CORE RECOVERY e	BOX OR SAMPLE NUMBER f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significent) g	Blow Count
	5	ML	Gypsum silt	75	—	Dry	24
	10	ML	Gypsum silt w/ some crystals	100	SB-002 (10-10.5)	Dry	105
	15	ML	Gypsum silt	100	—	Dry	111
	20	ML	Gypsum silt w/ some fine sand	100	SB-002 (20-20.5)	Dry	74
	25	CL-ML	silty clay (brown) w/ gyp crystals	100	—	Dry	44
	30	CL-ML	silty clay	100	SB-002 (30-30.5)	Dry	47
	35	CL-ML	silty clay w/ some gyp crystals	100		Dry	40
	40	SM	silty sand	100	SB-002 (40-40.5)	Dry	128

DRILLING LOG (Continuation Sheet)	INSTALLATION	HOLE No. SB-02	SHEET No. 2 OF 2
1. PROJECT HELSTF Phase III RFI	11. ELEVATION OF TOP HOLE		

ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (description) d	% CORE RECOVERY e	BOX OR SAMPLE NUMBER f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g	Blow Count
	45	SM	silty sand to 46.7'	100	—	Dry	126
		ML	gyp silt w/ crystals				
	50	CL	clay (brown) w/ gyp cry.	100	SB-002 (49.5-50)	Moist	48

DRILLING LOG	DIVISION	INSTALLATION	HOLE No. SB-03	SHEET No. 1 OF 2

1. PROJECT: HELSTR Phase III RFI	11. DATUM FOR ELEVATION SHOWN (TBM or MSL)
2. LOCATION (Coordinates or Station)	12. MANUFACTURER'S DESIGNATION OF DRILL
3. DRILLING AGENCY	13. TOTAL No. OF OVERBURDEN SAMPLES TAKEN — DISTURBED — UNDISTURBED
4. HOLE No. (As shown on drawing title and file number): SB-03	14. TOTAL NUMBER CORE BOXES
5. NAME OF DRILLER: Raba Kistner	15. ELEVATION GROUND WATER
6. DIRECTION OF HOLE: ☒ Vertical ☐ Inclined _____ Degrees from Vertical	16. DATE HOLE — STARTED: 10-20-06 — COMPLETED: 1400 — 1750
7. THICKNESS OF OVERBURDEN	17. ELEVATION TOP OF HOLE
8. DEPTH DRILLED INTO ROCK	18. TOTAL CORE RECOVERY FOR BORING
9. TOTAL DEPTH OF HOLE: 50' — 10. SIZE AND TYPE OF BIT: 6" Ø HSA	19. SIGNATURE OF INSPECTOR: T. Thompson

ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (description) d	% CORE RECOVERY e	BOX OR SAMPLE NUMBER f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significent) g	Blow Count
	5	ML	Gypsum silt	60	—	dry	63
	10	ML	Gyp silt	60	SB-003 (10.0-~~10.0~~ 10.5)	dry	63
	15	ML	Gyp silt	90	—	dry	157
	20	ML	Gyp silt	80	SB-003 (20.0-20.5)	dry slightly moist @ 22'	112
	25	CL-ML	silty clay (brown) w/ 5% gyp crystals	100	—	moist dry @ 27	31
	30	CL-ML	silty clay (brown) w/ 40% gyp crystals	100	SB-003 (30.0-30.5)	dry	110
	35	CL-ML	silty clay (brown) w/ some gyp crystals	100	—	slightly moist to dry	93
	40	CL-ML SP	silty clay (brown) v. fine sand @41'	100	SB-003 (40.0-40.5)	moist dry	78

DRILLING LOG (Continuation Sheet)	INSTALLATION	HOLE No. SB-03	SHEET No. 2 OF 2
1. PROJECT HELSTF Phase III RFI	11. ELEVATION OF TOP HOLE		

ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (description) d	% CORE RECOVERY e	BOX OR SAMPLE NUMBER f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significent) g	Blow count
	45	SP	v. fine sand	60	—	dry	refusal @ 1.5'
	50	SP	v fine sand w/ gyp cry @ 49'	80	SB-003 (49.5-50.0)	slight moist @ 48.5	refusal @ 1.5'

DRILLING LOG	DIVISION	INSTALLATION	HOLE No. SB-04	SHEET No. 1 OF 2

1. PROJECT HELSTF Phase III RFI	11. DATUM FOR ELEVATION SHOWN (TBM or MSL)
2. LOCATION (Coordinates or Station)	12. MANUFACTURER'S DESIGNATION OF DRILL
3. DRILLING AGENCY	13. TOTAL No. OF OVERBURDEN SAMPLES TAKEN — DISTURBED — UNDISTURBED
4. HOLE No. (As shown on drawing title and file number) SB-04	14. TOTAL NUMBER CORE BOXES
5. NAME OF DRILLER Rabau Kistner	15. ELEVATION GROUND WATER
6. DIRECTION OF HOLE ☒ Vertical ☐ Inclined _____ Degrees from Vertical	16. DATE HOLE 10-20-06 — STARTED 1000 — COMPLETED ~1400
7. THICKNESS OF OVERBURDEN	17. ELEVATION TOP OF HOLE
8. DEPTH DRILLED INTO ROCK	18. TOTAL CORE RECOVERY FOR BORING
9. TOTAL DEPTH OF HOLE 50' — 10. SIZE AND TYPE OF BIT 6" Ø HSA	19. SIGNATURE OF INSPECTOR T. Thompson

ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (description) d	% CORE RECOVERY e	BOX OR SAMPLE NUMBER f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significent) g	Blow count
	5	ML	Gypsum silt	70	—	dry	56
	10	ML	Gypsum silt	80	SB-004 (10.0-10.5)	dry	73
	15	ML	Gyp. silt	100	—	dry moist @ 15.7'	90
	20	ML	Gyp. silt	100	SB-004 (20.0-20.5)	moist dry @ 21'	72
	25	CL	clay (brown) w/ 20% gyp. crystals	100	—	moist	46
	30	CL-ML	Silty clay (brown) w/ 10% gyp cry	100	SB-004 (30.0-30.5)	dry	55
	35	SP ML CL-ML SP	fine sand silt w/ gyp cry. @ 35.5' silty clay (brown) @ 35.8' fine sand @ 36.2'	90	—	dry dry moist dry	54
	40	SP	V. fine sand	60	SB-004 (40.0-40.5)	dry	refusal @ 1.2'

DRILLING LOG (Continuation Sheet)	INSTALLATION	HOLE No. SB-04	SHEET No. 2 OF 2
1. PROJECT HELSTF Phase III RFI	11. ELEVATION OF TOP HOLE		

ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (description) d	% CORE RECOVERY e	BOX OR SAMPLE NUMBER f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g	Blow Count
	45	SP	v. fine sand	40	—	dry	refusal @0.5'
		ML	silt w/ sand	80	SB-04 (49.5-50.0)	added ~2gal water to lift cuttings	
	50	CL	clay (brown)			moist @ 48'	58

DRILLING LOG	DIVISION	INSTALLATION	HOLE No. SB-05	SHEET No. 1 OF 2

1. PROJECT HELSTF Phase III RFI	11. DATUM FOR ELEVATION SHOWN (TBM or MSL)
2. LOCATION (Coordinates or Station)	12. MANUFACTURER'S DESIGNATION OF DRILL
3. DRILLING AGENCY	13. TOTAL No. OF OVERBURDEN SAMPLES TAKEN — DISTURBED — UNDISTURBED
4. HOLE No. (As shown on drawing title and file number) SB-05	14. TOTAL NUMBER CORE BOXES
5. NAME OF DRILLER Raba Kistner	15. ELEVATION GROUND WATER
6. DIRECTION OF HOLE ☒ Vertical ☐ Inclined _____ Degrees from Vertical	16. DATE HOLE — STARTED 10-19-06 1330 — COMPLETED 10-20-06 1000
7. THICKNESS OF OVERBURDEN	17. ELEVATION TOP OF HOLE
8. DEPTH DRILLED INTO ROCK	18. TOTAL CORE RECOVERY FOR BORING
9. TOTAL DEPTH OF HOLE 50' — 10. SIZE AND TYPE OF BIT 6" Φ HSA	19. SIGNATURE OF INSPECTOR T. Thompson

ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (description) d	% CORE RECOVERY e	BOX OR SAMPLE NUMBER f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g	Blow count
	5	ML	Gypsum silt	70	—	dry	51
	10	ML	Gyp. silt	95	SB-005 (10.0-10.5)	dry	95
	15	ML	gyp. silt	95	—	dry to v. slight moisture	95
	20	CL	clay (brown) w/ 10% gyp. crystals	95	SB-005 (20.0-20.5)	dry	61
	25	CL	clay (brown) w/ 40% gyp. crystals	95	—	slightly moist	61
	30	CL	clay (brown) w/ 20% gyp. crystals	95	SB-005 (30.0-30.5)	slightly moist	53
	35	CL	clay (brown) w/ 10% gyp. crystals	100	—	moist	42
	40	SP	v. fine sand	95	SB-005 (40.0-40.5)	dry	115 @ 1.5'

DRILLING LOG (Continuation Sheet)	INSTALLATION	HOLE No. SB-05	SHEET No. 2 OF 2
1. PROJECT HELSTF Phase III RFI	11. ELEVATION OF TOP HOLE		

ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (description) d	% CORE RECOVERY e	BOX OR SAMPLE NUMBER f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g	Blow Count
							45
	45	SP CL	- v. fine sand - clay (brown) @ 46'	100	—	moist	47 ~~44~~
	50	CL SP CL	- clay (brown) - v. fine sand @ 48.2' clay (brown) @ 48.5'	95	SB-005 (49.5-50.0)	moist	44

DRILLING LOG	DIVISION	INSTALLATION	HOLE No. SB-06	SHEET No. 1 OF 2

1. PROJECT HELSTF Phase III RFI	11. DATUM FOR ELEVATION SHOWN (TBM or MSL)
2. LOCATION (Coordinates or Station)	12. MANUFACTURER'S DESIGNATION OF DRILL
3. DRILLING AGENCY	13. TOTAL No. OF OVERBURDEN SAMPLES TAKEN — DISTURBED — UNDISTURBED
4. HOLE No. (As shown on drawing title and file number) SB-06	14. TOTAL NUMBER CORE BOXES
5. NAME OF DRILLER Raba Kistner	15. ELEVATION GROUND WATER
6. DIRECTION OF HOLE ☒ Vertical ☐ Inclined _____ Degrees from Vertical	16. DATE HOLE — STARTED 0855 — COMPLETED 1330 (10-19-06)
7. THICKNESS OF OVERBURDEN	17. ELEVATION TOP OF HOLE
8. DEPTH DRILLED INTO ROCK	18. TOTAL CORE RECOVERY FOR BORING
9. TOTAL DEPTH OF HOLE 50' — 10. SIZE AND TYPE OF BIT 6" Φ HSA	19. SIGNATURE OF INSPECTOR T. Thompson

ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (description) d	% CORE RECOVERY e	BOX OR SAMPLE NUMBER f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significent) g	Blow Count
					SB-006 (0.5-1)	Surface sample from 50' N of SB-06	
	5	ML	Gypsum silt	50	—	Dry	52
	10	ML	Gyp silt	100	SB-006 (10-10.5)	Dry to 11' Moist 11-12	90
	15	ML	Gyp silt	90	—	Dry	97
	20	CL	clay (brown) w/ 40% gyp crystals	100	SB-006 (20-20.5)	Moist	29
	25	CL SP	clay 20% gyp cry to 26.6' very fine sand	100	—	Moist	44
	30	CL	clay w/ 5% gyp crystals	100	SB-006 (30-30.5)	moist	41
	35	CL	clay w/ 10% gyp crystals	100	—	moist	35
	40	CL SP	clay to 40.8' fine sand to 42'	90	SB-006 (40-40.5)	Moist	82

DRILLING LOG (Continuation Sheet)	INSTALLATION	HOLE No. SB-06	SHEET No. 2 OF 2
1. PROJECT HELSTF Ph III RFI	11. ELEVATION OF TOP HOLE		

ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (description) d	% CORE RECOVERY e	BOX OR SAMPLE NUMBER f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g	Blow Count
	45 ~~40~~	CL	clay 45-45.5				
		SP	v. fine sand to 45.7	100	—	moist	41
		CL	clay to 47				
		SP	fine sand 48-48.5				
	50	CL	clay w/ some sand to 50'	100	SB-006 (49.5-50)	moist	47

DRILLING LOG	DIVISION	INSTALLATION	HOLE No. SB-07	SHEET No. 1 OF 2

1. PROJECT HELSTF Phase III RFI	11. DATUM FOR ELEVATION SHOWN (TBM or MSL)
2. LOCATION (Coordinates or Station)	12. MANUFACTURER'S DESIGNATION OF DRILL
3. DRILLING AGENCY	13. TOTAL No. OF OVERBURDEN SAMPLES TAKEN — DISTURBED — UNDISTURBED
4. HOLE No. (As shown on drawing title and file number) SB-07	14. TOTAL NUMBER CORE BOXES
5. NAME OF DRILLER Raba Kistner	15. ELEVATION GROUND WATER
6. DIRECTION OF HOLE ☒ Vertical ☐ Inclined _____ Degrees from Vertical	16. DATE HOLE 10-17-06 — STARTED 0930 — COMPLETED 1300
7. THICKNESS OF OVERBURDEN	17. ELEVATION TOP OF HOLE
8. DEPTH DRILLED INTO ROCK	18. TOTAL CORE RECOVERY FOR BORING
9. TOTAL DEPTH OF HOLE 50' — 10. SIZE AND TYPE OF BIT 6" Ø HSA	19. SIGNATURE OF INSPECTOR J. Thompson

ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (description) d	% CORE RECOVERY e	BOX OR SAMPLE NUMBER f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g	Blow Count
					SB-007 (0.5-1.5)		
	5	ML	Gyp silt	100	—	Dry	52
	10	ML	Gyp silt	60	SB-007 (10-11)	Dry	107
	15	ML	Gyp silt	95	—	Dry	52
	20	ML	Gyp silt	100	SB-007 (20-21)	Moist	17
	25	ML	Gyp silt some gyp crystals at 26.2'-27'	95	—	Moist to 25.5' Dry	94
	30	ML	Gyp silt w/ gyp crystals	100	SB-007 (30-31)	Moist	65
	35	—	Gyp crystals w/ some clay	100	—	Moist	60
	40	CL	Clay (brwn) w/ gyp crystals	100	SB-007 (40-41)	Slightly Moist	76

DRILLING LOG (Continuation Sheet)	INSTALLATION	HOLE No. SB-07	SHEET No. 2 OF 2
1. PROJECT HELSTF Ph III RFI	11. ELEVATION OF TOP HOLE		

ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (description) d	% CORE RECOVERY e	BOX OR SAMPLE NUMBER f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significent) g	Blow Count
	45	SP	fine sand	100	—	Dry	96
	50	CL	clay (brown) w/ 5% gyp crystals	100	SB-007 (49-50)	Moist	39 ~~3~~

DRILLING LOG	DIVISION	INSTALLATION	HOLE No. SB-08	SHEET No. 1 OF 2

1. PROJECT HELSTF Phase III RFI	11. DATUM FOR ELEVATION SHOWN (TBM or MSL)
2. LOCATION (Coordinates or Station)	12. MANUFACTURER'S DESIGNATION OF DRILL
3. DRILLING AGENCY	13. TOTAL No. OF OVERBURDEN SAMPLES TAKEN — DISTURBED — UNDISTURBED
4. HOLE No. (As shown on drawing title and file number) SB-08	14. TOTAL NUMBER CORE BOXES
5. NAME OF DRILLER Rabea Kistner	15. ELEVATION GROUND WATER
6. DIRECTION OF HOLE ☒ Vertical ☐ Inclined _____ Degrees from Vertical	16. DATE HOLE — STARTED 10-17-06 1400 — COMPLETED 10-18-06 1130
7. THICKNESS OF OVERBURDEN	17. ELEVATION TOP OF HOLE
8. DEPTH DRILLED INTO ROCK	18. TOTAL CORE RECOVERY FOR BORING
9. TOTAL DEPTH OF HOLE 50' — 10. SIZE AND TYPE OF BIT 6" Φ HSA	19. SIGNATURE OF INSPECTOR J. Thompson

ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (description) d	% CORE RECOVERY e	BOX OR SAMPLE NUMBER f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significent) g	Blow Count
					SB-008 (0.5-1.5)		
	5	ML	Silt (brown) w/ 10% Gypsum silt	80	—	Dry	21
	10	ML	Gyp silt	50	SB-008 (10-11)	Dry	110 @ 1 ft
	15	ML	Gyp silt	100	—	Dry Moist @ 16.8'	81
	20	CL-ML	Gyp. silty clay	100	SB-008 (20-21)	Moist	18
	25	ML	Gyp silt w/ 5% gyp crystals	100	—	Dry Moist @ 26'	86
	30	ML	Gyp silt w/ crystals w/ 10% clay (brown)	—	SB-008 (30-31)	Dry	90
	35	CL	clay (brown) w/ 40% gyp. cry.	90	—	Dry to slightly moist	72
	40	CL	clay (brown)	100	SB-008 (40-41)	Dry	66

DRILLING LOG (Continuation Sheet)	INSTALLATION	HOLE No. SB-08	SHEET No. 2 OF 2
1. PROJECT HELSTF Phase III RFI	11. ELEVATION OF TOP HOLE		

ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (description) d	% CORE RECOVERY e	BOX OR SAMPLE NUMBER f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g	Blow Count
	45	SP CL	fine sand to 46' gyp cry 46-46.2' clay (brown) to 47'	95	—	dry	71
	50	CL	clay (brown) w/ 10% gyp. cry.	90	SB-008 (49-50)	Dry	44

DRILLING LOG	DIVISION	INSTALLATION	HOLE No. SB-09	SHEET No. 1 OF 2

1. PROJECT HELSTF Phase III RFI	11. DATUM FOR ELEVATION SHOWN (TBM or MSL)
2. LOCATION (Coordinates or Station)	12. MANUFACTURER'S DESIGNATION OF DRILL
3. DRILLING AGENCY	13. TOTAL No. OF OVERBURDEN SAMPLES TAKEN — DISTURBED — UNDISTURBED
4. HOLE No. (As shown on drawing title and file number) SB-09	14. TOTAL NUMBER CORE BOXES
5. NAME OF DRILLER Raloa Kistner	15. ELEVATION GROUND WATER
6. DIRECTION OF HOLE ☒ Vertical ☐ Inclined _____ Degrees from Vertical	16. DATE HOLE 10-18-06 — STARTED 1245 — COMPLETED 1630
7. THICKNESS OF OVERBURDEN	17. ELEVATION TOP OF HOLE
8. DEPTH DRILLED INTO ROCK	18. TOTAL CORE RECOVERY FOR BORING
9. TOTAL DEPTH OF HOLE 58' — 10. SIZE AND TYPE OF BIT 6" Ø HSA	19. SIGNATURE OF INSPECTOR J. Thompson

ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (description) d	% CORE RECOVERY e	BOX OR SAMPLE NUMBER f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significent) g	Blow Count
					SB-009 (.5-1)		
	5	ML	silt (brwn) w/ 10% gypsum silt	60	—	Dry.	33
	10	ML	Gypsum silt	50	SB-009 (10-11)	Dry	150 @ 1ft
	15	ML	Gyp. silt	100	—	Moist 15-15.5 Dry	61 ~~21~~ AFT
	20	ML	Gyp. silt	100	SB-009 (20-21)	Moist	21
	25	ML	Gyp. silt	100	—	Moist Less moist 25.5 - 27	81
	30	ML	Gyp. silt w/ gyp crystals & brwn silt	100	SB-009 (30-31)	Moist	60
	35	SP ML SP	v. fine sand to 35.5' silt w/ gyp. cry. to 36' v. fine sand 36-37'	100	—	moist Dry moist	89
	40	SP CL SP	fine sand clay ~~45~~ 41-41.2 fine sand	100	SB-009 (40-42) SB-109 (40-42)	moist	63

DRILLING LOG (Continuation Sheet)	INSTALLATION	HOLE No. SB-09	SHEET No. 2 OF 2
1. PROJECT HELSTF Phase III RFI	11. ELEVATION OF TOP HOLE		

ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (description) d	% CORE RECOVERY e	BOX OR SAMPLE NUMBER f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g	Blow Count
	45	CL	clay (brwn) w/ 5% gyp. crystals	100	—	moist	46
	50	CL	clay (brwn) w/ 5% gyp. crystals	100	SB-009 (49-50)	moist	46

DRILLING LOG	DIVISION	INSTALLATION	HOLE No. SB-10	SHEET No. 1 OF 2

1. PROJECT HELSTF Phase III RFI	11. DATUM FOR ELEVATION SHOWN (TBM or MSL)
2. LOCATION (Coordinates or Station)	12. MANUFACTURER'S DESIGNATION OF DRILL
3. DRILLING AGENCY	13. TOTAL No. OF OVERBURDEN SAMPLES TAKEN — DISTURBED — UNDISTURBED
4. HOLE No. (As shown on drawing title and file number) SB-10	14. TOTAL NUMBER CORE BOXES
5. NAME OF DRILLER Raba Kistner	15. ELEVATION GROUND WATER
6. DIRECTION OF HOLE ☒ Vertical ☐ Inclined _____ Degrees from Vertical	16. DATE HOLE — STARTED 11-01-06 1300 — COMPLETED 1620
7. THICKNESS OF OVERBURDEN	17. ELEVATION TOP OF HOLE
8. DEPTH DRILLED INTO ROCK	18. TOTAL CORE RECOVERY FOR BORING
9. TOTAL DEPTH OF HOLE 50' — 10. SIZE AND TYPE OF BIT 6" Ø HSA	19. SIGNATURE OF INSPECTOR T. Thompson

ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (description) d	% CORE RECOVERY e	BOX OR SAMPLE NUMBER f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significent) g	Blow count
	5	ML	Gypsum silt	60	–	Dry	35
	10	ML	Gyp. silt	95	HLSF-0085 -SB-010 (10-11)	Dry Moist 11.2-11.7'	81
	15	ML CL-ML	Gyp silt w/ 20% gyp cry silty clay w/ 20% gyp cry	100	–	Moist	19
	20	CL-ML	silty clay (brown) w/ 10% gyp cry.	90	SB-010 (20-22) SB-110 (20-22)	Moist PID-17.3 ppm VOC	19
	25	SM	silty sand w/ 10% gyp cry	95	–	moist PID-0.5 ppm VOC	39
	30	SM	silty sand w/ 5% gypsum crystals	90	SB-010 (30-31)	Slightly moist PID-0.2 ppm VOC	70
	35	SP-SM	sand w/ silt	95	–	moist PID-0.2 ppm VOC	97
	40	CL	clay (brown)	100	SB-010 (40-41)	moist	39

DRILLING LOG (Continuation Sheet)	INSTALLATION	HOLE No. SB-10	SHEET No. 2 OF 2
1. PROJECT HELSTF Phase III RFI	11. ELEVATION OF TOP HOLE		

ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (description) d	% CORE RECOVERY e	BOX OR SAMPLE NUMBER f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significent) g	Blow Count
	45	CL	clay (brown) w/ some sand	30	—	moist	35
		SP-SM	sand w/ silt 48-49.6'		SB-010		
	50	CL-ML	silty clay 49.6-50'	100	(49-50)	moist	31

DRILLING LOG	DIVISION	INSTALLATION	HOLE No. SB-11	SHEET No. 1 OF 2

1. PROJECT HELSTF Phase III RFI	11. DATUM FOR ELEVATION SHOWN (TBM or MSL)
2. LOCATION (Coordinates or Station)	12. MANUFACTURER'S DESIGNATION OF DRILL
3. DRILLING AGENCY	13. TOTAL No. OF OVERBURDEN SAMPLES TAKEN — DISTURBED — UNDISTURBED
4. HOLE No. (As shown on drawing title and file number) SB-11	14. TOTAL NUMBER CORE BOXES
5. NAME OF DRILLER Raba Kistner	15. ELEVATION GROUND WATER
6. DIRECTION OF HOLE ☒ Vertical ☐ Inclined _____ Degrees from Vertical	16. DATE HOLE 11-16-06 — STARTED 1300 — COMPLETED 1515
7. THICKNESS OF OVERBURDEN	17. ELEVATION TOP OF HOLE
8. DEPTH DRILLED INTO ROCK	18. TOTAL CORE RECOVERY FOR BORING
9. TOTAL DEPTH OF HOLE 50' — 10. SIZE AND TYPE OF BIT 6" Ø HSA	19. SIGNATURE OF INSPECTOR J. Thompson

ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (description) d	% CORE RECOVERY e	BOX OR SAMPLE NUMBER f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significent) g	Blow Count
						Vac-excavated 0-5 ft bgs	
	5	—	—	50	—	Slough from excavation	26
	10	ML CL	Gypsum silt to 11.1' clay (grey)	100	SB-011 (10.0-11.0)	Dry moist	108
	15	CL	clay (brown) w/ 10%	90	—	PID 58.0 ppm VOC 9.0 ppm CO	26
	20	CL SP-SM	clay (brown) 10% gyp cry to 21.2 fine sand w/ silt	90	SB-011 (20.0-21.0)	moist PID -	~~28~~ 23
	25	SP-SM CL	fine sand w/ silt diesel stains Clay at 26 w/ 5% gyp crystals (grey)	80	—	moist PID 105 ppm VOC	28
	30	CL SP	clay (brown) to 30.3 fine sand	100	SB-011 SB-111 (30-32)	PID 43.6 ppm VOC moist	48
	35	SP-SM SP CL	silty fine sand to 35.8 fine sand to 36.5 clay	100	—	PID 23.6 ppm VOC 3 ppm CO moist	56
	40	SP	fine sand stained black	70		PID 348 ppm VOC 46 CO @1.8'	78

DRILLING LOG (Continuation Sheet)	INSTALLATION	HOLE No. SB-11	SHEET No. 2 OF 2
1. PROJECT HELSTF Phase III RFI	11. ELEVATION OF TOP HOLE		

ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (description) d	% CORE RECOVERY e	BOX OR SAMPLE NUMBER f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significent) g	Blow Count
	45	CL	clay			moist	
			Sandy clay at 46.7	90	—	PID-158 ppm VOC	42
		SP	Med. to fine sand small amount of clay in split spoon nose.	95		wet PID 1.6 ppm VOC	33
	50						

DRILLING LOG	DIVISION	INSTALLATION	HOLE No. SB-13	SHEET No. 1 OF 2

1. PROJECT HELSTF Phase III RFI	11. DATUM FOR ELEVATION SHOWN (TBM or MSL)
2. LOCATION (Coordinates or Station)	12. MANUFACTURER'S DESIGNATION OF DRILL
3. DRILLING AGENCY	13. TOTAL No. OF OVERBURDEN SAMPLES TAKEN — DISTURBED — UNDISTURBED
4. HOLE No. (As shown on drawing title and file number) SB-13	14. TOTAL NUMBER CORE BOXES
5. NAME OF DRILLER Raba Kistner	15. ELEVATION GROUND WATER
6. DIRECTION OF HOLE ☒ Vertical ☐ Inclined _____ Degrees from Vertical	16. DATE HOLE 11-16-06 — STARTED 0825 — COMPLETED 1145
7. THICKNESS OF OVERBURDEN	17. ELEVATION TOP OF HOLE
8. DEPTH DRILLED INTO ROCK	18. TOTAL CORE RECOVERY FOR BORING
9. TOTAL DEPTH OF HOLE 50 ft bgs — 10. SIZE AND TYPE OF BIT 6" Ø HSA	19. SIGNATURE OF INSPECTOR J. Thompson

ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (description) d	% CORE RECOVERY e	BOX OR SAMPLE NUMBER f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significent) g	Blow Count
						Vac-excavated 0-5 ft bgs	
	5	ML	Gypsum silt	80	—	Dry	29
	10	ML	gypsum silt	90	SB-013 (10.0-11.0)	Dry	29
	15	ML	gypsum silt	70	—	Moist PID - 9.6 ppm VOC	49
	20	CL	clay (brown) w/ 20% gyp cry some grey staining	80	SB-013 (20.0-21.0)	Water in split spoon PID - 84.7 ppm VOC	32
	25	SP-SM ML	fine sand w/ silt to 25.5' silt w/ some fine sand	90	—	moist PID - 21.0 ppm CO 12.1 ppm VOC	35
	30	SP	fine to v. fine sand	50	SB-013 (30.0-31.0)	moist PID - 42 ppm CO	91
	35	SP	fine sand	50	—	wet to moist PID - 31 ppm CO 0.4 ppm VOC	82
	40	SP	fine sand w/ dark grey staining & sewage odor	70	SB-013 (40.0-41.0)	Wet PID - 13.0 ppm CO 6.6 ppm VOC	102

DRILLING LOG (Continuation Sheet)	INSTALLATION	HOLE No. SB-13	SHEET No. 2 OF 2
1. PROJECT HELSTF Phase III RFI	11. ELEVATION OF TOP HOLE		

ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (description) d	% CORE RECOVERY e	BOX OR SAMPLE NUMBER f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g	Blow Count
						wet to moist	
	45	SP	fine to v. fine sand to 46.5	100	—	PID- 24 ppm CO 0.6 ppm VOC	74
		CL/SP	0.1' clay lense at 46.5 fine to v. fine sand, some gyp cry and clay at 47.				
	50	SP	fine to v. fine sand	50	SB-013 (49.0-50.0)	Wet - most of core was too soupy to remain in spoon.	24

DRILLING LOG	DIVISION	INSTALLATION	HOLE No. SB-14	SHEET No. 1 OF 2

1. PROJECT HELSTF Phase III RFI	11. DATUM FOR ELEVATION SHOWN (TBM or MSL)
2. LOCATION (Coordinates or Station)	12. MANUFACTURER'S DESIGNATION OF DRILL
3. DRILLING AGENCY	13. TOTAL No. OF OVERBURDEN SAMPLES TAKEN — DISTURBED — UNDISTURBED
4. HOLE No. (As shown on drawing title and file number) SB-14	14. TOTAL NUMBER CORE BOXES
5. NAME OF DRILLER Raba Kistner	15. ELEVATION GROUND WATER
6. DIRECTION OF HOLE ☒ Vertical ☐ Inclined _____ Degrees from Vertical	16. DATE HOLE 11-17-06 — STARTED 1145 — COMPLETED 1510
7. THICKNESS OF OVERBURDEN	17. ELEVATION TOP OF HOLE
8. DEPTH DRILLED INTO ROCK	18. TOTAL CORE RECOVERY FOR BORING
9. TOTAL DEPTH OF HOLE 50' — 10. SIZE AND TYPE OF BIT 6" Ø HSA	19. SIGNATURE OF INSPECTOR T. Thompson

ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (description) d	% CORE RECOVERY e	BOX OR SAMPLE NUMBER f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significent) g	Blow Count
						Vac-excavated 0-6.5 ft bgs	
	5	—	No split spoon	—	—	—	—
	10	ML	Gypsum silt	90	SB-014 SB-114 (10.0-12.0)	Moist PID - 3.9 ppm VOC	92
	15	ML	silt stained grey to black	40	—	PID - 154 ppm VOC	35
	20	CL SP	clay 20-20.5 fine sand w/some silt all stained grey	90	SB-014 SB-114 (20-22)	Water in spoon PID - 205 ppm VOC	25
	25	CL-ML	silty clay (light brown) 5% gypsum crystals	90	—	Moist PID - 7.6 ppm VOC	29
	30	SP	fine sand	40	SB-014 (30-31)	Moist PID - 1.3 ppm VOC	54
	35	SP	fine sand	50	—	Moist/Wet PID - 1.8 ppm VOC 3 ppm CO	105
	40	SP CL	fine sand clay w/ 50% gyp crystals at 42.	50	SB-014 (40-41)	PID = 9.8 ppm VOC 17 ppm CO	83

DRILLING LOG (Continuation Sheet)	INSTALLATION	HOLE No. SB-14	SHEET No. 2 OF 2
1. PROJECT HELSTF Phase III RFI	11. ELEVATION OF TOP HOLE		

ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (description) d	% CORE RECOVERY e	BOX OR SAMPLE NUMBER f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g	Blow Count
	45	~~CL~~ ML	Silt (brown) ~~w/~~	40	SB-014 (45-46)	Moist PID - 0.0 VOC 0 CO	24
	50	CL ~~ML~~ SP	clay brown to 48.3 fine sand	90	SB-014 (49-50)	moist wet	36

DRILLING LOG	DIVISION	INSTALLATION	HOLE No. SB-15	SHEET No. 1 OF 2

1. PROJECT HELSTF Phase III RFI	11. DATUM FOR ELEVATION SHOWN (TBM or MSL)
2. LOCATION (Coordinates or Station)	12. MANUFACTURER'S DESIGNATION OF DRILL
3. DRILLING AGENCY	13. TOTAL No. OF OVERBURDEN SAMPLES TAKEN — DISTURBED — UNDISTURBED
4. HOLE No. (As shown on drawing title and file number)	14. TOTAL NUMBER CORE BOXES
5. NAME OF DRILLER Raba Kistner	15. ELEVATION GROUND WATER
6. DIRECTION OF HOLE ☒ Vertical ☐ Inclined _____ Degrees from Vertical	16. DATE HOLE 11-02-06 — STARTED 0805 — COMPLETED 1150
7. THICKNESS OF OVERBURDEN	17. ELEVATION TOP OF HOLE
8. DEPTH DRILLED INTO ROCK	18. TOTAL CORE RECOVERY FOR BORING
9. TOTAL DEPTH OF HOLE 50 feet — 10. SIZE AND TYPE OF BIT 6" Ø HSA	19. SIGNATURE OF INSPECTOR J. Thompson

ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (description) d	% CORE RECOVERY e	BOX OR SAMPLE NUMBER f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significent) g	Blow Count
						0-5 ft bgs Vac-excavator	
	5	ML	Gypsum silt	50	—	Moist - likely due to vac-excavator	13
	10	ML	Gyp. silt	60	HLSF-0085 -SB-015 -(10-11)	Moist - vac-excavator	30
	15	ML	Gyp silt w/ 10% gyp. crystals	90	—	Wet PID-44.9 ppm VOC	15
	20	CL-ML SP	silty clay (brown) silty sand @ 22'	90	SB-015 (20-21)	PID-70.3 ppm VOC	26
	25	CL-ML	silty clay (grey/brown)	50	—	PID-2.9 ppm VOC	35
	30	SP	fine sand (tan)	60	SB-015 (30-31)	PID-11.5 ppm VOC @ 32' bgs	74
	35	SP	fine sand (grey)	60	—	PID-21.3 ppm VOC @ 36.5' bgs	91
	40	SP	fine sand (grey/tan)	40	SB-015 (40-41)	PID-2.1 ppm VOC @ 42' bgs	110 @ 1'

DRILLING LOG (Continuation Sheet)	INSTALLATION	HOLE No. SB-15	SHEET No. 2 OF 2
1. PROJECT HELSTF Phase III RFI	11. ELEVATION OF TOP HOLE		

ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (description) d	% CORE RECOVERY e	BOX OR SAMPLE NUMBER f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significent) g Blow Counts
	45	SP	fine sand	60	—	Wet; sand sloughing entering thru auger 34
	50	SP	fine sand	80	SB-015 (49-50)	Wet 61 @ 1 ft

DRILLING LOG	DIVISION	INSTALLATION	HOLE No. SB-16	SHEET No. 1 OF 2

1. PROJECT HELSTF Phase III RFI	11. DATUM FOR ELEVATION SHOWN (TBM or MSL)
2. LOCATION (Coordinates or Station)	12. MANUFACTURER'S DESIGNATION OF DRILL
3. DRILLING AGENCY	13. TOTAL No. OF OVERBURDEN SAMPLES TAKEN — DISTURBED — UNDISTURBED
4. HOLE No. (As shown on drawing title and file number) SB-16	14. TOTAL NUMBER CORE BOXES
5. NAME OF DRILLER Raba Kistner	15. ELEVATION GROUND WATER
6. DIRECTION OF HOLE ☒ Vertical ☐ Inclined _____ Degrees from Vertical	16. DATE HOLE — STARTED 1540 — COMPLETED 11-17-06 ~1130 (DATE: 11-16-06)
7. THICKNESS OF OVERBURDEN	17. ELEVATION TOP OF HOLE
8. DEPTH DRILLED INTO ROCK	18. TOTAL CORE RECOVERY FOR BORING
9. TOTAL DEPTH OF HOLE 50' — 10. SIZE AND TYPE OF BIT 6" Ø HSA	19. SIGNATURE OF INSPECTOR J. Thompson

ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (description) d	% CORE RECOVERY e	BOX OR SAMPLE NUMBER f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significent) g	Blow count
						0-7 ft bgs Vac-excavated	
	5	—	—	—	—	—	
	10	ML	Gypsum silt	60	SB-016 (10.0-11.0)	Dry	50
	15	ML CL	Gypsum silt clay (tan/grey)	100	—	Dry	54
	20	CL	clay w/ 10% gypsum cry.	90	SB-016 (20.0-21.0)	Water in spoon PID - 50.8 ppm VOC	17
	25	CL SP-SM	clay to 26' fine sand w/ silt increase in sand at 27.	80	—	Moist PID - 15.5 ppm VOC 5 ppm CO	42
	30	CL SP	30.8-31' clay 31-32' fine sand	60	SB-016 (30.0-31.0)	Moist PID - 4.3 ppm VOC 15 ppm CO @1.8'	96
	35	SP	fine to v. fine sand	80	—	Moist PID - 27.5 ppm VOC 15 ppm CO	93
	40	SP-SM	v. fine sand w/ some silt	40	SB-016 (40.0-41.0)	Moist PID - ~~3.8~~ 4.3 ppm VOC 34 ppm CO	76

DRILLING LOG (Continuation Sheet)	INSTALLATION	HOLE No. SB-16	SHEET No. 2 OF 2
1. PROJECT HELSTF Phase III RFI	11. ELEVATION OF TOP HOLE		

ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (description) d	% CORE RECOVERY e	BOX OR SAMPLE NUMBER f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g	Blow Count
	45	CL	clay (brown)	80	SB-016 (35-36)	Moist 1.2 ppm VOC 3 ppm CO	39
	50	SP-SM	fine sand w/ some silt	80	SB-016 (49-50)	PID – 1.7 ppm VOC 26 ppm CO	53

DRILLING LOG	DIVISION	INSTALLATION	HOLE No. SB-18	SHEET No. 1 OF 2

1. PROJECT: HELSTF Phase III RI	11. DATUM FOR ELEVATION SHOWN (TBM or MSL)
2. LOCATION (Coordinates or Station)	12. MANUFACTURER'S DESIGNATION OF DRILL
3. DRILLING AGENCY	13. TOTAL No. OF OVERBURDEN SAMPLES TAKEN — DISTURBED — UNDISTURBED
4. HOLE No. (As shown on drawing title and file number): SB-18	14. TOTAL NUMBER CORE BOXES
5. NAME OF DRILLER: Raba Kistner	15. ELEVATION GROUND WATER
6. DIRECTION OF HOLE: ☒ Vertical ☐ Inclined _____ Degrees from Vertical	16. DATE HOLE — STARTED: 11-02-06 — COMPLETED: 1305 — 1600
7. THICKNESS OF OVERBURDEN	17. ELEVATION TOP OF HOLE
8. DEPTH DRILLED INTO ROCK	18. TOTAL CORE RECOVERY FOR BORING
9. TOTAL DEPTH OF HOLE: 50 feet — 10. SIZE AND TYPE OF BIT: 6" Ø HSA	19. SIGNATURE OF INSPECTOR: T. Thompson

ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (description) d	% CORE RECOVERY e	BOX OR SAMPLE NUMBER f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significent) g — Blow Count
						Vac-extraction 0-5 ft
	5	ML	Gypsum silt	95	—	moist - likely due to vac-extraction 70
	10	ML	Gyp. silt		HLSF-0085 -SB-018 -(10-11)	Moist PID - 5.0 ppm VOC @ 7 ft bgs 122
	15	ML CL-ML	Gyp. silt (discolored) silty clay (brown) 16-17' 10% gyp crystals	100	—	Moist PID - 45.3 ppm VOC @ 17 ft bgs 21
	20	SP-SM	sand w/ silt (dis-colored)	60	SB-018 (20-21)	-57.6 ppm @ 16 ft bgs Wet PID-94.1 ppm VOC 25
	25	SP-SM CL-ML	sand w/ silt (grey) silty clay 26.5-27' (grey)	90	—	PID-12.4 ppm VOC 45
	30	SP	fine sand (tan)	60	SB-018 (30-31)	PID - 5.0 ppm VOC 46
	35	SP	fine sand (tan)	40	—	PID-0.9 ppm VOC 104 @ 1 ft
	40	SP	fine sand (tan)	50	SB-018 (40-41)	PID - 40.5 ppm VOC 67

DRILLING LOG (Continuation Sheet)	INSTALLATION	HOLE No. SB-18	SHEET No. 2 OF 2
1. PROJECT HELSTF Phase III RFI	11. ELEVATION OF TOP HOLE		

ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (description) d	% CORE RECOVERY e	BOX OR SAMPLE NUMBER f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g	Blow Count
	45	SP	fine sand to 46.5'	60	—	Wet PID - 1.2 ppm	60
		CL	clay			Moist	
	50	SP	fine sand	40	SB-018 (49-50)	wet	37

DRILLING LOG	DIVISION	INSTALLATION	HOLE No. SB-19	SHEET No. 1 OF 2

1. PROJECT HELSTF Phase III RFI	11. DATUM FOR ELEVATION SHOWN (TBM or MSL)
2. LOCATION (Coordinates or Station)	12. MANUFACTURER'S DESIGNATION OF DRILL
3. DRILLING AGENCY	13. TOTAL No. OF OVERBURDEN SAMPLES TAKEN — DISTURBED — UNDISTURBED
4. HOLE No. (As shown on drawing title and file number) SB-19	14. TOTAL NUMBER CORE BOXES
5. NAME OF DRILLER Raba Kistner	15. ELEVATION GROUND WATER
6. DIRECTION OF HOLE ☒ Vertical ☐ Inclined _____ Degrees from Vertical	16. DATE HOLE 11-13-06 — STARTED 1340 — COMPLETED 1620
7. THICKNESS OF OVERBURDEN	17. ELEVATION TOP OF HOLE
8. DEPTH DRILLED INTO ROCK	18. TOTAL CORE RECOVERY FOR BORING
9. TOTAL DEPTH OF HOLE 50' — 10. SIZE AND TYPE OF BIT 6" Ø HSA	19. SIGNATURE OF INSPECTOR J. Thompson

ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (description) d	% CORE RECOVERY e	BOX OR SAMPLE NUMBER f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g	Blow Count
						Vac-excavated 0-5 ft	
	5	ML	Gypsum silt	40	—		7
	10	ML	gypsum silt	90	HLSF-0085 -SB-019 (10.0-11.0)		98
	15	ML CL-ML	gypsum silt to 16' Silty Clay	100	—	moist	15
	20	CL-ML	silty (brown) clay w/ 5% gyp cry. & grey staining	90	SB-019 SB-119 (20.0-22.0)	moist PID 36.6 ppm VOC	17
	25	CL-M SM	silty clay silty sand @ 26.5'	80	SB-019 SB-119 (25-26)	moist PID 7.6 ppm	33
	30	SM	fine sand	60	SB-019 (30-31)	moist PID 13.6 ppm VOC	84
	35	SM	fine sand (tan) grey @ 36'	80	(36-37) one jar	moist PID 51.2 ppm	51
	40	SM CL	fine sand to 41.5 clay @ 41.5	90		moist	60

DRILLING LOG (Continuation Sheet)	INSTALLATION	HOLE No. SB-19	SHEET No. 2 OF 2
1. PROJECT HELSTF Phase III RFI	11. ELEVATION OF TOP HOLE		

ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (description) d	% CORE RECOVERY e	BOX OR SAMPLE NUMBER f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g	Blow Count
	46	SM	Silty sand to 45.4	90	–	moist	34
		CL	CL (brown) 45.4-47				
	50	SM	fine sand to 48.2 medium sand	100		moist	52

DRILLING LOG	DIVISION	INSTALLATION	HOLE No. SB-20	SHEET No. 1 OF 2

1. PROJECT HLSTF Phase III RFI	11. DATUM FOR ELEVATION SHOWN (TBM or MSL)
2. LOCATION (Coordinates or Station)	12. MANUFACTURER'S DESIGNATION OF DRILL
3. DRILLING AGENCY	13. TOTAL No. OF OVERBURDEN SAMPLES TAKEN — DISTURBED — UNDISTURBED
4. HOLE No. (As shown on drawing title and file number) SB-20	14. TOTAL NUMBER CORE BOXES
5. NAME OF DRILLER Raloa Kistner	15. ELEVATION GROUND WATER
6. DIRECTION OF HOLE ☒ Vertical ☐ Inclined _____ Degrees from Vertical	16. DATE HOLE 11-15-06 — STARTED 1005 — COMPLETED 1405
7. THICKNESS OF OVERBURDEN	17. ELEVATION TOP OF HOLE
8. DEPTH DRILLED INTO ROCK	18. TOTAL CORE RECOVERY FOR BORING
9. TOTAL DEPTH OF HOLE 50 ft bgs — 10. SIZE AND TYPE OF BIT 6" ⌀ HSA	19. SIGNATURE OF INSPECTOR T. Thompson

ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (description) d	% CORE RECOVERY e	BOX OR SAMPLE NUMBER f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significent) g	Blow Count
						Vac-excavated 0-5 ft bgs	
	5	ML	Gypsum silt	75	—	Dry	23
	10	ML	Gypsum silt	100	HLSF-0085-SB-020 (10.0-11.0)	Moist	54
	15	ML	Gypsum silt	80	—	Moist	32
	20	CL	clay w/ 10% gypsum crystals	90	HLSF-0085-SB-020 (20.0-22.0)	Moist	15
	25	CL	clay w/ 10% gypsum crystals	90	—	Moist	32
	30	CL SP-SM	clay to 31.6 silty fine sand	95	HLSF-0085-SB-020 (30.0-31.0)	Moist	34
	35	SP	v. fine sand	80	—	moist	53
	40	SP CL-ML SP	v. fine sand silty clay 0.1' at 41' v. fine sand	70	HLSF-0085-SB-020-(40.0-41.0)	moist moist wet	45

DRILLING LOG (Continuation Sheet)	INSTALLATION	HOLE No. SB-20	SHEET No. 2 OF 2
1. PROJECT HELSTE Phase III RFI	11. ELEVATION OF TOP HOLE		

ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (description) d	% CORE RECOVERY e	BOX OR SAMPLE NUMBER f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significent) g	Blow Count
	45	CL	clay (brown)	80	—	Moist	26
		SP-SM	fine sand w/ silt to 48.6	70		Wet	
	50	CL	clay 48.6-50			Moist	51

DRILLING LOG	DIVISION	INSTALLATION	HOLE No. SB-21	SHEET No. 1 OF 2

1. PROJECT HELSTF Phase III RFI	11. DATUM FOR ELEVATION SHOWN (TBM or MSL)
2. LOCATION (Coordinates or Station)	12. MANUFACTURER'S DESIGNATION OF DRILL
3. DRILLING AGENCY	13. TOTAL No. OF OVERBURDEN SAMPLES TAKEN — DISTURBED — UNDISTURBED
4. HOLE No. (As shown on drawing title and file number) SB-21	14. TOTAL NUMBER CORE BOXES
5. NAME OF DRILLER Raba Kistner (Manny Duenez)	15. ELEVATION GROUND WATER
6. DIRECTION OF HOLE ☒ Vertical ☐ Inclined _____ Degrees from Vertical	16. DATE HOLE 11-15-06 — STARTED 1400 — COMPLETED 1630
7. THICKNESS OF OVERBURDEN	17. ELEVATION TOP OF HOLE
8. DEPTH DRILLED INTO ROCK	18. TOTAL CORE RECOVERY FOR BORING
9. TOTAL DEPTH OF HOLE 50' — 10. SIZE AND TYPE OF BIT 6" Ø HSA	19. SIGNATURE OF INSPECTOR J. Thompson

ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (description) d	% CORE RECOVERY e	BOX OR SAMPLE NUMBER f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significent) g	Blow Count
						Vac-excavated 0-6 ft bgs	
	5	—	—	—	—	No split spoon sample due to water on hole	
	10	ML	Gypsum silt	60	HLSF-0085-SB-021 (10.0-11.0)	Dry.	35
	15	ML	Gypsum silt	90	—	Dry Moist at 16.5'	54
	20	CL	Clay brown w/ 20% gypsum crystals	90	HLSF-0085-SB-021 (20.0-22.0)	Moist	24
	25	CL	Clay brown w/ 40% gypsum crystals	90	—	moist	37
	30	CL ML	Clay brown to 31.2 Silt (brown) w/ fine sand	95	HLSF-0085-SB-021 (30.0-31.0)	moist moist	34
	35	SP	V. fine sand	90	—	moist	54
	40	SP-SM SP	silty fine sand to 40.5 fine sand 40.5-42	90	HLSF-0085-SB-021 (40.0-41.0)	moist wet	36

DRILLING LOG (Continuation Sheet)	INSTALLATION	HOLE No. SB-21	SHEET No. 2 OF 2
1. PROJECT HELSTF Phase III RFI	11. ELEVATION OF TOP HOLE		

ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (description) d	% CORE RECOVERY e	BOX OR SAMPLE NUMBER f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g	Blow Count
	45	CL	clay some silt at 46.2'. Gyp crystals at 46.5'	100	—	Moist	33
	50	SP SP-SM CL	Fine sand to 48 49.1 Silty fine sand to 49.5 Clay to 50	100	HLSF-0025 -SB-021 -(49.0-50.0)	wet moist moist	36

DRILLING LOG	DIVISION	INSTALLATION	HOLE No. SB-22	SHEET No. 1 OF 2

1. PROJECT HELSTF Phase III RFI	11. DATUM FOR ELEVATION SHOWN (TBM or MSL)
2. LOCATION (Coordinates or Station)	12. MANUFACTURER'S DESIGNATION OF DRILL
3. DRILLING AGENCY	13. TOTAL No. OF OVERBURDEN SAMPLES TAKEN — DISTURBED — UNDISTURBED
4. HOLE No. (As shown on drawing title and file number) SB-22	14. TOTAL NUMBER CORE BOXES
5. NAME OF DRILLER Raba Kistner (Manny Duenez)	15. ELEVATION GROUND WATER
6. DIRECTION OF HOLE ☒ Vertical ☐ Inclined _____ Degrees from Vertical	16. DATE HOLE 11-3-06 — STARTED 0800 — COMPLETED 1045
7. THICKNESS OF OVERBURDEN	17. ELEVATION TOP OF HOLE
8. DEPTH DRILLED INTO ROCK	18. TOTAL CORE RECOVERY FOR BORING
9. TOTAL DEPTH OF HOLE 50' — 10. SIZE AND TYPE OF BIT 6" Φ HSA	19. SIGNATURE OF INSPECTOR J. Thompson

ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (description) d	% CORE RECOVERY e	BOX OR SAMPLE NUMBER f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significent) g	Blow count
						Location "pot-holed" to verify no utilities. 0-5 ft.	
	5	ML	Gypsum silt	70	—	Moist - due to vac-extractor	15
	10	ML	Gypsum silt	70	HLSF-0085 - SB-022 - (10.0-11.0)	Moist	74
	15	CL-ML	Silty clay ~~g~~ w/ 20% gypsum crystals	90	—	moist	21
	20	CL ML	Silty clay (brown) w/ 5% gypsum crystals	95	SB-022 SB-122	moist	17
	25	CL-ML	brown clay 5% gyp cry grey clay 40% gyp crystals	95	—	Moist	41
	30	CL-ML SP ~~SW~~	brown clay @ 30.8-31.5 well graded fine sand @ 31.5-32.	55	SB-022 (31.0-32.0)	(Water is in the borehole) Moist	47
	35	SM	Silty sand	60	—	Moist	—
	40	SP ~~SW~~ CL	well graded fine sand @ 41.6' brown	80	SB-022 (40.0-41.0)	~~wet~~ wet	27

DRILLING LOG (Continuation Sheet)	INSTALLATION	HOLE No. SB-22	SHEET No. 2 OF 2
1. PROJECT HELSTF Phase III RFI	11. ELEVATION OF TOP HOLE		

ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (description) d	% CORE RECOVERY e	BOX OR SAMPLE NUMBER f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g	Blow count
	45	CL	brown clay w/ 5% gyp crystals	50	—	Moist	27
	50	CL	brown clay 5% gyp crystals	40	SB-022 -(49.0-50.0)	Moist	39

DRILLING LOG	DIVISION	INSTALLATION	HOLE No. SB-23	SHEET No. 1 OF 2

1. PROJECT HELSTF Phase III RFI	11. DATUM FOR ELEVATION SHOWN (TBM or MSL)
2. LOCATION (Coordinates or Station)	12. MANUFACTURER'S DESIGNATION OF DRILL
3. DRILLING AGENCY	13. TOTAL No. OF OVERBURDEN SAMPLES TAKEN — DISTURBED — UNDISTURBED
4. HOLE No. (As shown on drawing title and file number)	14. TOTAL NUMBER CORE BOXES
5. NAME OF DRILLER Raba Kistner (Manny Chenez)	15. ELEVATION GROUND WATER
6. DIRECTION OF HOLE ☒ Vertical ☐ Inclined _____ Degrees from Vertical	16. DATE HOLE 11-7-06 — STARTED 0800 — COMPLETED 1145
7. THICKNESS OF OVERBURDEN	17. ELEVATION TOP OF HOLE
8. DEPTH DRILLED INTO ROCK	18. TOTAL CORE RECOVERY FOR BORING
9. TOTAL DEPTH OF HOLE 50 ft bgs — 10. SIZE AND TYPE OF BIT 6" Ø HSA	19. SIGNATURE OF INSPECTOR J. Thompson

ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (description) d	% CORE RECOVERY e	BOX OR SAMPLE NUMBER f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g	Blow count
						Vac-extraction from 0-5 ft bgs	
	5	ML	Gypsum silt	90	—	Dry	61
	10	ML	Gypsum silt	80	HLSF-0085 SB-023 (10.0-11.0)	Slightly Moist	121
	15	CL-ML	Silty clay w/ decreasing gypsum content	90	—	Moist	24
	20	CL ~~-ML~~	~~Silty~~ clay w/ 20% gypsum crystals	70	HLSF-0085 -SB-023 (20.0-21.0)	Moist	26
	25	CL SP-SM CL-ML	clay ~~25.0-5~~ 25.0-25.2 fine sand w/ silt 25.2-26.5 silty clay 26.5-26.7	80	—	Wet	35
	30	SP-SM SP	v. fine sand w/ silt to 30.5 fine sand to 31.5	70	HLSF-0085 -SB-023 -(30.8-31.0)	wet moist	63
	35	SP CL	fine sand to 36.2 Sandy clay to 36.5	75	—	wet	42
	40	SP SP-SM	fine sand to 41 v. fine sand w/ silt	100	HLSF-0085 -SB-023 (40.0-41.0)	wet	53

DRILLING LOG (Continuation Sheet)	INSTALLATION	HOLE No. SB-23	SHEET No. 2 OF 2
1. PROJECT HELSTF Phase III RFI	11. ELEVATION OF TOP HOLE		

ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (description) d	% CORE RECOVERY e	BOX OR SAMPLE NUMBER f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g	Blow Count
	45	SP	fine sand to 46.5	100	–	Wet	
		CL	clay w/ 10% gyp cry			moist	41
		SP-SM	fine sand w/ silt to 48.5	100	HLSF-0085	Wet	
	50	ML	silt w/ sand, 48.5-49.2		-SB-023	wet	42
		CL	clay w/ 5% gyp cry 49.2-50.0		-(48.0-50.0)	moist	

DRILLING LOG	DIVISION	INSTALLATION	HOLE No. SB-24	SHEET No. 1 OF 2

1. PROJECT HELSTF Phase III RFI	11. DATUM FOR ELEVATION SHOWN (TBM or MSL)
2. LOCATION (Coordinates or Station)	12. MANUFACTURER'S DESIGNATION OF DRILL
3. DRILLING AGENCY	13. TOTAL No. OF OVERBURDEN SAMPLES TAKEN — DISTURBED — UNDISTURBED
4. HOLE No. (As shown on drawing title and file number) SB-24	14. TOTAL NUMBER CORE BOXES
5. NAME OF DRILLER Raba Kistner (Manny Duenez)	15. ELEVATION GROUND WATER
6. DIRECTION OF HOLE ☒ Vertical ☐ Inclined _____ Degrees from Vertical	16. DATE HOLE 11-6-06 — STARTED 1315 — COMPLETED 1540
7. THICKNESS OF OVERBURDEN	17. ELEVATION TOP OF HOLE
8. DEPTH DRILLED INTO ROCK	18. TOTAL CORE RECOVERY FOR BORING
9. TOTAL DEPTH OF HOLE 50' — 10. SIZE AND TYPE OF BIT 6" Φ HSA	19. SIGNATURE OF INSPECTOR J. Thompson

ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (description) d	% CORE RECOVERY e	BOX OR SAMPLE NUMBER f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significent) g	Blow Count
						Vac-extraction 0-5 ft bgs.	
	5	ML	Gypsum silt	70	—	Dry	24
	10	ML	Gypsum silt	90	HLSF-0085 ~~HLSF~~ SB-024 -(10.0-11.0)	Moist	87
	15	ML	Gypsum silt to 16' Gypsum silt w/ 20% gyp crystals	95	—	Dry to 15.5' moist	18
	20	ML	Gypsum silt to 20.1	100	HLSF-0085 -SB-024 (20.0-21.0)	Moist	15
	25	SM CL-ML	Silty sand (fine) to 25.7 Gypsum silty clay w/ 20% gyp cry.	80	—	wet	51
	30	SP ~~SW~~ CL	Medium to fine sand ~~to 30.4~~ to 31.5' clay (brown) w/ 5% gyp crystals.	70	HLSF-0085 -SB-024 (30.0-31.0)	wet	61
	35	SM	Silty sand	90	—	wet	—
	40	SM	Silty sand	80	HLSF-0085 -SB-024 -(40.0-41.0)	wet	56

DRILLING LOG (Continuation Sheet)	INSTALLATION	HOLE No. SB-24	SHEET No. 2 OF 2
1. PROJECT HELSTF Phase III RFI	11. ELEVATION OF TOP HOLE		

ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (description) d	% CORE RECOVERY e	BOX OR SAMPLE NUMBER f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g	Blow Count
	45	SM	Silty sand to 46'	80	—	Wet	
		CL-ML	Silty clay to 47				33
			Silty clay to 49.5	95	HLSF-0085 SB-024 (49.0-50.0)	Wet	
	50	CL	clay to 50.			Moist	33

DRILLING LOG	DIVISION	INSTALLATION	HOLE No. SB-25	SHEET No. 1 OF 2

1. PROJECT HELSTF Phase III RFI	11. DATUM FOR ELEVATION SHOWN (TBM or MSL)
2. LOCATION (Coordinates or Station)	12. MANUFACTURER'S DESIGNATION OF DRILL
3. DRILLING AGENCY	13. TOTAL No. OF OVERBURDEN SAMPLES TAKEN — DISTURBED — UNDISTURBED
4. HOLE No. (As shown on drawing title and file number) SB-25	14. TOTAL NUMBER CORE BOXES
5. NAME OF DRILLER Raloa Kistner	15. ELEVATION GROUND WATER
6. DIRECTION OF HOLE ☒ Vertical ☐ Inclined _____ Degrees from Vertical	16. DATE HOLE 11-3-06 — STARTED 1240 — COMPLETED 1555
7. THICKNESS OF OVERBURDEN	17. ELEVATION TOP OF HOLE
8. DEPTH DRILLED INTO ROCK	18. TOTAL CORE RECOVERY FOR BORING
9. TOTAL DEPTH OF HOLE 50' ft — 10. SIZE AND TYPE OF BIT 6" Ø HSA	19. SIGNATURE OF INSPECTOR J. Thompson

ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (description) d	% CORE RECOVERY e	BOX OR SAMPLE NUMBER f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g	Blow Count
						0-5 ft "pot holed" to clear for utilities.	
	5	ML	Gypsum silt	90	—	Moist	45
	10	ML	Gypsum silt	40	SB-025 (10.0-11.0)	Dry	75 @ 16
	15	ML	Gypsum silt	100	—	Moist @ 15.5'	30
	20	CL-ML	Silty clay (brown) 20% gypsum crystals	80	SB-025 (20.0-21.0)	Wet	22
	25	SM ML	brown silt sand to 26.5 Gyp silt w/ 20% gypsum	90	—	wet	33
	30	CL-ML SP ~~SW~~	silty clay to 30.5' fine sand	70	SB-025 (30.0-31.0)	moist	75
	35	CL-ML ML	silty clay to 36.7 brown silt	80	—	moist wet	41
	40	ML ML	brown silt sandy silt at 41'	90	SB-025 (40.0-41.0)	wet	43

DRILLING LOG (Continuation Sheet)	INSTALLATION	HOLE No. SB-25	SHEET No. 2 OF 2
1. PROJECT HELSTF Phase III RFI	11. ELEVATION OF TOP HOLE		

ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (description) d	% CORE RECOVERY e	BOX OR SAMPLE NUMBER f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g Blow Count
	45	SP ~~SW~~	fine grain sand	100	–	wet 71
	50		Grout borehole to surface.			unable to obtain sample due to heaving sands

DRILLING LOG	DIVISION	INSTALLATION	HOLE No. SB-26	SHEET No. 1 OF 2

1. PROJECT HELSTF Phase III RFI	11. DATUM FOR ELEVATION SHOWN (TBM or MSL)
2. LOCATION (Coordinates or Station) ~~HB~~	12. MANUFACTURER'S DESIGNATION OF DRILL
3. DRILLING AGENCY	13. TOTAL No. OF OVERBURDEN SAMPLES TAKEN — DISTURBED — UNDISTURBED
4. HOLE No. (As shown on drawing title and file number) SB-26	14. TOTAL NUMBER CORE BOXES
5. NAME OF DRILLER Raba Kistner (Manny Duenez)	15. ELEVATION GROUND WATER
6. DIRECTION OF HOLE ☒ Vertical ☐ Inclined _____ Degrees from Vertical	16. DATE HOLE 11-6-07 — STARTED 0840 — COMPLETED 1140
7. THICKNESS OF OVERBURDEN	17. ELEVATION TOP OF HOLE
8. DEPTH DRILLED INTO ROCK	18. TOTAL CORE RECOVERY FOR BORING
9. TOTAL DEPTH OF HOLE 50 ft bgs — 10. SIZE AND TYPE OF BIT 6" Φ HSA	19. SIGNATURE OF INSPECTOR T. Thompson

ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (description) d	% CORE RECOVERY e	BOX OR SAMPLE NUMBER f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g	Blow count
						Vacuum excavated for 0-5 ft.	
	5	ML	Gypsum silt	50	—	Moist/dry	22
	10	ML	Gypsum silt	50	HLSF-0085 -SB-026 -(10.0-11.0)	Dry	61
	15	ML	Gypsum silt w/ 5% gypsum crystals	90	—	Moist	17
	20	CL-ML	Silty Clay (brown)	80	HLSF-0085 -SB-026 -(20.0-21.0)	Wet	21
	25	~~CL~~-ML	Silty gypsum w/ some clay 5% gypsum crystals	80	—	Moist	31
	30	SM CL-ML	(brown) silty sand to 31 silty clay (brown)	80	HLSF-0085 SB-026 SB-126 (30.0-32.0)	Moist	46
	35	CL-ML SM	silty clay 35-35.4 fine sand	70	—	Moist	31
	40	CL	clay (brown)	100	SB-026 (40.0-41.0)	Moist	35

DRILLING LOG (Continuation Sheet)	INSTALLATION	HOLE No. SB-26	SHEET No. 2 OF 2
1. PROJECT HELSTF Phase III RFI	11. ELEVATION OF TOP HOLE		

ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (description) d	% CORE RECOVERY e	BOX OR SAMPLE NUMBER f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g	Blow Count
	45	CL-ML	silty clay w/ 5% gypsum crystals	100	—	Moist	40 34
	50	CL-ML SM	silty clay to ~~48~~ 49.5 silty sand	100	HLSF-0085 -SB-026 -(49.0-50.0)	Moist	34

DRILLING LOG

DIVISION	INSTALLATION	HOLE No.	SHEET No.
		SB-27	1 OF 2

1. PROJECT: HELSTF Phase III RFI	11. DATUM FOR ELEVATION SHOWN (TBM or MSL)
2. LOCATION (Coordinates or Station)	12. MANUFACTURER'S DESIGNATION OF DRILL
3. DRILLING AGENCY	13. TOTAL No. OF OVERBURDEN SAMPLES TAKEN — DISTURBED — UNDISTURBED
4. HOLE No. (As shown on drawing title and file number): SB-27	14. TOTAL NUMBER CORE BOXES
5. NAME OF DRILLER: Raba Kistner (Manny Duenez)	15. ELEVATION GROUND WATER
6. DIRECTION OF HOLE: [X] Vertical [ ] Inclined ____ Degrees from Vertical	16. DATE HOLE — STARTED: 11-7-06, 1315 — COMPLETED: 1610
7. THICKNESS OF OVERBURDEN	17. ELEVATION TOP OF HOLE
8. DEPTH DRILLED INTO ROCK	18. TOTAL CORE RECOVERY FOR BORING
9. TOTAL DEPTH OF HOLE: 50' — 10. SIZE AND TYPE OF BIT: 6" Ø HSA	19. SIGNATURE OF INSPECTOR: A. Thompson

ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (description) d	% CORE RECOVERY e	BOX OR SAMPLE NUMBER f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significent) g	Blow Count
						Vac-excavated 0-5 ft bgs	
	5	ML	Gypsum silt	55	—	Dry	31
	10	ML	Gypsum silt	80	SB-027 SB-12ft (10-12)	Dry	69
	15	CL-ML	Silty clay w/ decreasing gypsum content	90	SB-027 (15.0-16.0)	Slightly Moist	26
	20	CL-ML	Silty clay w/ 5% gypsum crystals increasing to 20% at 21'	80	SB-027 (20.0-21.0)	Wet	15
	25	CL-ML CL SM	Silty clay 40% gypsum @26' Clay 20% gypsum Sandy silt	90	—	Wet Moist moist	43
	30	CL	Clay 20% gypsum crystals	90	SB-027 (30.0-31.0)	Moist	46
	35	CL	Clay 10% gypsum crystal	100	—	Moist	38
	40	CL	Clay 10% gypsum crystal	100	SB-027 (40.0-41.0)	moist	41

DRILLING LOG (Continuation Sheet)	INSTALLATION	HOLE No. SB-27	SHEET No. 2 OF 2
1. PROJECT HELSTF Phase III RFI	11. ELEVATION OF TOP HOLE		

ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (description) d	% CORE RECOVERY e	BOX OR SAMPLE NUMBER f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g	Blow Count
	45	CL	clay 5% gypsum crystals	100	—	moist	30
	50	CL mL CL	clay to 49.2' sand silt 49.2-49.6 clay	100	SB-027 (49-50)	moist	28

DRILLING LOG	DIVISION	INSTALLATION	HOLE No. SB-28	SHEET No. 1 OF 2

1. PROJECT HELSTF Phase III RFI	11. DATUM FOR ELEVATION SHOWN (TBM or MSL)
2. LOCATION (Coordinates or Station)	12. MANUFACTURER'S DESIGNATION OF DRILL
3. DRILLING AGENCY	13. TOTAL No. OF OVERBURDEN SAMPLES TAKEN — DISTURBED — UNDISTURBED
4. HOLE No. (As shown on drawing title and file number) SB-28	14. TOTAL NUMBER CORE BOXES
5. NAME OF DRILLER Raba Kistner (Manny Duenez)	15. ELEVATION GROUND WATER
6. DIRECTION OF HOLE ☒ Vertical ☐ Inclined _____ Degrees from Vertical	16. DATE HOLE — STARTED 11-13-06 — COMPLETED 0920 — 1220
7. THICKNESS OF OVERBURDEN	17. ELEVATION TOP OF HOLE
8. DEPTH DRILLED INTO ROCK	18. TOTAL CORE RECOVERY FOR BORING
9. TOTAL DEPTH OF HOLE 50' — 10. SIZE AND TYPE OF BIT 6" Ø HSA	19. SIGNATURE OF INSPECTOR J. Thompson

ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (description) d	% CORE RECOVERY e	BOX OR SAMPLE NUMBER f	REMARKS (Drilling time, water loss, depth or weathering, etc., if significent) g	Blow Count
						Vac-excavated 0-5 ft	
	5	ML	gypsum silt	80	—	Moist (due to vac. excavation)	17
	10	ML	gypsum silt	30	~~HLSF-0085-SB-028-(8.0-11.0)~~	Dry.	148
	15	ML CL-ML	gypsum silt w/ 20% crystals 16.-17 silty clay	95	HLSF-0085-SB-028-(15-16)	Moist	12
	20	SM	silty sand	80	HLSF-0085-SB-028-(20-21)	wet	24
	25	SM CL	silty sand, to 25.5 clay w/ 20% gypsum crystals	90	—	wet moist	49
	30	CL	clay w/ 10% gypsum crystals	90	HLSF-0085-SB-028-(30-31)	moist	26
	35	CL CL-ML	clay to 35.4' silty clay w/ increasing silt	90	—	moist	26
	40	CL SM	clay sand @ 42'	100		moist	28

DRILLING LOG (Continuation Sheet)	INSTALLATION	HOLE No. SB-28	SHEET No. 2 OF 2
1. PROJECT HELSTF Phase III RFI	11. ELEVATION OF TOP HOLE		

ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (description) d	% CORE RECOVERY e	BOX OR SAMPLE NUMBER f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g	Blow Count
	45	CL CL-ML CL	clay to 46 silty clay 46-46.5 clay	100	—	Moist	27
	50	CL	clay	100	HLSF-0085-SB-028 (49.0-50.0)	Moist	23

DRILLING LOG	DIVISION	INSTALLATION	HOLE No. SB-29	SHEET No. 1 OF 2

1. PROJECT HELSTF Phase III RFI	11. DATUM FOR ELEVATION SHOWN (TBM or MSL)
2. LOCATION (Coordinates or Station)	12. MANUFACTURER'S DESIGNATION OF DRILL
3. DRILLING AGENCY	13. TOTAL No. OF OVERBURDEN SAMPLES TAKEN — DISTURBED — UNDISTURBED
4. HOLE No. (As shown on drawing title and file number) SB-29	14. TOTAL NUMBER CORE BOXES
5. NAME OF DRILLER Raba Kistner	15. ELEVATION GROUND WATER
6. DIRECTION OF HOLE ☒ Vertical ☐ Inclined _____ Degrees from Vertical	16. DATE HOLE 10-10-06 — STARTED 1340 — COMPLETED 1830
7. THICKNESS OF OVERBURDEN	17. ELEVATION TOP OF HOLE
8. DEPTH DRILLED INTO ROCK	18. TOTAL CORE RECOVERY FOR BORING
9. TOTAL DEPTH OF HOLE 50' — 10. SIZE AND TYPE OF BIT 6" Ø HSA	19. SIGNATURE OF INSPECTOR T. Thompson

ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (description) d	% CORE RECOVERY e	BOX OR SAMPLE NUMBER f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g	Blow count
	5	ML	Gypsum silt	100	—	Dry	~90
	10	SP	very fine sand w/ gyp. crystals	100	SB-029 (10-10.5)	Dry	47
	15	CL	clay w/ gyp. cry.	100	—	wet	14
	20	CL	clay w/ some sand and gyp. cry.	100	SB-029 (20-21)	moist	24
	25	CL SP-SC	clay w/ gyp. cry. to 26.5' fine sand w/ clay	95	—	moist	43
	30	CL	clay w/ gyp cry some f. sand	95	SB-029 (30-31)	moist	45
	35	CL	clay w/ gyp. cry. Gyp. cry. 36-36.2'	100	—	moist	51
	40	CL ML CL	clay w/ f. sand to 40.6' silt 40.6-41.5' sandy clay 41.5-42'	100	SB-029 (40-41)	moist	65

DRILLING LOG (Continuation Sheet)	INSTALLATION	HOLE No. SB-29	SHEET No. 2 OF 2
1. PROJECT HELSTF Phase III RFI	11. ELEVATION OF TOP HOLE		

ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (description) d	% CORE RECOVERY e	BOX OR SAMPLE NUMBER f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significent) g	Blow Count
	45	CL	clay w/ f. sand 45-46.8'	97	—	moist	25
		SP	fine sand 46.8-47'				
		CL	clay (grey) 48-48.7'	100	SB-029 (49-50')	moist	22
	50		clay (brown) 48.7-50'				

DRILLING LOG	DIVISION	INSTALLATION	HOLE No. SB-30	SHEET No. 1 OF 2

1. PROJECT HELSTF Phase III RFI	11. DATUM FOR ELEVATION SHOWN (TBM or MSL)
2. LOCATION (Coordinates or Station)	12. MANUFACTURER'S DESIGNATION OF DRILL
3. DRILLING AGENCY	13. TOTAL No. OF OVERBURDEN SAMPLES TAKEN — DISTURBED — UNDISTURBED
4. HOLE No. (As shown on drawing title and file number) SB-30	14. TOTAL NUMBER CORE BOXES
5. NAME OF DRILLER Raba Kistner	15. ELEVATION GROUND WATER
6. DIRECTION OF HOLE ☒ Vertical ☐ Inclined ____ Degrees from Vertical	16. DATE HOLE 10-11-06 — STARTED 0825 — COMPLETED 1240
7. THICKNESS OF OVERBURDEN	17. ELEVATION TOP OF HOLE
8. DEPTH DRILLED INTO ROCK	18. TOTAL CORE RECOVERY FOR BORING
9. TOTAL DEPTH OF HOLE 50' — 10. SIZE AND TYPE OF BIT 6" Ø HSA	19. SIGNATURE OF INSPECTOR T. Thompson

ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (description) d	% CORE RECOVERY e	BOX OR SAMPLE NUMBER f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significent) g	Blow count
	5	ML	Gypsum silt	80	—	Dry	94 @ 1.5 ft
	10	ML CL	Gypsum silt to 11' clay w/ f. sand to 12'	100	SB-030 (10-11)	Dry	35
	15	CL	clay w/ f. sand to 15.2' clay (brown) to 17'	100	—	Dry	~10 ?
	20	CL	clay w/ gypsum crystals	100	SB-030 (20-22); SB-130 (20-22)	Moist - water infiltrating from above	35
	25	CL ML	clay w/ gyp. cry. to 26' silt w/ f. sand	80	—	moist	38
	30	CL	clay w/ gyp. cry and some sand 30.5-32'	100	SB-030 (30-31)	moist	21
	35	CL	clay (brown) w/ large gyp. cry.	100	—	moist	37
	40	ML	silt w/ sand	80	SB-030 (40-41)	moist	63

DRILLING LOG (Continuation Sheet)	INSTALLATION	HOLE No. SB-30	SHEET No. 2 OF 2
1. PROJECT HELSTF Phase III RFI	11. ELEVATION OF TOP HOLE		

ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (description) d	% CORE RECOVERY e	BOX OR SAMPLE NUMBER f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significent) g	Blow count
	45	CL	clay (brown) w/ f. sand	80	—	moist	44
	50	CL	clay w/ gyp. cry.	100	SB-030 (49-50)	moist	27

DRILLING LOG	DIVISION	INSTALLATION	HOLE No. SB-31	SHEET No. 1 OF 2

1. PROJECT HELSTF Phase III RFI	11. DATUM FOR ELEVATION SHOWN (TBM or MSL)
2. LOCATION (Coordinates or Station)	12. MANUFACTURER'S DESIGNATION OF DRILL
3. DRILLING AGENCY	13. TOTAL No. OF OVERBURDEN SAMPLES TAKEN — DISTURBED — UNDISTURBED
4. HOLE No. (As shown on drawing title and file number) SB-31	14. TOTAL NUMBER CORE BOXES
5. NAME OF DRILLER Raba Kistner (Manny Buenez)	15. ELEVATION GROUND WATER
6. DIRECTION OF HOLE ☒ Vertical ☐ Inclined _____ Degrees from Vertical	16. DATE HOLE — STARTED 10-11-06 1600 — COMPLETED 10-12-06 1830
7. THICKNESS OF OVERBURDEN	17. ELEVATION TOP OF HOLE
8. DEPTH DRILLED INTO ROCK	18. TOTAL CORE RECOVERY FOR BORING
9. TOTAL DEPTH OF HOLE 50' — 10. SIZE AND TYPE OF BIT 6" Φ HSA	19. SIGNATURE OF INSPECTOR J. Thompson

ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (description) d	% CORE RECOVERY e	BOX OR SAMPLE NUMBER f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significent) g	Blow Count
	5	ML	Gypsum silt	95	—	Dry	63
	10	ML CL	Silt Gypsum clay w/ gyp crystals	100	SB-031 (10-11)	Dry to moist	40
	15	CL	clay w/ Gyp cry.	100	—	Moist/wet	18
	20	CL	Clay w/ Gyp. cry.	100	SB-031 (20-21)	moist	38
	25	CL ML	clay w/ gyp. cry to 26' silt w/ f. sand to 27'	80	—	moist	46
	30	CL	clay w/ gyp. cry.	50	SB-031 (30-31)	moist	30
	35	CL	clay w/ gyp. cry.	100	—	moist	43
	40	CL	clay w/ gyp. cry.	100	SB-031 (40-41)	moist	37

DRILLING LOG (Continuation Sheet)	INSTALLATION	HOLE No. SB-31	SHEET No. 2 OF 2
1. PROJECT HELSTF Phase III RFI	11. ELEVATION OF TOP HOLE		

ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (description) d	% CORE RECOVERY e	BOX OR SAMPLE NUMBER f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significent) g	Blow Count
	45	ML	silt w/ fine sand to 45.5'				
		CL	clay w/ gyp cry to 46.5'	100	—	moist	39
			clay w/ fine sand to 47'				
	50	CL	clay (brown)	—	SB-031 (49-50)	moist	34

DRILLING LOG	DIVISION	INSTALLATION	HOLE No. SB-32	SHEET No. 1 OF 2

1. PROJECT HELSTF Phase III RFI	11. DATUM FOR ELEVATION SHOWN (TBM or MSL)
2. LOCATION (Coordinates or Station)	12. MANUFACTURER'S DESIGNATION OF DRILL
3. DRILLING AGENCY	13. TOTAL No. OF OVERBURDEN SAMPLES TAKEN — DISTURBED — UNDISTURBED
4. HOLE No. (As shown on drawing title and file number) SB-32	14. TOTAL NUMBER CORE BOXES
5. NAME OF DRILLER Raba Kistner	15. ELEVATION GROUND WATER
6. DIRECTION OF HOLE ☒ Vertical ☐ Inclined _____ Degrees from Vertical	16. DATE HOLE 10-24-06 — STARTED 0805 — COMPLETED 1120
7. THICKNESS OF OVERBURDEN	17. ELEVATION TOP OF HOLE
8. DEPTH DRILLED INTO ROCK	18. TOTAL CORE RECOVERY FOR BORING
9. TOTAL DEPTH OF HOLE 50' — 10. SIZE AND TYPE OF BIT 6" Φ HSA	19. SIGNATURE OF INSPECTOR J. Thompson

ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (description) d	% CORE RECOVERY e	BOX OR SAMPLE NUMBER f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significent) g	Blow Count
	5	ML	Gypsum silt	40	—	Dry	100@ 1ft
	10	ML	Gypsum silt	100	SB-032	Dry, Moist @ 11.5'	71
	15	ML SP	silt (light brown) to 16.2 fine to v. fine sand	100	—	moist	62
	20	CL	clay w/ 10% gyp crystals	100	SB-032	moist	29
	25	CL SM	clay w/ 5% gyp crystals silty sand (26.5-27)	100	—	moist	45
	30	CL	clay	100		moist	44
	35	CL	clay brown w/ 5% gyp cry.	100	—	moist	32
	40	CL	clay brown 10% gyp crystals 41-42'	100		moist	34

DRILLING LOG (Continuation Sheet)	INSTALLATION	HOLE No. SB-32	SHEET No. 2 OF 2
1. PROJECT HELSTF Phase III RFI	11. ELEVATION OF TOP HOLE		

ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (description) d	% CORE RECOVERY e	BOX OR SAMPLE NUMBER f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g	Blow Counts
	45	CL	clay brown. trc. silt @ 46.5'	100		moist	37
	50	CL	clay w/ some fine sand @ 49.5-50'	100		moist	33

DRILLING LOG	DIVISION	INSTALLATION	HOLE No. SB-33	SHEET No. 1 OF 2

1. PROJECT HELSTF Phase III RFI	11. DATUM FOR ELEVATION SHOWN (TBM or MSL)
2. LOCATION (Coordinates or Station)	12. MANUFACTURER'S DESIGNATION OF DRILL
3. DRILLING AGENCY	13. TOTAL No. OF OVERBURDEN SAMPLES TAKEN — DISTURBED — UNDISTURBED
4. HOLE No. (As shown on drawing title and file number) SB-33	14. TOTAL NUMBER CORE BOXES
5. NAME OF DRILLER Raba Kistner	15. ELEVATION GROUND WATER
6. DIRECTION OF HOLE ☒ Vertical ☐ Inclined _____ Degrees from Vertical	16. DATE HOLE — STARTED 1300 — COMPLETED 1635 — 10-31-06
7. THICKNESS OF OVERBURDEN	17. ELEVATION TOP OF HOLE
8. DEPTH DRILLED INTO ROCK	18. TOTAL CORE RECOVERY FOR BORING
9. TOTAL DEPTH OF HOLE 50' — 10. SIZE AND TYPE OF BIT 6" Φ HSA	19. SIGNATURE OF INSPECTOR T. Thompson

ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (description) d	% CORE RECOVERY e	BOX OR SAMPLE NUMBER f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significent) g	Blow Count
	5	ML	Gypsum silt	50	—	Dry	160@ 1 ft
	10	ML	Gypsum silt	75	HLSF-0085 -SB-033 -(10-11)	Dry	84
	15	CL-ML	silty clay (brown) w/ 10% gypsum crystals	100	—	moist	32
	20	CL-ML	silty clay (brown) w 5% gyp. cry.	100	SB-033 (20-21)	moist	40
	25	SP-SM CL-ML SP-SM	sand w/ silt 25-25.5' silty clay 10% gyp cry 25.5-26.8' sand w/ silt 26.8-27'	85	—	moist	49
	30	CL-ML	silty clay (brown)	100	SB-033 (30-31)	moist	43
	35	CL-ML	silty clay (brown) w/ <5% gyp. crystals	100	—	moist	42
	40	CL ML	clay (brown) silt w/ sand 41.8-42'	100	SB-033 (40-42) SB-133 (40-42)	moist	27

DRILLING LOG (Continuation Sheet)	INSTALLATION	HOLE No. SB-33	SHEET No. 2 OF 2
1. PROJECT HELSTF Phase III RFI	11. ELEVATION OF TOP HOLE		

ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (description) d	% CORE RECOVERY e	BOX OR SAMPLE NUMBER f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significent) g Blow Count
	45	SP-SM	sand w/ silt fine to v. fine	90	—	wet 80
	50	SP	fine to v. fine sand	90	SB-033 (49-50)	wet 34

DRILLING LOG	DIVISION	INSTALLATION	HOLE No. SB-34	SHEET No. 1 OF 2

1. PROJECT HELSTF Phase III RFI	11. DATUM FOR ELEVATION SHOWN (TBM or MSL)
2. LOCATION (Coordinates or Station)	12. MANUFACTURER'S DESIGNATION OF DRILL
3. DRILLING AGENCY	13. TOTAL No. OF OVERBURDEN SAMPLES TAKEN — DISTURBED — UNDISTURBED
4. HOLE No. (As shown on drawing title and file number) SB-34	14. TOTAL NUMBER CORE BOXES
5. NAME OF DRILLER Raba Kistner (Manny Duenez)	15. ELEVATION GROUND WATER
6. DIRECTION OF HOLE ☒ Vertical ☐ Inclined _____ Degrees from Vertical	16. DATE HOLE 10-31-06 — STARTED 0800 — COMPLETED 1140
7. THICKNESS OF OVERBURDEN	17. ELEVATION TOP OF HOLE
8. DEPTH DRILLED INTO ROCK	18. TOTAL CORE RECOVERY FOR BORING
9. TOTAL DEPTH OF HOLE 50 feet — 10. SIZE AND TYPE OF BIT 6" Ø HSA	19. SIGNATURE OF INSPECTOR T. Thompson

ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (description) d	% CORE RECOVERY e	BOX OR SAMPLE NUMBER f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significent) g	Blow count
	5	ML	Gypsum silt	25	—	Dry	100 @6"
	10	ML	Gypsum silt	100	HCSF-0085 -SB-034 (10-11)	Dry Moist 11-11.8'	93
	15	ML ML-CL	Gypsum silt to 15.4' silty clay (brown) to 17' 5% gyp. crystals	90	—	Dry Moist 15.5-17'	40
	20	ML-CL	silty clay (brown) 10% gyp. cry.	100	SB-034 (20-21)	Moist	43
	25	ML-CL SP	silty clay (brown) to 26.8' fine to v. fine sand	100	—	Moist	50
	30	SP	fine to v. fine sand	60	SB-034 (30-31)	Moist	140
	35	SP ML-CL	f. to v.f. sand silty clay (brown) w/ gyp. cry. @ 37'	100	—	wet	88
	40	SP CL ~~SP~~-SM SP	f. to v.f. sand to 40.5' clay (brown) to 41.8' fine sand w/ silt to 42'	100	SB-034 (40-41)	moist	27

DRILLING LOG (Continuation Sheet)	INSTALLATION	HOLE No. SB-34	SHEET No. 2 OF 2
1. PROJECT HELSTF Phase III RFI	11. ELEVATION OF TOP HOLE		

ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (description) d	% CORE RECOVERY e	BOX OR SAMPLE NUMBER f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significent) g	Blow Count
	45	SP-SM	fine sand w/ silt 45-46'	100	-	wet	76
			fine sand 46-47'				
	50	SP	f. to v.f. sand	100	SB-034 (49-50)	wet	96

DRILLING LOG	DIVISION	INSTALLATION	HOLE No. SB-35	SHEET No. 1 OF 2

1. PROJECT HELSTF Phase III RFI	11. DATUM FOR ELEVATION SHOWN (TBM or MSL)
2. LOCATION (Coordinates or Station)	12. MANUFACTURER'S DESIGNATION OF DRILL
3. DRILLING AGENCY	13. TOTAL No. OF OVERBURDEN SAMPLES TAKEN — DISTURBED — UNDISTURBED
4. HOLE No. (As shown on drawing title and file number) ~~SB-0~~ SB-35	14. TOTAL NUMBER CORE BOXES
5. NAME OF DRILLER Rabca Kistner	15. ELEVATION GROUND WATER
6. DIRECTION OF HOLE ☒ Vertical ☐ Inclined _____ Degrees from Vertical	16. DATE HOLE — STARTED 10-23-06 — 0955 — COMPLETED 1455
7. THICKNESS OF OVERBURDEN	17. ELEVATION TOP OF HOLE
8. DEPTH DRILLED INTO ROCK	18. TOTAL CORE RECOVERY FOR BORING
9. TOTAL DEPTH OF HOLE 50' — 10. SIZE AND TYPE OF BIT 6" Φ HSA	19. SIGNATURE OF INSPECTOR T. Thompson

ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (description) d	% CORE RECOVERY e	BOX OR SAMPLE NUMBER f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significent) g	Blow count
	5	ML	gypsum silt	60	—	Dry	124
	10	ML	gypsum silt	90	SB-035 (10.0-11.0)	Dry moist @ 11'	51
	15	CL-ML	clay (brown) w/ 40% gypsum crystals	100	—	moist	78
	20	CL-ML	silty clay (brown) w/ 5% gyp crystals	100	SB-035 (20.0-21.0)	moist	36
	25	CL-ML SP-SM	silty clay (brown) 5% gyp cry v. fine sand @ 26.7 silty	100	—	moist	62
	30	CL	clay (brown) 10% gyp crystals	100	SB-035 (30.0-31.0)	moist	50
	35	CL	clay (brown) 10% gyp crystals	100	—	moist	41
	40	CL SP-SC CL	clay (brown) 5% gyp cry sandy clay @ 41.2' clay @ 41.5'	100	SB-035 (40.0-41.0)	moist	38

DRILLING LOG (Continuation Sheet)	INSTALLATION	HOLE No. SB-35	SHEET No. 2 OF 2
1. PROJECT HELSTF Phase III RFI	11. ELEVATION OF TOP HOLE		

ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (description) d	% CORE RECOVERY e	BOX OR SAMPLE NUMBER f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g	Blow Count
	45	SP	fine sand	~~30~~ 41	–	wet	30
	50	SP	fine to v. fine sand?	–	SB-035 (49.0-50.0)	wet	~40

DRILLING LOG	DIVISION	INSTALLATION	HOLE No. SB-36	SHEET No. 1 OF 2

1. PROJECT HELSTF Phase III RFI	11. DATUM FOR ELEVATION SHOWN (TBM or MSL)
2. LOCATION (Coordinates or Station)	12. MANUFACTURER'S DESIGNATION OF DRILL
3. DRILLING AGENCY	13. TOTAL No. OF OVERBURDEN SAMPLES TAKEN — DISTURBED — UNDISTURBED
4. HOLE No. (As shown on drawing title and file number) SB-36	14. TOTAL NUMBER CORE BOXES
5. NAME OF DRILLER Raba Kistner	15. ELEVATION GROUND WATER
6. DIRECTION OF HOLE ☒ Vertical ☐ Inclined _____ Degrees from Vertical	16. DATE HOLE 10-23-06 — STARTED 1500 — COMPLETED 1850
7. THICKNESS OF OVERBURDEN	17. ELEVATION TOP OF HOLE
8. DEPTH DRILLED INTO ROCK	18. TOTAL CORE RECOVERY FOR BORING
9. TOTAL DEPTH OF HOLE 50' — 10. SIZE AND TYPE OF BIT 6" Φ HSA	19. SIGNATURE OF INSPECTOR J. Thompson

ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (description) d	% CORE RECOVERY e	BOX OR SAMPLE NUMBER f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significent) g	Blow Count
	5	ML	Gypsum silt	60	—	dry	119 @ 1.5 ft
	10	ML	Gypsum silt	100		Moist 10-12' Dry 11-12' ~~Moist 0-11'~~	78
	15	CL-ML	Silty clay w/ 40% gypsum crystals	100	—	moist	32
	20	CL-ML	Silty clay w/ 20% gyp crystals	100		moist	35
	25	CL-ML SP-SM	Silty clay w/ 20% gyp cry. poorly grade sand w/ silt	60		moist	51
	30	CL	clay (brown) w/ 5% gyp cry.	100		moist	44
	35	CL	clay (brown) w/ 5% gyp cry.	100		moist	35
	40	CL	clay (brown)	100		moist	39

DRILLING LOG (Continuation Sheet)	INSTALLATION	HOLE No. SB-36	SHEET No. 2 OF 2
1. PROJECT HELSTF Phase III RFI	11. ELEVATION OF TOP HOLE		

ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (description) d	% CORE RECOVERY e	BOX OR SAMPLE NUMBER f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g	Blow Count
	45	SP	fine to v. fine poorly graded sand			Wet	31
	50		Sand sloughed into hole @ 48-50' not attempted.			split spoon	

DRILLING LOG	DIVISION	INSTALLATION	HOLE No. SB-37	SHEET No. 1 OF 2

1. PROJECT HELSTF Phase III RFI	11. DATUM FOR ELEVATION SHOWN (TBM or MSL)
2. LOCATION (Coordinates or Station)	12. MANUFACTURER'S DESIGNATION OF DRILL
3. DRILLING AGENCY	13. TOTAL No. OF OVERBURDEN SAMPLES TAKEN — DISTURBED — UNDISTURBED
4. HOLE No. (As shown on drawing title and file number) SB-37	14. TOTAL NUMBER CORE BOXES
5. NAME OF DRILLER Raba Kistner (Manny Duenez)	15. ELEVATION GROUND WATER
6. DIRECTION OF HOLE ☒ Vertical ☐ Inclined _____ Degrees from Vertical	16. DATE HOLE — STARTED 0820 — COMPLETED to 1100 (11-14-06)
7. THICKNESS OF OVERBURDEN	17. ELEVATION TOP OF HOLE
8. DEPTH DRILLED INTO ROCK	18. TOTAL CORE RECOVERY FOR BORING
9. TOTAL DEPTH OF HOLE 50 ft bgs — 10. SIZE AND TYPE OF BIT 6" Ø HSA	19. SIGNATURE OF INSPECTOR J. Thompson

ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (description) d	% CORE RECOVERY e	BOX OR SAMPLE NUMBER f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g	Blow Count
						Vac-excavated 0-5 ft bgs	
	5	ML	Gypsum silt	50	—	Dry	48
	10	ML	Gypsum silt	60	HLSF-0085 SB-037-(10.0-11.0)	Dry	84
	15	ML	Gypsum silt	90	—	Moist	58
	20	CL	clay (lorum) w/ 10% gypsum crystals	50	HLSF-0085-SB-037-(20.0-21.0)	Moist	25
	25	SP-SM	Sand w/ silt	100	—	moist	75
	30	SP	v. fine sand	95	HLSF-0085-SB-037 (30.0-31.0)	moist	55
	35	SP SP-SC	fine sand sand w/ clay 36.5-36.9	80	—	moist	47
	40	SP CL-ML	v. fine sand silty clay @ 42	90	(40.0-41.0)	wet	97

DRILLING LOG (Continuation Sheet)	INSTALLATION	HOLE No. SB-37	SHEET No. 2 OF 2
1. PROJECT HELSTF Phase III RFI	11. ELEVATION OF TOP HOLE		

ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (description) d	% CORE RECOVERY e	BOX OR SAMPLE NUMBER f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g	Blow Count
	45	SP	fine to v. fine sand	100	—	wet	
		CL	clay 45.6-47			moist	30
		SP-SM	sand w/ silt 48-48.4	95		wet	
	50	CL-ML	silty clay to 49.5			moist	
		SP-SM	sand w/ silt 49.5-49.8				61

DRILLING LOG	DIVISION	INSTALLATION	HOLE No. SB-38	SHEET No. 1 OF 2

1. PROJECT HELSTF Phase III RFI	11. DATUM FOR ELEVATION SHOWN (TBM or MSL)
2. LOCATION (Coordinates or Station)	12. MANUFACTURER'S DESIGNATION OF DRILL
3. DRILLING AGENCY	13. TOTAL No. OF OVERBURDEN SAMPLES TAKEN — DISTURBED — UNDISTURBED
4. HOLE No. (As shown on drawing title and file number) SB-38	14. TOTAL NUMBER CORE BOXES
5. NAME OF DRILLER Raba Kistner (Manny Duenez)	15. ELEVATION GROUND WATER
6. DIRECTION OF HOLE ☒ Vertical ☐ Inclined _____ Degrees from Vertical	16. DATE HOLE — STARTED 11-14-06 15:15 — COMPLETED 11-15-06
7. THICKNESS OF OVERBURDEN	17. ELEVATION TOP OF HOLE
8. DEPTH DRILLED INTO ROCK	18. TOTAL CORE RECOVERY FOR BORING
9. TOTAL DEPTH OF HOLE 50' — 10. SIZE AND TYPE OF BIT 6" Φ HSA	19. SIGNATURE OF INSPECTOR J. Thompson

ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (description) d	% CORE RECOVERY e	BOX OR SAMPLE NUMBER f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significent) g	Blow Count
						Vac-excavation 0-5 ft	
	5	ML	Gypsum silt	90	—	Dry	27
	10	ML	Gypsum silt	60	HLSF-0085-SB-038-(10.0-11.0)	Dry	107 @ 1.5'
	15	ML	Gypsum silt 15-15.3 Silt (brwn) 15.3-16.5 Silt w/ 40% gyp cry to 17	95	—	moist	17
	20	CL	Clay (brwn) w/ 5% gyp cry @ 21.5 40% gyp crystals	90	HLSF-0085-SB-038 (20.0-21.0)	moist	23
	25	ML	Silt (brwn) w/ some fine sand	95	—	moist	46
	30	CL SP	clay fine to v. fine sand	95	HLSF-0085-SB-038 SB-138 (30.0-32.0)	moist	61
	35	SP	fine sand	80	—	moist	101
	40	SP-SM	v. fine silty sand	95	HLSF-0085-SB-038-(40.0-41.0)	wet	78

DRILLING LOG (Continuation Sheet)	INSTALLATION	HOLE No. SB-38	SHEET No. 2 OF 2
1. PROJECT HELSTF Phase III RFI	11. ELEVATION OF TOP HOLE		

ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (description) d	% CORE RECOVERY e	BOX OR SAMPLE NUMBER f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g	Blow Count
	45	CL	clay	95	—	moist	29
		SP	sand to 48.7			wet	
		CL	clay to 49.5	90		moist	77
	50	SP	sand fine			wet	

DRILLING LOG

DIVISION	INSTALLATION	HOLE No.	SHEET No.
		SB-39	1 OF 2

1. PROJECT: AELSTF Phase III RFI	11. DATUM FOR ELEVATION SHOWN (TBM or MSL)
2. LOCATION (Coordinates or Station)	12. MANUFACTURER'S DESIGNATION OF DRILL
3. DRILLING AGENCY	13. TOTAL No. OF OVERBURDEN SAMPLES TAKEN — DISTURBED: — UNDISTURBED: —
4. HOLE No. (As shown on drawing title and file number): SB-39	14. TOTAL NUMBER CORE BOXES
5. NAME OF DRILLER: Raba Kistner (Manny Duenez)	15. ELEVATION GROUND WATER
6. DIRECTION OF HOLE: [X] Vertical [ ] Inclined ____ Degrees from Vertical	16. DATE HOLE: 11-14-06 — STARTED: 1230 — COMPLETED: 1500
7. THICKNESS OF OVERBURDEN	17. ELEVATION TOP OF HOLE
8. DEPTH DRILLED INTO ROCK	18. TOTAL CORE RECOVERY FOR BORING
9. TOTAL DEPTH OF HOLE: 50' — 10. SIZE AND TYPE OF BIT: 6" Ø HSA	19. SIGNATURE OF INSPECTOR: J. Thompson

ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (description) d	% CORE RECOVERY e	BOX OR SAMPLE NUMBER f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significent) g	Blow Count
						Vac-excavated 0-5 ft	
	5	ML	Gypsum silt	60	—	Dry	21
	10	ML	Gypsum silt	100	HLSF-0086 SB-039 (10.0-11.0)	Dry	86
	15	ML	Gypsum silt w/ 10% gypsum crystals	95	—	moist	25
	20	CL-ML	Silty clay w/ 5% gyp crystals. v. thin bed of fine sand @ 21.1 ft	90	HLSF-0086 -SB-039 -(20.0-21.0)	moist	18
	25	SP-SM CL-ML	v. fine sand w/ silt to 26.2' silty clay w/ 5% gypsum crystals	90	—	moist	27
	30	CL-ML SP-SM	silty clay to 31.5 v. fine sand w/ silt	90	HLSF-0085 -SB-039 (30.0-31.0)	moist	18
	35	SP	fine to v. fine sand	90	—	moist	48
	40	SP SP-SM	fine to v. fine sand to 44.3 fine sand w/ silt	60		wet moist	84

DRILLING LOG (Continuation Sheet)	INSTALLATION	HOLE No. SB-39	SHEET No. 2 OF 2
1. PROJECT HELSTF Phase III RFI	11. ELEVATION OF TOP HOLE		

ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (description) d	% CORE RECOVERY e	BOX OR SAMPLE NUMBER f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g	Blow Count
	45	SP	fine sand to 45.2	95	–	wet	
		CL	clay to 46			moist	44
		SP	fine sand to 47			wet	
	50	SP	fine to v. fine sand	100	HLSF-0085-SB-039 (49.0-50.0)	wet	66

DRILLING LOG	DIVISION	INSTALLATION	HOLE No. SB-01	SHEET No. 1 OF 2

1. PROJECT HELSTF Phase III RFI	11. DATUM FOR ELEVATION SHOWN (TBM or MSL)
2. LOCATION (Coordinates or Station)	12. MANUFACTURER'S DESIGNATION OF DRILL
3. DRILLING AGENCY	13. TOTAL No. OF OVERBURDEN SAMPLES TAKEN — DISTURBED — UNDISTURBED
4. HOLE No. (As shown on drawing title and file number) SB-01	14. TOTAL NUMBER CORE BOXES
5. NAME OF DRILLER Raba Kistner	15. ELEVATION GROUND WATER
6. DIRECTION OF HOLE ☒ Vertical ☐ Inclined _____ Degrees from Vertical	16. DATE HOLE — STARTED 0745 — COMPLETED 1100 — 11-01-06
7. THICKNESS OF OVERBURDEN	17. ELEVATION TOP OF HOLE
8. DEPTH DRILLED INTO ROCK	18. TOTAL CORE RECOVERY FOR BORING
9. TOTAL DEPTH OF HOLE 50' — 10. SIZE AND TYPE OF BIT 6" Φ HSA	19. SIGNATURE OF INSPECTOR T. Thompson

ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (description) d	% CORE RECOVERY e	BOX OR SAMPLE NUMBER f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g	Blow Count
					SB-001 (0.5-1.0)		
	5	ML	Gypsum silt	50	—	Dry	100 @ 1 ft
	10	ML	Gyp. silt light brwn silt	100	SB-001 (10-10.5)	Moist	17
	15	CL-ML SP-SM	silty clay w 5% gyp crystals fine sand w/ silt @ 16.5	100	—	Moist	44
	20	CL-ML	silty clay (brwn) w/ 20% gyp cry.	100	SB-001 (20-20.5)	Moist	45
	25	CL-ML	silty clay (brwn) 10% gyp cry.	100	—	Moist Dry @ 26.7'	47
	30	ML	silt (brwn) w/ 5% gyp cry.	100	SB-001 (30-30.5)	Dry	75
	35	SP	very fine sand	50	SB-101 (30-30.5) —	Dry	105
	40	SP	v. fine sand w/ some silt	70	SB-001 (40-40.5)	Dry	64

DRILLING LOG (Continuation Sheet)	INSTALLATION	HOLE No. SB-01	SHEET No. 2 OF 2
1. PROJECT HELSTF Phase III RFI	11. ELEVATION OF TOP HOLE		

ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (description) d	% CORE RECOVERY e	BOX OR SAMPLE NUMBER f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g	Blow Count
	45	SP	v. fine sand w/ some silt	60	—	Dry	110
	50	SP SC	v. fine sand w/ silt clayey sand @ 49.5'	70	SB-001 (49.5-50)	Moist	74

DRILLING LOG	DIVISION	INSTALLATION	HOLE No. SB-02	SHEET No. 1 OF 2

1. PROJECT HELSTF Phase III RFI	11. DATUM FOR ELEVATION SHOWN (TBM or MSL)
2. LOCATION (Coordinates or Station)	12. MANUFACTURER'S DESIGNATION OF DRILL
3. DRILLING AGENCY	13. TOTAL No. OF OVERBURDEN SAMPLES TAKEN — DISTURBED — UNDISTURBED
4. HOLE No. (As shown on drawing title and file number) SB-02	14. TOTAL NUMBER CORE BOXES
5. NAME OF DRILLER Raloa Kistner	15. ELEVATION GROUND WATER
6. DIRECTION OF HOLE ☒ Vertical ☐ Inclined _____ Degrees from Vertical	16. DATE HOLE 10-13-06 — STARTED 1015 — COMPLETED 1445
7. THICKNESS OF OVERBURDEN	17. ELEVATION TOP OF HOLE
8. DEPTH DRILLED INTO ROCK	18. TOTAL CORE RECOVERY FOR BORING
9. TOTAL DEPTH OF HOLE 50' — 10. SIZE AND TYPE OF BIT 6" Φ HSA	19. SIGNATURE OF INSPECTOR J. Thompson

ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (description) d	% CORE RECOVERY e	BOX OR SAMPLE NUMBER f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significent) g	Blow Count
	5	ML	Gypsum silt	75	—	Dry	24
	10	ML	Gypsum silt w/ some crystals	100	SB-002 (10-10.5)	Dry	105
	15	ML	Gypsum silt	100	—	Dry	111
	20	ML	Gypsum silt w/ some fine sand	100	SB-002 (20-20.5)	Dry	74
	25	CL-ML	silty clay (brown) w/ gyp crystals	100	—	Dry	44
	30	CL-ML	silty clay	100	SB-002 (30-30.5)	Dry	47
	35	CL-ML	silty clay w/ some gyp crystals	100		Dry	40
	40	SM	silty sand	100	SB-002 (40-40.5)	Dry	128

DRILLING LOG (Continuation Sheet)	INSTALLATION	HOLE No. SB-02	SHEET No. 2 OF 2
1. PROJECT HELSTF Phase III RFI	11. ELEVATION OF TOP HOLE		

ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (description) d	% CORE RECOVERY e	BOX OR SAMPLE NUMBER f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g	Blow Count
	45	SM ML	silty sand to 46.7' gyp silt w/ crystals	100	—	Dry	126
	50	CL	clay (brown) w/ gyp cry.	100	SB-002 (49.5-50)	Moist	48

DRILLING LOG	DIVISION	INSTALLATION	HOLE No. SB-03	SHEET No. 1 OF 2

1. PROJECT HELSTF Phase III RFI	11. DATUM FOR ELEVATION SHOWN (TBM or MSL)
2. LOCATION (Coordinates or Station)	12. MANUFACTURER'S DESIGNATION OF DRILL
3. DRILLING AGENCY	13. TOTAL No. OF OVERBURDEN SAMPLES TAKEN — DISTURBED — UNDISTURBED
4. HOLE No. (As shown on drawing title and file number) SB-03	14. TOTAL NUMBER CORE BOXES
5. NAME OF DRILLER Raba Kistner	15. ELEVATION GROUND WATER
6. DIRECTION OF HOLE ☒ Vertical ☐ Inclined _____ Degrees from Vertical	16. DATE HOLE — STARTED 1400 — COMPLETED 1750 (10-20-06)
7. THICKNESS OF OVERBURDEN	17. ELEVATION TOP OF HOLE
8. DEPTH DRILLED INTO ROCK	18. TOTAL CORE RECOVERY FOR BORING
9. TOTAL DEPTH OF HOLE 50' — 10. SIZE AND TYPE OF BIT 6" Ø HSA	19. SIGNATURE OF INSPECTOR T. Thompson

ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (description) d	% CORE RECOVERY e	BOX OR SAMPLE NUMBER f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significent) g	Blow Count
	5	ML	Gypsum silt	60	—	dry	63
	10	ML	Gyp silt	60	SB-003 (10.0-~~10.0~~ 10.5)	dry	63
	15	ML	Gyp silt	90	—	dry	157
	20	ML	Gyp silt	80	SB-003 (20.0-20.5)	dry slightly moist @ 22'	112
	25	CL-ML	silty clay (brown) w/ 5% gyp crystals	100	—	moist dry @ 27	31
	30	CL-ML	silty clay (brown) w/ 40% gyp crystals	100	SB-003 (30.0-30.5)	dry	110
	35	CL-ML	silty clay (brown) w/ some gyp crystals	100	—	slightly moist to dry	93
	40	CL-ML SP	silty clay (brown) v. fine sand @ 41'	100	SB-003 (40.0-40.5)	moist dry	78

DRILLING LOG (Continuation Sheet)	INSTALLATION	HOLE No. SB-03	SHEET No. 2 OF 2
1. PROJECT HELSTF Phase III RFI	11. ELEVATION OF TOP HOLE		

ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (description) d	% CORE RECOVERY e	BOX OR SAMPLE NUMBER f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g	Blow Count
	45	SP	v. fine sand	60	—	dry	refusal @ 1.5'
	50	SP	v fine sand w/ gyp cry @ 49'	80	SB-003 (49.5-50.0)	slight moist @ 48.5	refusal @ 1.5'

DRILLING LOG	DIVISION	INSTALLATION	HOLE No. SB-04	SHEET No. 1 OF 2

1. PROJECT HELSTF Phase III RFI	11. DATUM FOR ELEVATION SHOWN (TBM or MSL)
2. LOCATION (Coordinates or Station)	12. MANUFACTURER'S DESIGNATION OF DRILL
3. DRILLING AGENCY	13. TOTAL No. OF OVERBURDEN SAMPLES TAKEN — DISTURBED — UNDISTURBED
4. HOLE No. (As shown on drawing title and file number) SB-04	14. TOTAL NUMBER CORE BOXES
5. NAME OF DRILLER Raba Kistner	15. ELEVATION GROUND WATER
6. DIRECTION OF HOLE ☒ Vertical ☐ Inclined _____ Degrees from Vertical	16. DATE HOLE 10-20-06 — STARTED 1000 — COMPLETED ~1400
7. THICKNESS OF OVERBURDEN	17. ELEVATION TOP OF HOLE
8. DEPTH DRILLED INTO ROCK	18. TOTAL CORE RECOVERY FOR BORING
9. TOTAL DEPTH OF HOLE 50' — 10. SIZE AND TYPE OF BIT 6" Ø HSA	19. SIGNATURE OF INSPECTOR T. Thompson

ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (description) d	% CORE RECOVERY e	BOX OR SAMPLE NUMBER f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significent) g	Blow count
	5	ML	Gypsum silt	70	—	dry	56
	10	ML	Gypsum silt	80	SB-004 (10.0-10.5)	dry	73
	15	ML	Gyp. silt	100	—	dry moist @ 15.7'	90
	20	ML	Gyp. silt	100	SB-004 (20.0-20.5)	moist dry @ 21'	72
	25	CL	clay (brown) w/ 20% gyp. crystals	100	—	moist	46
	30	CL-ML	Silty clay (brown) w/ 18% gyp cry	100	SB-004 (30.0-30.5)	dry	55
	35	SP ML CL-ML SP	fine sand silt w/ gyp cry. @ 35.5' silty clay (brown) @ 35.8' fine sand @ 36.2'	90	—	dry dry moist dry	54
	40	SP	V. fine sand	60	SB-004 (40.0-40.5)	dry	refusal @ 1.2'

DRILLING LOG (Continuation Sheet)	INSTALLATION	HOLE No. SB-04	SHEET No. 2 OF 2
1. PROJECT HELSTF Phase III RFI	11. ELEVATION OF TOP HOLE		

ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (description) d	% CORE RECOVERY e	BOX OR SAMPLE NUMBER f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g	Blow Count
	45	SP	v. fine sand	40	—	dry	refusal @0.5'
		ML	silt w/ sand	80	SB-04 (49.5-50.0)	added ~2 gal water to lift cuttings	
	50	CL	clay (brown)			moist @ 48'	58

DRILLING LOG	DIVISION	INSTALLATION	HOLE No. SB-05	SHEET No. 1 OF 2

1. PROJECT HELSTF Phase III RFI	11. DATUM FOR ELEVATION SHOWN (TBM or MSL)
2. LOCATION (Coordinates or Station)	12. MANUFACTURER'S DESIGNATION OF DRILL
3. DRILLING AGENCY	13. TOTAL No. OF OVERBURDEN SAMPLES TAKEN — DISTURBED — UNDISTURBED
4. HOLE No. (As shown on drawing title and file number) SB-05	14. TOTAL NUMBER CORE BOXES
5. NAME OF DRILLER Raba Kistner	15. ELEVATION GROUND WATER
6. DIRECTION OF HOLE ☒ Vertical ☐ Inclined _____ Degrees from Vertical	16. DATE HOLE — STARTED 10-19-06 1330 — COMPLETED 10-20-06 1000
7. THICKNESS OF OVERBURDEN	17. ELEVATION TOP OF HOLE
8. DEPTH DRILLED INTO ROCK	18. TOTAL CORE RECOVERY FOR BORING
9. TOTAL DEPTH OF HOLE 50' — 10. SIZE AND TYPE OF BIT 6" Φ HSA	19. SIGNATURE OF INSPECTOR T. Thompson

ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (description) d	% CORE RECOVERY e	BOX OR SAMPLE NUMBER f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significent) g	Blow Count
	5	ML	Gypsum silt	70	—	dry	51
	10	ML	Gyp. silt	95	SB-005 (10.0-10.5)	dry	95
	15	ML	gyp. silt	95	—	dry to v. slight moisture	95
	20	CL	clay (brown) w/ 10% gyp. crystals	95	SB-005 (20.0-20.5)	dry	61
	25	CL	clay (brown) w/ 40% gyp. crystals	95	—	slightly moist	61
	30	CL	clay (brown) w/ 20% gyp. crystals	95	SB-005 (30.0-30.5)	Slightly moist	53
	35	CL	clay (brown) w/ 10% gyp. crystals	100	—	moist	42
	40	SP	v. fine sand	95	SB-005 (40.0-40.5)	dry	115 @1.5'

DRILLING LOG (Continuation Sheet)	INSTALLATION	HOLE No. SB-05	SHEET No. 2 OF 2
1. PROJECT HELSTF Phase III RFI	11. ELEVATION OF TOP HOLE		

ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (description) d	% CORE RECOVERY e	BOX OR SAMPLE NUMBER f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g	Blow Count
							45
	45	SP	v. fine sand	100	—	moist	47
		CL	clay (brwn) @ 46'				
		CL	clay (brwn)				
		SP	v. fine sand @ 48.2'	95	SB-005 (49.5-50.0)	moist	44
	50	CL	clay (brwn) @ 48.5'				

DRILLING LOG	DIVISION	INSTALLATION	HOLE No. SB-06	SHEET No. 1 OF 2

1. PROJECT HELSTF Phase III RFI	11. DATUM FOR ELEVATION SHOWN (TBM or MSL)
2. LOCATION (Coordinates or Station)	12. MANUFACTURER'S DESIGNATION OF DRILL
3. DRILLING AGENCY	13. TOTAL No. OF OVERBURDEN SAMPLES TAKEN — DISTURBED — UNDISTURBED
4. HOLE No. (As shown on drawing title and file number) SB-06	14. TOTAL NUMBER CORE BOXES
5. NAME OF DRILLER Raba Kistner	15. ELEVATION GROUND WATER
6. DIRECTION OF HOLE ☒ Vertical ☐ Inclined _____ Degrees from Vertical	16. DATE HOLE 10-19-06 — STARTED 0855 — COMPLETED 1330
7. THICKNESS OF OVERBURDEN	17. ELEVATION TOP OF HOLE
8. DEPTH DRILLED INTO ROCK	18. TOTAL CORE RECOVERY FOR BORING
9. TOTAL DEPTH OF HOLE 50' — 10. SIZE AND TYPE OF BIT 6" Φ HSA	19. SIGNATURE OF INSPECTOR T. Thompson

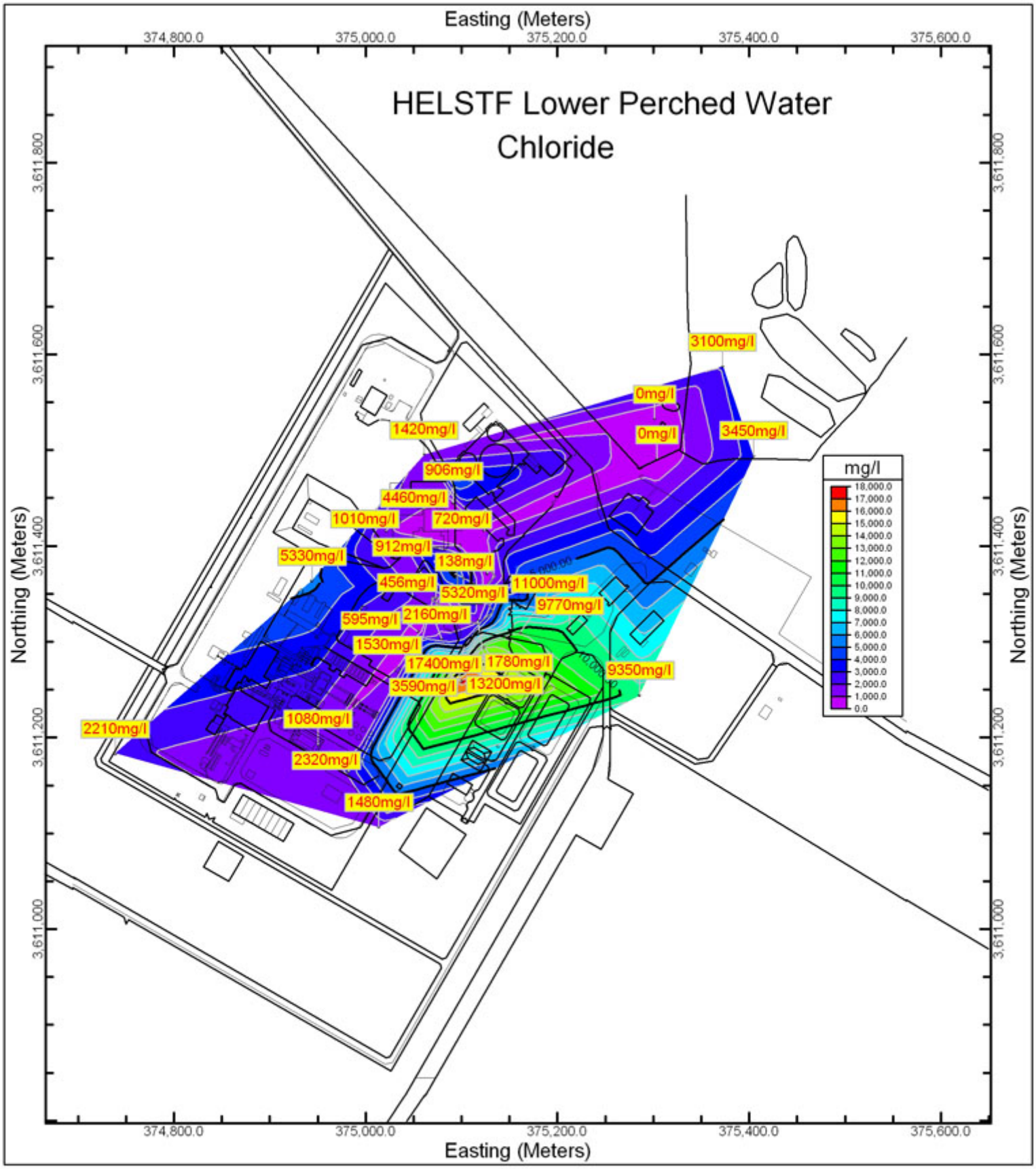
ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (description) d	% CORE RECOVERY e	BOX OR SAMPLE NUMBER f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g	Blow Count
					SB-006 (0.5-1)	Surface sample from 50' N of SB-06	
	5	ML	Gypsum silt	50	—	Dry	52
	10	ML	Gyp silt	100	SB-006 (10-10.5)	Dry to 11' Moist 11-12	90
	15	ML	Gyp silt	90	—	Dry	97
	20	CL	clay (brown) w/ 40% gyp crystals	100	SB-006 (20-20.5)	Moist	29
	25	CL SP	clay 20% gyp cry to 26.6' very fine sand	100	—	Moist	44
	30	CL	clay w/ 5% gyp crystals	100	SB-006 (30-30.5)	moist	41
	35	CL	clay w/ 10% gyp crystals	100	—	moist	35
	40	CL SP	clay to 40.8' fine sand to 42'	90	SB-006 (40-40.5)	Moist	82

DRILLING LOG (Continuation Sheet)	INSTALLATION	HOLE No. SB-06	SHEET No. 2 OF 2
1. PROJECT HELSTF Ph III RFI	11. ELEVATION OF TOP HOLE		

ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (description) d	% CORE RECOVERY e	BOX OR SAMPLE NUMBER f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g	Blow Count
		CL	clay 45-45.5				
	45 ~~40~~	SP	v. fine sand to 45.7	100	—	moist	41
		CL	clay to 47				
		SP	fine sand 48-48.5				
	50	CL	clay w/ some sand to 50'	100	SB-006 (49.5-50)	moist	47

APPENDIX D

Conditioned Analytical Data


HELSTF Lower Perched Water
Chloride
Easting (Meters)
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375,000.0
375,200.0
375,400.0
375,600.0
Northing (Meters)
3,611,800
3,611,600
3,611,400
3,611,200
3,611,000
3100mg/l
0mg/l
0mg/l
3450mg/l
1420mg/l
906mg/l
4460mg/l
1010mg/l
720mg/l
912mg/l
5330mg/l
138mg/l
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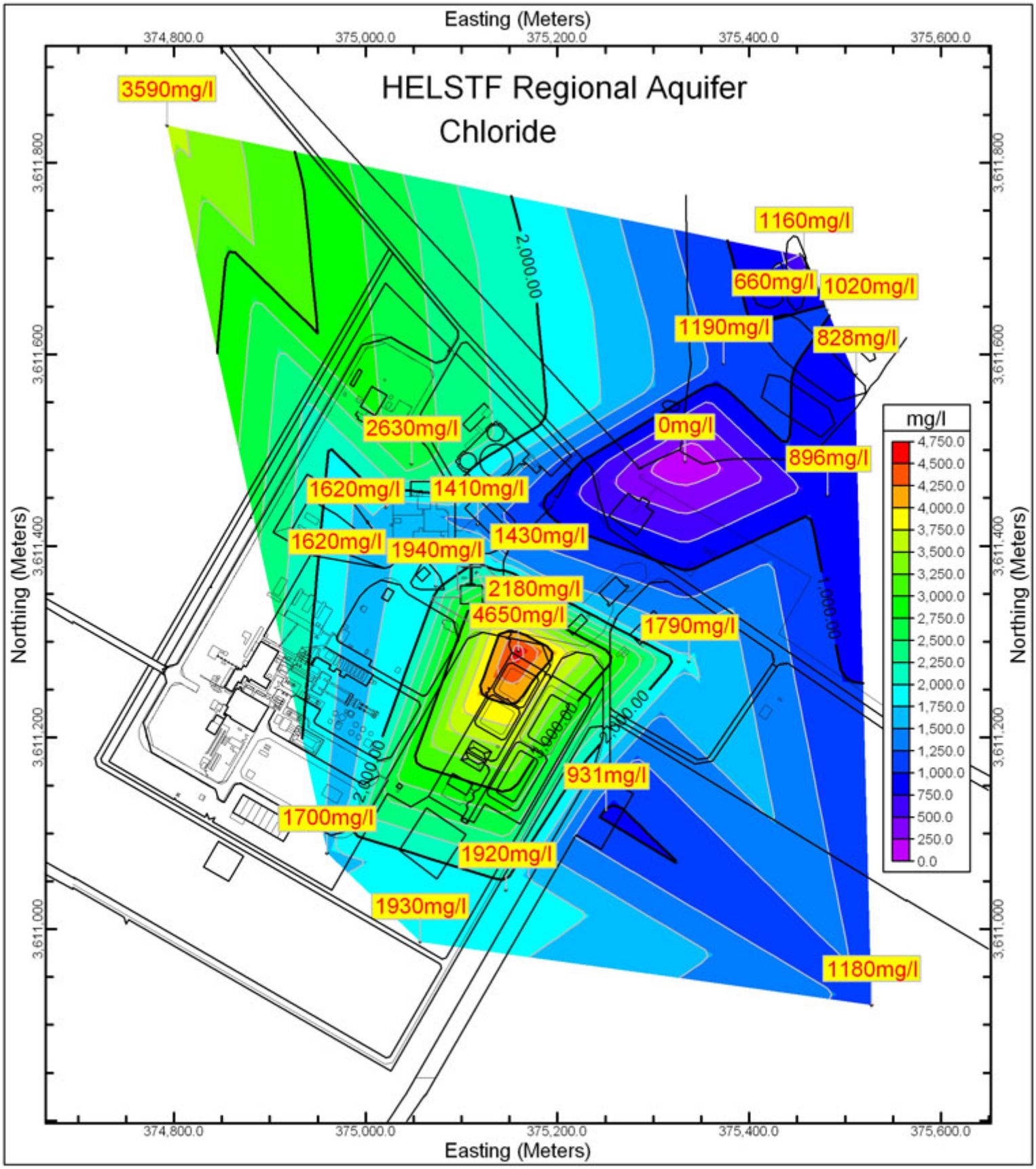
HELSTF Regional Aquifer
Chloride
Easting (Meters)
Northing (Meters)
374,800.0
375,000.0
375,200.0
375,400.0
375,600.0
3,611,800
3,611,600
3,611,400
3,611,200
3,611,000
3590mg/l
1160mg/l
660mg/l
1020mg/l
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828mg/l
2630mg/l
0mg/l
896mg/l
1620mg/l
1410mg/l
1620mg/l
1940mg/l
1430mg/l
2180mg/l
4650mg/l
1790mg/l
931mg/l
1700mg/l
1920mg/l
1930mg/l
1180mg/l
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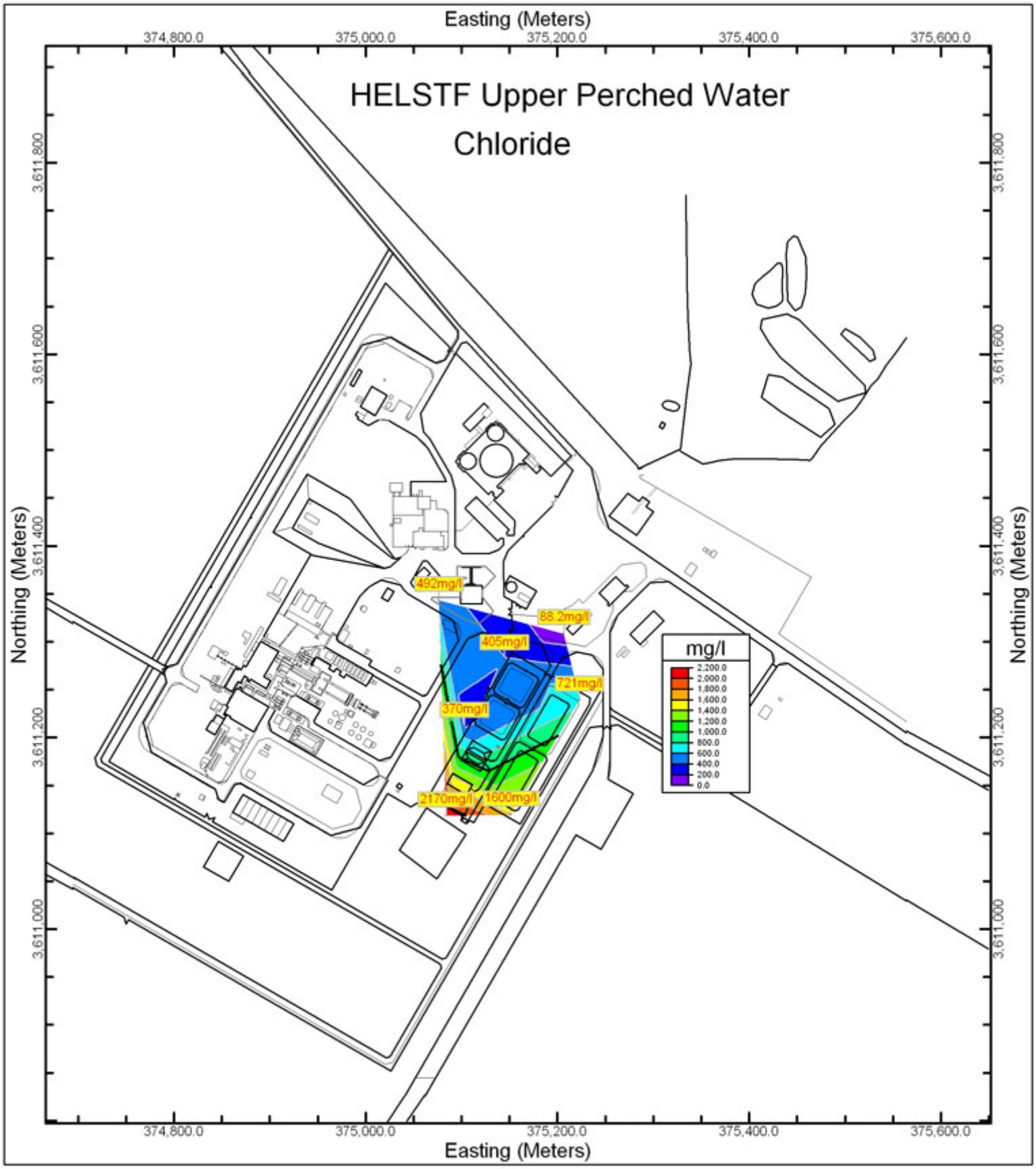
HELSTF Upper Perched Water
Chloride
Easting (Meters)
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375,000.0
375,200.0
375,400.0
375,600.0
Northing (Meters)
3,611,800
3,611,600
3,611,400
3,611,200
3,611,000
492mg/l
88.2mg/l
405mg/l
721mg/l
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2,000.0
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800.0
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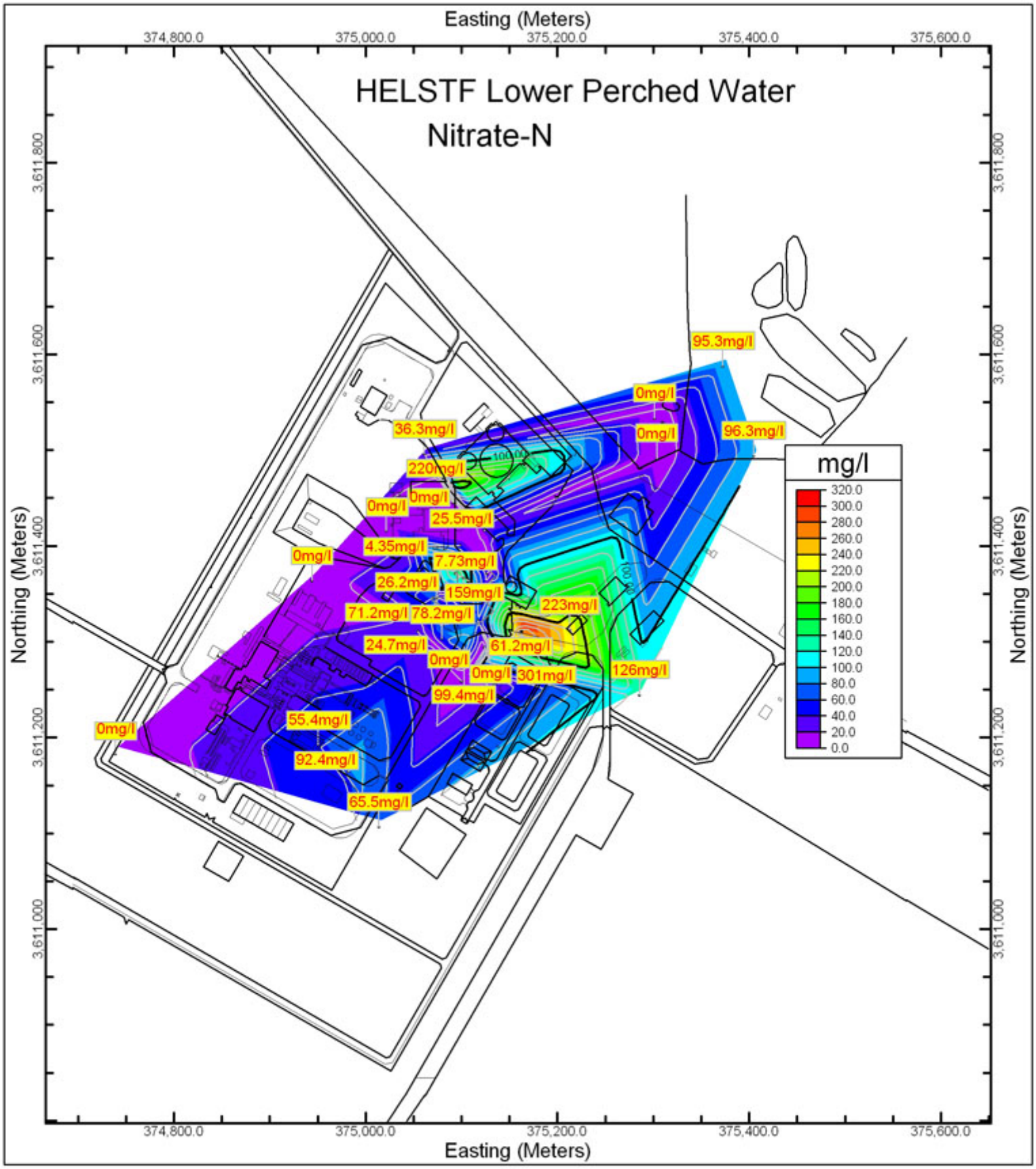
0.0


HELSTF Lower Perched Water
Nitrate-N
Easting (Meters)
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375,000.0
375,200.0
375,400.0
375,600.0
Northing (Meters)
3,611,800
3,611,600
3,611,400
3,611,200
3,611,000
95.3mg/l
0mg/l
0mg/l
96.3mg/l
36.3mg/l
220mg/l
0mg/l
0mg/l
25.5mg/l
4.35mg/l
0mg/l
7.73mg/l
26.2mg/l
159mg/l
223mg/l
71.2mg/l
78.2mg/l
24.7mg/l
61.2mg/l
0mg/l
0mg/l
301mg/l
126mg/l
99.4mg/l
55.4mg/l
0mg/l
92.4mg/l
65.5mg/l
mg/l
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240.0
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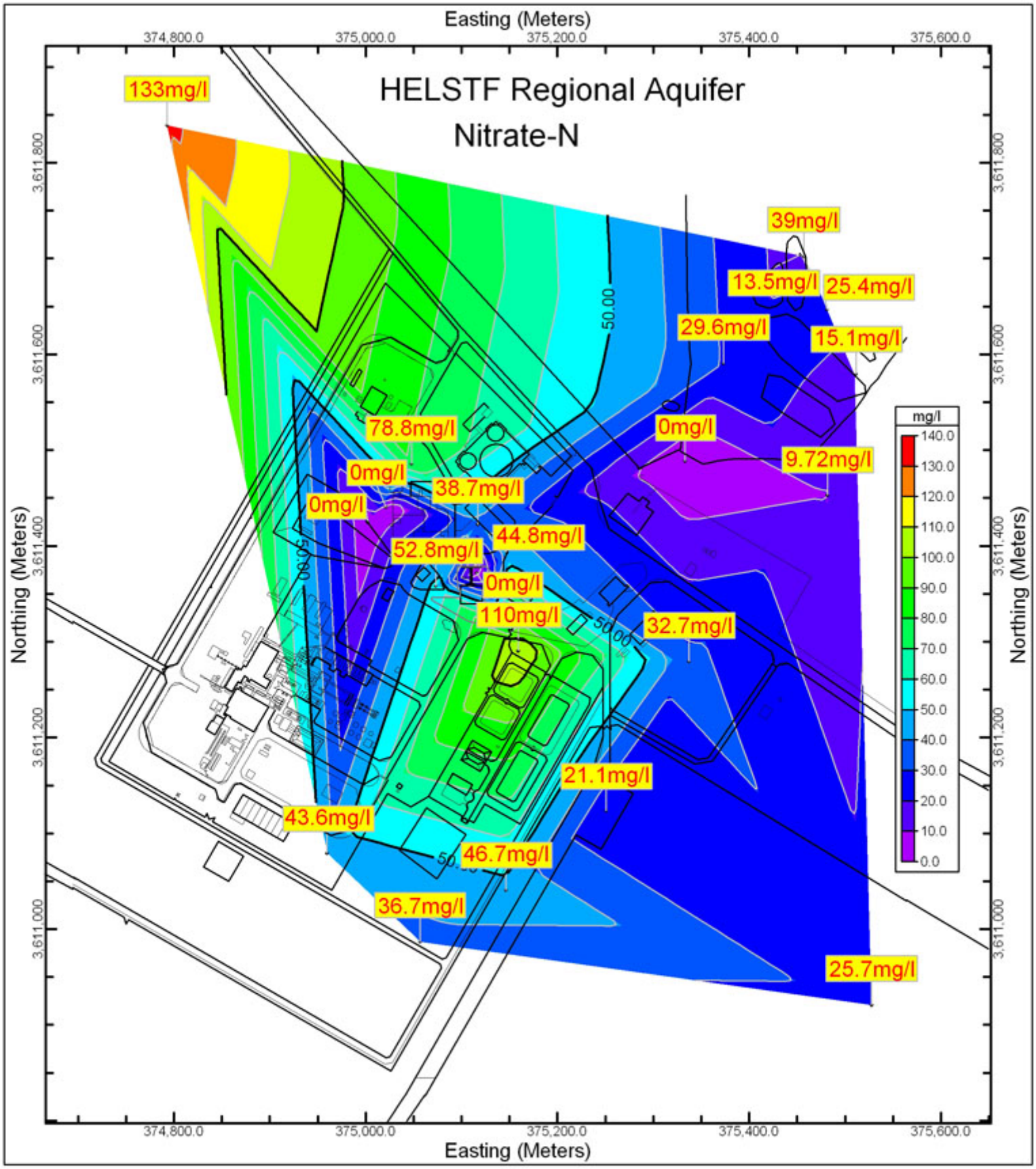
HELSTF Regional Aquifer
Nitrate-N
Easting (Meters)
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375,000.0
375,200.0
375,400.0
375,600.0
Northing (Meters)
3,611,800
3,611,600
3,611,400
3,611,200
3,611,000
133mg/l
39mg/l
13.5mg/l
25.4mg/l
29.6mg/l
15.1mg/l
78.8mg/l
0mg/l
9.72mg/l
0mg/l
38.7mg/l
0mg/l
44.8mg/l
52.8mg/l
0mg/l
110mg/l
32.7mg/l
21.1mg/l
43.6mg/l
46.7mg/l
36.7mg/l
25.7mg/l
50.00
mg/l
140.0
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120.0
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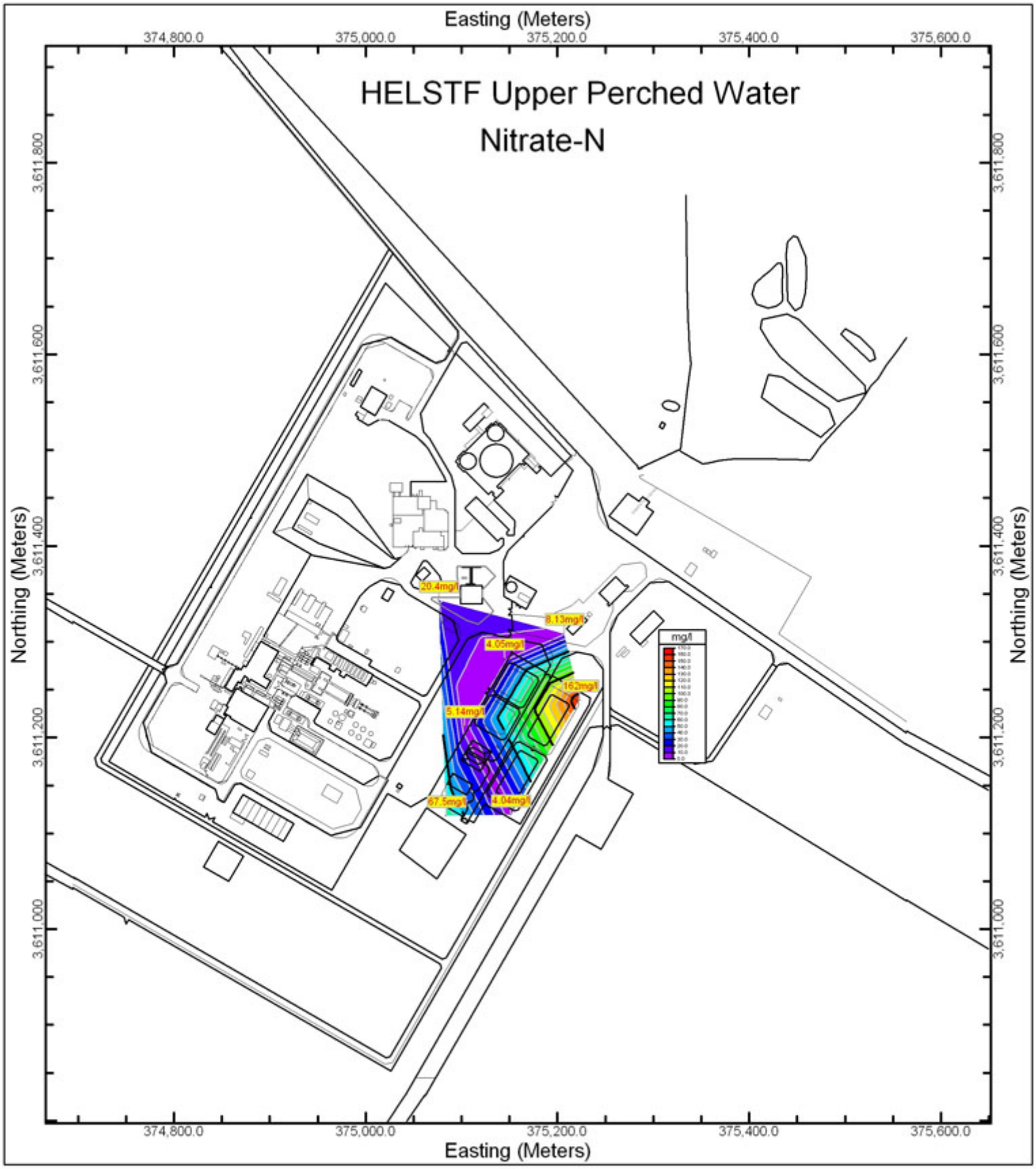
HELSTF Upper Perched Water
Nitrate-N
Easting (Meters)
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375,400.0
375,600.0
Northing (Meters)
3,611,800
3,611,600
3,611,400
3,611,200
3,611,000
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8.13mg/l
4.05mg/l
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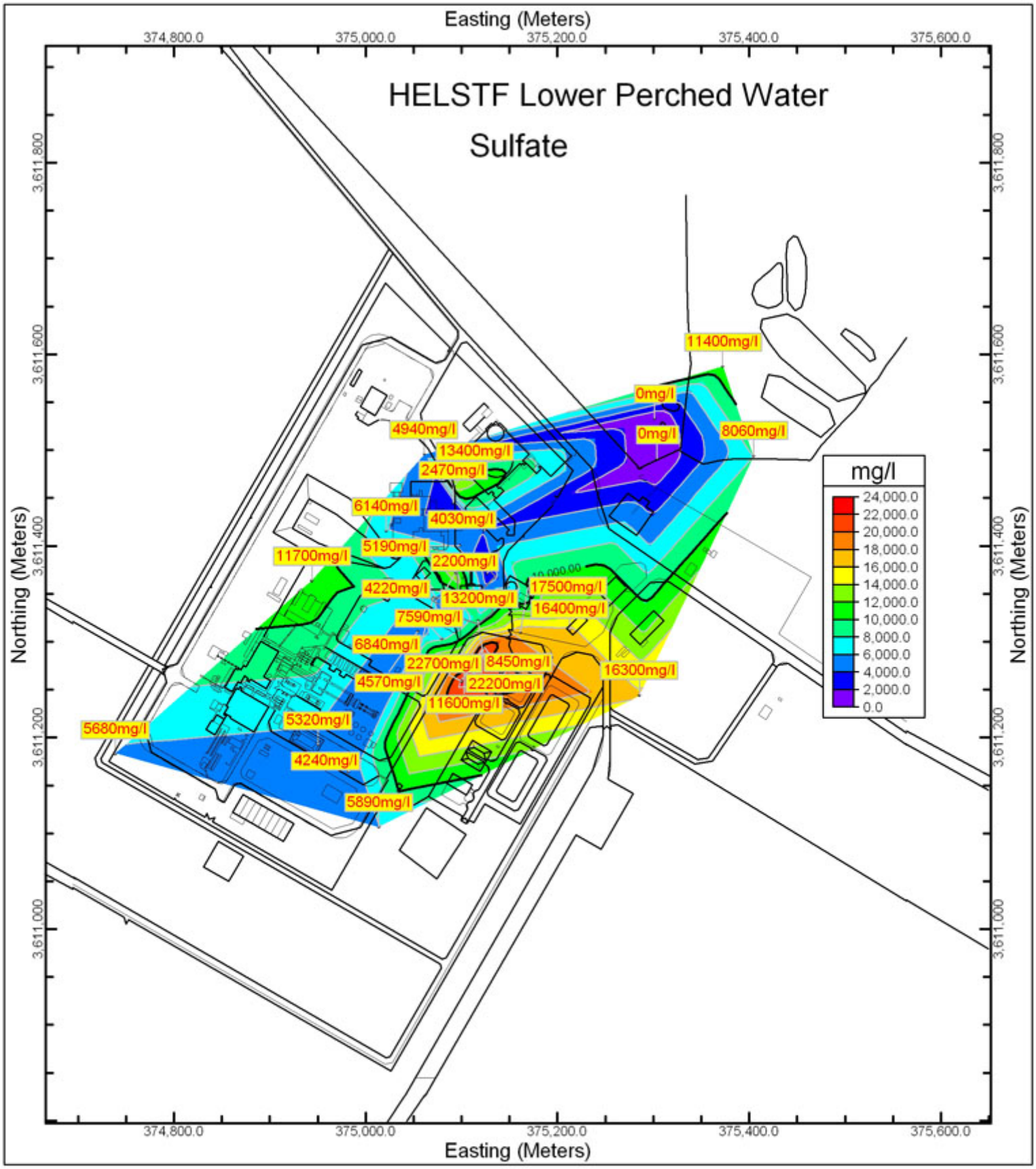
mg/l


HELSTF Lower Perched Water
Sulfate
Easting (Meters)
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375,000.0
375,200.0
375,400.0
375,600.0
Northing (Meters)
3,611,800
3,611,600
3,611,400
3,611,200
3,611,000
11400mg/l
0mg/l
0mg/l
8060mg/l
4940mg/l
13400mg/l
2470mg/l
6140mg/l
4030mg/l
5190mg/l
11700mg/l
2200mg/l
4220mg/l
13200mg/l
17500mg/l
16400mg/l
7590mg/l
6840mg/l
22700mg/l
8450mg/l
16300mg/l
4570mg/l
22200mg/l
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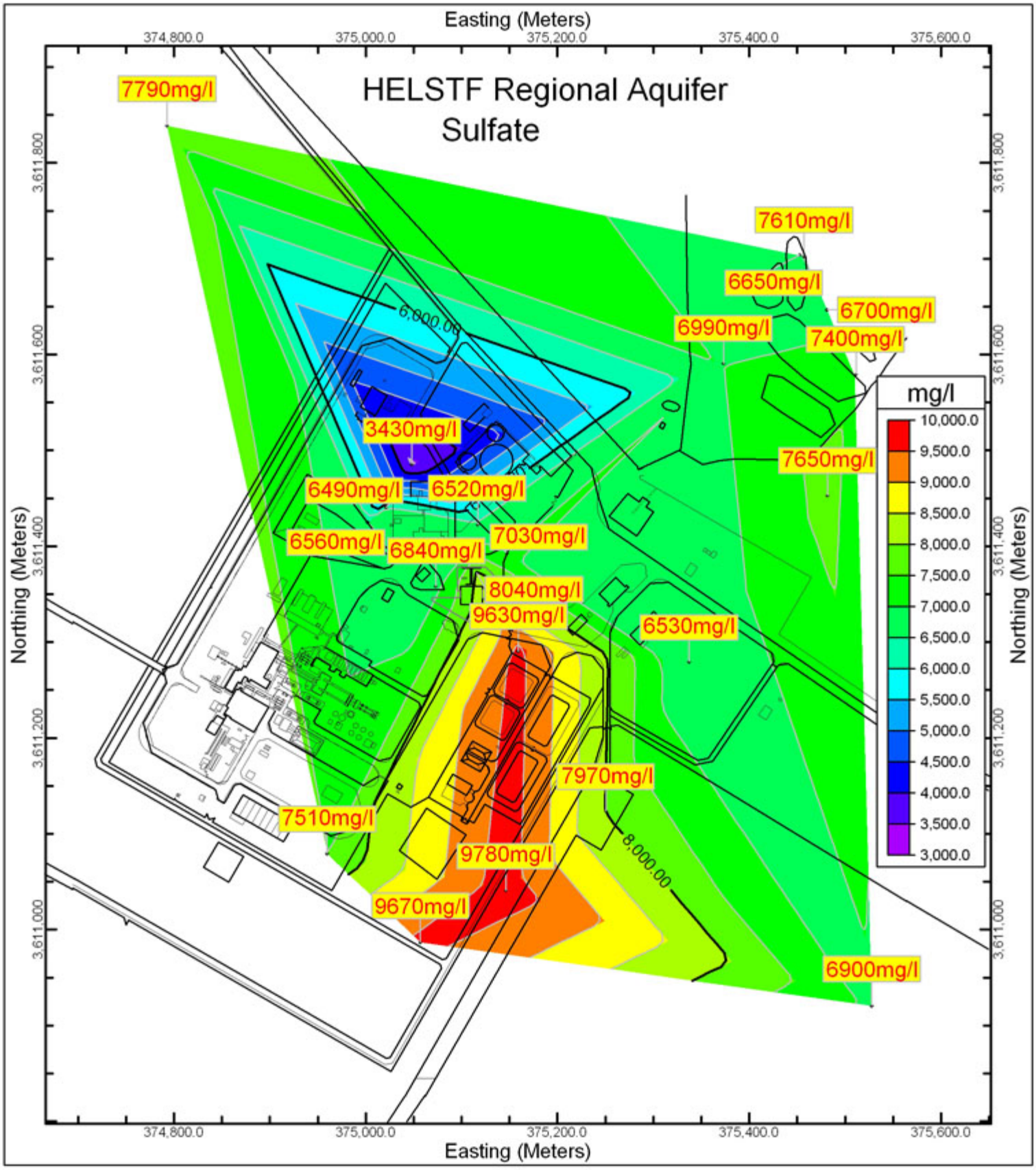
HELSTF Regional Aquifer
Sulfate
Easting (Meters)
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375,000.0
375,200.0
375,400.0
375,600.0
Northing (Meters)
3,611,800
3,611,600
3,611,400
3,611,200
3,611,000
7790mg/l
7610mg/l
6650mg/l
6700mg/l
6990mg/l
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3430mg/l
7650mg/l
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6520mg/l
6560mg/l
6840mg/l
7030mg/l
8040mg/l
9630mg/l
6530mg/l
7970mg/l
7510mg/l
9780mg/l
8,000.00
9670mg/l
6900mg/l
mg/l
10,000.0
9,500.0
9,000.0
8,500.0
8,000.0
7,500.0
7,000.0
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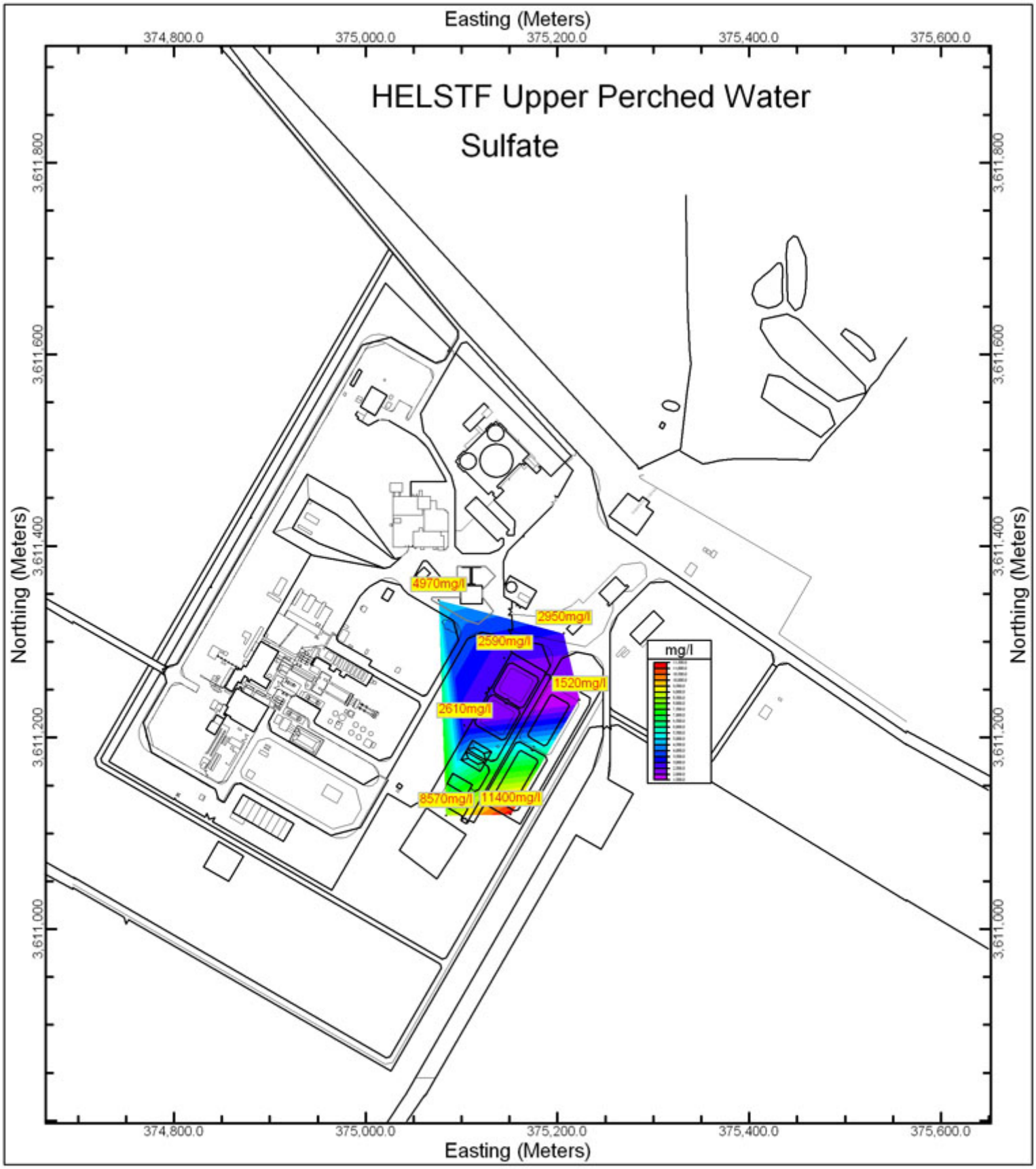
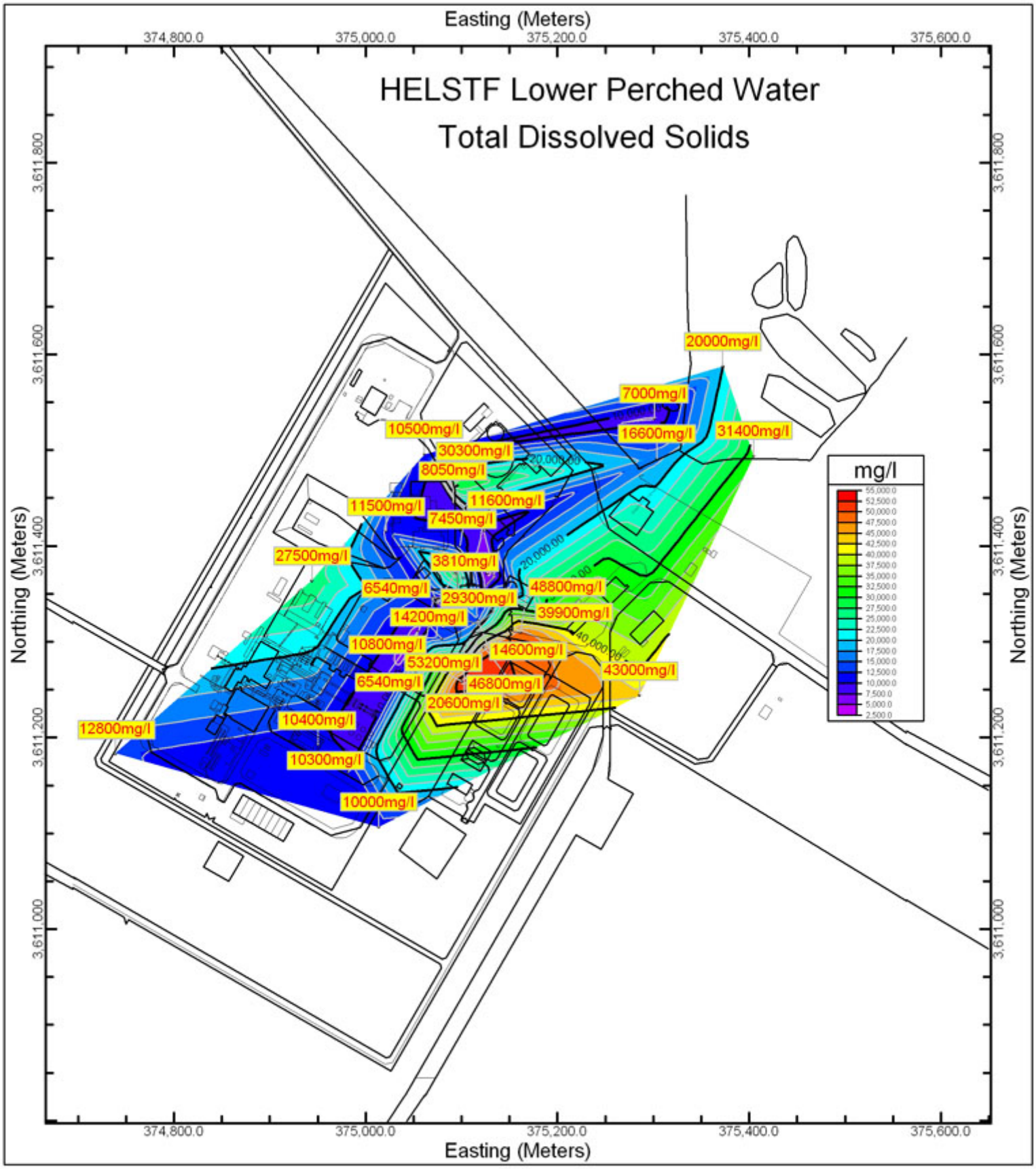
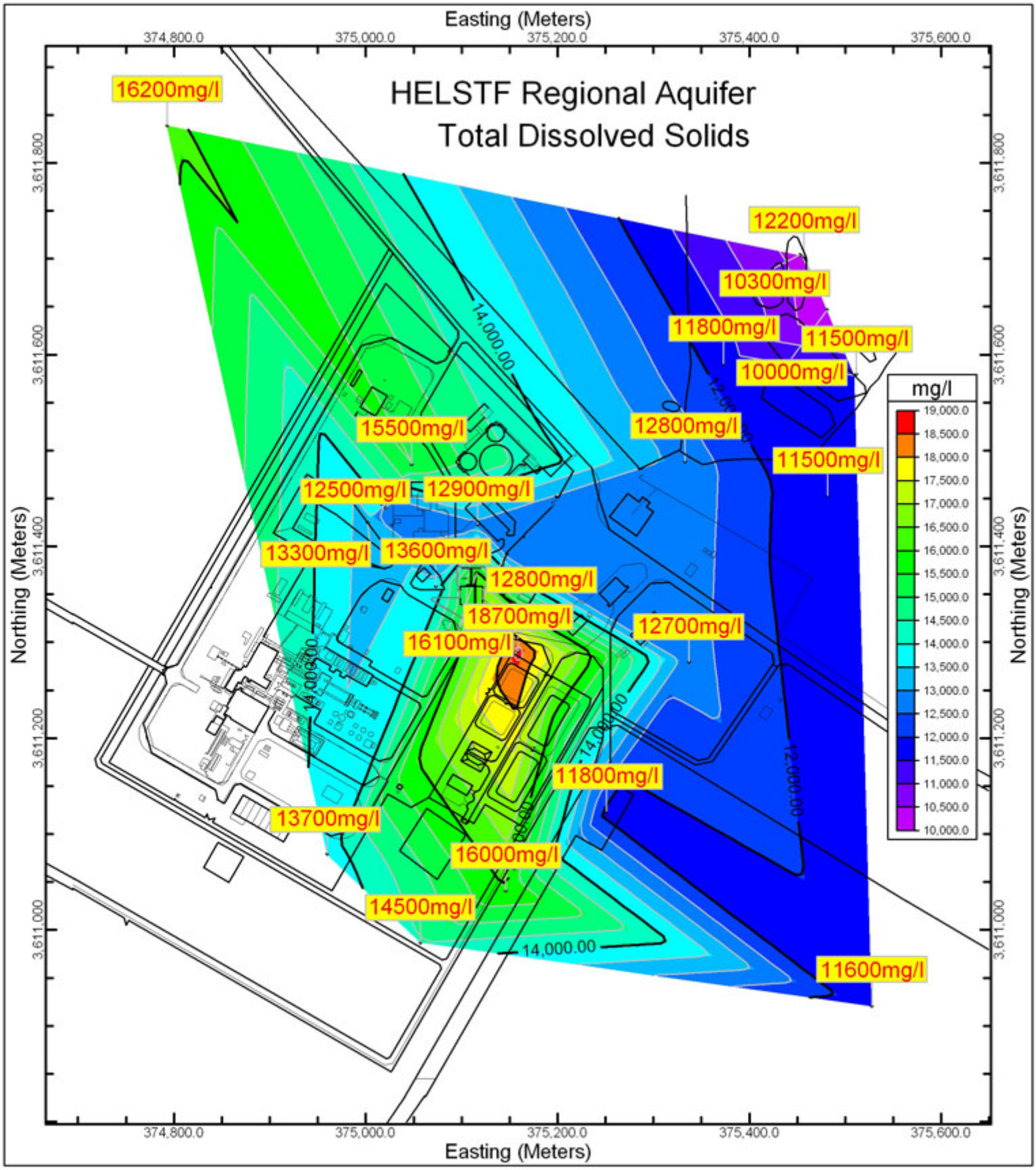
3,500.0
3,000.0


HELSTF Upper Perched Water
Sulfate
Easting (Meters)
374,800.0
375,000.0
375,200.0
375,400.0
375,600.0
Northing (Meters)
3,611,800
3,611,600
3,611,400
3,611,200
3,611,000
4970mg/l
2950mg/l
2590mg/l
1520mg/l
2610mg/l
8570mg/l
11400mg/l
mg/l


HELSTF Lower Perched Water
Total Dissolved Solids
Easting (Meters)
374,800.0
375,000.0
375,200.0
375,400.0
375,600.0
Northing (Meters)
3,611,800
3,611,600
3,611,400
3,611,200
3,611,000
20000mg/l
7000mg/l
10500mg/l
16600mg/l
31400mg/l
30300mg/l
8050mg/l
11500mg/l
11600mg/l
7450mg/l
27500mg/l
3810mg/l
6540mg/l
29300mg/l
48800mg/l
14200mg/l
39900mg/l
10800mg/l
14600mg/l
53200mg/l
43000mg/l
6540mg/l
46800mg/l
20600mg/l
12800mg/l
10400mg/l
10300mg/l
10000mg/l
20,000.00
40,000.00
mg/l
55,000.0
52,500.0
50,000.0
47,500.0
45,000.0
42,500.0
40,000.0
37,500.0
35,000.0
32,500.0
30,000.0
27,500.0
25,000.0
22,500.0
20,000.0
17,500.0
15,000.0
12,500.0
10,000.0
7,500.0
5,000.0
2,500.0


HELSTF Regional Aquifer
Total Dissolved Solids
Easting (Meters)
Northing (Meters)
374,800.0
375,000.0
375,200.0
375,400.0
375,600.0
3,611,800
3,611,600
3,611,400
3,611,200
3,611,000
16200mg/l
12200mg/l
10300mg/l
11800mg/l
11500mg/l
10000mg/l
15500mg/l
12800mg/l
11500mg/l
12500mg/l
12900mg/l
13300mg/l
13600mg/l
12800mg/l
18700mg/l
12700mg/l
16100mg/l
11800mg/l
13700mg/l
16000mg/l
14500mg/l
11600mg/l
14,000.00
12,000.00
mg/l
19,000.0
18,500.0
18,000.0
17,500.0
17,000.0
16,500.0
16,000.0
15,500.0
15,000.0
14,500.0
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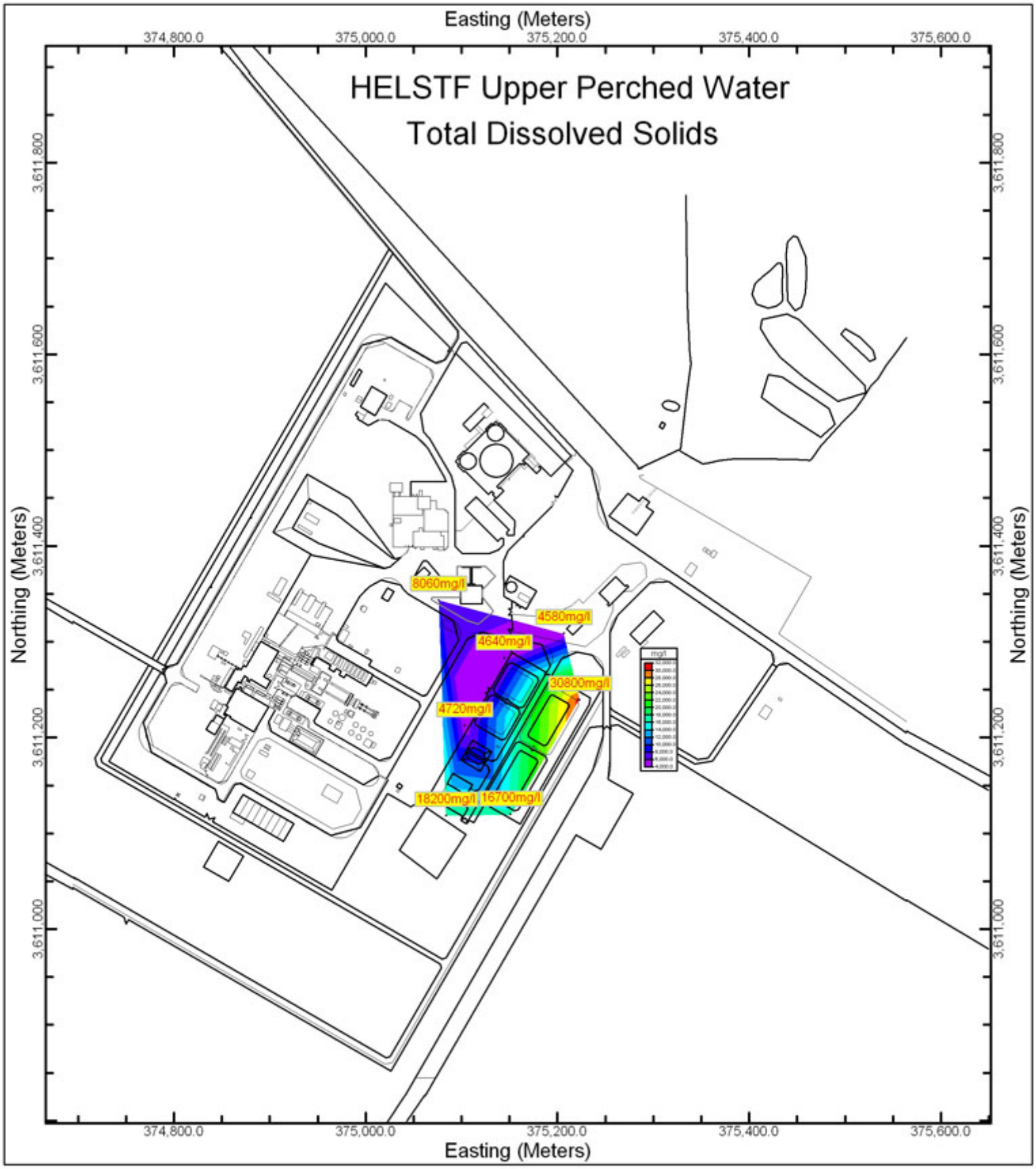
10,500.0
10,000.0


HELSTF Upper Perched Water
Total Dissolved Solids
Easting (Meters)
374,800.0
375,000.0
375,200.0
375,400.0
375,600.0
Northing (Meters)
3,611,800
3,611,600
3,611,400
3,611,200
3,611,000
8060mg/l
4580mg/l
4640mg/l
30800mg/l
4720mg/l
18200mg/l
16700mg/l
mg/l

HELSTF UCL STATISTICS

On CD only

Data File

Variable: As 20.0

Raw Statistics	
Number of Valid Samples	6
Number of Unique Samples	6
Minimum	0.46
Maximum	7.74
Mean	3.183333
Median	2.31
Standard Deviation	2.90919
Variance	8.463387
Coefficient of Variation	0.913882
Skewness	0.771063

Gamma Statistics	
k hat	1.242125
k star (bias corrected)	0.732174
Theta hat	2.562812
Theta star	4.347785
nu hat	14.9055
nu star	8.786083
Approx.Chi Square Value (.05)	3.197524
Adjusted Level of Significance	0.01222
Adjusted Chi Square Value	2.109375

Log-transformed Statistics	
Minimum of log data	-0.776529
Maximum of log data	2.046402
Mean of log data	0.704181
Standard Deviation of log data	1.116399
Variance of log data	1.246346

Recommendation
Data are normal (0.05)
Use Student's-t UCL

Normal Distribution Test	
Shapiro-Wilk Test Statisitic	0.884503
Shapiro-Wilk 5% Critical Value	0.788
Data are normal at 5% significance level	

95% UCL (Assuming Normal Distribution)		
Student's-t	UCL	5.576549

Gamma Distribution Test	
A-D Test Statistic	0.353783
A-D 5% Critical Value	0.71156
K-S Test Statistic	0.269867
K-S 5% Critical Value	0.339204
Data follow gamma distribution	
at 5% significance level	

95% UCLs (Assuming Gamma Distribution)	
Approximate Gamma UCL	8.74709
Adjusted Gamma UCL	13.25939

Lognormal Distribution Test	
Shapiro-Wilk Test Statisitic	0.922998
Shapiro-Wilk 5% Critical Value	0.788
Data are lognormal at 5% significance level	

95% UCLs (Assuming Lognormal Distribution)	
95% H-UCL	39.81447
95% Chebyshev (MVUE) UCL	9.66085
97.5% Chebyshev (MVUE) UCL	12.41883
99% Chebyshev (MVUE) UCL	17.83634

95% Non-parametric UCLs	
CLT UCL	5.13688
Adj-CLT UCL (Adjusted for skewness)	5.536356
Mod-t UCL (Adjusted for skewness)	5.63886
Jackknife UCL	5.576549
Standard Bootstrap UCL	4.950979
Bootstrap-t UCL	6.097677
Hall's Bootstrap UCL	4.766152
Percentile Bootstrap UCL	5.108333
BCA Bootstrap UCL	5.401667
95% Chebyshev (Mean, Sd) UCL	8.360275
97.5% Chebyshev (Mean, Sd) UCL	10.60034
99% Chebyshev (Mean, Sd) UCL	15.00052

Data File

Variable: As 30.0

Raw Statistics	
Number of Valid Samples	6
Number of Unique Samples	6
Minimum	0.21
Maximum	4.46
Mean	1.951667
Median	1.845
Standard Deviation	1.507255
Variance	2.271817
Coefficient of Variation	0.772291
Skewness	0.798454

Gamma Statistics	
k hat	1.519566
k star (bias corrected)	0.870894
Theta hat	1.284358
Theta star	2.240992
nu hat	18.23479
nu star	10.45073
Approx.Chi Square Value (.05)	4.224523
Adjusted Level of Significance	0.01222
Adjusted Chi Square Value	2.921231

Log-transformed Statistics	
Minimum of log data	-1.560648
Maximum of log data	1.495149
Mean of log data	0.304882
Standard Deviation of log data	1.078337
Variance of log data	1.162812

Recommendation
Data are normal (0.05)
Use Student's-t UCL

Normal Distribution Test	
Shapiro-Wilk Test Statisitic	0.95341
Shapiro-Wilk 5% Critical Value	0.788
Data are normal at 5% significance level	

95% UCL (Assuming Normal Distribution)	
Student's-t UCL	3.191595

Gamma Distribution Test	
A-D Test Statistic	0.198076
A-D 5% Critical Value	0.70765
K-S Test Statistic	0.181663
K-S 5% Critical Value	0.337387
Data follow gamma distribution	
at 5% significance level	

95% UCLs (Assuming Gamma Distribution)	
Approximate Gamma UCL	4.828081
Adjusted Gamma UCL	6.982102

Lognormal Distribution Test	
Shapiro-Wilk Test Statisitic	0.929258
Shapiro-Wilk 5% Critical Value	0.788
Data are lognormal at 5% significance level	

95% UCLs (Assuming Lognormal Distribution)	
95% H-UCL	22.11396
95% Chebyshev (MVUE) UCL	6.153507
97.5% Chebyshev (MVUE) UCL	7.890939
99% Chebyshev (MVUE) UCL	11.30379

95% Non-parametric UCLs	
CLT UCL	2.963801
Adj-CLT UCL (Adjusted for skewness)	3.178123
Mod-t UCL (Adjusted for skewness)	3.225024
Jackknife UCL	3.191595
Standard Bootstrap UCL	2.872512
Bootstrap-t UCL	3.628893
Hall's Bootstrap UCL	3.494419
Percentile Bootstrap UCL	2.905
BCA Bootstrap UCL	3.028333
95% Chebyshev (Mean, Sd) UCL	4.633846
97.5% Chebyshev (Mean, Sd) UCL	5.794427
99% Chebyshev (Mean, Sd) UCL	8.074164

Data File

Variable: As 40.0

Raw Statistics	
Number of Valid Samples	5
Number of Unique Samples	5
Minimum	0.61
Maximum	3.85
Mean	2.252
Median	2.6
Standard Deviation	1.358057
Variance	1.84432
Coefficient of Variation	0.603045
Skewness	-0.200486

Gamma Statistics	
k hat	2.61219
k star (bias corrected)	1.178209
Theta hat	0.862112
Theta star	1.911375
nu hat	26.1219
nu star	11.78209
Approx.Chi Square Value (.05)	5.082864
Adjusted Level of Significance	0.0086
Adjusted Chi Square Value	3.34409

Log-transformed Statistics	
Minimum of log data	-0.494296
Maximum of log data	1.348073
Mean of log data	0.608364
Standard Deviation of log data	0.775848
Variance of log data	0.60194

Recommendation
Data are normal (0.05)
Use Student's-t UCL

Normal Distribution Test	
Shapiro-Wilk Test Statisitic	0.938364
Shapiro-Wilk 5% Critical Value	0.762
Data are normal at 5% significance level	

95% UCL (Assuming Normal Distribution)	
Student's-t UCL	3.546759

Gamma Distribution Test	
A-D Test Statistic	0.349385
A-D 5% Critical Value	0.683336
K-S Test Statistic	0.271225
K-S 5% Critical Value	0.359827
Data follow gamma distribution	
at 5% significance level	

95% UCLs (Assuming Gamma Distribution)	
Approximate Gamma UCL	5.220143
Adjusted Gamma UCL	7.934379

Lognormal Distribution Test	
Shapiro-Wilk Test Statisitic	0.899286
Shapiro-Wilk 5% Critical Value	0.762
Data are lognormal at 5% significance level	

95% UCLs (Assuming Lognormal Distribution)	
95% H-UCL	11.55035
95% Chebyshev (MVUE) UCL	5.738283
97.5% Chebyshev (MVUE) UCL	7.218762
99% Chebyshev (MVUE) UCL	10.12688

95% Non-parametric UCLs	
CLT UCL	3.250988
Adj-CLT UCL (Adjusted for skewness)	3.192803
Mod-t UCL (Adjusted for skewness)	3.537683
Jackknife UCL	3.546759
Standard Bootstrap UCL	3.125628
Bootstrap-t UCL	3.501555
Hall's Bootstrap UCL	2.906055
Percentile Bootstrap UCL	3.15
BCA Bootstrap UCL	3.05
95% Chebyshev (Mean, Sd) UCL	4.899341
97.5% Chebyshev (Mean, Sd) UCL	6.044848
99% Chebyshev (Mean, Sd) UCL	8.294974

Data File

Variable: Ba 0.0

Raw Statistics	
Number of Valid Samples	6
Number of Unique Samples	6
Minimum	9.48
Maximum	21.4
Mean	14.87167
Median	15.4
Standard Deviation	4.699661
Variance	22.08682
Coefficient of Variation	0.316014
Skewness	0.051763

Gamma Statistics	
k hat	11.43715
k star (bias corrected)	5.829687
Theta hat	1.300295
Theta star	2.551023
nu hat	137.2458
nu star	69.95625
Approx.Chi Square Value (.05)	51.6982
Adjusted Level of Significance	0.01222
Adjusted Chi Square Value	46.07889

Log-transformed Statistics	
Minimum of log data	2.249184
Maximum of log data	3.063391
Mean of log data	2.655104
Standard Deviation of log data	0.33173
Variance of log data	0.110045

Recommendation
Data are normal (0.05)
Use Student's-t UCL

Normal Distribution Test	
Shapiro-Wilk Test Statisitic	0.93327
Shapiro-Wilk 5% Critical Value	0.788
Data are normal at 5% significance level	

95% UCL (Assuming Normal Distribution)	
Student's-t UCL	18.7378

Gamma Distribution Test	
A-D Test Statistic	0.335116
A-D 5% Critical Value	0.698152
K-S Test Statistic	0.224379
K-S 5% Critical Value	0.332372
Data follow gamma distribution	
at 5% significance level	

95% UCLs (Assuming Gamma Distribution)	
Approximate Gamma UCL	20.12383
Adjusted Gamma UCL	22.57793

Lognormal Distribution Test	
Shapiro-Wilk Test Statisitic	0.909283
Shapiro-Wilk 5% Critical Value	0.788
Data are lognormal at 5% significance level	

95% UCLs (Assuming Lognormal Distribution)	
95% H-UCL	21.21966
95% Chebyshev (MVUE) UCL	23.6767
97.5% Chebyshev (MVUE) UCL	27.47891
99% Chebyshev (MVUE) UCL	34.9476

95% Non-parametric UCLs	
CLT UCL	18.02753
Adj-CLT UCL (Adjusted for skewness)	18.07085
Mod-t UCL (Adjusted for skewness)	18.74455
Jackknife UCL	18.7378
Standard Bootstrap UCL	17.7016
Bootstrap-t UCL	18.81054
Hall's Bootstrap UCL	17.85069
Percentile Bootstrap UCL	17.66667
BCA Bootstrap UCL	17.58333
95% Chebyshev (Mean, Sd) UCL	23.23478
97.5% Chebyshev (Mean, Sd) UCL	26.8535
99% Chebyshev (Mean, Sd) UCL	33.96178

Data File

Variable: Ba 10.0

Raw Statistics	
Number of Valid Samples	6
Number of Unique Samples	6
Minimum	18.4
Maximum	94.5
Mean	37.91667
Median	25.8
Standard Deviation	29.26817
Variance	856.6257
Coefficient of Variation	0.771908
Skewness	1.954688

Gamma Statistics	
k hat	2.811445
k star (bias corrected)	1.516834
Theta hat	13.48654
Theta star	24.99725
nu hat	33.73734
nu star	18.202
Approx.Chi Square Value (.05)	9.535621
Adjusted Level of Significance	0.01222
Adjusted Chi Square Value	7.382446

Log-transformed Statistics	
Minimum of log data	2.912351
Maximum of log data	4.5486
Mean of log data	3.44713
Standard Deviation of log data	0.626161
Variance of log data	0.392077

Recommendation
Data follow gamma distribution (0.05)
Use Approximate Gamma UCL

Normal Distribution Test	
Shapiro-Wilk Test Statisitic	0.738521
Shapiro-Wilk 5% Critical Value	0.788
Data not normal at 5% significance level	

95% UCL (Assuming Normal Distribution)	
Student's-t UCL	61.99383

Gamma Distribution Test	
A-D Test Statistic	0.574356
A-D 5% Critical Value	0.701873
K-S Test Statistic	0.301518
K-S 5% Critical Value	0.334791
Data follow gamma distribution	
at 5% significance level	

95% UCLs (Assuming Gamma Distribution)	
Approximate Gamma UCL	72.37696
Adjusted Gamma UCL	93.48653

Lognormal Distribution Test	
Shapiro-Wilk Test Statisitic	0.860662
Shapiro-Wilk 5% Critical Value	0.788
Data are lognormal at 5% significance level	

95% UCLs (Assuming Lognormal Distribution)	
95% H-UCL	89.93286
95% Chebyshev (MVUE) UCL	77.78106
97.5% Chebyshev (MVUE) UCL	95.49194
99% Chebyshev (MVUE) UCL	130.2815

95% Non-parametric UCLs	
CLT UCL	57.5705
Adj-CLT UCL (Adjusted for skewness)	67.75881
Mod-t UCL (Adjusted for skewness)	63.583
Jackknife UCL	61.99383
Standard Bootstrap UCL	56.46776
Bootstrap-t UCL	154.4599
Hall's Bootstrap UCL	162.7263
Percentile Bootstrap UCL	58.58333
BCA Bootstrap UCL	63.21667
95% Chebyshev (Mean, Sd) UCL	89.99975
97.5% Chebyshev (Mean, Sd) UCL	112.5361
99% Chebyshev (Mean, Sd) UCL	156.8045

Data File

Variable: Ba 20.0

Raw Statistics	
Number of Valid Samples	6
Number of Unique Samples	6
Minimum	25.6
Maximum	53.7
Mean	37.9
Median	38.15
Standard Deviation	11.8
Variance	139.24
Coefficient of Variation	0.311346
Skewness	0.175231

Gamma Statistics	
k hat	12.1607
k star (bias corrected)	6.191464
Theta hat	3.116596
Theta star	6.121331
nu hat	145.9285
nu star	74.29756
Approx.Chi Square Value (.05)	55.44292
Adjusted Level of Significance	0.01222
Adjusted Chi Square Value	49.60585

Log-transformed Statistics	
Minimum of log data	3.242592
Maximum of log data	3.983413
Mean of log data	3.593272
Standard Deviation of log data	0.318414
Variance of log data	0.101388

Recommendation
Data are normal (0.05)
Use Student's-t UCL

Normal Distribution Test	
Shapiro-Wilk Test Statisitic	0.884011
Shapiro-Wilk 5% Critical Value	0.788
Data are normal at 5% significance level	

95% UCL (Assuming Normal Distribution)	
Student's-t UCL	47.60715

Gamma Distribution Test	
A-D Test Statistic	0.456815
A-D 5% Critical Value	0.698062
K-S Test Statistic	0.258848
K-S 5% Critical Value	0.332318
Data follow gamma distribution	
at 5% significance level	

95% UCLs (Assuming Gamma Distribution)	
Approximate Gamma UCL	50.78877
Adjusted Gamma UCL	56.76503

Lognormal Distribution Test	
Shapiro-Wilk Test Statisitic	0.876513
Shapiro-Wilk 5% Critical Value	0.788
Data are lognormal at 5% significance level	

95% UCLs (Assuming Lognormal Distribution)	
95% H-UCL	53.05029
95% Chebyshev (MVUE) UCL	59.38856
97.5% Chebyshev (MVUE) UCL	68.68153
99% Chebyshev (MVUE) UCL	86.93577

95% Non-parametric UCLs	
CLT UCL	45.8238
Adj-CLT UCL (Adjusted for skewness)	46.19203
Mod-t UCL (Adjusted for skewness)	47.66459
Jackknife UCL	47.60715
Standard Bootstrap UCL	45.11639
Bootstrap-t UCL	48.41531
Hall's Bootstrap UCL	43.40149
Percentile Bootstrap UCL	44.91667
BCA Bootstrap UCL	45.3
95% Chebyshev (Mean, Sd) UCL	58.89825
97.5% Chebyshev (Mean, Sd) UCL	67.98422
99% Chebyshev (Mean, Sd) UCL	85.83183

Data File

Variable: Ba 30.0

Raw Statistics	
Number of Valid Samples	6
Number of Unique Samples	6
Minimum	11.3
Maximum	89.55
Mean	47.04167
Median	50.8
Standard Deviation	30.91576
Variance	955.7844
Coefficient of Variation	0.6572
Skewness	-0.009475

Gamma Statistics	
k hat	2.016273
k star (bias corrected)	1.119248
Theta hat	23.331
Theta star	42.02972
nu hat	24.19528
nu star	13.43097
Approx.Chi Square Value (.05)	6.182576
Adjusted Level of Significance	0.01222
Adjusted Chi Square Value	4.527239

Log-transformed Statistics	
Minimum of log data	2.424803
Maximum of log data	4.494797
Mean of log data	3.583009
Standard Deviation of log data	0.887327
Variance of log data	0.787349

Recommendation
Data are normal (0.05)
Use Student's-t UCL

Normal Distribution Test	
Shapiro-Wilk Test Statisitic	0.930367
Shapiro-Wilk 5% Critical Value	0.788
Data are normal at 5% significance level	

95% UCL (Assuming Normal Distribution)	
Student's-t UCL	72.47421

Gamma Distribution Test	
A-D Test Statistic	0.462327
A-D 5% Critical Value	0.704163
K-S Test Statistic	0.238581
K-S 5% Critical Value	0.335809
Data follow gamma distribution	
at 5% significance level	

95% UCLs (Assuming Gamma Distribution)	
Approximate Gamma UCL	102.1929
Adjusted Gamma UCL	139.5586

Lognormal Distribution Test	
Shapiro-Wilk Test Statisitic	0.84414
Shapiro-Wilk 5% Critical Value	0.788
Data are lognormal at 5% significance level	

95% UCLs (Assuming Lognormal Distribution)	
95% H-UCL	251.2105
95% Chebyshev (MVUE) UCL	126.1711
97.5% Chebyshev (MVUE) UCL	159.4522
99% Chebyshev (MVUE) UCL	224.8266

95% Non-parametric UCLs	
CLT UCL	67.80187
Adj-CLT UCL (Adjusted for skewness)	67.74971
Mod-t UCL (Adjusted for skewness)	72.46607
Jackknife UCL	72.47421
Standard Bootstrap UCL	65.85322
Bootstrap-t UCL	73.32024
Hall's Bootstrap UCL	66.4174
Percentile Bootstrap UCL	65.58333
BCA Bootstrap UCL	63.76667
95% Chebyshev (Mean, Sd) UCL	102.0567
97.5% Chebyshev (Mean, Sd) UCL	125.8617
99% Chebyshev (Mean, Sd) UCL	172.6221

Data File

Variable: Ba 40.0

Raw Statistics	
Number of Valid Samples	5
Number of Unique Samples	5
Minimum	8.15
Maximum	66.1
Mean	39.97
Median	38.6
Standard Deviation	23.14405
Variance	535.647
Coefficient of Variation	0.579035
Skewness	-0.33068

Gamma Statistics	
k hat	2.489428
k star (bias corrected)	1.129105
Theta hat	16.0559
Theta star	35.39973
nu hat	24.89428
nu star	11.29105
Approx.Chi Square Value (.05)	4.762909
Adjusted Level of Significance	0.0086
Adjusted Chi Square Value	3.095263

Log-transformed Statistics	
Minimum of log data	2.098018
Maximum of log data	4.191169
Mean of log data	3.474036
Standard Deviation of log data	0.835926
Variance of log data	0.698773

Recommendation
Data are normal (0.05)
Use Student's-t UCL

Normal Distribution Test	
Shapiro-Wilk Test Statisitic	0.966717
Shapiro-Wilk 5% Critical Value	0.762
Data are normal at 5% significance level	

95% UCL (Assuming Normal Distribution)	
Student's-t UCL	62.03532

Gamma Distribution Test	
A-D Test Statistic	0.324611
A-D 5% Critical Value	0.683559
K-S Test Statistic	0.197425
K-S 5% Critical Value	0.359956
Data follow gamma distribution	
at 5% significance level	

95% UCLs (Assuming Gamma Distribution)	
Approximate Gamma UCL	94.75368
Adjusted Gamma UCL	145.8044

Lognormal Distribution Test	
Shapiro-Wilk Test Statisitic	0.868845
Shapiro-Wilk 5% Critical Value	0.762
Data are lognormal at 5% significance level	

95% UCLs (Assuming Lognormal Distribution)	
95% H-UCL	265.8372
95% Chebyshev (MVUE) UCL	108.9689
97.5% Chebyshev (MVUE) UCL	137.8745
99% Chebyshev (MVUE) UCL	194.6541

95% Non-parametric UCLs	
CLT UCL	56.99478
Adj-CLT UCL (Adjusted for skewness)	55.35926
Mod-t UCL (Adjusted for skewness)	61.78021
Jackknife UCL	62.03532
Standard Bootstrap UCL	55.27447
Bootstrap-t UCL	63.17191
Hall's Bootstrap UCL	63.27868
Percentile Bootstrap UCL	54.51
BCA Bootstrap UCL	53.48
95% Chebyshev (Mean, Sd) UCL	85.08606
97.5% Chebyshev (Mean, Sd) UCL	104.6078
99% Chebyshev (Mean, Sd) UCL	142.9545

Data File

Variable: Ba 50.0

Raw Statistics	
Number of Valid Samples	6
Number of Unique Samples	6
Minimum	37.5
Maximum	104
Mean	64.45
Median	59.25
Standard Deviation	24.29294
Variance	590.147
Coefficient of Variation	0.376927
Skewness	0.806408

Gamma Statistics	
k hat	8.855881
k star (bias corrected)	4.539052
Theta hat	7.27765
Theta star	14.199
nu hat	106.2706
nu star	54.46862
Approx.Chi Square Value (.05)	38.50761
Adjusted Level of Significance	0.01222
Adjusted Chi Square Value	33.72542

Log-transformed Statistics	
Minimum of log data	3.624341
Maximum of log data	4.644391
Mean of log data	4.108369
Standard Deviation of log data	0.369986
Variance of log data	0.13689

Recommendation
Data are normal (0.05)
Use Student's-t UCL

Normal Distribution Test	
Shapiro-Wilk Test Statisitic	0.946552
Shapiro-Wilk 5% Critical Value	0.788
Data are normal at 5% significance level	

95% UCL (Assuming Normal Distribution)	
Student's-t UCL	84.43435

Gamma Distribution Test	
A-D Test Statistic	0.201448
A-D 5% Critical Value	0.698266
K-S Test Statistic	0.201663
K-S 5% Critical Value	0.332551
Data follow gamma distribution	
at 5% significance level	

95% UCLs (Assuming Gamma Distribution)	
Approximate Gamma UCL	91.16387
Adjusted Gamma UCL	104.0907

Lognormal Distribution Test	
Shapiro-Wilk Test Statisitic	0.981537
Shapiro-Wilk 5% Critical Value	0.788
Data are lognormal at 5% significance level	

95% UCLs (Assuming Lognormal Distribution)	
95% H-UCL	96.95496
95% Chebyshev (MVUE) UCL	106.7651
97.5% Chebyshev (MVUE) UCL	125.1011
99% Chebyshev (MVUE) UCL	161.1186

95% Non-parametric UCLs	
CLT UCL	80.76292
Adj-CLT UCL (Adjusted for skewness)	84.25162
Mod-t UCL (Adjusted for skewness)	84.97851
Jackknife UCL	84.43435
Standard Bootstrap UCL	79.5996
Bootstrap-t UCL	88.58661
Hall's Bootstrap UCL	94.8922
Percentile Bootstrap UCL	80.1
BCA Bootstrap UCL	81.08333
95% Chebyshev (Mean, Sd) UCL	107.6796
97.5% Chebyshev (Mean, Sd) UCL	126.3851
99% Chebyshev (Mean, Sd) UCL	163.1284

Data File

Variable: Cr 0.0

Raw Statistics	
Number of Valid Samples	6
Number of Unique Samples	6
Minimum	0.12
Maximum	1.19
Mean	0.668
Median	0.654
Standard Deviation	0.433387
Variance	0.187824
Coefficient of Variation	0.648782
Skewness	-0.011095

Gamma Statistics	
k hat	2.088165
k star (bias corrected)	1.155194
Theta hat	0.319898
Theta star	0.578258
nu hat	25.05798
nu star	13.86233
Approx.Chi Square Value (.05)	6.47607
Adjusted Level of Significance	0.01222
Adjusted Chi Square Value	4.772741

Log-transformed Statistics	
Minimum of log data	-2.120264
Maximum of log data	0.173953
Mean of log data	-0.661624
Standard Deviation of log data	0.879006
Variance of log data	0.772651

Recommendation
Data are normal (0.05)
Use Student's-t UCL

Normal Distribution Test	
Shapiro-Wilk Test Statisitic	0.929439
Shapiro-Wilk 5% Critical Value	0.788
Data are normal at 5% significance level	

95% UCL (Assuming Normal Distribution)	
Student's-t UCL	1.024521

Gamma Distribution Test	
A-D Test Statistic	0.302017
A-D 5% Critical Value	0.703956
K-S Test Statistic	0.227544
K-S 5% Critical Value	0.335717
Data follow gamma distribution	
at 5% significance level	

95% UCLs (Assuming Gamma Distribution)	
Approximate Gamma UCL	1.429885
Adjusted Gamma UCL	1.940192

Lognormal Distribution Test	
Shapiro-Wilk Test Statisitic	0.90574
Shapiro-Wilk 5% Critical Value	0.788
Data are lognormal at 5% significance level	

95% UCLs (Assuming Lognormal Distribution)	
95% H-UCL	3.48503
95% Chebyshev (MVUE) UCL	1.789372
97.5% Chebyshev (MVUE) UCL	2.259697
99% Chebyshev (MVUE) UCL	3.183561

95% Non-parametric UCLs	
CLT UCL	0.959023
Adj-CLT UCL (Adjusted for skewness)	0.958167
Mod-t UCL (Adjusted for skewness)	1.024388
Jackknife UCL	1.024521
Standard Bootstrap UCL	0.931371
Bootstrap-t UCL	1.074372
Hall's Bootstrap UCL	0.889766
Percentile Bootstrap UCL	0.936
BCA Bootstrap UCL	0.916333
95% Chebyshev (Mean, Sd) UCL	1.439217
97.5% Chebyshev (Mean, Sd) UCL	1.772924
99% Chebyshev (Mean, Sd) UCL	2.428425

Data File

Variable: Cr 10.0

Raw Statistics	
Number of Valid Samples	6
Number of Unique Samples	6
Minimum	0.21
Maximum	7.22
Mean	2.46
Median	1.815
Standard Deviation	2.455443
Variance	6.0292
Coefficient of Variation	0.998148
Skewness	1.902536

Gamma Statistics	
k hat	1.254646
k star (bias corrected)	0.738434
Theta hat	1.960713
Theta star	3.331375
nu hat	15.05575
nu star	8.861207
Approx.Chi Square Value (.05)	3.242588
Adjusted Level of Significance	0.01222
Adjusted Chi Square Value	2.144396

Log-transformed Statistics	
Minimum of log data	-1.560648
Maximum of log data	1.976855
Mean of log data	0.451403
Standard Deviation of log data	1.157451
Variance of log data	1.339693

Recommendation
Data are normal (0.05)
Use Student's-t UCL

Normal Distribution Test	
Shapiro-Wilk Test Statisitic	0.788368
Shapiro-Wilk 5% Critical Value	0.788
Data are normal at 5% significance level	

95% UCL (Assuming Normal Distribution)	
Student's-t UCL	4.479946

Gamma Distribution Test	
A-D Test Statistic	0.329257
A-D 5% Critical Value	0.711377
K-S Test Statistic	0.227103
K-S 5% Critical Value	0.339118
Data follow gamma distribution	
at 5% significance level	

95% UCLs (Assuming Gamma Distribution)	
Approximate Gamma UCL	6.722584
Adjusted Gamma UCL	10.16537

Lognormal Distribution Test	
Shapiro-Wilk Test Statisitic	0.917709
Shapiro-Wilk 5% Critical Value	0.788
Data are lognormal at 5% significance level	

95% UCLs (Assuming Lognormal Distribution)	
95% H-UCL	38.18681
95% Chebyshev (MVUE) UCL	7.935202
97.5% Chebyshev (MVUE) UCL	10.22591
99% Chebyshev (MVUE) UCL	14.72557

95% Non-parametric UCLs	
CLT UCL	4.108851
Adj-CLT UCL (Adjusted for skewness)	4.940791
Mod-t UCL (Adjusted for skewness)	4.609711
Jackknife UCL	4.479946
Standard Bootstrap UCL	3.944109
Bootstrap-t UCL	6.886118
Hall's Bootstrap UCL	11.71921
Percentile Bootstrap UCL	4.25
BCA Bootstrap UCL	4.555
95% Chebyshev (Mean, Sd) UCL	6.829493
97.5% Chebyshev (Mean, Sd) UCL	8.720176
99% Chebyshev (Mean, Sd) UCL	12.43406

Data File

Variable: Cr 20.0

Raw Statistics	
Number of Valid Samples	6
Number of Unique Samples	5
Minimum	1.81
Maximum	7.36
Mean	5.381667
Median	5.645
Standard Deviation	2.132655
Variance	4.548217
Coefficient of Variation	0.396281
Skewness	-0.945444

Gamma Statistics	
k hat	5.394116
k star (bias corrected)	2.808169
Theta hat	0.997692
Theta star	1.916433
nu hat	64.72939
nu star	33.69803
Approx.Chi Square Value (.05)	21.42101
Adjusted Level of Significance	0.01222
Adjusted Chi Square Value	17.9749

Log-transformed Statistics	
Minimum of log data	0.593327
Maximum of log data	1.99606
Mean of log data	1.58745
Standard Deviation of log data	0.530289
Variance of log data	0.281206

Recommendation
Data are normal (0.05)
Use Student's-t UCL

Normal Distribution Test	
Shapiro-Wilk Test Statisitic	0.877829
Shapiro-Wilk 5% Critical Value	0.788
Data are normal at 5% significance level	

95% UCL (Assuming Normal Distribution)	
Student's-t UCL	7.136074

Gamma Distribution Test	
A-D Test Statistic	0.556314
A-D 5% Critical Value	0.698072
K-S Test Statistic	0.256012
K-S 5% Critical Value	0.332766
Data follow gamma distribution	
at 5% significance level	

95% UCLs (Assuming Gamma Distribution)	
Approximate Gamma UCL	8.46606
Adjusted Gamma UCL	10.08915

Lognormal Distribution Test	
Shapiro-Wilk Test Statisitic	0.795817
Shapiro-Wilk 5% Critical Value	0.788
Data are lognormal at 5% significance level	

95% UCLs (Assuming Lognormal Distribution)	
95% H-UCL	10.89828
95% Chebyshev (MVUE) UCL	10.65972
97.5% Chebyshev (MVUE) UCL	12.89715
99% Chebyshev (MVUE) UCL	17.29214

95% Non-parametric UCLs	
CLT UCL	6.813763
Adj-CLT UCL (Adjusted for skewness)	6.454688
Mod-t UCL (Adjusted for skewness)	7.080065
Jackknife UCL	7.136074
Standard Bootstrap UCL	6.670469
Bootstrap-t UCL	6.699593
Hall's Bootstrap UCL	6.454847
Percentile Bootstrap UCL	6.618333
BCA Bootstrap UCL	6.423333
95% Chebyshev (Mean, Sd) UCL	9.176754
97.5% Chebyshev (Mean, Sd) UCL	10.81889
99% Chebyshev (Mean, Sd) UCL	14.04455

Data File

Variable: Cr 30.0

Raw Statistics	
Number of Valid Samples	6
Number of Unique Samples	6
Minimum	0.12
Maximum	10.1
Mean	6.395
Median	7.135
Standard Deviation	3.530228
Variance	12.46251
Coefficient of Variation	0.552029
Skewness	-1.245548

Gamma Statistics	
k hat	1.068343
k star (bias corrected)	0.645282
Theta hat	5.985908
Theta star	9.91039
nu hat	12.82011
nu star	7.743389
Approx.Chi Square Value (.05)	2.586674
Adjusted Level of Significance	0.01222
Adjusted Chi Square Value	1.64152

Log-transformed Statistics	
Minimum of log data	-2.120264
Maximum of log data	2.312535
Mean of log data	1.319321
Standard Deviation of log data	1.701868
Variance of log data	2.896356

Recommendation
Data are normal (0.05)
Use Student's-t UCL

Normal Distribution Test	
Shapiro-Wilk Test Statisitic	0.914458
Shapiro-Wilk 5% Critical Value	0.788
Data are normal at 5% significance level	

95% UCL (Assuming Normal Distribution)	
Student's-t UCL	9.299107

Gamma Distribution Test	
A-D Test Statistic	0.997509
A-D 5% Critical Value	0.714101
K-S Test Statistic	0.370422
K-S 5% Critical Value	0.340385
Data do not follow gamma distribution	
at 5% significance level	

95% UCLs (Assuming Gamma Distribution)	
Approximate Gamma UCL	19.14387
Adjusted Gamma UCL	30.16653

Lognormal Distribution Test	
Shapiro-Wilk Test Statisitic	0.62874
Shapiro-Wilk 5% Critical Value	0.788
Data not lognormal at 5% significance level	

95% UCLs (Assuming Lognormal Distribution)	
95% H-UCL	3085.914
95% Chebyshev (MVUE) UCL	40.42785
97.5% Chebyshev (MVUE) UCL	53.2904
99% Chebyshev (MVUE) UCL	78.55639

95% Non-parametric UCLs	
CLT UCL	8.765579
Adj-CLT UCL (Adjusted for skewness)	7.982524
Mod-t UCL (Adjusted for skewness)	9.176966
Jackknife UCL	9.299107
Standard Bootstrap UCL	8.549808
Bootstrap-t UCL	8.478112
Hall's Bootstrap UCL	8.116032
Percentile Bootstrap UCL	8.346667
BCA Bootstrap UCL	8.191667
95% Chebyshev (Mean, Sd) UCL	12.67709
97.5% Chebyshev (Mean, Sd) UCL	15.39535
99% Chebyshev (Mean, Sd) UCL	20.73485

Data File

Variable: Cr 40.0

Raw Statistics	
Number of Valid Samples	5
Number of Unique Samples	5
Minimum	2.85
Maximum	5.11
Mean	3.93
Median	3.82
Standard Deviation	0.869224
Variance	0.75555
Coefficient of Variation	0.221177
Skewness	0.246646

Gamma Statistics	
k hat	25.34558
k star (bias corrected)	10.27157
Theta hat	0.155057
Theta star	0.38261
nu hat	253.4558
nu star	102.7157
Approx.Chi Square Value (.05)	80.32635
Adjusted Level of Significance	0.0086
Adjusted Chi Square Value	71.69956

Log-transformed Statistics	
Minimum of log data	1.047319
Maximum of log data	1.631199
Mean of log data	1.348782
Standard Deviation of log data	0.223898
Variance of log data	0.05013

Recommendation
Data are normal (0.05)
Use Student's-t UCL

Normal Distribution Test	
Shapiro-Wilk Test Statisitic	0.991715
Shapiro-Wilk 5% Critical Value	0.762
Data are normal at 5% significance level	

95% UCL (Assuming Normal Distribution)	
Student's-t UCL	4.75871

Gamma Distribution Test	
A-D Test Statistic	0.164856
A-D 5% Critical Value	0.678613
K-S Test Statistic	0.144451
K-S 5% Critical Value	0.357107
Data follow gamma distribution	
at 5% significance level	

95% UCLs (Assuming Gamma Distribution)	
Approximate Gamma UCL	5.025407
Adjusted Gamma UCL	5.630056

Lognormal Distribution Test	
Shapiro-Wilk Test Statisitic	0.99461
Shapiro-Wilk 5% Critical Value	0.762
Data are lognormal at 5% significance level	

95% UCLs (Assuming Lognormal Distribution)	
95% H-UCL	5.078175
95% Chebyshev (MVUE) UCL	5.643085
97.5% Chebyshev (MVUE) UCL	6.384119
99% Chebyshev (MVUE) UCL	7.839738

95% Non-parametric UCLs	
CLT UCL	4.569402
Adj-CLT UCL (Adjusted for skewness)	4.615218
Mod-t UCL (Adjusted for skewness)	4.765856
Jackknife UCL	4.75871
Standard Bootstrap UCL	4.494924
Bootstrap-t UCL	4.944843
Hall's Bootstrap UCL	5.20946
Percentile Bootstrap UCL	4.5
BCA Bootstrap UCL	4.522
95% Chebyshev (Mean, Sd) UCL	5.624429
97.5% Chebyshev (Mean, Sd) UCL	6.35761
99% Chebyshev (Mean, Sd) UCL	7.797802

Data File

Variable: Cr 50.0

Raw Statistics	
Number of Valid Samples	6
Number of Unique Samples	6
Minimum	1.51
Maximum	22.3
Mean	9.208333
Median	7.93
Standard Deviation	7.726889
Variance	59.70482
Coefficient of Variation	0.839119
Skewness	0.988953

Gamma Statistics	
k hat	1.489
k star (bias corrected)	0.855611
Theta hat	6.18424
Theta star	10.76229
nu hat	17.868
nu star	10.26733
Approx.Chi Square Value (.05)	4.108671
Adjusted Level of Significance	0.01222
Adjusted Chi Square Value	2.828359

Log-transformed Statistics	
Minimum of log data	0.41211
Maximum of log data	3.104587
Mean of log data	1.848161
Standard Deviation of log data	1.02605
Variance of log data	1.052779

Recommendation
Data are normal (0.05)
Use Student's-t UCL

Normal Distribution Test	
Shapiro-Wilk Test Statisitic	0.921173
Shapiro-Wilk 5% Critical Value	0.788
Data are normal at 5% significance level	

95% UCL (Assuming Normal Distribution)	
Student's-t UCL	15.56478

Gamma Distribution Test	
A-D Test Statistic	0.21168
A-D 5% Critical Value	0.707951
K-S Test Statistic	0.187298
K-S 5% Critical Value	0.337525
Data follow gamma distribution	
at 5% significance level	

95% UCLs (Assuming Gamma Distribution)	
Approximate Gamma UCL	23.0111
Adjusted Gamma UCL	33.42752

Lognormal Distribution Test	
Shapiro-Wilk Test Statisitic	0.948657
Shapiro-Wilk 5% Critical Value	0.788
Data are lognormal at 5% significance level	

95% UCLs (Assuming Lognormal Distribution)	
95% H-UCL	80.72251
95% Chebyshev (MVUE) UCL	26.82803
97.5% Chebyshev (MVUE) UCL	34.27988
99% Chebyshev (MVUE) UCL	48.9176

95% Non-parametric UCLs	
CLT UCL	14.39701
Adj-CLT UCL (Adjusted for skewness)	15.75785
Mod-t UCL (Adjusted for skewness)	15.77705
Jackknife UCL	15.56478
Standard Bootstrap UCL	14.03363
Bootstrap-t UCL	18.28134
Hall's Bootstrap UCL	43.60204
Percentile Bootstrap UCL	14.19
BCA Bootstrap UCL	14.81333
95% Chebyshev (Mean, Sd) UCL	22.95843
97.5% Chebyshev (Mean, Sd) UCL	28.90811
99% Chebyshev (Mean, Sd) UCL	40.59511

Data File

Variable: Cu 0.0

Raw Statistics	
Number of Valid Samples	6
Number of Unique Samples	6
Minimum	0.4
Maximum	2.18
Mean	1.4295
Median	1.475
Standard Deviation	0.732026
Variance	0.535862
Coefficient of Variation	0.512085
Skewness	-0.308783

Gamma Statistics	
k hat	3.466141
k star (bias corrected)	1.844182
Theta hat	0.412418
Theta star	0.775141
nu hat	41.59369
nu star	22.13018
Approx.Chi Square Value (.05)	12.43431
Adjusted Level of Significance	0.01222
Adjusted Chi Square Value	9.91525

Log-transformed Statistics	
Minimum of log data	-0.916291
Maximum of log data	0.779325
Mean of log data	0.206191
Standard Deviation of log data	0.658829
Variance of log data	0.434056

Recommendation
Data are normal (0.05)
Use Student's-t UCL

Normal Distribution Test	
Shapiro-Wilk Test Statisitic	0.911393
Shapiro-Wilk 5% Critical Value	0.788
Data are normal at 5% significance level	

95% UCL (Assuming Normal Distribution)	
Student's-t UCL	2.031694

Gamma Distribution Test	
A-D Test Statistic	0.356537
A-D 5% Critical Value	0.700701
K-S Test Statistic	0.229637
K-S 5% Critical Value	0.334079
Data follow gamma distribution	
at 5% significance level	

95% UCLs (Assuming Gamma Distribution)	
Approximate Gamma UCL	2.544177
Adjusted Gamma UCL	3.190549

Lognormal Distribution Test	
Shapiro-Wilk Test Statisitic	0.880832
Shapiro-Wilk 5% Critical Value	0.788
Data are lognormal at 5% significance level	

95% UCLs (Assuming Lognormal Distribution)	
95% H-UCL	3.867945
95% Chebyshev (MVUE) UCL	3.178416
97.5% Chebyshev (MVUE) UCL	3.919334
99% Chebyshev (MVUE) UCL	5.374724

95% Non-parametric UCLs	
CLT UCL	1.921062
Adj-CLT UCL (Adjusted for skewness)	1.880808
Mod-t UCL (Adjusted for skewness)	2.025415
Jackknife UCL	2.031694
Standard Bootstrap UCL	1.877493
Bootstrap-t UCL	1.979535
Hall's Bootstrap UCL	1.804918
Percentile Bootstrap UCL	1.878333
BCA Bootstrap UCL	1.831167
95% Chebyshev (Mean, Sd) UCL	2.732149
97.5% Chebyshev (Mean, Sd) UCL	3.295806
99% Chebyshev (Mean, Sd) UCL	4.403002

Data File

Variable: Cu 10.0

Raw Statistics	
Number of Valid Samples	6
Number of Unique Samples	6
Minimum	0.692
Maximum	6.41
Mean	2.062
Median	1.0465
Standard Deviation	2.236114
Variance	5.000204
Coefficient of Variation	1.084439
Skewness	2.004344

Gamma Statistics	
k hat	1.466046
k star (bias corrected)	0.844134
Theta hat	1.406504
Theta star	2.442739
nu hat	17.59256
nu star	10.12961
Approx.Chi Square Value (.05)	4.022081
Adjusted Level of Significance	0.01222
Adjusted Chi Square Value	2.759137

Log-transformed Statistics	
Minimum of log data	-0.368169
Maximum of log data	1.857859
Mean of log data	0.34537
Standard Deviation of log data	0.887662
Variance of log data	0.787944

Recommendation
Data follow gamma distribution (0.05)
Use Approximate Gamma UCL

Normal Distribution Test	
Shapiro-Wilk Test Statisitic	0.712364
Shapiro-Wilk 5% Critical Value	0.788
Data not normal at 5% significance level	

95% UCL (Assuming Normal Distribution)	
Student's-t UCL	3.901516

Gamma Distribution Test	
A-D Test Statistic	0.604817
A-D 5% Critical Value	0.708286
K-S Test Statistic	0.261413
K-S 5% Critical Value	0.337681
Data follow gamma distribution	
at 5% significance level	

95% UCLs (Assuming Gamma Distribution)	
Approximate Gamma UCL	5.193147
Adjusted Gamma UCL	7.570214

Lognormal Distribution Test	
Shapiro-Wilk Test Statisitic	0.849277
Shapiro-Wilk 5% Critical Value	0.788
Data are lognormal at 5% significance level	

95% UCLs (Assuming Lognormal Distribution)	
95% H-UCL	9.874888
95% Chebyshev (MVUE) UCL	4.955253
97.5% Chebyshev (MVUE) UCL	6.262525
99% Chebyshev (MVUE) UCL	8.830408

95% Non-parametric UCLs	
CLT UCL	3.56357
Adj-CLT UCL (Adjusted for skewness)	4.361739
Mod-t UCL (Adjusted for skewness)	4.026015
Jackknife UCL	3.901516
Standard Bootstrap UCL	3.424669
Bootstrap-t UCL	10.74924
Hall's Bootstrap UCL	11.81061
Percentile Bootstrap UCL	3.570333
BCA Bootstrap UCL	4.1655
95% Chebyshev (Mean, Sd) UCL	6.041193
97.5% Chebyshev (Mean, Sd) UCL	7.762993
99% Chebyshev (Mean, Sd) UCL	11.14514

Data File

Variable: Cu 20.0

Raw Statistics	
Number of Valid Samples	6
Number of Unique Samples	6
Minimum	1.2
Maximum	9.33
Mean	4.565
Median	4.32
Standard Deviation	2.766613
Variance	7.65415
Coefficient of Variation	0.606049
Skewness	0.923339

Gamma Statistics	
k hat	3.001519
k star (bias corrected)	1.611871
Theta hat	1.520896
Theta star	2.832113
nu hat	36.01823
nu star	19.34245
Approx.Chi Square Value (.05)	10.36641
Adjusted Level of Significance	0.01222
Adjusted Chi Square Value	8.103501

Log-transformed Statistics	
Minimum of log data	0.182322
Maximum of log data	2.233235
Mean of log data	1.342684
Standard Deviation of log data	0.692065
Variance of log data	0.478954

Recommendation
Data are normal (0.05)
Use Student's-t UCL

Normal Distribution Test	
Shapiro-Wilk Test Statisitic	0.948333
Shapiro-Wilk 5% Critical Value	0.788
Data are normal at 5% significance level	

95% UCL (Assuming Normal Distribution)	
Student's-t UCL	6.840927

Gamma Distribution Test	
A-D Test Statistic	0.191882
A-D 5% Critical Value	0.701328
K-S Test Statistic	0.150039
K-S 5% Critical Value	0.334548
Data follow gamma distribution	
at 5% significance level	

95% UCLs (Assuming Gamma Distribution)	
Approximate Gamma UCL	8.517728
Adjusted Gamma UCL	10.89631

Lognormal Distribution Test	
Shapiro-Wilk Test Statisitic	0.961204
Shapiro-Wilk 5% Critical Value	0.788
Data are lognormal at 5% significance level	

95% UCLs (Assuming Lognormal Distribution)	
95% H-UCL	13.33622
95% Chebyshev (MVUE) UCL	10.35059
97.5% Chebyshev (MVUE) UCL	12.81723
99% Chebyshev (MVUE) UCL	17.66246

95% Non-parametric UCLs	
CLT UCL	6.422805
Adj-CLT UCL (Adjusted for skewness)	6.877729
Mod-t UCL (Adjusted for skewness)	6.911886
Jackknife UCL	6.840927
Standard Bootstrap UCL	6.280755
Bootstrap-t UCL	7.56463
Hall's Bootstrap UCL	9.462745
Percentile Bootstrap UCL	6.336667
BCA Bootstrap UCL	6.511667
95% Chebyshev (Mean, Sd) UCL	9.488225
97.5% Chebyshev (Mean, Sd) UCL	11.61851
99% Chebyshev (Mean, Sd) UCL	15.80304

Data File

Variable: Cu 30.0

Raw Statistics	
Number of Valid Samples	6
Number of Unique Samples	6
Minimum	1.95
Maximum	8.92
Mean	5.968333
Median	6.415
Standard Deviation	2.498827
Variance	6.244137
Coefficient of Variation	0.418681
Skewness	-0.692992

Gamma Statistics	
k hat	4.960318
k star (bias corrected)	2.59127
Theta hat	1.203216
Theta star	2.303246
nu hat	59.52382
nu star	31.09524
Approx.Chi Square Value (.05)	19.35387
Adjusted Level of Significance	0.01222
Adjusted Chi Square Value	16.10099

Log-transformed Statistics	
Minimum of log data	0.667829
Maximum of log data	2.188296
Mean of log data	1.682294
Standard Deviation of log data	0.551537
Variance of log data	0.304193

Recommendation
Data are normal (0.05)
Use Student's-t UCL

Normal Distribution Test	
Shapiro-Wilk Test Statisitic	0.961563
Shapiro-Wilk 5% Critical Value	0.788
Data are normal at 5% significance level	

95% UCL (Assuming Normal Distribution)	
Student's-t UCL	8.023968

Gamma Distribution Test	
A-D Test Statistic	0.372936
A-D 5% Critical Value	0.698127
K-S Test Statistic	0.221007
K-S 5% Critical Value	0.33282
Data follow gamma distribution	
at 5% significance level	

95% UCLs (Assuming Gamma Distribution)	
Approximate Gamma UCL	9.589128
Adjusted Gamma UCL	11.52642

Lognormal Distribution Test	
Shapiro-Wilk Test Statisitic	0.860975
Shapiro-Wilk 5% Critical Value	0.788
Data are lognormal at 5% significance level	

95% UCLs (Assuming Lognormal Distribution)	
95% H-UCL	12.62408
95% Chebyshev (MVUE) UCL	12.05758
97.5% Chebyshev (MVUE) UCL	14.63928
99% Chebyshev (MVUE) UCL	19.71054

95% Non-parametric UCLs	
CLT UCL	7.646317
Adj-CLT UCL (Adjusted for skewness)	7.337932
Mod-t UCL (Adjusted for skewness)	7.975867
Jackknife UCL	8.023968
Standard Bootstrap UCL	7.48201
Bootstrap-t UCL	7.767936
Hall's Bootstrap UCL	7.358527
Percentile Bootstrap UCL	7.413333
BCA Bootstrap UCL	7.338333
95% Chebyshev (Mean, Sd) UCL	10.41503
97.5% Chebyshev (Mean, Sd) UCL	12.33912
99% Chebyshev (Mean, Sd) UCL	16.11862

Data File

Variable: Cu 40.0

Raw Statistics	
Number of Valid Samples	5
Number of Unique Samples	5
Minimum	2.6
Maximum	5.13
Mean	3.936
Median	4.04
Standard Deviation	1.144784
Variance	1.31053
Coefficient of Variation	0.29085
Skewness	-0.15723

Gamma Statistics	
k hat	13.99571
k star (bias corrected)	5.731619
Theta hat	0.281229
Theta star	0.686717
nu hat	139.9571
nu star	57.31619
Approx.Chi Square Value (.05)	40.91027
Adjusted Level of Significance	0.0086
Adjusted Chi Square Value	34.94386

Log-transformed Statistics	
Minimum of log data	0.955511
Maximum of log data	1.635106
Mean of log data	1.334015
Standard Deviation of log data	0.305328
Variance of log data	0.093225

Recommendation
Data are normal (0.05)
Use Student's-t UCL

Normal Distribution Test	
Shapiro-Wilk Test Statisitic	0.895346
Shapiro-Wilk 5% Critical Value	0.762
Data are normal at 5% significance level	

95% UCL (Assuming Normal Distribution)	
Student's-t UCL	5.027426

Gamma Distribution Test	
A-D Test Statistic	0.376378
A-D 5% Critical Value	0.678804
K-S Test Statistic	0.238234
K-S 5% Critical Value	0.357418
Data follow gamma distribution	
at 5% significance level	

95% UCLs (Assuming Gamma Distribution)	
Approximate Gamma UCL	5.514422
Adjusted Gamma UCL	6.45597

Lognormal Distribution Test	
Shapiro-Wilk Test Statisitic	0.892926
Shapiro-Wilk 5% Critical Value	0.762
Data are lognormal at 5% significance level	

95% UCLs (Assuming Lognormal Distribution)	
95% H-UCL	5.749875
95% Chebyshev (MVUE) UCL	6.276868
97.5% Chebyshev (MVUE) UCL	7.288212
99% Chebyshev (MVUE) UCL	9.274801

95% Non-parametric UCLs	
CLT UCL	4.778104
Adj-CLT UCL (Adjusted for skewness)	4.739639
Mod-t UCL (Adjusted for skewness)	5.021426
Jackknife UCL	5.027426
Standard Bootstrap UCL	4.68464
Bootstrap-t UCL	4.985658
Hall's Bootstrap UCL	4.64133
Percentile Bootstrap UCL	4.66
BCA Bootstrap UCL	4.592
95% Chebyshev (Mean, Sd) UCL	6.167594
97.5% Chebyshev (Mean, Sd) UCL	7.133207
99% Chebyshev (Mean, Sd) UCL	9.029966

Data File

Variable: Cu 50.0

Raw Statistics	
Number of Valid Samples	6
Number of Unique Samples	6
Minimum	4.79
Maximum	14
Mean	8.821667
Median	8.045
Standard Deviation	4.03188
Variance	16.25606
Coefficient of Variation	0.457043
Skewness	0.406774

Gamma Statistics	
k hat	5.67182
k star (bias corrected)	2.947021
Theta hat	1.55535
Theta star	2.993418
nu hat	68.06184
nu star	35.36425
Approx.Chi Square Value (.05)	22.75527
Adjusted Level of Significance	0.01222
Adjusted Chi Square Value	19.18924

Log-transformed Statistics	
Minimum of log data	1.56653
Maximum of log data	2.639057
Mean of log data	2.086473
Standard Deviation of log data	0.471037
Variance of log data	0.221876

Recommendation
Data are normal (0.05)
Use Student's-t UCL

Normal Distribution Test	
Shapiro-Wilk Test Statisitic	0.877139
Shapiro-Wilk 5% Critical Value	0.788
Data are normal at 5% significance level	

95% UCL (Assuming Normal Distribution)	
Student's-t UCL	12.13845

Gamma Distribution Test	
A-D Test Statistic	0.383089
A-D 5% Critical Value	0.698088
K-S Test Statistic	0.211195
K-S 5% Critical Value	0.332748
Data follow gamma distribution	
at 5% significance level	

95% UCLs (Assuming Gamma Distribution)	
Approximate Gamma UCL	13.70987
Adjusted Gamma UCL	16.25763

Lognormal Distribution Test	
Shapiro-Wilk Test Statisitic	0.888627
Shapiro-Wilk 5% Critical Value	0.788
Data are lognormal at 5% significance level	

95% UCLs (Assuming Lognormal Distribution)	
95% H-UCL	15.67454
95% Chebyshev (MVUE) UCL	16.21663
97.5% Chebyshev (MVUE) UCL	19.41444
99% Chebyshev (MVUE) UCL	25.69593

95% Non-parametric UCLs	
CLT UCL	11.52911
Adj-CLT UCL (Adjusted for skewness)	11.82118
Mod-t UCL (Adjusted for skewness)	12.18401
Jackknife UCL	12.13845
Standard Bootstrap UCL	11.27924
Bootstrap-t UCL	13.10959
Hall's Bootstrap UCL	13.0746
Percentile Bootstrap UCL	11.385
BCA Bootstrap UCL	11.385
95% Chebyshev (Mean, Sd) UCL	15.99645
97.5% Chebyshev (Mean, Sd) UCL	19.10098
99% Chebyshev (Mean, Sd) UCL	25.19924

Data File

Variable: K 0.0

Raw Statistics	
Number of Valid Samples	6
Number of Unique Samples	6
Minimum	121
Maximum	325
Mean	196
Median	187
Standard Deviation	74.99333
Variance	5624
Coefficient of Variation	0.382619
Skewness	1.028434

Gamma Statistics	
k hat	8.844971
k star (bias corrected)	4.533597
Theta hat	22.15948
Theta star	43.23278
nu hat	106.1397
nu star	54.40316
Approx.Chi Square Value (.05)	38.45251
Adjusted Level of Significance	0.01222
Adjusted Chi Square Value	33.67409

Log-transformed Statistics	
Minimum of log data	4.795791
Maximum of log data	5.783825
Mean of log data	5.220522
Standard Deviation of log data	0.367887
Variance of log data	0.135341

Recommendation
Data are normal (0.05)
Use Student's-t UCL

Normal Distribution Test	
Shapiro-Wilk Test Statisitic	0.91741
Shapiro-Wilk 5% Critical Value	0.788
Data are normal at 5% significance level	

95% UCL (Assuming Normal Distribution)	
Student's-t UCL	257.6925

Gamma Distribution Test	
A-D Test Statistic	0.242251
A-D 5% Critical Value	0.698265
K-S Test Statistic	0.185815
K-S 5% Critical Value	0.332552
Data follow gamma distribution	
at 5% significance level	

95% UCLs (Assuming Gamma Distribution)	
Approximate Gamma UCL	277.3036
Adjusted Gamma UCL	316.6535

Lognormal Distribution Test	
Shapiro-Wilk Test Statisitic	0.95593
Shapiro-Wilk 5% Critical Value	0.788
Data are lognormal at 5% significance level	

95% UCLs (Assuming Lognormal Distribution)	
95% H-UCL	293.7256
95% Chebyshev (MVUE) UCL	323.726
97.5% Chebyshev (MVUE) UCL	379.1328
99% Chebyshev (MVUE) UCL	487.9687

95% Non-parametric UCLs	
CLT UCL	246.3587
Adj-CLT UCL (Adjusted for skewness)	260.0937
Mod-t UCL (Adjusted for skewness)	259.8349
Jackknife UCL	257.6925
Standard Bootstrap UCL	241.865
Bootstrap-t UCL	276.3016
Hall's Bootstrap UCL	500.8472
Percentile Bootstrap UCL	242
BCA Bootstrap UCL	251.1667
95% Chebyshev (Mean, Sd) UCL	329.4516
97.5% Chebyshev (Mean, Sd) UCL	387.1962
99% Chebyshev (Mean, Sd) UCL	500.6244

Data File

Variable: K 10.0

Raw Statistics	
Number of Valid Samples	6
Number of Unique Samples	6
Minimum	376
Maximum	2180
Mean	784.9167
Median	528.25
Standard Deviation	693.7813
Variance	481332.4
Coefficient of Variation	0.883892
Skewness	2.291173

Gamma Statistics	
k hat	2.443946
k star (bias corrected)	1.333084
Theta hat	321.1677
Theta star	588.7975
nu hat	29.32735
nu star	15.99701
Approx.Chi Square Value (.05)	7.958809
Adjusted Level of Significance	0.01222
Adjusted Chi Square Value	6.027236

Log-transformed Statistics	
Minimum of log data	5.929589
Maximum of log data	7.68708
Mean of log data	6.447256
Standard Deviation of log data	0.649732
Variance of log data	0.422152

Recommendation
Data are lognormal (0.05)
Use H-UCL

Normal Distribution Test	
Shapiro-Wilk Test Statisitic	0.647718
Shapiro-Wilk 5% Critical Value	0.788
Data not normal at 5% significance level	

95% UCL (Assuming Normal Distribution)	
Student's-t UCL	1355.649

Gamma Distribution Test	
A-D Test Statistic	0.811865
A-D 5% Critical Value	0.702931
K-S Test Statistic	0.335799
K-S 5% Critical Value	0.335262
Data do not follow gamma distribution	
at 5% significance level	

95% UCLs (Assuming Gamma Distribution)	
Approximate Gamma UCL	1577.663
Adjusted Gamma UCL	2083.263

Lognormal Distribution Test	
Shapiro-Wilk Test Statisitic	0.794896
Shapiro-Wilk 5% Critical Value	0.788
Data are lognormal at 5% significance level	

95% UCLs (Assuming Lognormal Distribution)	
95% H-UCL	1933.254
95% Chebyshev (MVUE) UCL	1612.205
97.5% Chebyshev (MVUE) UCL	1985.646
99% Chebyshev (MVUE) UCL	2719.199

95% Non-parametric UCLs	
CLT UCL	1250.797
Adj-CLT UCL (Adjusted for skewness)	1533.877
Mod-t UCL (Adjusted for skewness)	1399.804
Jackknife UCL	1355.649
Standard Bootstrap UCL	1205.592
Bootstrap-t UCL	2856.026
Hall's Bootstrap UCL	3316.258
Percentile Bootstrap UCL	1298.833
BCA Bootstrap UCL	1419
95% Chebyshev (Mean, Sd) UCL	2019.509
97.5% Chebyshev (Mean, Sd) UCL	2553.719
99% Chebyshev (Mean, Sd) UCL	3603.069

Data File

Variable: K 20.0

Raw Statistics	
Number of Valid Samples	6
Number of Unique Samples	6
Minimum	639
Maximum	2600
Mean	1739.833
Median	1975
Standard Deviation	757.2583
Variance	573440.2
Coefficient of Variation	0.435248
Skewness	-0.635355

Gamma Statistics	
k hat	4.845465
k star (bias corrected)	2.533843
Theta hat	359.0643
Theta star	686.6381
nu hat	58.14557
nu star	30.40612
Approx.Chi Square Value (.05)	18.81034
Adjusted Level of Significance	0.01222
Adjusted Chi Square Value	15.60991

Log-transformed Statistics	
Minimum of log data	6.459904
Maximum of log data	7.863267
Mean of log data	7.354821
Standard Deviation of log data	0.546449
Variance of log data	0.298606

Recommendation
Data are normal (0.05)
Use Student's-t UCL

Normal Distribution Test	
Shapiro-Wilk Test Statisitic	0.92056
Shapiro-Wilk 5% Critical Value	0.788
Data are normal at 5% significance level	

95% UCL (Assuming Normal Distribution)	
Student's-t UCL	2362.784

Gamma Distribution Test	
A-D Test Statistic	0.459506
A-D 5% Critical Value	0.698348
K-S Test Statistic	0.28913
K-S 5% Critical Value	0.332906
Data follow gamma distribution	
at 5% significance level	

95% UCLs (Assuming Gamma Distribution)	
Approximate Gamma UCL	2812.367
Adjusted Gamma UCL	3388.974

Lognormal Distribution Test	
Shapiro-Wilk Test Statisitic	0.863312
Shapiro-Wilk 5% Critical Value	0.788
Data are lognormal at 5% significance level	

95% UCLs (Assuming Lognormal Distribution)	
95% H-UCL	3624.486
95% Chebyshev (MVUE) UCL	3482.234
97.5% Chebyshev (MVUE) UCL	4224.365
99% Chebyshev (MVUE) UCL	5682.138

95% Non-parametric UCLs	
CLT UCL	2248.339
Adj-CLT UCL (Adjusted for skewness)	2162.657
Mod-t UCL (Adjusted for skewness)	2349.42
Jackknife UCL	2362.784
Standard Bootstrap UCL	2203.587
Bootstrap-t UCL	2274.762
Hall's Bootstrap UCL	2107.888
Percentile Bootstrap UCL	2185
BCA Bootstrap UCL	2128.333
95% Chebyshev (Mean, Sd) UCL	3087.384
97.5% Chebyshev (Mean, Sd) UCL	3670.471
99% Chebyshev (Mean, Sd) UCL	4815.831

Data File

Variable: K 30.0

Raw Statistics	
Number of Valid Samples	6
Number of Unique Samples	6
Minimum	1160
Maximum	2770
Mean	1917.5
Median	1795
Standard Deviation	570.7342
Variance	325737.5
Coefficient of Variation	0.297645
Skewness	0.368078

Gamma Statistics	
k hat	13.34211
k star (bias corrected)	6.782165
Theta hat	143.7179
Theta star	282.7268
nu hat	160.1053
nu star	81.38598
Approx.Chi Square Value (.05)	61.59373
Adjusted Level of Significance	0.01222
Adjusted Chi Square Value	55.41424

Log-transformed Statistics	
Minimum of log data	7.056175
Maximum of log data	7.926603
Mean of log data	7.520834
Standard Deviation of log data	0.305004
Variance of log data	0.093027

Recommendation
Data are normal (0.05)
Use Student's-t UCL

Normal Distribution Test	
Shapiro-Wilk Test Statisitic	0.971518
Shapiro-Wilk 5% Critical Value	0.788
Data are normal at 5% significance level	

95% UCL (Assuming Normal Distribution)	
Student's-t UCL	2387.009

Gamma Distribution Test	
A-D Test Statistic	0.203302
A-D 5% Critical Value	0.697916
K-S Test Statistic	0.155791
K-S 5% Critical Value	0.332229
Data follow gamma distribution	
at 5% significance level	

95% UCLs (Assuming Gamma Distribution)	
Approximate Gamma UCL	2533.661
Adjusted Gamma UCL	2816.201

Lognormal Distribution Test	
Shapiro-Wilk Test Statisitic	0.975989
Shapiro-Wilk 5% Critical Value	0.788
Data are lognormal at 5% significance level	

95% UCLs (Assuming Lognormal Distribution)	
95% H-UCL	2636.922
95% Chebyshev (MVUE) UCL	2959.826
97.5% Chebyshev (MVUE) UCL	3410.338
99% Chebyshev (MVUE) UCL	4295.282

95% Non-parametric UCLs	
CLT UCL	2300.753
Adj-CLT UCL (Adjusted for skewness)	2338.164
Mod-t UCL (Adjusted for skewness)	2392.844
Jackknife UCL	2387.009
Standard Bootstrap UCL	2263.697
Bootstrap-t UCL	2598.243
Hall's Bootstrap UCL	2709.591
Percentile Bootstrap UCL	2261.667
BCA Bootstrap UCL	2290
95% Chebyshev (Mean, Sd) UCL	2933.129
97.5% Chebyshev (Mean, Sd) UCL	3372.592
99% Chebyshev (Mean, Sd) UCL	4235.833

Data File

Variable: K 40.0

Raw Statistics	
Number of Valid Samples	5
Number of Unique Samples	5
Minimum	799
Maximum	2220
Mean	1434
Median	1340
Standard Deviation	654.7446
Variance	428690.5
Coefficient of Variation	0.456586
Skewness	0.252721

Gamma Statistics	
k hat	5.771259
k star (bias corrected)	2.441837
Theta hat	248.4727
Theta star	587.2628
nu hat	57.71259
nu star	24.41837
Approx.Chi Square Value (.05)	14.16552
Adjusted Level of Significance	0.0086
Adjusted Chi Square Value	10.90689

Log-transformed Statistics	
Minimum of log data	6.683361
Maximum of log data	7.705262
Mean of log data	7.179092
Standard Deviation of log data	0.478627
Variance of log data	0.229084

Recommendation
Data are normal (0.05)
Use Student's-t UCL

Normal Distribution Test	
Shapiro-Wilk Test Statisitic	0.877232
Shapiro-Wilk 5% Critical Value	0.762
Data are normal at 5% significance level	

95% UCL (Assuming Normal Distribution)	
Student's-t UCL	2058.227

Gamma Distribution Test	
A-D Test Statistic	0.416416
A-D 5% Critical Value	0.680428
K-S Test Statistic	0.260178
K-S 5% Critical Value	0.358199
Data follow gamma distribution	
at 5% significance level	

95% UCLs (Assuming Gamma Distribution)	
Approximate Gamma UCL	2471.913
Adjusted Gamma UCL	3210.442

Lognormal Distribution Test	
Shapiro-Wilk Test Statisitic	0.869857
Shapiro-Wilk 5% Critical Value	0.762
Data are lognormal at 5% significance level	

95% UCLs (Assuming Lognormal Distribution)	
95% H-UCL	2930.145
95% Chebyshev (MVUE) UCL	2764.091
97.5% Chebyshev (MVUE) UCL	3338.912
99% Chebyshev (MVUE) UCL	4468.035

95% Non-parametric UCLs	
CLT UCL	1915.631
Adj-CLT UCL (Adjusted for skewness)	1950.992
Mod-t UCL (Adjusted for skewness)	2063.743
Jackknife UCL	2058.227
Standard Bootstrap UCL	1872.543
Bootstrap-t UCL	2361.356
Hall's Bootstrap UCL	1770.735
Percentile Bootstrap UCL	1889.8
BCA Bootstrap UCL	1889.8
95% Chebyshev (Mean, Sd) UCL	2710.332
97.5% Chebyshev (Mean, Sd) UCL	3262.602
99% Chebyshev (Mean, Sd) UCL	4347.43

Data File

Variable: K 50.0

Raw Statistics	
Number of Valid Samples	6
Number of Unique Samples	6
Minimum	1340
Maximum	3370
Mean	2178.333
Median	1980
Standard Deviation	849.5979
Variance	721816.7
Coefficient of Variation	0.390022
Skewness	0.567418

Gamma Statistics	
k hat	8.101867
k star (bias corrected)	4.162044
Theta hat	268.8681
Theta star	523.3806
nu hat	97.2224
nu star	49.94453
Approx.Chi Square Value (.05)	34.7152
Adjusted Level of Significance	0.01222
Adjusted Chi Square Value	30.19914

Log-transformed Statistics	
Minimum of log data	7.200425
Maximum of log data	8.122668
Mean of log data	7.623334
Standard Deviation of log data	0.388061
Variance of log data	0.150592

Recommendation
Data are normal (0.05)
Use Student's-t UCL

Normal Distribution Test	
Shapiro-Wilk Test Statisitic	0.89006
Shapiro-Wilk 5% Critical Value	0.788
Data are normal at 5% significance level	

95% UCL (Assuming Normal Distribution)	
Student's-t UCL	2877.247

Gamma Distribution Test	
A-D Test Statistic	0.353814
A-D 5% Critical Value	0.698224
K-S Test Statistic	0.199403
K-S 5% Critical Value	0.332598
Data follow gamma distribution	
at 5% significance level	

95% UCLs (Assuming Gamma Distribution)	
Approximate Gamma UCL	3133.954
Adjusted Gamma UCL	3602.614

Lognormal Distribution Test	
Shapiro-Wilk Test Statisitic	0.907094
Shapiro-Wilk 5% Critical Value	0.788
Data are lognormal at 5% significance level	

95% UCLs (Assuming Lognormal Distribution)	
95% H-UCL	3368.291
95% Chebyshev (MVUE) UCL	3678.938
97.5% Chebyshev (MVUE) UCL	4328.993
99% Chebyshev (MVUE) UCL	5605.9

95% Non-parametric UCLs	
CLT UCL	2748.846
Adj-CLT UCL (Adjusted for skewness)	2834.697
Mod-t UCL (Adjusted for skewness)	2890.638
Jackknife UCL	2877.247
Standard Bootstrap UCL	2700.535
Bootstrap-t UCL	3447.377
Hall's Bootstrap UCL	3799.272
Percentile Bootstrap UCL	2753.333
BCA Bootstrap UCL	2753.333
95% Chebyshev (Mean, Sd) UCL	3690.204
97.5% Chebyshev (Mean, Sd) UCL	4344.392
99% Chebyshev (Mean, Sd) UCL	5629.416

Data File

Variable: Na 0.0

Raw Statistics	
Number of Valid Samples	6
Number of Unique Samples	6
Minimum	205
Maximum	381
Mean	278.5
Median	266.5
Standard Deviation	69.00942
Variance	4762.3
Coefficient of Variation	0.24779
Skewness	0.536607

Gamma Statistics	
k hat	20.09319
k star (bias corrected)	10.15771
Theta hat	13.86041
Theta star	27.4176
nu hat	241.1183
nu star	121.8925
Approx.Chi Square Value (.05)	97.39181
Adjusted Level of Significance	0.01222
Adjusted Chi Square Value	89.48966

Log-transformed Statistics	
Minimum of log data	5.32301
Maximum of log data	5.942799
Mean of log data	5.604328
Standard Deviation of log data	0.244236
Variance of log data	0.059651

Recommendation
Data are normal (0.05)
Use Student's-t UCL

Normal Distribution Test	
Shapiro-Wilk Test Statisitic	0.935954
Shapiro-Wilk 5% Critical Value	0.788
Data are normal at 5% significance level	

95% UCL (Assuming Normal Distribution)	
Student's-t UCL	335.2699

Gamma Distribution Test	
A-D Test Statistic	0.26013
A-D 5% Critical Value	0.697089
K-S Test Statistic	0.199296
K-S 5% Critical Value	0.33173
Data follow gamma distribution	
at 5% significance level	

95% UCLs (Assuming Gamma Distribution)	
Approximate Gamma UCL	348.5618
Adjusted Gamma UCL	379.3406

Lognormal Distribution Test	
Shapiro-Wilk Test Statisitic	0.947681
Shapiro-Wilk 5% Critical Value	0.788
Data are lognormal at 5% significance level	

95% UCLs (Assuming Lognormal Distribution)	
95% H-UCL	354.4843
95% Chebyshev (MVUE) UCL	399.4027
97.5% Chebyshev (MVUE) UCL	451.7564
99% Chebyshev (MVUE) UCL	554.595

95% Non-parametric UCLs	
CLT UCL	324.8404
Adj-CLT UCL (Adjusted for skewness)	331.4351
Mod-t UCL (Adjusted for skewness)	336.2985
Jackknife UCL	335.2699
Standard Bootstrap UCL	321.1785
Bootstrap-t UCL	341.9649
Hall's Bootstrap UCL	337.7682
Percentile Bootstrap UCL	320.6667
BCA Bootstrap UCL	323
95% Chebyshev (Mean, Sd) UCL	401.3032
97.5% Chebyshev (Mean, Sd) UCL	454.4402
99% Chebyshev (Mean, Sd) UCL	558.8176

Data File

Variable: Na 10.0

Raw Statistics	
Number of Valid Samples	6
Number of Unique Samples	6
Minimum	455
Maximum	2090
Mean	1364.333
Median	1459.5
Standard Deviation	739.0017
Variance	546123.5
Coefficient of Variation	0.541658
Skewness	-0.206016

Gamma Statistics	
k hat	3.332289
k star (bias corrected)	1.777255
Theta hat	409.4283
Theta star	767.6631
nu hat	39.98746
nu star	21.32706
Approx.Chi Square Value (.05)	11.83359
Adjusted Level of Significance	0.01222
Adjusted Chi Square Value	9.38668

Log-transformed Statistics	
Minimum of log data	6.120297
Maximum of log data	7.644919
Mean of log data	7.060934
Standard Deviation of log data	0.653445
Variance of log data	0.42699

Recommendation
Data are normal (0.05)
Use Student's-t UCL

Normal Distribution Test	
Shapiro-Wilk Test Statisitic	0.849393
Shapiro-Wilk 5% Critical Value	0.788
Data are normal at 5% significance level	

95% UCL (Assuming Normal Distribution)	
Student's-t UCL	1972.266

Gamma Distribution Test	
A-D Test Statistic	0.488436
A-D 5% Critical Value	0.700881
K-S Test Statistic	0.287272
K-S 5% Critical Value	0.334214
Data follow gamma distribution	
at 5% significance level	

95% UCLs (Assuming Gamma Distribution)	
Approximate Gamma UCL	2458.868
Adjusted Gamma UCL	3099.842

Lognormal Distribution Test	
Shapiro-Wilk Test Statisitic	0.86194
Shapiro-Wilk 5% Critical Value	0.788
Data are lognormal at 5% significance level	

95% UCLs (Assuming Lognormal Distribution)	
95% H-UCL	3610.281
95% Chebyshev (MVUE) UCL	2992.817
97.5% Chebyshev (MVUE) UCL	3687.864
99% Chebyshev (MVUE) UCL	5053.151

95% Non-parametric UCLs	
CLT UCL	1860.579
Adj-CLT UCL (Adjusted for skewness)	1833.466
Mod-t UCL (Adjusted for skewness)	1968.037
Jackknife UCL	1972.266
Standard Bootstrap UCL	1815.236
Bootstrap-t UCL	1959.959
Hall's Bootstrap UCL	1670.571
Percentile Bootstrap UCL	1837
BCA Bootstrap UCL	1807.5
95% Chebyshev (Mean, Sd) UCL	2679.396
97.5% Chebyshev (Mean, Sd) UCL	3248.425
99% Chebyshev (Mean, Sd) UCL	4366.172

Data File

Variable: Na 20.0

Raw Statistics	
Number of Valid Samples	6
Number of Unique Samples	6
Minimum	546
Maximum	2990
Mean	1964.333
Median	2005
Standard Deviation	931.4809
Variance	867656.7
Coefficient of Variation	0.474197
Skewness	-0.467577

Gamma Statistics	
k hat	3.850474
k star (bias corrected)	2.036348
Theta hat	510.1536
Theta star	964.6352
nu hat	46.20569
nu star	24.43618
Approx.Chi Square Value (.05)	14.1791
Adjusted Level of Significance	0.01222
Adjusted Chi Square Value	11.45947

Log-transformed Statistics	
Minimum of log data	6.302619
Maximum of log data	8.003029
Mean of log data	7.44747
Standard Deviation of log data	0.632985
Variance of log data	0.40067

Recommendation
Data are normal (0.05)
Use Student's-t UCL

Normal Distribution Test	
Shapiro-Wilk Test Statisitic	0.94912
Shapiro-Wilk 5% Critical Value	0.788
Data are normal at 5% significance level	

95% UCL (Assuming Normal Distribution)	
Student's-t UCL	2730.607

Gamma Distribution Test	
A-D Test Statistic	0.339287
A-D 5% Critical Value	0.700182
K-S Test Statistic	0.189843
K-S 5% Critical Value	0.333691
Data follow gamma distribution	
at 5% significance level	

95% UCLs (Assuming Gamma Distribution)	
Approximate Gamma UCL	3385.32
Adjusted Gamma UCL	4188.745

Lognormal Distribution Test	
Shapiro-Wilk Test Statisitic	0.868215
Shapiro-Wilk 5% Critical Value	0.788
Data are lognormal at 5% significance level	

95% UCLs (Assuming Lognormal Distribution)	
95% H-UCL	5007.878
95% Chebyshev (MVUE) UCL	4286.868
97.5% Chebyshev (MVUE) UCL	5267.946
99% Chebyshev (MVUE) UCL	7195.085

95% Non-parametric UCLs	
CLT UCL	2589.831
Adj-CLT UCL (Adjusted for skewness)	2512.267
Mod-t UCL (Adjusted for skewness)	2718.508
Jackknife UCL	2730.607
Standard Bootstrap UCL	2531.985
Bootstrap-t UCL	2698.632
Hall's Bootstrap UCL	2511.976
Percentile Bootstrap UCL	2535
BCA Bootstrap UCL	2473.333
95% Chebyshev (Mean, Sd) UCL	3621.916
97.5% Chebyshev (Mean, Sd) UCL	4339.153
99% Chebyshev (Mean, Sd) UCL	5748.027

Data File

Variable: Na 30.0

Raw Statistics	
Number of Valid Samples	6
Number of Unique Samples	6
Minimum	516
Maximum	2550
Mean	1691.833
Median	1867.5
Standard Deviation	762.3098
Variance	581116.2
Coefficient of Variation	0.450582
Skewness	-0.665733

Gamma Statistics	
k hat	4.246369
k star (bias corrected)	2.234296
Theta hat	398.4188
Theta star	757.211
nu hat	50.95643
nu star	26.81155
Approx.Chi Square Value (.05)	16.00386
Adjusted Level of Significance	0.01222
Adjusted Chi Square Value	13.08684

Log-transformed Statistics	
Minimum of log data	6.246107
Maximum of log data	7.843849
Mean of log data	7.311224
Standard Deviation of log data	0.598524
Variance of log data	0.358231

Recommendation
Data are normal (0.05)
Use Student's-t UCL

Normal Distribution Test	
Shapiro-Wilk Test Statisitic	0.95046
Shapiro-Wilk 5% Critical Value	0.788
Data are normal at 5% significance level	

95% UCL (Assuming Normal Distribution)	
Student's-t UCL	2318.94

Gamma Distribution Test	
A-D Test Statistic	0.381078
A-D 5% Critical Value	0.699505
K-S Test Statistic	0.230364
K-S 5% Critical Value	0.333355
Data follow gamma distribution	
at 5% significance level	

95% UCLs (Assuming Gamma Distribution)	
Approximate Gamma UCL	2834.357
Adjusted Gamma UCL	3466.128

Lognormal Distribution Test	
Shapiro-Wilk Test Statisitic	0.86537
Shapiro-Wilk 5% Critical Value	0.788
Data are lognormal at 5% significance level	

95% UCLs (Assuming Lognormal Distribution)	
95% H-UCL	3971.266
95% Chebyshev (MVUE) UCL	3573.248
97.5% Chebyshev (MVUE) UCL	4369.654
99% Chebyshev (MVUE) UCL	5934.038

95% Non-parametric UCLs	
CLT UCL	2203.731
Adj-CLT UCL (Adjusted for skewness)	2113.353
Mod-t UCL (Adjusted for skewness)	2304.843
Jackknife UCL	2318.94
Standard Bootstrap UCL	2150.223
Bootstrap-t UCL	2250.102
Hall's Bootstrap UCL	2055.288
Percentile Bootstrap UCL	2129.167
BCA Bootstrap UCL	2115
95% Chebyshev (Mean, Sd) UCL	3048.373
97.5% Chebyshev (Mean, Sd) UCL	3635.349
99% Chebyshev (Mean, Sd) UCL	4788.35

Data File

Variable: Na 40.0

Raw Statistics	
Number of Valid Samples	5
Number of Unique Samples	5
Minimum	739
Maximum	1920
Mean	1301.4
Median	1070
Standard Deviation	554.6565
Variance	307643.8
Coefficient of Variation	0.4262
Skewness	0.413625

Gamma Statistics	
k hat	6.914627
k star (bias corrected)	2.899184
Theta hat	188.2097
Theta star	448.8849
nu hat	69.14627
nu star	28.99184
Approx.Chi Square Value (.05)	17.70018
Adjusted Level of Significance	0.0086
Adjusted Chi Square Value	13.9884

Log-transformed Statistics	
Minimum of log data	6.605298
Maximum of log data	7.56008
Mean of log data	7.097146
Standard Deviation of log data	0.43109
Variance of log data	0.185839

Recommendation
Data are normal (0.05)
Use Student's-t UCL

Normal Distribution Test	
Shapiro-Wilk Test Statisitic	0.840531
Shapiro-Wilk 5% Critical Value	0.762
Data are normal at 5% significance level	

95% UCL (Assuming Normal Distribution)	
Student's-t UCL	1830.204

Gamma Distribution Test	
A-D Test Statistic	0.455766
A-D 5% Critical Value	0.680009
K-S Test Statistic	0.272356
K-S 5% Critical Value	0.358034
Data follow gamma distribution	
at 5% significance level	

95% UCLs (Assuming Gamma Distribution)	
Approximate Gamma UCL	2131.616
Adjusted Gamma UCL	2697.234

Lognormal Distribution Test	
Shapiro-Wilk Test Statisitic	0.880171
Shapiro-Wilk 5% Critical Value	0.762
Data are lognormal at 5% significance level	

95% UCLs (Assuming Lognormal Distribution)	
95% H-UCL	2392.816
95% Chebyshev (MVUE) UCL	2386.353
97.5% Chebyshev (MVUE) UCL	2856.158
99% Chebyshev (MVUE) UCL	3778.999

95% Non-parametric UCLs	
CLT UCL	1709.406
Adj-CLT UCL (Adjusted for skewness)	1758.433
Mod-t UCL (Adjusted for skewness)	1837.852
Jackknife UCL	1830.204
Standard Bootstrap UCL	1677.739
Bootstrap-t UCL	2757.326
Hall's Bootstrap UCL	6268.976
Percentile Bootstrap UCL	1697.6
BCA Bootstrap UCL	1707.6
95% Chebyshev (Mean, Sd) UCL	2382.625
97.5% Chebyshev (Mean, Sd) UCL	2850.471
99% Chebyshev (Mean, Sd) UCL	3769.465

Data File

Variable: Na 50.0

Raw Statistics	
Number of Valid Samples	6
Number of Unique Samples	6
Minimum	1120
Maximum	3080
Mean	1931.667
Median	1855
Standard Deviation	743.5433
Variance	552856.7
Coefficient of Variation	0.384923
Skewness	0.568728

Gamma Statistics	
k hat	8.230252
k star (bias corrected)	4.226237
Theta hat	234.7032
Theta star	457.0654
nu hat	98.76302
nu star	50.71484
Approx.Chi Square Value (.05)	35.35864
Adjusted Level of Significance	0.01222
Adjusted Chi Square Value	30.79645

Log-transformed Statistics	
Minimum of log data	7.021084
Maximum of log data	8.032685
Mean of log data	7.504159
Standard Deviation of log data	0.386518
Variance of log data	0.149396

Recommendation
Data are normal (0.05)
Use Student's-t UCL

Normal Distribution Test	
Shapiro-Wilk Test Statisitic	0.934293
Shapiro-Wilk 5% Critical Value	0.788
Data are normal at 5% significance level	

95% UCL (Assuming Normal Distribution)	
Student's-t UCL	2543.335

Gamma Distribution Test	
A-D Test Statistic	0.275072
A-D 5% Critical Value	0.698231
K-S Test Statistic	0.212235
K-S 5% Critical Value	0.33259
Data follow gamma distribution	
at 5% significance level	

95% UCLs (Assuming Gamma Distribution)	
Approximate Gamma UCL	2770.587
Adjusted Gamma UCL	3181.022

Lognormal Distribution Test	
Shapiro-Wilk Test Statisitic	0.951855
Shapiro-Wilk 5% Critical Value	0.788
Data are lognormal at 5% significance level	

95% UCLs (Assuming Lognormal Distribution)	
95% H-UCL	2981.338
95% Chebyshev (MVUE) UCL	3258.73
97.5% Chebyshev (MVUE) UCL	3833.181
99% Chebyshev (MVUE) UCL	4961.579

95% Non-parametric UCLs	
CLT UCL	2430.962
Adj-CLT UCL (Adjusted for skewness)	2506.27
Mod-t UCL (Adjusted for skewness)	2555.082
Jackknife UCL	2543.335
Standard Bootstrap UCL	2384.621
Bootstrap-t UCL	2738.528
Hall's Bootstrap UCL	2398.269
Percentile Bootstrap UCL	2410
BCA Bootstrap UCL	2435
95% Chebyshev (Mean, Sd) UCL	3254.812
97.5% Chebyshev (Mean, Sd) UCL	3827.338
99% Chebyshev (Mean, Sd) UCL	4951.954

Data File

Variable: NO3-NO2 0.0

Raw Statistics	
Number of Valid Samples	6
Number of Unique Samples	6
Minimum	0.17
Maximum	3.16
Mean	1.010333
Median	0.516
Standard Deviation	1.117574
Variance	1.248972
Coefficient of Variation	1.106144
Skewness	1.91312

Gamma Statistics	
k hat	1.276622
k star (bias corrected)	0.749422
Theta hat	0.791412
Theta star	1.34815
nu hat	15.31946
nu star	8.993064
Approx.Chi Square Value (.05)	3.322002
Adjusted Level of Significance	0.01222
Adjusted Chi Square Value	2.206262

Log-transformed Statistics	
Minimum of log data	-1.771957
Maximum of log data	1.150572
Mean of log data	-0.429977
Standard Deviation of log data	1.00915
Variance of log data	1.018385

Recommendation
Data follow gamma distribution (0.05)
Use Approximate Gamma UCL

Normal Distribution Test	
Shapiro-Wilk Test Statisitic	0.757547
Shapiro-Wilk 5% Critical Value	0.788
Data not normal at 5% significance level	

95% UCL (Assuming Normal Distribution)	
Student's-t UCL	1.929694

Gamma Distribution Test	
A-D Test Statistic	0.386697
A-D 5% Critical Value	0.711056
K-S Test Statistic	0.272417
K-S 5% Critical Value	0.338969
Data follow gamma distribution	
at 5% significance level	

95% UCLs (Assuming Gamma Distribution)	
Approximate Gamma UCL	2.735096
Adjusted Gamma UCL	4.118275

Lognormal Distribution Test	
Shapiro-Wilk Test Statisitic	0.96205
Shapiro-Wilk 5% Critical Value	0.788
Data are lognormal at 5% significance level	

95% UCLs (Assuming Lognormal Distribution)	
95% H-UCL	7.653953
95% Chebyshev (MVUE) UCL	2.687119
97.5% Chebyshev (MVUE) UCL	3.429321
99% Chebyshev (MVUE) UCL	4.887233

95% Non-parametric UCLs	
CLT UCL	1.760794
Adj-CLT UCL (Adjusted for skewness)	2.141551
Mod-t UCL (Adjusted for skewness)	1.989085
Jackknife UCL	1.929694
Standard Bootstrap UCL	1.677453
Bootstrap-t UCL	5.295545
Hall's Bootstrap UCL	7.606897
Percentile Bootstrap UCL	1.79
BCA Bootstrap UCL	1.959667
95% Chebyshev (Mean, Sd) UCL	2.999071
97.5% Chebyshev (Mean, Sd) UCL	3.859599
99% Chebyshev (Mean, Sd) UCL	5.549941

Data File

Variable: NO3-NO2 10.0

Raw Statistics	
Number of Valid Samples	6
Number of Unique Samples	6
Minimum	6.15
Maximum	232
Mean	109.4067
Median	126.1
Standard Deviation	88.17755
Variance	7775.28
Coefficient of Variation	0.805961
Skewness	-0.076286

Gamma Statistics	
k hat	0.864139
k star (bias corrected)	0.54318
Theta hat	126.6078
Theta star	201.4186
nu hat	10.36966
nu star	6.518166
Approx.Chi Square Value (.05)	1.909596
Adjusted Level of Significance	0.01222
Adjusted Chi Square Value	1.141743

Log-transformed Statistics	
Minimum of log data	1.816452
Maximum of log data	5.446737
Mean of log data	4.015085
Standard Deviation of log data	1.614669
Variance of log data	2.607156

Recommendation
Data are normal (0.05)
Use Student's-t UCL

Normal Distribution Test	
Shapiro-Wilk Test Statisitic	0.903984
Shapiro-Wilk 5% Critical Value	0.788
Data are normal at 5% significance level	

95% UCL (Assuming Normal Distribution)	
Student's-t UCL	181.945

Gamma Distribution Test	
A-D Test Statistic	0.699657
A-D 5% Critical Value	0.718301
K-S Test Statistic	0.353833
K-S 5% Critical Value	0.342263
Data follow approximate gamma distibution	
at 5% significance level	

95% UCLs (Assuming Gamma Distribution)	
Approximate Gamma UCL	373.4459
Adjusted Gamma UCL	624.5982

Lognormal Distribution Test	
Shapiro-Wilk Test Statisitic	0.770783
Shapiro-Wilk 5% Critical Value	0.788
Data not lognormal at 5% significance level	

95% UCLs (Assuming Lognormal Distribution)	
95% H-UCL	23750.95
95% Chebyshev (MVUE) UCL	529.2009
97.5% Chebyshev (MVUE) UCL	695.7339
99% Chebyshev (MVUE) UCL	1022.856

95% Non-parametric UCLs	
CLT UCL	168.6187
Adj-CLT UCL (Adjusted for skewness)	167.4207
Mod-t UCL (Adjusted for skewness)	181.7582
Jackknife UCL	181.945
Standard Bootstrap UCL	162.338
Bootstrap-t UCL	180.7988
Hall's Bootstrap UCL	159.1822
Percentile Bootstrap UCL	159.4
BCA Bootstrap UCL	164.225
95% Chebyshev (Mean, Sd) UCL	266.3198
97.5% Chebyshev (Mean, Sd) UCL	334.2162
99% Chebyshev (Mean, Sd) UCL	467.5856

Data File

Variable: NO3-NO2 20.0

Raw Statistics	
Number of Valid Samples	6
Number of Unique Samples	6
Minimum	1.32
Maximum	207
Mean	109.92
Median	120.5
Standard Deviation	74.52536
Variance	5554.029
Coefficient of Variation	0.677996
Skewness	-0.306548

Gamma Statistics	
k hat	0.8773
k star (bias corrected)	0.549761
Theta hat	125.2936
Theta star	199.9415
nu hat	10.5276
nu star	6.597131
Approx.Chi Square Value (.05)	1.951693
Adjusted Level of Significance	0.01222
Adjusted Chi Square Value	1.172091

Log-transformed Statistics	
Minimum of log data	0.277632
Maximum of log data	5.332719
Mean of log data	4.031246
Standard Deviation of log data	1.898487
Variance of log data	3.604253

Recommendation
Data are normal (0.05)
Use Student's-t UCL

Normal Distribution Test	
Shapiro-Wilk Test Statisitic	0.982721
Shapiro-Wilk 5% Critical Value	0.788
Data are normal at 5% significance level	

95% UCL (Assuming Normal Distribution)	
Student's-t UCL	171.2275

Gamma Distribution Test	
A-D Test Statistic	0.633563
A-D 5% Critical Value	0.717991
K-S Test Statistic	0.281902
K-S 5% Critical Value	0.342126
Data follow gamma distribution	
at 5% significance level	

95% UCLs (Assuming Gamma Distribution)	
Approximate Gamma UCL	371.5526
Adjusted Gamma UCL	618.6863

Lognormal Distribution Test	
Shapiro-Wilk Test Statisitic	0.714673
Shapiro-Wilk 5% Critical Value	0.788
Data not lognormal at 5% significance level	

95% UCLs (Assuming Lognormal Distribution)	
95% H-UCL	230941.6
95% Chebyshev (MVUE) UCL	807.2614
97.5% Chebyshev (MVUE) UCL	1069.443
99% Chebyshev (MVUE) UCL	1584.447

95% Non-parametric UCLs	
CLT UCL	159.9644
Adj-CLT UCL (Adjusted for skewness)	155.8959
Mod-t UCL (Adjusted for skewness)	170.5929
Jackknife UCL	171.2275
Standard Bootstrap UCL	156.3697
Bootstrap-t UCL	169.8579
Hall's Bootstrap UCL	153.9541
Percentile Bootstrap UCL	153.5333
BCA Bootstrap UCL	152.3667
95% Chebyshev (Mean, Sd) UCL	242.5388
97.5% Chebyshev (Mean, Sd) UCL	299.9231
99% Chebyshev (Mean, Sd) UCL	412.6434

Data File

Variable: NO3-NO2 30.0

Raw Statistics	
Number of Valid Samples	6
Number of Unique Samples	6
Minimum	1.22
Maximum	90.3
Mean	43.62833
Median	43.925
Standard Deviation	33.40923
Variance	1116.176
Coefficient of Variation	0.765769
Skewness	0.14886

Gamma Statistics	
k hat	0.998949
k star (bias corrected)	0.610586
Theta hat	43.67422
Theta star	71.45324
nu hat	11.98739
nu star	7.32703
Approx.Chi Square Value (.05)	2.351156
Adjusted Level of Significance	0.01222
Adjusted Chi Square Value	1.465077

Log-transformed Statistics	
Minimum of log data	0.198851
Maximum of log data	4.503137
Mean of log data	3.197813
Standard Deviation of log data	1.582775
Variance of log data	2.505178

Recommendation
Data are normal (0.05)
Use Student's-t UCL

Normal Distribution Test	
Shapiro-Wilk Test Statisitic	0.952089
Shapiro-Wilk 5% Critical Value	0.788
Data are normal at 5% significance level	

95% UCL (Assuming Normal Distribution)	
Student's-t UCL	71.1121

Gamma Distribution Test	
A-D Test Statistic	0.399971
A-D 5% Critical Value	0.715125
K-S Test Statistic	0.252666
K-S 5% Critical Value	0.340861
Data follow gamma distribution	
at 5% significance level	

95% UCLs (Assuming Gamma Distribution)	
Approximate Gamma UCL	135.9612
Adjusted Gamma UCL	218.1907

Lognormal Distribution Test	
Shapiro-Wilk Test Statisitic	0.809137
Shapiro-Wilk 5% Critical Value	0.788
Data are lognormal at 5% significance level	

95% UCLs (Assuming Lognormal Distribution)	
95% H-UCL	8326.838
95% Chebyshev (MVUE) UCL	223.4012
97.5% Chebyshev (MVUE) UCL	293.3978
99% Chebyshev (MVUE) UCL	430.8926

95% Non-parametric UCLs	
CLT UCL	66.06292
Adj-CLT UCL (Adjusted for skewness)	66.94859
Mod-t UCL (Adjusted for skewness)	71.25025
Jackknife UCL	71.1121
Standard Bootstrap UCL	64.12542
Bootstrap-t UCL	74.25065
Hall's Bootstrap UCL	62.5533
Percentile Bootstrap UCL	65.06667
BCA Bootstrap UCL	65.975
95% Chebyshev (Mean, Sd) UCL	103.0805
97.5% Chebyshev (Mean, Sd) UCL	128.8055
99% Chebyshev (Mean, Sd) UCL	179.3373

Data File

Variable: NO3-NO2 40.0

Raw Statistics	
Number of Valid Samples	5
Number of Unique Samples	5
Minimum	7.55
Maximum	21.2
Mean	15.418
Median	19.5
Standard Deviation	6.723252
Variance	45.20212
Coefficient of Variation	0.436065
Skewness	-0.586519

Gamma Statistics	
k hat	5.484578
k star (bias corrected)	2.327165
Theta hat	2.811155
Theta star	6.62523
nu hat	54.84578
nu star	23.27165
Approx.Chi Square Value (.05)	13.29445
Adjusted Level of Significance	0.0086
Adjusted Chi Square Value	10.15561

Log-transformed Statistics	
Minimum of log data	2.021548
Maximum of log data	3.054001
Mean of log data	2.64161
Standard Deviation of log data	0.5076
Variance of log data	0.257658

Recommendation
Data are normal (0.05)
Use Student's-t UCL

Normal Distribution Test	
Shapiro-Wilk Test Statisitic	0.778108
Shapiro-Wilk 5% Critical Value	0.762
Data are normal at 5% significance level	

95% UCL (Assuming Normal Distribution)	
Student's-t UCL	21.82788

Gamma Distribution Test	
A-D Test Statistic	0.716223
A-D 5% Critical Value	0.680533
K-S Test Statistic	0.361929
K-S 5% Critical Value	0.35824
Data do not follow gamma distribution	
at 5% significance level	

95% UCLs (Assuming Gamma Distribution)	
Approximate Gamma UCL	26.98888
Adjusted Gamma UCL	35.33045

Lognormal Distribution Test	
Shapiro-Wilk Test Statisitic	0.770459
Shapiro-Wilk 5% Critical Value	0.762
Data are lognormal at 5% significance level	

95% UCLs (Assuming Lognormal Distribution)	
95% H-UCL	33.93862
95% Chebyshev (MVUE) UCL	30.75916
97.5% Chebyshev (MVUE) UCL	37.34757
99% Chebyshev (MVUE) UCL	50.28923

95% Non-parametric UCLs	
CLT UCL	20.36363
Adj-CLT UCL (Adjusted for skewness)	19.52093
Mod-t UCL (Adjusted for skewness)	21.69644
Jackknife UCL	21.82788
Standard Bootstrap UCL	19.82493
Bootstrap-t UCL	21.22598
Hall's Bootstrap UCL	17.65498
Percentile Bootstrap UCL	20.12
BCA Bootstrap UCL	19.98
95% Chebyshev (Mean, Sd) UCL	28.52403
97.5% Chebyshev (Mean, Sd) UCL	34.19502
99% Chebyshev (Mean, Sd) UCL	45.33458

Data File

Variable: NO3-NO2 50.0

Raw Statistics	
Number of Valid Samples	6
Number of Unique Samples	6
Minimum	2.38
Maximum	51
Mean	19.37
Median	12.7
Standard Deviation	18.30799
Variance	335.1825
Coefficient of Variation	0.945172
Skewness	1.24539

Gamma Statistics	
k hat	1.297146
k star (bias corrected)	0.759684
Theta hat	14.93278
Theta star	25.49743
nu hat	15.56576
nu star	9.116212
Approx.Chi Square Value (.05)	3.396529
Adjusted Level of Significance	0.01222
Adjusted Chi Square Value	2.264491

Log-transformed Statistics	
Minimum of log data	0.8671
Maximum of log data	3.931826
Mean of log data	2.531126
Standard Deviation of log data	1.093034
Variance of log data	1.194722

Recommendation
Data are normal (0.05)
Use Student's-t UCL

Normal Distribution Test	
Shapiro-Wilk Test Statisitic	0.876505
Shapiro-Wilk 5% Critical Value	0.788
Data are normal at 5% significance level	

95% UCL (Assuming Normal Distribution)	
Student's-t UCL	34.43089

Gamma Distribution Test	
A-D Test Statistic	0.18367
A-D 5% Critical Value	0.710756
K-S Test Statistic	0.177362
K-S 5% Critical Value	0.338829
Data follow gamma distribution	
at 5% significance level	

95% UCLs (Assuming Gamma Distribution)	
Approximate Gamma UCL	51.98868
Adjusted Gamma UCL	77.97824

Lognormal Distribution Test	
Shapiro-Wilk Test Statisitic	0.983333
Shapiro-Wilk 5% Critical Value	0.788
Data are lognormal at 5% significance level	

95% UCLs (Assuming Lognormal Distribution)	
95% H-UCL	220.1996
95% Chebyshev (MVUE) UCL	58.16206
97.5% Chebyshev (MVUE) UCL	74.65548
99% Chebyshev (MVUE) UCL	107.0536

95% Non-parametric UCLs	
CLT UCL	31.66397
Adj-CLT UCL (Adjusted for skewness)	35.72443
Mod-t UCL (Adjusted for skewness)	35.06423
Jackknife UCL	34.43089
Standard Bootstrap UCL	30.59834
Bootstrap-t UCL	61.24355
Hall's Bootstrap UCL	115.9512
Percentile Bootstrap UCL	30.88333
BCA Bootstrap UCL	34.12333
95% Chebyshev (Mean, Sd) UCL	51.94931
97.5% Chebyshev (Mean, Sd) UCL	66.0464
99% Chebyshev (Mean, Sd) UCL	93.73741

Data File

Variable: P 0.0

Raw Statistics	
Number of Valid Samples	6
Number of Unique Samples	6
Minimum	15.2
Maximum	54.8
Mean	37.46667
Median	39.2
Standard Deviation	16.86092
Variance	284.2907
Coefficient of Variation	0.450025
Skewness	-0.237804

Gamma Statistics	
k hat	5.049807
k star (bias corrected)	2.636015
Theta hat	7.419425
Theta star	14.21338
nu hat	60.59769
nu star	31.63218
Approx.Chi Square Value (.05)	19.7785
Adjusted Level of Significance	0.01222
Adjusted Chi Square Value	16.48514

Log-transformed Statistics	
Minimum of log data	2.721295
Maximum of log data	4.00369
Mean of log data	3.521183
Standard Deviation of log data	0.520105
Variance of log data	0.270509

Recommendation
Data are normal (0.05)
Use Student's-t UCL

Normal Distribution Test	
Shapiro-Wilk Test Statisitic	0.872522
Shapiro-Wilk 5% Critical Value	0.788
Data are normal at 5% significance level	

95% UCL (Assuming Normal Distribution)	
Student's-t UCL	51.33713

Gamma Distribution Test	
A-D Test Statistic	0.453454
A-D 5% Critical Value	0.698053
K-S Test Statistic	0.291513
K-S 5% Critical Value	0.332787
Data follow gamma distribution	
at 5% significance level	

95% UCLs (Assuming Gamma Distribution)	
Approximate Gamma UCL	59.92123
Adjusted Gamma UCL	71.89217

Lognormal Distribution Test	
Shapiro-Wilk Test Statisitic	0.878675
Shapiro-Wilk 5% Critical Value	0.788
Data are lognormal at 5% significance level	

95% UCLs (Assuming Lognormal Distribution)	
95% H-UCL	73.55373
95% Chebyshev (MVUE) UCL	72.71775
97.5% Chebyshev (MVUE) UCL	87.82948
99% Chebyshev (MVUE) UCL	117.5135

95% Non-parametric UCLs	
CLT UCL	48.78892
Adj-CLT UCL (Adjusted for skewness)	48.07487
Mod-t UCL (Adjusted for skewness)	51.22576
Jackknife UCL	51.33713
Standard Bootstrap UCL	47.74796
Bootstrap-t UCL	50.8486
Hall's Bootstrap UCL	44.58595
Percentile Bootstrap UCL	47.58333
BCA Bootstrap UCL	47.5
95% Chebyshev (Mean, Sd) UCL	67.4709
97.5% Chebyshev (Mean, Sd) UCL	80.45375
99% Chebyshev (Mean, Sd) UCL	105.9561

Data File

Variable: P 10.0

Raw Statistics	
Number of Valid Samples	6
Number of Unique Samples	6
Minimum	29.7
Maximum	92.2
Mean	47.04167
Median	39.025
Standard Deviation	22.98405
Variance	528.2664
Coefficient of Variation	0.488589
Skewness	2.062646

Gamma Statistics	
k hat	6.687421
k star (bias corrected)	3.454821
Theta hat	7.034351
Theta star	13.61624
nu hat	80.24905
nu star	41.45786
Approx.Chi Square Value (.05)	27.69762
Adjusted Level of Significance	0.01222
Adjusted Chi Square Value	23.71488

Log-transformed Statistics	
Minimum of log data	3.391147
Maximum of log data	4.52396
Mean of log data	3.774407
Standard Deviation of log data	0.401856
Variance of log data	0.161489

Recommendation
Data follow gamma distribution (0.05)
Use Approximate Gamma UCL

Normal Distribution Test	
Shapiro-Wilk Test Statisitic	0.745313
Shapiro-Wilk 5% Critical Value	0.788
Data not normal at 5% significance level	

95% UCL (Assuming Normal Distribution)	
Student's-t UCL	65.94926

Gamma Distribution Test	
A-D Test Statistic	0.594936
A-D 5% Critical Value	0.698144
K-S Test Statistic	0.269862
K-S 5% Critical Value	0.332685
Data follow gamma distribution	
at 5% significance level	

95% UCLs (Assuming Gamma Distribution)	
Approximate Gamma UCL	2.735096
Adjusted Gamma UCL	82.23727

Lognormal Distribution Test	
Shapiro-Wilk Test Statisitic	0.856227
Shapiro-Wilk 5% Critical Value	0.788
Data are lognormal at 5% significance level	

95% UCLs (Assuming Lognormal Distribution)	
95% H-UCL	73.63786
95% Chebyshev (MVUE) UCL	79.86141
97.5% Chebyshev (MVUE) UCL	94.26454
99% Chebyshev (MVUE) UCL	122.5567

95% Non-parametric UCLs	
CLT UCL	62.47565
Adj-CLT UCL (Adjusted for skewness)	70.91833
Mod-t UCL (Adjusted for skewness)	67.26615
Jackknife UCL	65.94926
Standard Bootstrap UCL	60.66348
Bootstrap-t UCL	96.61888
Hall's Bootstrap UCL	128.4463
Percentile Bootstrap UCL	62.80833
BCA Bootstrap UCL	66.85
95% Chebyshev (Mean, Sd) UCL	87.94208
97.5% Chebyshev (Mean, Sd) UCL	105.6397
99% Chebyshev (Mean, Sd) UCL	140.4033

Data File

Variable: P 20.0

Raw Statistics	
Number of Valid Samples	6
Number of Unique Samples	6
Minimum	35.3
Maximum	179
Mean	101.3833
Median	96.65
Standard Deviation	52.12015
Variance	2716.51
Coefficient of Variation	0.51409
Skewness	0.358178

Gamma Statistics	
k hat	4.043125
k star (bias corrected)	2.132674
Theta hat	25.07549
Theta star	47.53814
nu hat	48.5175
nu star	25.59208
Approx.Chi Square Value (.05)	15.06383
Adjusted Level of Significance	0.01222
Adjusted Chi Square Value	12.24705

Log-transformed Statistics	
Minimum of log data	3.563883
Maximum of log data	5.187386
Mean of log data	4.490175
Standard Deviation of log data	0.584581
Variance of log data	0.341735

Recommendation
Data are normal (0.05)
Use Student's-t UCL

Normal Distribution Test	
Shapiro-Wilk Test Statisitic	0.96816
Shapiro-Wilk 5% Critical Value	0.788
Data are normal at 5% significance level	

95% UCL (Assuming Normal Distribution)	
Student's-t UCL	144.2595

Gamma Distribution Test	
A-D Test Statistic	0.214539
A-D 5% Critical Value	0.699897
K-S Test Statistic	0.19492
K-S 5% Critical Value	0.333508
Data follow gamma distribution	
at 5% significance level	

95% UCLs (Assuming Gamma Distribution)	
Approximate Gamma UCL	172.2411
Adjusted Gamma UCL	211.8559

Lognormal Distribution Test	
Shapiro-Wilk Test Statisitic	0.956869
Shapiro-Wilk 5% Critical Value	0.788
Data are lognormal at 5% significance level	

95% UCLs (Assuming Lognormal Distribution)	
95% H-UCL	227.8021
95% Chebyshev (MVUE) UCL	208.8507
97.5% Chebyshev (MVUE) UCL	254.8722
99% Chebyshev (MVUE) UCL	345.2725

95% Non-parametric UCLs	
CLT UCL	136.3825
Adj-CLT UCL (Adjusted for skewness)	139.707
Mod-t UCL (Adjusted for skewness)	144.778
Jackknife UCL	144.2595
Standard Bootstrap UCL	133.8746
Bootstrap-t UCL	155.2821
Hall's Bootstrap UCL	173.021
Percentile Bootstrap UCL	132.55
BCA Bootstrap UCL	134.8333
95% Chebyshev (Mean, Sd) UCL	194.1318
97.5% Chebyshev (Mean, Sd) UCL	234.2642
99% Chebyshev (Mean, Sd) UCL	313.0964

Data File

Variable: P 30.0

Raw Statistics	
Number of Valid Samples	6
Number of Unique Samples	6
Minimum	90
Maximum	290.5
Mean	207.25
Median	205
Standard Deviation	71.16723
Variance	5064.775
Coefficient of Variation	0.343388
Skewness	-0.686488

Gamma Statistics	
k hat	8.054725
k star (bias corrected)	4.138474
Theta hat	25.73024
Theta star	50.07885
nu hat	96.6567
nu star	49.66168
Approx.Chi Square Value (.05)	34.47919
Adjusted Level of Significance	0.01222
Adjusted Chi Square Value	29.98015

Log-transformed Statistics	
Minimum of log data	4.49981
Maximum of log data	5.671604
Mean of log data	5.270568
Standard Deviation of log data	0.418518
Variance of log data	0.175157

Recommendation
Data are normal (0.05)
Use Student's-t UCL

Normal Distribution Test	
Shapiro-Wilk Test Statisitic	0.946952
Shapiro-Wilk 5% Critical Value	0.788
Data are normal at 5% significance level	

95% UCL (Assuming Normal Distribution)	
Student's-t UCL	265.795

Gamma Distribution Test	
A-D Test Statistic	0.379341
A-D 5% Critical Value	0.698221
K-S Test Statistic	0.255058
K-S 5% Critical Value	0.332601
Data follow gamma distribution	
at 5% significance level	

95% UCLs (Assuming Gamma Distribution)	
Approximate Gamma UCL	298.5101
Adjusted Gamma UCL	343.3067

Lognormal Distribution Test	
Shapiro-Wilk Test Statisitic	0.865063
Shapiro-Wilk 5% Critical Value	0.788
Data are lognormal at 5% significance level	

95% UCLs (Assuming Lognormal Distribution)	
95% H-UCL	339.5356
95% Chebyshev (MVUE) UCL	364.7197
97.5% Chebyshev (MVUE) UCL	432.0571
99% Chebyshev (MVUE) UCL	564.3285

95% Non-parametric UCLs	
CLT UCL	255.0394
Adj-CLT UCL (Adjusted for skewness)	246.339
Mod-t UCL (Adjusted for skewness)	264.4379
Jackknife UCL	265.795
Standard Bootstrap UCL	250.3328
Bootstrap-t UCL	256.2051
Hall's Bootstrap UCL	256.3127
Percentile Bootstrap UCL	248.6667
BCA Bootstrap UCL	245.25
95% Chebyshev (Mean, Sd) UCL	333.893
97.5% Chebyshev (Mean, Sd) UCL	388.6916
99% Chebyshev (Mean, Sd) UCL	496.3327

Data File

Variable: P 40.0

Raw Statistics	
Number of Valid Samples	5
Number of Unique Samples	4
Minimum	132
Maximum	192
Mean	152.8
Median	137
Standard Deviation	25.70409
Variance	660.7
Coefficient of Variation	0.16822
Skewness	1.119982

Gamma Statistics	
k hat	46.9804
k star (bias corrected)	18.92549
Theta hat	3.25242
Theta star	8.073765
nu hat	469.804
nu star	189.2549
Approx.Chi Square Value (.05)	158.4243
Adjusted Level of Significance	0.0086
Adjusted Chi Square Value	146.0293

Log-transformed Statistics	
Minimum of log data	4.882802
Maximum of log data	5.257495
Mean of log data	5.018449
Standard Deviation of log data	0.161001
Variance of log data	0.025921

Recommendation
Data are normal (0.05)
Use Student's-t UCL

Normal Distribution Test	
Shapiro-Wilk Test Statisitic	0.83137
Shapiro-Wilk 5% Critical Value	0.762
Data are normal at 5% significance level	

95% UCL (Assuming Normal Distribution)	
Student's-t UCL	177.306

Gamma Distribution Test	
A-D Test Statistic	0.541807
A-D 5% Critical Value	0.678303
K-S Test Statistic	0.353542
K-S 5% Critical Value	0.35689
Data follow gamma distribution	
at 5% significance level	

95% UCLs (Assuming Gamma Distribution)	
Approximate Gamma UCL	182.5361
Adjusted Gamma UCL	198.0298

Lognormal Distribution Test	
Shapiro-Wilk Test Statisitic	0.84133
Shapiro-Wilk 5% Critical Value	0.762
Data are lognormal at 5% significance level	

95% UCLs (Assuming Lognormal Distribution)	
95% H-UCL	181.7877
95% Chebyshev (MVUE) UCL	200.6479
97.5% Chebyshev (MVUE) UCL	221.3736
99% Chebyshev (MVUE) UCL	262.0851

95% Non-parametric UCLs	
CLT UCL	171.7079
Adj-CLT UCL (Adjusted for skewness)	177.86
Mod-t UCL (Adjusted for skewness)	178.2656
Jackknife UCL	177.306
Standard Bootstrap UCL	N/R
Bootstrap-t UCL	N/R
Hall's Bootstrap UCL	N/R
Percentile Bootstrap UCL	N/R
BCA Bootstrap UCL	N/R
95% Chebyshev (Mean, Sd) UCL	202.9065
97.5% Chebyshev (Mean, Sd) UCL	224.5876
99% Chebyshev (Mean, Sd) UCL	267.176

Data File

Variable: P 50.0

Raw Statistics	
Number of Valid Samples	6
Number of Unique Samples	6
Minimum	130
Maximum	380
Mean	254.1667
Median	264
Standard Deviation	90.81722
Variance	8247.767
Coefficient of Variation	0.357314
Skewness	-0.073744

Gamma Statistics	
k hat	8.477892
k star (bias corrected)	4.350057
Theta hat	29.97994
Theta star	58.42835
nu hat	101.7347
nu star	52.20069
Approx.Chi Square Value (.05)	36.60247
Adjusted Level of Significance	0.01222
Adjusted Chi Square Value	31.95227

Log-transformed Statistics	
Minimum of log data	4.867534
Maximum of log data	5.940171
Mean of log data	5.477855
Standard Deviation of log data	0.393147
Variance of log data	0.154565

Recommendation
Data are normal (0.05)
Use Student's-t UCL

Normal Distribution Test	
Shapiro-Wilk Test Statisitic	0.98378
Shapiro-Wilk 5% Critical Value	0.788
Data are normal at 5% significance level	

95% UCL (Assuming Normal Distribution)	
Student's-t UCL	328.8765

Gamma Distribution Test	
A-D Test Statistic	0.214897
A-D 5% Critical Value	0.698245
K-S Test Statistic	0.170189
K-S 5% Critical Value	0.332574
Data follow gamma distribution	
at 5% significance level	

95% UCLs (Assuming Gamma Distribution)	
Approximate Gamma UCL	362.4803
Adjusted Gamma UCL	415.2341

Lognormal Distribution Test	
Shapiro-Wilk Test Statisitic	0.956307
Shapiro-Wilk 5% Critical Value	0.788
Data are lognormal at 5% significance level	

95% UCLs (Assuming Lognormal Distribution)	
95% H-UCL	397.8838
95% Chebyshev (MVUE) UCL	433.4836
97.5% Chebyshev (MVUE) UCL	510.6681
99% Chebyshev (MVUE) UCL	662.2821

95% Non-parametric UCLs	
CLT UCL	315.1512
Adj-CLT UCL (Adjusted for skewness)	313.9585
Mod-t UCL (Adjusted for skewness)	328.6905
Jackknife UCL	328.8765
Standard Bootstrap UCL	308.9935
Bootstrap-t UCL	327.0873
Hall's Bootstrap UCL	310.817
Percentile Bootstrap UCL	310.5
BCA Bootstrap UCL	306.3333
95% Chebyshev (Mean, Sd) UCL	415.7771
97.5% Chebyshev (Mean, Sd) UCL	485.706
99% Chebyshev (Mean, Sd) UCL	623.0679

Data File

Variable: Pb 10.0

Raw Statistics

Number of Valid Samples	6
Number of Unique Samples	6
Minimum	0.38
Maximum	12.8
Mean	3.185
Median	1.575
Standard Deviation	4.753638
Variance	22.59707
Coefficient of Variation	1.492508
Skewness	2.34961

Gamma Statistics

k hat	0.857609
k star (bias corrected)	0.539916
Theta hat	3.713814
Theta star	5.89907
nu hat	10.29131
nu star	6.478987
Approx.Chi Square Value (.05)	1.888796
Adjusted Level of Significance	0.01222
Adjusted Chi Square Value	1.12679

Log-transformed Statistics

Minimum of log data	-0.967584
Maximum of log data	2.549445
Mean of log data	0.472628
Standard Deviation of log data	1.20226
Variance of log data	1.445428

Recommendation

Data follow gamma distribution (0.05)

Use Approximate Gamma UCL

Normal Distribution Test

Shapiro-Wilk Test Statisitic	0.624393
Shapiro-Wilk 5% Critical Value	0.788

Data not normal at 5% significance level

95% UCL (Assuming Normal Distribution)

Student's-t UCL	7.095532

Gamma Distribution Test

A-D Test Statistic	0.593037
A-D 5% Critical Value	0.718455
K-S Test Statistic	0.326623
K-S 5% Critical Value	0.342331

Data follow gamma distribution at 5% significance level

95% UCLs (Assuming Gamma Distribution)

Approximate Gamma UCL	10.92525
Adjusted Gamma UCL	18.3136

Lognormal Distribution Test

Shapiro-Wilk Test Statisitic	0.927248
Shapiro-Wilk 5% Critical Value	0.788

Data are lognormal at 5% significance level

95% UCLs (Assuming Lognormal Distribution)

95% H-UCL	49.55113
95% Chebyshev (MVUE) UCL	8.618209
97.5% Chebyshev (MVUE) UCL	11.13445
99% Chebyshev (MVUE) UCL	16.07712

95% Non-parametric UCLs

CLT UCL	6.377109
Adj-CLT UCL (Adjusted for skewness)	8.366183
Mod-t UCL (Adjusted for skewness)	7.405788
Jackknife UCL	7.095532
Standard Bootstrap UCL	6.104855
Bootstrap-t UCL	22.15002
Hall's Bootstrap UCL	26.11055
Percentile Bootstrap UCL	6.988333
BCA Bootstrap UCL	7.373333
95% Chebyshev (Mean, Sd) UCL	11.64416
97.5% Chebyshev (Mean, Sd) UCL	15.30445
99% Chebyshev (Mean, Sd) UCL	22.49437

Data File

Variable: Pb 20.0

Raw Statistics	
Number of Valid Samples	6
Number of Unique Samples	6
Minimum	0.91
Maximum	24.9
Mean	11.465
Median	13.05
Standard Deviation	8.873028
Variance	78.73063
Coefficient of Variation	0.773923
Skewness	0.210709

Gamma Statistics	
k hat	1.169219
k star (bias corrected)	0.695721
Theta hat	9.805689
Theta star	16.47931
nu hat	14.03063
nu star	8.348649
Approx.Chi Square Value (.05)	2.937832
Adjusted Level of Significance	0.01222
Adjusted Chi Square Value	1.908842

Log-transformed Statistics	
Minimum of log data	-0.094311
Maximum of log data	3.214868
Mean of log data	1.954196
Standard Deviation of log data	1.300753
Variance of log data	1.691958

Recommendation
Data are normal (0.05)
Use Student's-t UCL

Normal Distribution Test	
Shapiro-Wilk Test Statisitic	0.9139
Shapiro-Wilk 5% Critical Value	0.788
Data are normal at 5% significance level	

95% UCL (Assuming Normal Distribution)	
Student's-t UCL	18.76431

Gamma Distribution Test	
A-D Test Statistic	0.527556
A-D 5% Critical Value	0.712626
K-S Test Statistic	0.336439
K-S 5% Critical Value	0.339699
Data follow gamma distribution	
at 5% significance level	

95% UCLs (Assuming Gamma Distribution)	
Approximate Gamma UCL	32.58092
Adjusted Gamma UCL	50.14415

Lognormal Distribution Test	
Shapiro-Wilk Test Statisitic	0.839953
Shapiro-Wilk 5% Critical Value	0.788
Data are lognormal at 5% significance level	

95% UCLs (Assuming Lognormal Distribution)	
95% H-UCL	380.8961
95% Chebyshev (MVUE) UCL	43.42662
97.5% Chebyshev (MVUE) UCL	56.39129
99% Chebyshev (MVUE) UCL	81.85788

95% Non-parametric UCLs	
CLT UCL	17.42332
Adj-CLT UCL (Adjusted for skewness)	17.75627
Mod-t UCL (Adjusted for skewness)	18.81624
Jackknife UCL	18.76431
Standard Bootstrap UCL	16.8562
Bootstrap-t UCL	18.66946
Hall's Bootstrap UCL	17.5523
Percentile Bootstrap UCL	17.20167
BCA Bootstrap UCL	17.20167
95% Chebyshev (Mean, Sd) UCL	27.25467
97.5% Chebyshev (Mean, Sd) UCL	34.08687
99% Chebyshev (Mean, Sd) UCL	47.50741

Data File

Variable: Pb 30.0

Raw Statistics	
Number of Valid Samples	6
Number of Unique Samples	6
Minimum	6.5
Maximum	16.1
Mean	12.475
Median	14.1
Standard Deviation	4.069859
Variance	16.56375
Coefficient of Variation	0.326241
Skewness	-0.834428

Gamma Statistics	
k hat	9.346556
k star (bias corrected)	4.784389
Theta hat	1.334716
Theta star	2.607438
nu hat	112.1587
nu star	57.41267
Approx.Chi Square Value (.05)	40.99187
Adjusted Level of Significance	0.01222
Adjusted Chi Square Value	36.04231

Log-transformed Statistics	
Minimum of log data	1.871802
Maximum of log data	2.778819
Mean of log data	2.469278
Standard Deviation of log data	0.379997
Variance of log data	0.144398

Recommendation
Data are normal (0.05)
Use Student's-t UCL

Normal Distribution Test	
Shapiro-Wilk Test Statisitic	0.847154
Shapiro-Wilk 5% Critical Value	0.788
Data are normal at 5% significance level	

95% UCL (Assuming Normal Distribution)	
Student's-t UCL	15.82303

Gamma Distribution Test	
A-D Test Statistic	0.593355
A-D 5% Critical Value	0.698293
K-S Test Statistic	0.287094
K-S 5% Critical Value	0.332521
Data follow gamma distribution	
at 5% significance level	

95% UCLs (Assuming Gamma Distribution)	
Approximate Gamma UCL	17.47232
Adjusted Gamma UCL	19.87173

Lognormal Distribution Test	
Shapiro-Wilk Test Statisitic	0.822085
Shapiro-Wilk 5% Critical Value	0.788
Data are lognormal at 5% significance level	

95% UCLs (Assuming Lognormal Distribution)	
95% H-UCL	19.16842
95% Chebyshev (MVUE) UCL	21.01594
97.5% Chebyshev (MVUE) UCL	24.68342
99% Chebyshev (MVUE) UCL	31.88747

95% Non-parametric UCLs	
CLT UCL	15.20795
Adj-CLT UCL (Adjusted for skewness)	14.60317
Mod-t UCL (Adjusted for skewness)	15.7287
Jackknife UCL	15.82303
Standard Bootstrap UCL	14.98018
Bootstrap-t UCL	15.27884
Hall's Bootstrap UCL	14.18297
Percentile Bootstrap UCL	14.96667
BCA Bootstrap UCL	14.7
95% Chebyshev (Mean, Sd) UCL	19.71737
97.5% Chebyshev (Mean, Sd) UCL	22.85114
99% Chebyshev (Mean, Sd) UCL	29.00684

Data File

Variable: Pb 40.0

Raw Statistics	
Number of Valid Samples	5
Number of Unique Samples	4
Minimum	7.54
Maximum	11.9
Mean	10.096
Median	10.8
Standard Deviation	2.03845
Variance	4.15528
Coefficient of Variation	0.201907
Skewness	-0.493022

Gamma Statistics	
k hat	28.97145
k star (bias corrected)	11.72192
Theta hat	0.348481
Theta star	0.861293
nu hat	289.7145
nu star	117.2192
Approx.Chi Square Value (.05)	93.21666
Adjusted Level of Significance	0.0086
Adjusted Chi Square Value	83.87067

Log-transformed Statistics	
Minimum of log data	2.020222
Maximum of log data	2.476538
Mean of log data	2.294782
Standard Deviation of log data	0.211434
Variance of log data	0.044704

Recommendation
Data are normal (0.05)
Use Student's-t UCL

Normal Distribution Test	
Shapiro-Wilk Test Statisitic	0.849081
Shapiro-Wilk 5% Critical Value	0.762
Data are normal at 5% significance level	

95% UCL (Assuming Normal Distribution)	
Student's-t UCL	12.03944

Gamma Distribution Test	
A-D Test Statistic	0.493269
A-D 5% Critical Value	0.678561
K-S Test Statistic	0.265882
K-S 5% Critical Value	0.35707
Data follow gamma distribution	
at 5% significance level	

95% UCLs (Assuming Gamma Distribution)	
Approximate Gamma UCL	12.69563
Adjusted Gamma UCL	14.11035

Lognormal Distribution Test	
Shapiro-Wilk Test Statisitic	0.846425
Shapiro-Wilk 5% Critical Value	0.762
Data are lognormal at 5% significance level	

95% UCLs (Assuming Lognormal Distribution)	
95% H-UCL	12.82948
95% Chebyshev (MVUE) UCL	14.25758
97.5% Chebyshev (MVUE) UCL	16.05624
99% Chebyshev (MVUE) UCL	19.58936

95% Non-parametric UCLs	
CLT UCL	11.59549
Adj-CLT UCL (Adjusted for skewness)	11.38071
Mod-t UCL (Adjusted for skewness)	12.00594
Jackknife UCL	12.03944
Standard Bootstrap UCL	N/R
Bootstrap-t UCL	N/R
Hall's Bootstrap UCL	N/R
Percentile Bootstrap UCL	N/R
BCA Bootstrap UCL	N/R
95% Chebyshev (Mean, Sd) UCL	14.06967
97.5% Chebyshev (Mean, Sd) UCL	15.78908
99% Chebyshev (Mean, Sd) UCL	19.16653

Data File

Variable: Pb 50.0

Raw Statistics	
Number of Valid Samples	6
Number of Unique Samples	6
Minimum	0.38
Maximum	24.1
Mean	14.72
Median	16.55
Standard Deviation	8.689414
Variance	75.50592
Coefficient of Variation	0.590313
Skewness	-0.891125

Gamma Statistics	
k hat	1.132002
k star (bias corrected)	0.677112
Theta hat	13.00351
Theta star	21.73939
nu hat	13.58402
nu star	8.125344
Approx.Chi Square Value (.05)	2.807126
Adjusted Level of Significance	0.01222
Adjusted Chi Square Value	1.808792

Log-transformed Statistics	
Minimum of log data	-0.967584
Maximum of log data	3.182212
Mean of log data	2.186404
Standard Deviation of log data	1.580161
Variance of log data	2.496908

Recommendation
Data are normal (0.05)
Use Student's-t UCL

Normal Distribution Test	
Shapiro-Wilk Test Statisitic	0.943638
Shapiro-Wilk 5% Critical Value	0.788
Data are normal at 5% significance level	

95% UCL (Assuming Normal Distribution)	
Student's-t UCL	21.86826

Gamma Distribution Test	
A-D Test Statistic	0.777243
A-D 5% Critical Value	0.71317
K-S Test Statistic	0.303746
K-S 5% Critical Value	0.339952
Data follow approximate gamma distibution	
at 5% significance level	

95% UCLs (Assuming Gamma Distribution)	
Approximate Gamma UCL	42.60766
Adjusted Gamma UCL	66.12426

Lognormal Distribution Test	
Shapiro-Wilk Test Statisitic	0.680938
Shapiro-Wilk 5% Critical Value	0.788
Data not lognormal at 5% significance level	

95% UCLs (Assuming Lognormal Distribution)	
95% H-UCL	2972.358
95% Chebyshev (MVUE) UCL	80.95275
97.5% Chebyshev (MVUE) UCL	106.3078
99% Chebyshev (MVUE) UCL	156.1129

95% Non-parametric UCLs	
CLT UCL	20.55502
Adj-CLT UCL (Adjusted for skewness)	19.17604
Mod-t UCL (Adjusted for skewness)	21.65317
Jackknife UCL	21.86826
Standard Bootstrap UCL	20.05079
Bootstrap-t UCL	20.38627
Hall's Bootstrap UCL	19.37812
Percentile Bootstrap UCL	19.70667
BCA Bootstrap UCL	19.12333
95% Chebyshev (Mean, Sd) UCL	30.18293
97.5% Chebyshev (Mean, Sd) UCL	36.87375
99% Chebyshev (Mean, Sd) UCL	50.01657

Data File

Variable: Zn 0.0

Raw Statistics	
Number of Valid Samples	6
Number of Unique Samples	6
Minimum	0.96
Maximum	7.48
Mean	3.135
Median	2.73
Standard Deviation	2.276012
Variance	5.18023
Coefficient of Variation	0.726001
Skewness	1.752456

Gamma Statistics	
k hat	2.720948
k star (bias corrected)	1.471585
Theta hat	1.152172
Theta star	2.130356
nu hat	32.65137
nu star	17.65902
Approx.Chi Square Value (.05)	9.143548
Adjusted Level of Significance	0.01222
Adjusted Chi Square Value	7.043739

Log-transformed Statistics	
Minimum of log data	-0.040822
Maximum of log data	2.012233
Mean of log data	0.947757
Standard Deviation of log data	0.680648
Variance of log data	0.463281

Recommendation
Data are normal (0.05)
Use Student's-t UCL

Normal Distribution Test	
Shapiro-Wilk Test Statisitic	0.820515
Shapiro-Wilk 5% Critical Value	0.788
Data are normal at 5% significance level	

95% UCL (Assuming Normal Distribution)	
Student's-t UCL	5.007338

Gamma Distribution Test	
A-D Test Statistic	0.323892
A-D 5% Critical Value	0.702134
K-S Test Statistic	0.245604
K-S 5% Critical Value	0.334907
Data follow gamma distribution	
at 5% significance level	

95% UCLs (Assuming Gamma Distribution)	
Approximate Gamma UCL	6.054655
Adjusted Gamma UCL	7.859608

Lognormal Distribution Test	
Shapiro-Wilk Test Statisitic	0.964104
Shapiro-Wilk 5% Critical Value	0.788
Data are lognormal at 5% significance level	

95% UCLs (Assuming Lognormal Distribution)	
95% H-UCL	8.672768
95% Chebyshev (MVUE) UCL	6.868484
97.5% Chebyshev (MVUE) UCL	8.493261
99% Chebyshev (MVUE) UCL	11.68482

95% Non-parametric UCLs	
CLT UCL	4.663362
Adj-CLT UCL (Adjusted for skewness)	5.373676
Mod-t UCL (Adjusted for skewness)	5.118133
Jackknife UCL	5.007338
Standard Bootstrap UCL	4.516791
Bootstrap-t UCL	6.446211
Hall's Bootstrap UCL	11.97538
Percentile Bootstrap UCL	4.76
BCA Bootstrap UCL	5.09
95% Chebyshev (Mean, Sd) UCL	7.185193
97.5% Chebyshev (Mean, Sd) UCL	8.937714
99% Chebyshev (Mean, Sd) UCL	12.3802

Data File

Variable: Zn 10.0

Raw Statistics	
Number of Valid Samples	6
Number of Unique Samples	6
Minimum	2.76
Maximum	18.1
Mean	7.905
Median	3.19
Standard Deviation	7.634775
Variance	58.28979
Coefficient of Variation	0.965816
Skewness	0.965562

Gamma Statistics	
k hat	1.446074
k star (bias corrected)	0.834148
Theta hat	5.466526
Theta star	9.476735
nu hat	17.35289
nu star	10.00978
Approx.Chi Square Value (.05)	3.94703
Adjusted Level of Significance	0.01222
Adjusted Chi Square Value	2.699279

Log-transformed Statistics	
Minimum of log data	1.015231
Maximum of log data	2.895912
Mean of log data	1.68348
Standard Deviation of log data	0.928643
Variance of log data	0.862378

Recommendation
Data are Non-parametric (0.05)
Use 95% Chebyshev (Mean, Sd) UCL

Normal Distribution Test	
Shapiro-Wilk Test Statisitic	0.675168
Shapiro-Wilk 5% Critical Value	0.788
Data not normal at 5% significance level	

95% UCL (Assuming Normal Distribution)	
Student's-t UCL	14.18567

Gamma Distribution Test	
A-D Test Statistic	1.035142
A-D 5% Critical Value	0.708578
K-S Test Statistic	0.377471
K-S 5% Critical Value	0.337817
Data do not follow gamma distribution	
at 5% significance level	

95% UCLs (Assuming Gamma Distribution)	
Approximate Gamma UCL	20.0473
Adjusted Gamma UCL	29.31423

Lognormal Distribution Test	
Shapiro-Wilk Test Statisitic	0.704509
Shapiro-Wilk 5% Critical Value	0.788
Data not lognormal at 5% significance level	

95% UCLs (Assuming Lognormal Distribution)	
95% H-UCL	44.52798
95% Chebyshev (MVUE) UCL	19.95567
97.5% Chebyshev (MVUE) UCL	25.30871
99% Chebyshev (MVUE) UCL	35.82371

95% Non-parametric UCLs	
CLT UCL	13.03182
Adj-CLT UCL (Adjusted for skewness)	14.34464
Mod-t UCL (Adjusted for skewness)	14.39044
Jackknife UCL	14.18567
Standard Bootstrap UCL	12.56341
Bootstrap-t UCL	128.7971
Hall's Bootstrap UCL	103.3358
Percentile Bootstrap UCL	12.885
BCA Bootstrap UCL	13.00667
95% Chebyshev (Mean, Sd) UCL	21.49118
97.5% Chebyshev (Mean, Sd) UCL	27.36993
99% Chebyshev (Mean, Sd) UCL	38.9176

Data File

Variable: Zn 20.0

Raw Statistics	
Number of Valid Samples	6
Number of Unique Samples	6
Minimum	3.77
Maximum	23.2
Mean	15.895
Median	15.5
Standard Deviation	6.98551
Variance	48.79735
Coefficient of Variation	0.439478
Skewness	-0.984417

Gamma Statistics	
k hat	3.788886
k star (bias corrected)	2.005554
Theta hat	4.195164
Theta star	7.92549
nu hat	45.46664
nu star	24.06665
Approx.Chi Square Value (.05)	13.89764
Adjusted Level of Significance	0.01222
Adjusted Chi Square Value	11.20952

Log-transformed Statistics	
Minimum of log data	1.327075
Maximum of log data	3.144152
Mean of log data	2.628274
Standard Deviation of log data	0.66675
Variance of log data	0.444555

Recommendation
Data are normal (0.05)
Use Student's-t UCL

Normal Distribution Test	
Shapiro-Wilk Test Statisitic	0.876573
Shapiro-Wilk 5% Critical Value	0.788
Data are normal at 5% significance level	

95% UCL (Assuming Normal Distribution)	
Student's-t UCL	21.64156

Gamma Distribution Test	
A-D Test Statistic	0.691482
A-D 5% Critical Value	0.700265
K-S Test Statistic	0.357755
K-S 5% Critical Value	0.333753
Data follow approximate gamma distibution	
at 5% significance level	

95% UCLs (Assuming Gamma Distribution)	
Approximate Gamma UCL	27.5255
Adjusted Gamma UCL	34.12629

Lognormal Distribution Test	
Shapiro-Wilk Test Statisitic	0.742257
Shapiro-Wilk 5% Critical Value	0.788
Data not lognormal at 5% significance level	

95% UCLs (Assuming Lognormal Distribution)	
95% H-UCL	44.63306
95% Chebyshev (MVUE) UCL	36.19756
97.5% Chebyshev (MVUE) UCL	44.68137
99% Chebyshev (MVUE) UCL	61.34616

95% Non-parametric UCLs	
CLT UCL	20.58583
Adj-CLT UCL (Adjusted for skewness)	19.3612
Mod-t UCL (Adjusted for skewness)	21.45054
Jackknife UCL	21.64156
Standard Bootstrap UCL	20.16599
Bootstrap-t UCL	21.09692
Hall's Bootstrap UCL	20.74746
Percentile Bootstrap UCL	20.2
BCA Bootstrap UCL	19.26667
95% Chebyshev (Mean, Sd) UCL	28.32581
97.5% Chebyshev (Mean, Sd) UCL	33.70463
99% Chebyshev (Mean, Sd) UCL	44.27028

Data File

Variable: Zn 30.0

Raw Statistics	
Number of Valid Samples	6
Number of Unique Samples	6
Minimum	9.61
Maximum	34.1
Mean	23.87667
Median	23.85
Standard Deviation	8.308951
Variance	69.03867
Coefficient of Variation	0.347995
Skewness	-0.859246

Gamma Statistics	
k hat	7.427156
k star (bias corrected)	3.824689
Theta hat	3.214779
Theta star	6.242773
nu hat	89.12587
nu star	45.89627
Approx.Chi Square Value (.05)	31.35055
Adjusted Level of Significance	0.01222
Adjusted Chi Square Value	27.08285

Log-transformed Statistics	
Minimum of log data	2.262804
Maximum of log data	3.529297
Mean of log data	3.104073
Standard Deviation of log data	0.442848
Variance of log data	0.196114

Recommendation
Data are normal (0.05)
Use Student's-t UCL

Normal Distribution Test	
Shapiro-Wilk Test Statisitic	0.931246
Shapiro-Wilk 5% Critical Value	0.788
Data are normal at 5% significance level	

95% UCL (Assuming Normal Distribution)	
Student's-t UCL	30.71194

Gamma Distribution Test	
A-D Test Statistic	0.49711
A-D 5% Critical Value	0.698186
K-S Test Statistic	0.302001
K-S 5% Critical Value	0.33264
Data follow gamma distribution	
at 5% significance level	

95% UCLs (Assuming Gamma Distribution)	
Approximate Gamma UCL	34.95472
Adjusted Gamma UCL	40.46288

Lognormal Distribution Test	
Shapiro-Wilk Test Statisitic	0.824862
Shapiro-Wilk 5% Critical Value	0.788
Data are lognormal at 5% significance level	

95% UCLs (Assuming Lognormal Distribution)	
95% H-UCL	40.85598
95% Chebyshev (MVUE) UCL	43.18999
97.5% Chebyshev (MVUE) UCL	51.42263
99% Chebyshev (MVUE) UCL	67.59407

95% Non-parametric UCLs	
CLT UCL	29.4562
Adj-CLT UCL (Adjusted for skewness)	28.18477
Mod-t UCL (Adjusted for skewness)	30.51362
Jackknife UCL	30.71194
Standard Bootstrap UCL	29.00554
Bootstrap-t UCL	29.63035
Hall's Bootstrap UCL	29.32605
Percentile Bootstrap UCL	28.69167
BCA Bootstrap UCL	27.95833
95% Chebyshev (Mean, Sd) UCL	38.66255
97.5% Chebyshev (Mean, Sd) UCL	45.06042
99% Chebyshev (Mean, Sd) UCL	57.62779

Data File

Variable: Zn 40.0

Raw Statistics	
Number of Valid Samples	5
Number of Unique Samples	5
Minimum	12.3
Maximum	21.7
Mean	16.46
Median	14.8
Standard Deviation	3.928486
Variance	15.433
Coefficient of Variation	0.238669
Skewness	0.546913

Gamma Statistics	
k hat	22.55092
k star (bias corrected)	9.1537
Theta hat	0.729904
Theta star	1.79818
nu hat	225.5092
nu star	91.537
Approx.Chi Square Value (.05)	70.47088
Adjusted Level of Significance	0.0086
Adjusted Chi Square Value	62.43352

Log-transformed Statistics	
Minimum of log data	2.509599
Maximum of log data	3.077312
Mean of log data	2.778597
Standard Deviation of log data	0.235067
Variance of log data	0.055256

Recommendation
Data are normal (0.05)
Use Student's-t UCL

Normal Distribution Test	
Shapiro-Wilk Test Statisitic	0.917557
Shapiro-Wilk 5% Critical Value	0.762
Data are normal at 5% significance level	

95% UCL (Assuming Normal Distribution)	
Student's-t UCL	20.20538

Gamma Distribution Test	
A-D Test Statistic	0.329622
A-D 5% Critical Value	0.678653
K-S Test Statistic	0.264641
K-S 5% Critical Value	0.357134
Data follow gamma distribution	
at 5% significance level	

95% UCLs (Assuming Gamma Distribution)	
Approximate Gamma UCL	21.38045
Adjusted Gamma UCL	24.13285

Lognormal Distribution Test	
Shapiro-Wilk Test Statisitic	0.93378
Shapiro-Wilk 5% Critical Value	0.762
Data are lognormal at 5% significance level	

95% UCLs (Assuming Lognormal Distribution)	
95% H-UCL	21.59416
95% Chebyshev (MVUE) UCL	23.98074
97.5% Chebyshev (MVUE) UCL	27.2372
99% Chebyshev (MVUE) UCL	33.6339

95% Non-parametric UCLs	
CLT UCL	19.3498
Adj-CLT UCL (Adjusted for skewness)	19.80895
Mod-t UCL (Adjusted for skewness)	20.277
Jackknife UCL	20.20538
Standard Bootstrap UCL	19.04109
Bootstrap-t UCL	25.82789
Hall's Bootstrap UCL	58.18995
Percentile Bootstrap UCL	19.26
BCA Bootstrap UCL	19.26
95% Chebyshev (Mean, Sd) UCL	24.11803
97.5% Chebyshev (Mean, Sd) UCL	27.43166
99% Chebyshev (Mean, Sd) UCL	33.94066

Data File

Variable: Zn 50.0

Raw Statistics	
Number of Valid Samples	6
Number of Unique Samples	6
Minimum	15.4
Maximum	50.9
Mean	31.6
Median	26.75
Standard Deviation	15.3113
Variance	234.436
Coefficient of Variation	0.484535
Skewness	0.619524

Gamma Statistics	
k hat	5.243392
k star (bias corrected)	2.732807
Theta hat	6.026633
Theta star	11.5632
nu hat	62.92071
nu star	32.79369
Approx.Chi Square Value (.05)	20.70033
Adjusted Level of Significance	0.01222
Adjusted Chi Square Value	17.32051

Log-transformed Statistics	
Minimum of log data	2.734368
Maximum of log data	3.929863
Mean of log data	3.354779
Standard Deviation of log data	0.486647
Variance of log data	0.236826

Recommendation
Data are normal (0.05)
Use Student's-t UCL

Normal Distribution Test	
Shapiro-Wilk Test Statisitic	0.845299
Shapiro-Wilk 5% Critical Value	0.788
Data are normal at 5% significance level	

95% UCL (Assuming Normal Distribution)	
Student's-t UCL	44.19569

Gamma Distribution Test	
A-D Test Statistic	0.428274
A-D 5% Critical Value	0.698064
K-S Test Statistic	0.24399
K-S 5% Critical Value	0.332775
Data follow gamma distribution	
at 5% significance level	

95% UCLs (Assuming Gamma Distribution)	
Approximate Gamma UCL	50.06107
Adjusted Gamma UCL	59.82968

Lognormal Distribution Test	
Shapiro-Wilk Test Statisitic	0.904676
Shapiro-Wilk 5% Critical Value	0.788
Data are lognormal at 5% significance level	

95% UCLs (Assuming Lognormal Distribution)	
95% H-UCL	57.66748
95% Chebyshev (MVUE) UCL	58.87005
97.5% Chebyshev (MVUE) UCL	70.68421
99% Chebyshev (MVUE) UCL	93.89084

95% Non-parametric UCLs	
CLT UCL	41.88167
Adj-CLT UCL (Adjusted for skewness)	43.57095
Mod-t UCL (Adjusted for skewness)	44.45918
Jackknife UCL	44.19569
Standard Bootstrap UCL	41.00896
Bootstrap-t UCL	61.48855
Hall's Bootstrap UCL	154.3683
Percentile Bootstrap UCL	41.36667
BCA Bootstrap UCL	41.48333
95% Chebyshev (Mean, Sd) UCL	58.84666
97.5% Chebyshev (Mean, Sd) UCL	70.63632
99% Chebyshev (Mean, Sd) UCL	93.79481

Table D-1. HELSTF BACKGROUND SOIL DATA

Analyte	Units	Depth	Mean	Standard Deviation	Max Detect	Min Detect	Laboratory Reporting Limit	Number of Unique Samples	Distribution	95% UCL/Proposed Background Value	Notes
Frac Org Carbon	%	Surface	3.89	1.25	5.29	2.06	N/A	6	Normal	n/a – use mean	Student's t
Frac Org Carbon	%	10	2.73	1.11	4.73	1.65	N/A	6	Normal	n/a – use mean	Student's t
Frac Org Carbon	%	20	3.12	0.74	3.91	2.16	N/A	6	Normal	n/a – use mean	Student's t
Frac Org Carbon	%	30	2.08	0.60	2.87	1.15	N/A	6	Normal	n/a – use mean	Student's t
Frac Org Carbon	%	40	1.96	1.62	4.42	0.45	N/A	5	Normal	n/a – use mean	Student's t
Frac Org Carbon	%	50	1.81	0.66	2.58	1.02	N/A	6	Normal	n/a – use mean	Student's t
Hex Chromium	mg/kg	Surface	N/A	N/A	N/A	N/A	0.4-5	6	N/A	<5	100% Non-Detect
Hex Chromium	mg/kg	10	N/A	N/A	N/A	N/A	0.4-5	6	N/A	<5	100% Non-Detect
Hex Chromium	mg/kg	20	N/A	N/A	N/A	N/A	0.4-5	6	N/A	<5	100% Non-Detect
Hex Chromium	mg/kg	30	N/A	N/A	N/A	N/A	0.4-5	6	N/A	<5	100% Non-Detect
Hex Chromium	mg/kg	40	N/A	N/A	N/A	N/A	5	5	N/A	<5	100% Non-Detect
Hex Chromium	mg/kg	50	N/A	N/A	N/A	N/A	0.4-5	6	N/A	<5	100% Non-Detect
Nitrate-Nitrite	mg/kg	Surface	1.01	1.11	3.16	0.17	0.1	6	Gamma	2.74	Approx. Gamma
Nitrate-Nitrite	mg/kg	All Sub-surface	62.1	64.6	232	1.22	0.1	29	Gamma	91.4	Approx. Gamma
Nitrate-Nitrite	mg/kg	10	109	88.18	232	6.15	0.1	6	Normal	182	Student's t
Nitrate-Nitrite	mg/kg	20	110	74.5	207	1.32	0.1	6	Normal	171	Student's t
Nitrate-Nitrite	mg/kg	30	43.6	33.4	90.3	1.22	0.1	6	Normal	71.1	Student's t
Nitrate-Nitrite	mg/kg	40	15.4	6.72	21.2	7.55	0.1	5	Normal	21.8	Student's t
Nitrate-Nitrite	mg/kg	50	19.4	18.3	51	2.38	0.1	6	Normal	34.4	Student's t
Total Arsenic	mg/kg	Surface	N/A	N/A	N/A	N/A	1-2	6	N/A	<2	100% Non-Detect
Total Arsenic	mg/kg	All Sub-surface	2.85	1.60	7.74	1	1-2	15	Non-parametric	4.12	95% Chebyshev
Total Arsenic	mg/kg	10	N/A	N/A	2.29	N/A	1-2	6	N/A	<2	83% Non-Detect
Total Arsenic	mg/kg	20	3.18	2.91	7.74	0.46	1-2	6	Normal	5.58	Student's t
Total Arsenic	mg/kg	30	1.95	1.51	4.46	0.21	1-2	6	Normal	3.19	Student's t

Table D-1. HELSTF BACKGROUND SOIL DATA

Analyte	Units	Depth	Mean	Standard Deviation	Max Detect	Min Detect	Laboratory Reporting Limit	Number of Unique Samples	Distribution	95% UCL/Proposed Background Value	Notes
Total Arsenic	mg/kg	40	2.25	1.36	3.85	0.61	2	5	Normal	3.55	Student's t
Total Arsenic	mg/kg	50	N/A	N/A	4.45	N/A	1-2	6	N/A	<2	66% Non-Detect
Total Barium	mg/kg	Surface	14.9	4.70	21.4	9.48	1	6	Normal	18.7	Student's t
Total Barium	mg/kg	All Sub-surface	47.1	26.1	104	8.15	1	30	Normal	55.2	Student's t
Total Barium	mg/kg	10	37.9	29.3	94.5	18.4	1	6	Gamma	72.4	Approx. Gamma
Total Barium	mg/kg	20	37.9	11.8	53.7	25.6	1	6	Normal	47.6	Student's t
Total Barium	mg/kg	30	47.0	30.9	89.6	11.3	1	6	Normal	72.5	Student's t
Total Barium	mg/kg	40	40.0	23.1	66.1	8.15	1	5	Normal	62.0	Student's t
Total Barium	mg/kg	50	64.4	24.3	104	37.5	1	6	Normal	84.4	Student's t
Total Cadmium	mg/kg	Surface	N/A	N/A	N/A	N/A	0.1-0.5	6	N/A	<0.5	100% Non-Detect
Total Cadmium	mg/kg	10	N/A	N/A	N/A	N/A	0.1-0.5	6	N/A	<0.5	100% Non-Detect
Total Cadmium	mg/kg	20	N/A	N/A	N/A	N/A	0.1-0.5	6	N/A	<0.5	100% Non-Detect
Total Cadmium	mg/kg	30	N/A	N/A	N/A	N/A	0.1-0.5	6	N/A	<0.5	83% Non-Detect
Total Cadmium	mg/kg	40	N/A	N/A	N/A	N/A	0.1-0.228	5	N/A	<0.5	80% Non-Detect
Total Cadmium	mg/kg	50	N/A	N/A	N/A	N/A	0.1-0.5	6	N/A	<0.5	83% Non-Detect
Total Chromium	mg/kg	Surface	0.67	0.43	1.19	0.12	0.5-1	6	Normal	1.02	Student's t
Total Chromium	mg/kg	All Sub-surface	5.59	4.42	22.3	0.5	0.5-1	28	Gamma	7.23	Approx. Gamma
Total Chromium	mg/kg	10	2.46	2.46	7.22	0.21	0.5-1	6	Normal	4.48	Student's t
Total Chromium	mg/kg	20	5.38	2.13	7.36	1.81	0.5-1	6	Normal	7.14	Student's t
Total Chromium	mg/kg	30	6.4	3.53	10.1	0.12	0.5-1	6	Normal	9.30	Student's t
Total Chromium	mg/kg	40	6.93	0.87	5.11	2.85	0.5	5	Normal	4.76	Student's t
Total Chromium	mg/kg	50	9.21	7.73	22.3	1.51	0.5-1	6	Normal	15.6	Student's t
Total Copper	mg/kg	Surface	1.43	0.73	2.18	0.4	0.5	6	Normal	2.03	Student's t
Total Copper	mg/kg	All Sun-surface	5.13	3.39	14	0.69	0.5	30	Gamma	6.48	Approx. Gamma

Table D-1. HELSTF BACKGROUND SOIL DATA

Analyte	Units	Depth	Mean	Standard Deviation	Max Detect	Min Detect	Laboratory Reporting Limit	Number of Unique Samples	Distribution	95% UCL/Proposed Background Value	Notes
Total Copper	mg/kg	10	2.06	2.24	6.41	0.69	0.5	6	Gamma	5.19	Approx. Gamma
Total Copper	mg/kg	20	4.57	2.78	9.33	1.2	0.5	6	Normal	6.84	Student's t
Total Copper	mg/kg	30	5.97	2.50	8.92	1.95	0.5	6	Normal	8.02	Student's t
Total Copper	mg/kg	40	3.94	1.14	5.13	2.6	0.5	5	Normal	5.03	Student's t
Total Copper	mg/kg	50	8.82	4.03	14	4.79	0.5	6	Normal	12.1	Student's t
Total Lead	mg/kg	Surface	N/A	N/A	N/A	N/A	1	6	N/A	<1	100% Non-Detect
Total Lead	mg/kg	All Sub-surface	10.55	6.99	24.9	1	1	26	Non-parametric	23.2	99% Chebyshev
Total Lead	mg/kg	10	3.19	4.75	12.8	0.38	1	6	Normal	7.10	Student's t
Total Lead	mg/kg	20	11.5	8.87	24.9	0.91	1	6	Normal	18.8	Student's t
Total Lead	mg/kg	30	12.5	4.07	16.1	6.5	1	6	Normal	15.8	Student's t
Total Lead	mg/kg	40	10.1	2.04	11.9	7.54	1	5	Normal	12.0	Student's t
Total Lead	mg/kg	50	14.7	8.69	24.1	0.38	1	6	Normal	21.9	Student's t
Total Mercury	mg/kg	Surface	N/A	N/A	N/A	N/A	0.04	6	N/A	<0.04	100% Non-Detect
Total Mercury	mg/kg	10	N/A	N/A	N/A	N/A	0.04	6	N/A	<0.04	100% Non-Detect
Total Mercury	mg/kg	20	N/A	N/A	N/A	N/A	0.04	6	N/A	<0.04	100% Non-Detect
Total Mercury	mg/kg	30	N/A	N/A	N/A	N/A	0.04	6	N/A	<0.04	100% Non-Detect
Total Mercury	mg/kg	40	N/A	N/A	N/A	N/A	0.04	5	N/A	<0.04	100% Non-Detect
Total Mercury	mg/kg	50	N/A	N/A	N/A	N/A	0.04	6	N/A	<0.04	100% Non-Detect
Total Phosphorus	mg/kg	Surface	37.5	16.9	54.8	15.2	1-2	6	Normal	51	Student's t
Total Phosphorus	mg/kg	All Sub-surface	157	95.8	380	29.7	1-2	29	Normal	187	Student’s t
Total Phosphorus	mg/kg	10	47.0	23.0	92.2	29.7	1-2	6	Gamma	70	Approx. Gamma
Total Phosphorus	mg/kg	20	101	52.1	179	35.3	1-2	6	Normal	144	Student's t
Total Phosphorus	mg/kg	30	207	71.2	290	90	1-2	6	Normal	266	Student's t
Total Phosphorus	mg/kg	40	153	25.7	192	132	2	5	Normal	177	Student's t

Table D-1. HELSTF BACKGROUND SOIL DATA

Analyte	Units	Depth	Mean	Standard Deviation	Max Detect	Min Detect	Laboratory Reporting Limit	Number of Unique Samples	Distribution	95% UCL/Proposed Background Value	Notes
Total Phosphorus	mg/kg	50	254	90.8	380	130	1-2	6	Normal	329	Student's t
Total Potassium	mg/kg	Surface	196	75	325	121	50	6	Normal	258	Student's t
Total Potassium	mg/kg	All Subsurface	1618	811	3370	376	50	29	Normal	1869	Student's t
Total Potassium	mg/kg	10	785	694	2180	376	50	6	Non-Parametric	1933	H-UCL
Total Potassium	mg/kg	20	1740	757	2600	639	50	6	Normal	2363	Student's t
Total Potassium	mg/kg	30	1918	571	2770	1160	50	6	Normal	2387	Student's t
Total Potassium	mg/kg	40	1434	655	2220	799	50	5	Normal	2058	Student's t
Total Potassium	mg/kg	50	2178	850	3370	1340	50	6	Normal	2877	Student's t
Total Selenium	mg/kg	Surface	N/A	N/A	N/A	N/A	1	6	N/A	<1	100% Non-Detect
Total Selenium	mg/kg	10	N/A	N/A	N/A	N/A	1	6	N/A	<1	100% Non-Detect
Total Selenium	mg/kg	20	N/A	N/A	N/A	N/A	1	6	N/A	<1	100% Non-Detect
Total Selenium	mg/kg	30	N/A	N/A	N/A	N/A	1	6	N/A	<1	100% Non-Detect
Total Selenium	mg/kg	40	N/A	N/A	N/A	N/A	1	5	N/A	<1	100% Non-Detect
Total Selenium	mg/kg	50	N/A	N/A	N/A	N/A	1	6	N/A	<1	83% Non-Detect
Total Silver	mg/kg	Surface	N/A	N/A	N/A	N/A	0.05-0.2	6	N/A	<0.2	100% Non-Detect
Total Silver	mg/kg	10	N/A	N/A	N/A	N/A	0.05-0.2	6	N/A	<0.2	100% Non-Detect
Total Silver	mg/kg	20	N/A	N/A	N/A	N/A	0.05-0.2	6	N/A	<0.2	100% Non-Detect
Total Silver	mg/kg	30	N/A	N/A	N/A	N/A	0.05-0.2	6	N/A	<0.2	100% Non-Detect
Total Silver	mg/kg	40	N/A	N/A	N/A	N/A	0.05	5	N/A	<0.2	100% Non-Detect
Total Silver	mg/kg	50	N/A	N/A	N/A	N/A	0.05-0.2	6	N/A	<0.2	100% Non-Detect
Total Sodium	mg/kg	Surface	278	69.01	381	205	50	6	Normal	335	Student's t
Total Sodium	mg/kg	All Sub-surface	1675	749	3080	455	50	30	Normal	1908	Student's t

Table D-1. HELSTF BACKGROUND SOIL DATA

Analyte	Units	Depth	Mean	Standard Deviation	Max Detect	Min Detect	Laboratory Reporting Limit	Number of Unique Samples	Distribution	95% UCL/Proposed Background Value	Notes
Total Sodium	mg/kg	10	1364	739	2090	455	50	6	Normal	1972	Student's t
Total Sodium	mg/kg	20	1964	931	2990	546	50	6	Normal	2731	Student's t
Total Sodium	mg/kg	30	1692	762	2550	516	50	6	Normal	2319	Student's t
Total Sodium	mg/kg	40	1301	555	1920	739	50	5	Normal	1830	Student's t
Total Sodium	mg/kg	50	1932	744	3080	1120	50	6	Normal	2543	Student's t
Total Zinc	mg/kg	Surface	3.14	2.28	7.48	0.96	1-2	6	Normal	5.01	Student's t
Total Zinc	mg/kg	All Sub-surface	19.3	11.8	50.9	2.76	1-2	29	Non-parametric	28.7	95% Chebyshev
Total Zinc	mg/kg	10	7.91	7.63	18.1	2.76	1-2	6	Non-Parametric	21.5	95% Chebyshev
Total Zinc	mg/kg	20	15.9	6.99	23.2	3.77	1-2	6	Normal	21.6	Student's t
Total Zinc	mg/kg	30	23.9	8.31	34.1	9.61	1-2	6	Normal	30.7	Student's t
Total Zinc	mg/kg	40	16.5	3.93	21.7	12.3	2	5	Normal	20.2	Student's t
Total Zinc	mg/kg	50	31.6	15.3	50.9	15.4	1-2	6	Normal	44.2	Student's t
Depth Indicators:		Surface = 0.0-0.5 ft									
		Ten ft = 10.0-10.5 ft									
		20 ft = 20.0-20.5 ft									
		30 ft = 30.0-30.5 ft									
		40 ft = 40.0-40.5 ft									
		50 ft = 49.5-50.0 ft									
Note: For all analytes with non-detects greater than 50%, statistics were not run.											
N/A Not Applicable											

Table D-2. HELSTF Diesel Spill Zone

Field Sample Id	Start Depth	End Depth	Constituent Name	Reporting Limit	Result	Units	Residential SSL	Background
HLSF-0085-SB-010 (20.0-22.0)***	20	22	1,2,4-Trimethylbenzene	10	11.45	ug/Kg	58000	—
HLSF-0085-SB-019 (30.0-31.0)	30	31	1,2,4-Trimethylbenzene	10	1620	ug/Kg	58000	
HLSF-0085-SB-013 (40.0-41.0)	40	41	1,2,4-Trimethylbenzene	10	1260	ug/Kg	58000	
HLSF-0085-SB-013 (49.0-50.0)	49	50	1,2,4-Trimethylbenzene	10	12.5	ug/Kg	58000	
HLSF-0085-SB-011 (20.0-21.0)	20	21	1,2,4-Trimethylbenzene	10	113	ug/Kg	58000	
HLSF-0085-SB-011 (30.0-32.0)***	30	32	1,2,4-Trimethylbenzene	10	3225	ug/Kg	58000	
HLSF-0085-SB-011 (40.0-42.0)	40	42	1,2,4-Trimethylbenzene	10	6700	ug/Kg	58000	
HLSF-0085-SB-011 (49.0-50.0)	49	50	1,2,4-Trimethylbenzene	10	13.3	ug/Kg	58000	
HLSF-0085-SB-014 (20.0-22.0)	20	22	1,2,4-Trimethylbenzene	10	968	ug/Kg	58000	
HLSF-0085-SB-014 (49.0-50.0)	49	50	1,2,4-Trimethylbenzene	10	10.5	ug/Kg	58000	
HLSF-0085-SB-018 (40.0-41.0)	40	41	1,3,5-Trimethylbenzene	10	12.5	ug/Kg	58000	
HLSF-0085-SB-019 (30.0-31.0)	30	31	1,3,5-Trimethylbenzene	10	736	ug/Kg	58000	
HLSF-0085-SB-013 (40.0-41.0)	40	41	1,3,5-Trimethylbenzene	10	320	ug/Kg	58000	
HLSF-0085-SB-011 (20.0-21.0)	20	21	1,3,5-Trimethylbenzene	10	29.3	ug/Kg	58000	
HLSF-0085-SB-011 (30.0-32.0)***	30	32	1,3,5-Trimethylbenzene	10	911.5	ug/Kg	58000	
HLSF-0085-SB-011 (40.0-42.0)	40	42	1,3,5-Trimethylbenzene	10	2660	ug/Kg	58000	
HLSF-0085-SB-014 (20.0-22.0)	20	22	1,3,5-Trimethylbenzene	10	506	ug/Kg	58000	
HLSF-0085-SB-017 (20.0-21.0)	20	21	1-Methylnaphthalene	0.25	2.52	mg/Kg	NE	—
HLSF-0085-SB-015 (40.0-41.0)	40	41	1-Methylnaphthalene	0.25	0.302	mg/Kg	NE	
HLSF-0085-SB-018 (20.0-21.0)	20	21	1-Methylnaphthalene	0.25	15.2	mg/Kg	NE	
HLSF-0085-SB-018 (40.0-41.0)	40	41	1-Methylnaphthalene	0.25	2.56	mg/Kg	NE	
HLSF-0085-SB-018 (49.0-50.0)	49	50	1-Methylnaphthalene	0.25	0.618	mg/Kg	NE	
HLSF-0085-SB-019 (20.0-22.0)***	20	22	1-Methylnaphthalene	0.25	6.85	mg/Kg	NE	
HLSF-0085-SB-019 (30.0-31.0)	30	31	1-Methylnaphthalene	0.25	17.2	mg/Kg	NE	
HLSF-0085-SB-013 (40.0-41.0)	40	41	1-Methylnaphthalene	0.25	8.77	mg/Kg	NE	
HLSF-0085-SB-011 (20.0-21.0)	20	21	1-Methylnaphthalene	0.25	5.53	mg/Kg	NE	
HLSF-0085-SB-011 (30.0-32.0)***	30	32	1-Methylnaphthalene	0.25	12.65	mg/Kg	NE	
HLSF-0085-SB-011 (40.0-42.0)	40	42	1-Methylnaphthalene	0.25	55.8	mg/Kg	NE	
HLSF-0085-SB-016 (20.0-21.0)	20	21	1-Methylnaphthalene	0.25	1.91	mg/Kg	NE	
HLSF-0085-SB-016 (30.0-31.0)	30	31	1-Methylnaphthalene	0.25	0.334	mg/Kg	NE	
HLSF-0085-SB-014 (20.0-22.0)	20	22	1-Methylnaphthalene	0.25	23.7	mg/Kg	NE	
HLSF-0085-SB-014 (40.0-41.0)	40	41	1-Methylnaphthalene	0.25	0.327	mg/Kg	NE	
HLSF-0085-SB-014 (49.0-50.0)	49	50	1-Methylnaphthalene	0.25	0.266	mg/Kg	NE	
HLSF-0085-SB-017 (20.0-21.0)	20	21	2-Methylnaphthalene	0.25	0.844	mg/Kg	NE	
HLSF-0085-SB-018 (20.0-21.0)	20	21	2-Methylnaphthalene	0.25	9.76	mg/Kg	NE	
HLSF-0085-SB-018 (40.0-41.0)	40	41	2-Methylnaphthalene	0.25	1.58	mg/Kg	NE	
HLSF-0085-SB-019 (20.0-22.0)***	20	22	2-Methylnaphthalene	0.25	0.474	mg/Kg	NE	
HLSF-0085-SB-019 (30.0-31.0)	30	31	2-Methylnaphthalene	0.25	8.25	mg/Kg	NE	
HLSF-0085-SB-013 (40.0-41.0)	40	41	2-Methylnaphthalene	0.25	11.1	mg/Kg	NE	
HLSF-0085-SB-013 (49.0-50.0)	49	50	2-Methylnaphthalene	0.25	0.263	mg/Kg	NE	
HLSF-0085-SB-011 (20.0-21.0)	20	21	2-Methylnaphthalene	0.25	7.64	mg/Kg	NE	
HLSF-0085-SB-011 (30.0-32.0)***	30	32	2-Methylnaphthalene	0.25	11.5	mg/Kg	NE	
HLSF-0085-SB-011 (40.0-42.0)	40	42	2-Methylnaphthalene	0.25	71.3	mg/Kg	NE	
HLSF-0085-SB-011 (49.0-50.0)	49	50	2-Methylnaphthalene	0.25	0.303	mg/Kg	NE	
HLSF-0085-SB-014 (20.0-22.0)	20	22	2-Methylnaphthalene	0.25	31.9	mg/Kg	NE	
HLSF-0085-SB-018 (20.0-21.0)	20	21	Acenaphthene	0.25	0.606	mg/Kg	3730	—
HLSF-0085-SB-019 (20.0-22.0)***	20	22	Acenaphthene	0.25	0.325	mg/Kg	3730	
HLSF-0085-SB-019 (30.0-31.0)	30	31	Acenaphthene	0.25	1.12	mg/Kg	3730	
HLSF-0085-SB-011 (30.0-32.0)***	30	32	Acenaphthene	0.25	0.578	mg/Kg	3730	
HLSF-0085-SB-011 (40.0-42.0)	40	42	Acenaphthene	0.25	3.1	mg/Kg	3730	
HLSF-0085-SB-017 (20.0-21.0)	20	21	Anthracene	0.25	1.17	mg/Kg	22000	—
HLSF-0085-SB-018 (20.0-21.0)	20	21	Anthracene	0.25	3.45	mg/Kg	22000	
HLSF-0085-SB-018 (40.0-41.0)	40	41	Anthracene	0.25	2.32	mg/Kg	22000	
HLSF-0085-SB-018 (49.0-50.0)	49	50	Anthracene	0.25	0.285	mg/Kg	22000	
HLSF-0085-SB-019 (20.0-22.0)***	20	22	Anthracene	0.25	2.175	mg/Kg	22000	
HLSF-0085-SB-019 (30.0-31.0)	30	31	Anthracene	0.25	6.16	mg/Kg	22000	
HLSF-0085-SB-013 (40.0-41.0)	40	41	Anthracene	0.25	2	mg/Kg	22000	
HLSF-0085-SB-011 (20.0-21.0)	20	21	Anthracene	0.25	1.51	mg/Kg	22000	
HLSF-0085-SB-011 (30.0-32.0)***	30	32	Anthracene	0.25	3.255	mg/Kg	22000	
HLSF-0085-SB-011 (40.0-42.0)	40	42	Anthracene	0.25	10.6	mg/Kg	22000	
HLSF-0085-SB-016 (20.0-21.0)	20	21	Anthracene	0.25	0.543	mg/Kg	22000	
HLSF-0085-SB-014 (20.0-22.0)	20	22	Anthracene	0.25	5.83	mg/Kg	22000	
HLSF-0085-SB-011 (40.0-42.0)	40	42	Benzene	10	244	ug/Kg	10300	—
HLSF-0085-SB-013 (20.0-21.0)	20	21	Benzoic acid*	0.25	0.41	mg/Kg	100000	—

Field Sample Id	Start Depth	End Depth	Constituent Name	Reporting Limit	Result	Units	Residential SSL	Background
HLSF-0085-SB-017 (20.0-21.0)	20	21	Dibenzofuran	0.25	0.578	mg/Kg	142	—
HLSF-0085-SB-018 (20.0-21.0)	20	21	Dibenzofuran	0.25	1.3	mg/Kg	142	
HLSF-0085-SB-019 (20.0-22.0)***	20	22	Dibenzofuran	0.25	0.973	mg/Kg	142	
HLSF-0085-SB-019 (30.0-31.0)	30	31	Dibenzofuran	0.25	2.44	mg/Kg	142	
HLSF-0085-SB-013 (40.0-41.0)	40	41	Dibenzofuran	0.25	0.994	mg/Kg	142	
HLSF-0085-SB-011 (20.0-21.0)	20	21	Dibenzofuran	0.25	0.738	mg/Kg	142	
HLSF-0085-SB-011 (30.0-32.0)***	30	32	Dibenzofuran	0.25	0.76	mg/Kg	142	
HLSF-0085-SB-017 (20.0-21.0)	20	21	Diphenylamine*	0.25	0.271	mg/Kg	1500	
HLSF-0085-SB-019 (20.0-22.0)***	20	22	Diphenylamine*	0.25	0.4735	mg/Kg	1500	
HLSF-0085-SB-019 (30.0-31.0)	30	31	Diphenylamine*	0.25	1.63	mg/Kg	1500	
HLSF-0085-SB-017 (20.0-21.0)	20	21	DRO**	50	112	mg/Kg	520	—
HLSF-0085-SB-010 (20.0-22.0)***	20	22	DRO**	50	67.35	mg/Kg	520	
HLSF-0085-SB-015 (30.0-31.0)	30	31	DRO**	50	1040	mg/Kg	520	
HLSF-0085-SB-018 (20.0-21.0)	20	21	DRO**	50	1840	mg/Kg	520	
HLSF-0085-SB-018 (40.0-41.0)	40	41	DRO**	50	1910	mg/Kg	520	
HLSF-0085-SB-018 (49.0-50.0)	49	50	DRO**	50	293	mg/Kg	520	
HLSF-0085-SB-019 (20.0-22.0)***	20	22	DRO**	50	661	mg/Kg	520	
HLSF-0085-SB-019 (30.0-31.0)	30	31	DRO**	50	9800	mg/Kg	520	
HLSF-0085-SB-019 (36.0-37.0)	36	37	DRO**	50	3360	mg/Kg	520	
HLSF-0085-SB-013 (20.0-21.0)	20	21	DRO**	50	178	mg/Kg	520	
HLSF-0085-SB-013 (40.0-41.0)	40	41	DRO**	50	3180	mg/Kg	520	
HLSF-0085-SB-013 (49.0-50.0)	49	50	DRO**	50	86.6	mg/Kg	520	
HLSF-0085-SB-011 (20.0-21.0)	20	21	DRO**	50	943	mg/Kg	520	
HLSF-0085-SB-011 (30.0-32.0)***	30	32	DRO**	50	4665	mg/Kg	520	
HLSF-0085-SB-011 (40.0-42.0)	40	42	DRO**	50	10800	mg/Kg	520	
HLSF-0085-SB-011 (49.0-50.0)	49	50	DRO**	50	138	mg/Kg	520	
HLSF-0085-SB-016 (20.0-21.0)	20	21	DRO**	50	166	mg/Kg	520	
HLSF-0085-SB-016 (30.0-31.0)	30	31	DRO**	50	110	mg/Kg	520	
HLSF-0085-SB-014 (20.0-22.0)	20	22	DRO**	50	3570	mg/Kg	520	
HLSF-0085-SB-014 (30.0-31.0)	30	31	DRO**	50	62.7	mg/Kg	520	
HLSF-0085-SB-014 (40.0-41.0)	40	41	DRO**	50	67.1	mg/Kg	520	
HLSF-0085-SB-018 (20.0-21.0)	20	21	Ethylbenzene	10	723	ug/Kg	128000	—
HLSF-0085-SB-011 (40.0-42.0)	40	42	Ethylbenzene	10	647	ug/Kg	128000	
HLSF-0085-SB-014 (20.0-22.0)	20	22	Ethylbenzene	10	4060	ug/Kg	128000	
HLSF-0085-SB-017 (20.0-21.0)	20	21	Fluorene	0.25	0.505	mg/Kg	2660	—
HLSF-0085-SB-018 (20.0-21.0)	20	21	Fluorene	0.25	1.56	mg/Kg	2660	
HLSF-0085-SB-019 (20.0-22.0)***	20	22	Fluorene	0.25	0.64	mg/Kg	2660	
HLSF-0085-SB-019 (30.0-31.0)	30	31	Fluorene	0.25	2.74	mg/Kg	2660	
HLSF-0085-SB-013 (40.0-41.0)	40	41	Fluorene	0.25	1.03	mg/Kg	2660	
HLSF-0085-SB-011 (20.0-21.0)	20	21	Fluorene	0.25	0.59	mg/Kg	2660	
HLSF-0085-SB-011 (30.0-32.0)***	30	32	Fluorene	0.25	1.565	mg/Kg	2660	
HLSF-0085-SB-011 (40.0-42.0)	40	42	Fluorene	0.25	6.38	mg/Kg	2660	
HLSF-0085-SB-014 (20.0-22.0)	20	22	Fluorene	0.25	2.59	mg/Kg	2660	
HLSF-0085-SB-017 (10.0-11.0)	10	11	FOC		2.08	%	NE	2.73
HLSF-0085-SB-017 (20.0-21.0)	20	21	FOC		2.36	%	NE	3.12
HLSF-0085-SB-017 (30.0-31.0)	30	31	FOC		1.2	%	NE	2.08
HLSF-0085-SB-017 (41.0-42.0)	41	42	FOC		1.17	%	NE	1.96
HLSF-0085-SB-017 (50.0-52.0)***	50	52	FOC		0.685	%	NE	1.81
HLSF-0085-SB-010 (10.0-11.0)	10	11	FOC		3.4	%	NE	2.73
HLSF-0085-SB-010 (20.0-22.0)***	20	22	FOC		2.565	%	NE	3.12
HLSF-0085-SB-010 (30.0-31.0)	30	31	FOC		0.88	%	NE	2.08
HLSF-0085-SB-010 (40.0-41.0)	40	41	FOC		4.07	%	NE	1.96
HLSF-0085-SB-010 (49.0-50.0)	49	50	FOC		3.03	%	NE	1.81
HLSF-0085-SB-015 (10.0-11.0)	10	11	FOC		1.93	%	NE	2.73
HLSF-0085-SB-015 (20.0-21.0)	20	21	FOC		2.66	%	NE	3.12
HLSF-0085-SB-015 (30.0-31.0)	30	31	FOC		1.09	%	NE	2.08
HLSF-0085-SB-015 (40.0-41.0)	40	41	FOC		0.846	%	NE	1.96
HLSF-0085-SB-015 (49.0-50.0)	49	50	FOC		1.03	%	NE	1.81
HLSF-0085-SB-018 (10.0-11.0)	10	11	FOC		2.68	%	NE	2.73
HLSF-0085-SB-018 (20.0-21.0)	20	21	FOC		0.731	%	NE	3.12
HLSF-0085-SB-018 (30.0-31.0)	30	31	FOC		0.58	%	NE	2.08
HLSF-0085-SB-018 (40.0-41.0)	40	41	FOC		0.7	%	NE	1.96
HLSF-0085-SB-018 (49.0-50.0)	49	50	FOC		0.89	%	NE	1.81
HLSF-0085-SB-019 (20.0-22.0)***	20	22	FOC		4.74	%	NE	3.12

Table D-2. HELSTF Diesel Spill Zone

Field Sample Id	Start Depth	End Depth	Constituent Name	Reporting Limit	Result	Units	Residential SSL	Background
HLSF-0085-SB-019 (30.0-31.0)	30	31	FOC		0.901	%	NE	2.08
HLSF-0085-SB-019 (40.0-41.0)	40	41	FOC		2.98	%	NE	1.96
HLSF-0085-SB-019 (49.0-50.0)	49	50	FOC		2.18	%	NE	1.81
HLSF-0085-SB-020 (10.0-11.0)	10	11	FOC		5.95	%	NE	2.73
HLSF-0085-SB-020 (20.0-21.0)	20	21	FOC		5.59	%	NE	3.12
HLSF-0085-SB-020 (30.0-31.0)	30	31	FOC		4.73	%	NE	2.08
HLSF-0085-SB-020 (40.0-41.0)	40	41	FOC		0.743	%	NE	1.96
HLSF-0085-SB-020 (49.0-50.0)	49	50	FOC		3.64	%	NE	1.81
HLSF-0085-SB-021 (10.0-11.0)	10	11	FOC		8.64	%	NE	2.73
HLSF-0085-SB-021 (20.0-21.0)	20	21	FOC		6.06	%	NE	3.12
HLSF-0085-SB-021 (30.0-31.0)	30	31	FOC		4.71	%	NE	2.08
HLSF-0085-SB-021 (40.0-41.0)	40	41	FOC		1.58	%	NE	1.96
HLSF-0085-SB-021 (49.0-50.0)	49	50	FOC		1.77	%	NE	1.81
HLSF-0085-SB-013 (10.0-11.0)	10	11	FOC		6.47	%	NE	2.73
HLSF-0085-SB-013 (20.0-21.0)	20	21	FOC		5.95	%	NE	3.12
HLSF-0085-SB-013 (30.0-31.0)	30	31	FOC		0.986	%	NE	2.08
HLSF-0085-SB-013 (40.0-41.0)	40	41	FOC		1.42	%	NE	1.96
HLSF-0085-SB-013 (49.0-50.0)	49	50	FOC		0.809	%	NE	1.81
HLSF-0085-SB-011 (10.0-11.0)	10	11	FOC		4.51	%	NE	2.73
HLSF-0085-SB-011 (20.0-21.0)	20	21	FOC		4.82	%	NE	3.12
HLSF-0085-SB-011 (30.0-32.0)***	30	32	FOC		1.505	%	NE	2.08
HLSF-0085-SB-011 (40.0-42.0)	40	42	FOC		1.24	%	NE	1.96
HLSF-0085-SB-011 (49.0-50.0)	49	50	FOC		0.854	%	NE	1.81
HLSF-0085-SB-016 (10.0-11.0)	10	11	FOC		5.4	%	NE	2.73
HLSF-0085-SB-016 (20.0-21.0)	20	21	FOC		5.22	%	NE	3.12
HLSF-0085-SB-016 (30.0-31.0)	30	31	FOC		1.56	%	NE	2.08
HLSF-0085-SB-016 (40.0-41.0)	40	41	FOC		1.35	%	NE	1.96
HLSF-0085-SB-016 (49.0-50.0)	49	50	FOC		1.75	%	NE	1.81
HLSF-0085-SB-014 (10.0-12.0)***	10	12	FOC		5.52	%	NE	2.73
HLSF-0085-SB-014 (20.0-22.0)	20	22	FOC		2.33	%	NE	3.12
HLSF-0085-SB-014 (30.0-31.0)	30	31	FOC		1.4	%	NE	2.08
HLSF-0085-SB-014 (40.0-41.0)	40	41	FOC		1.05	%	NE	1.96
HLSF-0085-SB-014 (49.0-50.0)	49	50	FOC		2.68	%	NE	1.81
HLSF-0085-SB-017 (20.0-21.0)	20	21	GRO	1	10	mg/Kg	NE	—
HLSF-0085-SB-017 (30.0-31.0)	30	31	GRO	1	2.77	mg/Kg	NE	
HLSF-0085-SB-010 (20.0-22.0)***	20	22	GRO	1	13.17	mg/Kg	NE	
HLSF-0085-SB-015 (30.0-31.0)	30	31	GRO	1	23.3	mg/Kg	NE	
HLSF-0085-SB-015 (40.0-41.0)	40	41	GRO	1	1.6	mg/Kg	NE	
HLSF-0085-SB-015 (49.0-50.0)	49	50	GRO	1	2.02	mg/Kg	NE	
HLSF-0085-SB-018 (20.0-21.0)	20	21	GRO	1	65.7	mg/Kg	NE	
HLSF-0085-SB-018 (40.0-41.0)	40	41	GRO	1	70.9	mg/Kg	NE	
HLSF-0085-SB-018 (49.0-50.0)	49	50	GRO	1	2.99	mg/Kg	NE	
HLSF-0085-SB-019 (20.0-22.0)***	20	22	GRO	1	53.15	mg/Kg	NE	
HLSF-0085-SB-019 (30.0-31.0)	30	31	GRO	1	102	mg/Kg	NE	
HLSF-0085-SB-019 (36.0-37.0)	36	37	GRO	1	106	mg/Kg	NE	
HLSF-0085-SB-013 (20.0-21.0)	20	21	GRO	1	2.7	mg/Kg	NE	
HLSF-0085-SB-013 (40.0-41.0)	40	41	GRO	1	171	mg/Kg	NE	
HLSF-0085-SB-011 (20.0-21.0)	20	21	GRO	1	62.9	mg/Kg	NE	
HLSF-0085-SB-011 (30.0-32.0)***	30	32	GRO	1	240.5	mg/Kg	NE	
HLSF-0085-SB-011 (40.0-42.0)	40	42	GRO	1	386	mg/Kg	NE	
HLSF-0085-SB-016 (20.0-21.0)	20	21	GRO	1	26.2	mg/Kg	NE	
HLSF-0085-SB-016 (30.0-31.0)	30	31	GRO	1	1.12	mg/Kg	NE	
HLSF-0085-SB-014 (20.0-22.0)	20	22	GRO	1	335	mg/Kg	NE	
HLSF-0085-SB-014 (40.0-41.0)	40	41	GRO	1	5.32	mg/Kg	NE	
HLSF-0085-SB-014 (49.0-50.0)	49	50	GRO	1	1.37	mg/Kg	NE	
HLSF-0085-SB-015 (20.0-21.0)	20	21	Hexavalent Chromium	5	5.21	mg/Kg	234	<5
HLSF-0085-SB-010 (20.0-22.0)***	20	22	Isopropylbenzene	10	11.65	ug/Kg	NE	—
HLSF-0085-SB-018 (20.0-21.0)	20	21	Isopropylbenzene	10	536	ug/Kg	NE	
HLSF-0085-SB-018 (40.0-41.0)	40	41	Isopropylbenzene	10	67.7	ug/Kg	NE	
HLSF-0085-SB-018 (49.0-50.0)	49	50	Isopropylbenzene	10	34.8	ug/Kg	NE	
HLSF-0085-SB-019 (20.0-22.0)***	20	22	Isopropylbenzene	10	168	ug/Kg	NE	
HLSF-0085-SB-019 (30.0-31.0)	30	31	Isopropylbenzene	10	30.2	ug/Kg	NE	
HLSF-0085-SB-019 (36.0-37.0)	36	37	Isopropylbenzene	10	24.7	ug/Kg	NE	
HLSF-0085-SB-013 (40.0-41.0)	40	41	Isopropylbenzene	10	346	ug/Kg	NE	

Table D-2. HELSTF Diesel Spill Zone

Field Sample Id	Start Depth	End Depth	Constituent Name	Reporting Limit	Result	Units	Residential SSL	Background
HLSF-0085-SB-011 (20.0-21.0)	20	21	Isopropylbenzene	10	43.2	ug/Kg	NE	
HLSF-0085-SB-011 (30.0-32.0)***	30	32	Isopropylbenzene	10	32.35	ug/Kg	NE	
HLSF-0085-SB-011 (40.0-42.0)	40	42	Isopropylbenzene	10	1540	ug/Kg	NE	
HLSF-0085-SB-016 (20.0-21.0)	20	21	Isopropylbenzene	10	42.4	ug/Kg	NE	
HLSF-0085-SB-014 (20.0-22.0)	20	22	Isopropylbenzene	10	3100	ug/Kg	NE	
HLSF-0085-SB-019 (30.0-31.0)	30	31	m,p-Xylene^	10	14.9	ug/Kg	82000	—
HLSF-0085-SB-011 (20.0-21.0)	20	21	m,p-Xylene^	10	11.6	ug/Kg	82000	
HLSF-0085-SB-011 (30.0-32.0)***	30	32	m,p-Xylene^	10	62	ug/Kg	82000	
HLSF-0085-SB-017 (20.0-21.0)	20	21	Naphthalene	0.25	0.376	mg/Kg	79.5	—
HLSF-0085-SB-010 (20.0-22.0)***	20	22	Naphthalene	50	126.9	ug/Kg	79500	
HLSF-0085-SB-018 (20.0-21.0)	20	21	Naphthalene	0.25	2.35	mg/Kg	79.5	
HLSF-0085-SB-018 (20.0-21.0)	20	21	Naphthalene	50	3060	ug/Kg	79500	
HLSF-0085-SB-019 (20.0-22.0)***	20	22	Naphthalene	0.25	0.9575	mg/Kg	79.5	
HLSF-0085-SB-019 (36.0-37.0)	36	37	Naphthalene	50	1560	ug/Kg	79500	
HLSF-0085-SB-013 (10.0-11.0)	10	11	Naphthalene	0.25	0.254	mg/Kg	79.5	
HLSF-0085-SB-013 (40.0-41.0)	40	41	Naphthalene	50	2560	ug/Kg	79500	
HLSF-0085-SB-013 (40.0-41.0)	40	41	Naphthalene	0.25	1.61	mg/Kg	79.5	
HLSF-0085-SB-013 (49.0-50.0)	49	50	Naphthalene	50	50.6	ug/Kg	79500	
HLSF-0085-SB-011 (20.0-21.0)	20	21	Naphthalene	0.25	1.02	mg/Kg	79.5	
HLSF-0085-SB-011 (20.0-21.0)	20	21	Naphthalene	50	388	ug/Kg	79500	
HLSF-0085-SB-011 (30.0-32.0)***	30	32	Naphthalene	0.25	620	ug/Kg	79.5	
HLSF-0085-SB-011 (40.0-42.0)	40	42	Naphthalene	0.25	12.9	mg/Kg	79.5	
HLSF-0085-SB-011 (40.0-42.0)	40	42	Naphthalene	50	6240	ug/Kg	79500	
HLSF-0085-SB-011 (49.0-50.0)	49	50	Naphthalene	50	78.9	ug/Kg	79500	
HLSF-0085-SB-016 (20.0-21.0)	20	21	Naphthalene	50	425	ug/Kg	79500	
HLSF-0085-SB-016 (20.0-21.0)	20	21	Naphthalene	0.25	0.299	mg/Kg	79.5	
HLSF-0085-SB-016 (30.0-31.0)	30	31	Naphthalene	50	64.8	ug/Kg	79500	
HLSF-0085-SB-014 (20.0-22.0)	20	22	Naphthalene	0.25	4.77	mg/Kg	79.5	
HLSF-0085-SB-014 (20.0-22.0)	20	22	Naphthalene	50	8720	ug/Kg	79500	
HLSF-0085-SB-014 (49.0-50.0)	49	50	Naphthalene	50	55.9	ug/Kg	79500	
HLSF-0085-SB-010 (20.0-22.0)***	20	22	n-Butylbenzene	10	39.4	ug/Kg	62100	—
HLSF-0085-SB-018 (20.0-21.0)	20	21	n-Butylbenzene	10	962	ug/Kg	62100	
HLSF-0085-SB-018 (40.0-41.0)	40	41	n-Butylbenzene	10	261	ug/Kg	62100	
HLSF-0085-SB-018 (49.0-50.0)	49	50	n-Butylbenzene	10	34	ug/Kg	62100	
HLSF-0085-SB-019 (20.0-22.0)***	20	22	n-Butylbenzene	10	548.5	ug/Kg	62100	
HLSF-0085-SB-019 (30.0-31.0)	30	31	n-Butylbenzene	10	367	ug/Kg	62100	
HLSF-0085-SB-019 (36.0-37.0)	36	37	n-Butylbenzene	10	763	ug/Kg	62100	
HLSF-0085-SB-013 (40.0-41.0)	40	41	n-Butylbenzene	10	925	ug/Kg	62100	
HLSF-0085-SB-013 (49.0-50.0)	49	50	n-Butylbenzene	10	15.7	ug/Kg	62100	
HLSF-0085-SB-011 (20.0-21.0)	20	21	n-Butylbenzene	10	158	ug/Kg	62100	
HLSF-0085-SB-011 (30.0-32.0)***	30	32	n-Butylbenzene	10	285	ug/Kg	62100	
HLSF-0085-SB-011 (40.0-42.0)	40	42	n-Butylbenzene	10	2770	ug/Kg	62100	
HLSF-0085-SB-016 (20.0-21.0)	20	21	n-Butylbenzene	10	163	ug/Kg	62100	
HLSF-0085-SB-016 (30.0-31.0)	30	31	n-Butylbenzene	10	12.3	ug/Kg	62100	
HLSF-0085-SB-014 (20.0-22.0)	20	22	n-Butylbenzene	10	5280	ug/Kg	62100	
HLSF-0085-SB-014 (49.0-50.0)	49	50	n-Butylbenzene	10	11.5	ug/Kg	62100	
HLSF-0085-SB-017 (10.0-11.0)	10	11	Nitrate and Nitrite as N^^	0.1	3.18	mg/Kg	7820	182
HLSF-0085-SB-017 (20.0-21.0)	20	21	Nitrate and Nitrite as N^^	0.1	0.346	mg/Kg	7820	171
HLSF-0085-SB-017 (30.0-31.0)	30	31	Nitrate and Nitrite as N^^	0.1	0.214	mg/Kg	7820	71.1
HLSF-0085-SB-017 (41.0-42.0)	41	42	Nitrate and Nitrite as N^^	0.1	2.25	mg/Kg	7820	21.8
HLSF-0085-SB-017 (50.0-52.0)***	50	52	Nitrate and Nitrite as N^^	0.1	2.445	mg/Kg	7820	34.4
HLSF-0085-SB-015 (10.0-11.0)	10	11	Nitrate and Nitrite as N^^	0.1	4.11	mg/Kg	7820	182
HLSF-0085-SB-015 (40.0-41.0)	40	41	Nitrate and Nitrite as N^^	0.1	1.69	mg/Kg	7820	21.8
HLSF-0085-SB-015 (49.0-50.0)	49	50	Nitrate and Nitrite as N^^	0.1	2.68	mg/Kg	7820	34.4
HLSF-0085-SB-019 (20.0-22.0)***	20	22	Nitrate and Nitrite as N^^	0.1	0.2575	mg/Kg	7820	171
HLSF-0085-SB-019 (30.0-31.0)	30	31	Nitrate and Nitrite as N^^	0.1	0.156	mg/Kg	7820	71.1
HLSF-0085-SB-019 (40.0-41.0)	40	41	Nitrate and Nitrite as N^^	0.1	2	mg/Kg	7820	21.8
HLSF-0085-SB-019 (49.0-50.0)	49	50	Nitrate and Nitrite as N^^	0.1	3.28	mg/Kg	7820	34.4
HLSF-0085-SB-020 (10.0-11.0)	10	11	Nitrate and Nitrite as N^^	0.1	25.6	mg/Kg	7820	182
HLSF-0085-SB-020 (20.0-21.0)	20	21	Nitrate and Nitrite as N^^	0.1	7.37	mg/Kg	7820	171
HLSF-0085-SB-020 (30.0-31.0)	30	31	Nitrate and Nitrite as N^^	0.1	3.17	mg/Kg	7820	71.1
HLSF-0085-SB-020 (40.0-41.0)	40	41	Nitrate and Nitrite as N^^	0.1	3.96	mg/Kg	7820	21.8
HLSF-0085-SB-020 (49.0-50.0)	49	50	Nitrate and Nitrite as N^^	0.1	9.58	mg/Kg	7820	34.4
HLSF-0085-SB-021 (10.0-11.0)	10	11	Nitrate and Nitrite as N^^	0.1	14.2	mg/Kg	7820	182

Table D-2. HELSTF Diesel Spill Zone

Field Sample Id	Start Depth	End Depth	Constituent Name	Reporting Limit	Result	Units	Residential SSL	Background
HLSF-0085-SB-021 (20.0-21.0)	20	21	Nitrate and Nitrite as N^^	0.1	13.8	mg/Kg	7820	171
HLSF-0085-SB-021 (30.0-31.0)	30	31	Nitrate and Nitrite as N^^	0.1	44.9	mg/Kg	7820	71.1
HLSF-0085-SB-021 (40.0-41.0)	40	41	Nitrate and Nitrite as N^^	0.1	6.92	mg/Kg	7820	21.8
HLSF-0085-SB-021 (49.0-50.0)	49	50	Nitrate and Nitrite as N^^	0.1	13.7	mg/Kg	7820	34.4
HLSF-0085-SB-011 (10.0-11.0)	10	11	Nitrate and Nitrite as N^^	0.1	5.29	mg/Kg	7820	182
HLSF-0085-SB-011 (20.0-21.0)	20	21	Nitrate and Nitrite as N^^	0.1	0.514	mg/Kg	7820	171
HLSF-0085-SB-011 (49.0-50.0)	49	50	Nitrate and Nitrite as N^^	0.1	1.02	mg/Kg	7820	34.4
HLSF-0085-SB-018 (20.0-21.0)	20	21	n-Propylbenzene	10	942	ug/Kg	62100	—
HLSF-0085-SB-018 (49.0-50.0)	49	50	n-Propylbenzene	10	18.8	ug/Kg	62100	
HLSF-0085-SB-019 (20.0-22.0)***	20	22	n-Propylbenzene	10	196.5	ug/Kg	62100	
HLSF-0085-SB-019 (30.0-31.0)	30	31	n-Propylbenzene	10	26.1	ug/Kg	62100	
HLSF-0085-SB-019 (36.0-37.0)	36	37	n-Propylbenzene	10	37.3	ug/Kg	62100	
HLSF-0085-SB-013 (40.0-41.0)	40	41	n-Propylbenzene	10	555	ug/Kg	62100	
HLSF-0085-SB-011 (20.0-21.0)	20	21	n-Propylbenzene	10	37	ug/Kg	62100	
HLSF-0085-SB-011 (30.0-32.0)***	30	32	n-Propylbenzene	10	33.65	ug/Kg	62100	
HLSF-0085-SB-011 (40.0-42.0)	40	42	n-Propylbenzene	10	1390	ug/Kg	62100	
HLSF-0085-SB-016 (20.0-21.0)	20	21	n-Propylbenzene	10	41	ug/Kg	62100	
HLSF-0085-SB-014 (20.0-22.0)	20	22	n-Propylbenzene	10	5270	ug/Kg	62100	
HLSF-0085-SB-019 (30.0-31.0)	30	31	o-Xylene	10	31.1	ug/Kg	99500	
HLSF-0085-SB-011 (30.0-32.0)***	30	32	o-Xylene	10	10.65	ug/Kg	99500	
HLSF-0085-SB-011 (40.0-42.0)	40	42	o-Xylene	10	367	ug/Kg	99500	
HLSF-0085-SB-018 (20.0-21.0)	20	21	p-Isopropyltoluene	10	209	ug/Kg	NE	—
HLSF-0085-SB-018 (40.0-41.0)	40	41	p-Isopropyltoluene	10	187	ug/Kg	NE	
HLSF-0085-SB-018 (49.0-50.0)	49	50	p-Isopropyltoluene	10	40.6	ug/Kg	NE	
HLSF-0085-SB-019 (30.0-31.0)	30	31	p-Isopropyltoluene	10	362	ug/Kg	NE	
HLSF-0085-SB-013 (40.0-41.0)	40	41	p-Isopropyltoluene	10	533	ug/Kg	NE	
HLSF-0085-SB-011 (30.0-32.0)***	30	32	p-Isopropyltoluene	10	329	ug/Kg	NE	
HLSF-0085-SB-011 (40.0-42.0)	40	42	p-Isopropyltoluene	10	611	ug/Kg	NE	
HLSF-0085-SB-014 (20.0-22.0)	20	22	p-Isopropyltoluene	10	1770	ug/Kg	NE	
HLSF-0085-SB-019 (30.0-31.0)	30	31	Pyrene	0.25	0.682	mg/Kg	NE	—
HLSF-0085-SB-011 (30.0-32.0)***	30	32	Pyrene	0.25	0.468	mg/Kg	NE	
HLSF-0085-SB-011 (40.0-42.0)	40	42	Pyrene	0.25	1.42	mg/Kg	NE	
HLSF-0085-SB-014 (20.0-22.0)	20	22	Pyrene	0.25	0.732	mg/Kg	NE	
HLSF-0085-SB-010 (20.0-22.0)***	20	22	sec-Butylbenzene	10	28.7	ug/Kg	60600	—
HLSF-0085-SB-018 (20.0-21.0)	20	21	sec-Butylbenzene	10	1040	ug/Kg	60600	
HLSF-0085-SB-018 (40.0-41.0)	40	41	sec-Butylbenzene	10	485	ug/Kg	60600	
HLSF-0085-SB-018 (49.0-50.0)	49	50	sec-Butylbenzene	10	91.9	ug/Kg	60600	
HLSF-0085-SB-019 (20.0-22.0)***	20	22	sec-Butylbenzene	10	493	ug/Kg	60600	
HLSF-0085-SB-019 (30.0-31.0)	30	31	sec-Butylbenzene	10	554	ug/Kg	60600	
HLSF-0085-SB-019 (36.0-37.0)	36	37	sec-Butylbenzene	10	466	ug/Kg	60600	
HLSF-0085-SB-013 (40.0-41.0)	40	41	sec-Butylbenzene	10	936	ug/Kg	60600	
HLSF-0085-SB-013 (49.0-50.0)	49	50	sec-Butylbenzene	10	14.4	ug/Kg	60600	
HLSF-0085-SB-011 (20.0-21.0)	20	21	sec-Butylbenzene	10	121	ug/Kg	60600	
HLSF-0085-SB-011 (30.0-32.0)***	30	32	sec-Butylbenzene	10	302	ug/Kg	60600	
HLSF-0085-SB-011 (40.0-42.0)	40	42	sec-Butylbenzene	10	2740	ug/Kg	60600	
HLSF-0085-SB-016 (20.0-21.0)	20	21	sec-Butylbenzene	10	123	ug/Kg	60600	
HLSF-0085-SB-016 (30.0-31.0)	30	31	sec-Butylbenzene	10	13.2	ug/Kg	60600	
HLSF-0085-SB-014 (20.0-22.0)	20	22	sec-Butylbenzene	10	5570	ug/Kg	60600	
HLSF-0085-SB-014 (49.0-50.0)	49	50	sec-Butylbenzene	10	15.6	ug/Kg	60600	
HLSF-0085-SB-017 (10.0-11.0)	10	11	Total Barium	1	32.9	mg/Kg	15600	72.4
HLSF-0085-SB-017 (20.0-21.0)	20	21	Total Barium	1	44.5	mg/Kg	15600	47.6
HLSF-0085-SB-017 (30.0-31.0)	30	31	Total Barium	1	65.7	mg/Kg	15600	72.5
HLSF-0085-SB-017 (41.0-42.0)	41	42	Total Barium	1	46.9	mg/Kg	15600	62
HLSF-0085-SB-017 (50.0-52.0)***	50	52	Total Barium	1	22.9	mg/Kg	15600	84.4
HLSF-0085-SB-017 (30.0-31.0)	30	31	Total Cadmium	0.5	0.604	mg/Kg	39	<0.5
HLSF-0085-SB-017 (41.0-42.0)	41	42	Total Cadmium	0.5	0.914	mg/Kg	39	<0.5
HLSF-0085-SB-017 (10.0-11.0)	10	11	Total Chromium*	1	2.84	mg/Kg	210	4.48
HLSF-0085-SB-017 (20.0-21.0)	20	21	Total Chromium*	1	5.41	mg/Kg	210	7.14
HLSF-0085-SB-017 (30.0-31.0)	30	31	Total Chromium*	1	9.17	mg/Kg	210	9.3
HLSF-0085-SB-017 (41.0-42.0)	41	42	Total Chromium*	1	13.3	mg/Kg	210	4.76
HLSF-0085-SB-017 (50.0-52.0)***	50	52	Total Chromium*	1	5.74	mg/Kg	210	15.6
HLSF-0085-SB-010 (10.0-11.0)	10	11	Total Chromium*	0.5	2.17	mg/Kg	210	4.48
HLSF-0085-SB-010 (20.0-22.0)***	20	22	Total Chromium*	0.5	14.3	mg/Kg	210	7.14
HLSF-0085-SB-010 (30.0-31.0)	30	31	Total Chromium*	0.5	5.6	mg/Kg	210	9.3

Table D-2. HELSTF Diesel Spill Zone

Field Sample Id	Start Depth	End Depth	Constituent Name	Reporting Limit	Result	Units	Residential SSL	Background
HLSF-0085-SB-010 (40.0-41.0)	40	41	Total Chromium*	0.5	17.3	mg/Kg	210	4.76
HLSF-0085-SB-010 (49.0-50.0)	49	50	Total Chromium*	0.5	13	mg/Kg	210	15.6
HLSF-0085-SB-015 (10.0-11.0)	10	11	Total Chromium*	0.5	6.75	mg/Kg	210	4.48
HLSF-0085-SB-015 (20.0-21.0)	20	21	Total Chromium*	0.5	18.9	mg/Kg	210	7.14
HLSF-0085-SB-015 (30.0-31.0)	30	31	Total Chromium*	0.5	4.7	mg/Kg	210	9.3
HLSF-0085-SB-015 (40.0-41.0)	40	41	Total Chromium*	0.5	7.55	mg/Kg	210	4.76
HLSF-0085-SB-015 (49.0-50.0)	49	50	Total Chromium*	0.5	9.11	mg/Kg	210	15.6
HLSF-0085-SB-018 (10.0-11.0)	10	11	Total Chromium*	0.5	7.42	mg/Kg	210	4.48
HLSF-0085-SB-018 (20.0-21.0)	20	21	Total Chromium*	0.5	12.9	mg/Kg	210	7.14
HLSF-0085-SB-018 (30.0-31.0)	30	31	Total Chromium*	0.5	10.1	mg/Kg	210	9.3
HLSF-0085-SB-018 (40.0-41.0)	40	41	Total Chromium*	0.5	11.2	mg/Kg	210	4.76
HLSF-0085-SB-018 (49.0-50.0)	49	50	Total Chromium*	0.5	7.96	mg/Kg	210	15.6
HLSF-0085-SB-019 (20.0-22.0)***	20	22	Total Chromium*	0.5	10.565	mg/Kg	210	7.14
HLSF-0085-SB-019 (30.0-31.0)	30	31	Total Chromium*	0.5	4.3	mg/Kg	210	9.3
HLSF-0085-SB-019 (40.0-41.0)	40	41	Total Chromium*	0.5	4.67	mg/Kg	210	4.76
HLSF-0085-SB-019 (49.0-50.0)	49	50	Total Chromium*	0.5	5.06	mg/Kg	210	15.6
HLSF-0085-SB-020 (10.0-11.0)	10	11	Total Chromium*	0.5	1.97	mg/Kg	210	4.48
HLSF-0085-SB-020 (20.0-21.0)	20	21	Total Chromium*	0.5	5.39	mg/Kg	210	7.14
HLSF-0085-SB-020 (30.0-31.0)	30	31	Total Chromium*	0.5	8.59	mg/Kg	210	9.3
HLSF-0085-SB-020 (40.0-41.0)	40	41	Total Chromium*	0.5	3.67	mg/Kg	210	4.76
HLSF-0085-SB-020 (49.0-50.0)	49	50	Total Chromium*	0.5	11.5	mg/Kg	210	15.6
HLSF-0085-SB-021 (10.0-11.0)	10	11	Total Chromium*	0.5	2.82	mg/Kg	210	4.48
HLSF-0085-SB-021 (20.0-21.0)	20	21	Total Chromium*	0.5	14	mg/Kg	210	7.14
HLSF-0085-SB-021 (30.0-31.0)	30	31	Total Chromium*	0.5	9.6	mg/Kg	210	9.3
HLSF-0085-SB-021 (40.0-41.0)	40	41	Total Chromium*	0.5	4.03	mg/Kg	210	4.76
HLSF-0085-SB-021 (49.0-50.0)	49	50	Total Chromium*	0.5	9.01	mg/Kg	210	15.6
HLSF-0085-SB-013 (10.0-11.0)	10	11	Total Chromium*	0.5	2.82	mg/Kg	210	4.48
HLSF-0085-SB-013 (20.0-21.0)	20	21	Total Chromium*	0.5	5.39	mg/Kg	210	7.14
HLSF-0085-SB-013 (30.0-31.0)	30	31	Total Chromium*	0.5	2.3	mg/Kg	210	9.3
HLSF-0085-SB-011 (20.0-21.0)	20	21	Total Chromium*	0.5	5.41	mg/Kg	210	7.14
HLSF-0085-SB-011 (30.0-32.0)***	30	32	Total Chromium*	0.5	3.1	mg/Kg	210	9.3
HLSF-0085-SB-011 (40.0-42.0)	40	42	Total Chromium*	0.5	2.48	mg/Kg	210	4.76
HLSF-0085-SB-011 (49.0-50.0)	49	50	Total Chromium*	0.5	3.34	mg/Kg	210	15.6
HLSF-0085-SB-016 (10.0-11.0)	10	11	Total Chromium*	0.5	2.97	mg/Kg	210	4.48
HLSF-0085-SB-016 (20.0-21.0)	20	21	Total Chromium*	0.5	8.08	mg/Kg	210	7.14
HLSF-0085-SB-016 (49.0-50.0)	49	50	Total Chromium*	1	4.47	mg/Kg	210	9.3
HLSF-0085-SB-014 (20.0-22.0)	20	22	Total Chromium*	1	2.64	mg/Kg	210	7.14
HLSF-0085-SB-014 (30.0-31.0)	30	31	Total Chromium*	1	1.83	mg/Kg	210	9.3
HLSF-0085-SB-014 (40.0-41.0)	40	41	Total Chromium*	1	1.61	mg/Kg	210	4.76
HLSF-0085-SB-014 (49.0-50.0)	49	50	Total Chromium*	1	4.49	mg/Kg	210	15.6
HLSF-0085-SB-017 (10.0-11.0)	10	11	Total Copper	0.5	2.21	mg/Kg	3130	5.19
HLSF-0085-SB-017 (20.0-21.0)	20	21	Total Copper	0.5	3.56	mg/Kg	3130	6.84
HLSF-0085-SB-017 (30.0-31.0)	30	31	Total Copper	0.5	3.92	mg/Kg	3130	8.02
HLSF-0085-SB-017 (41.0-42.0)	41	42	Total Copper	0.5	7.17	mg/Kg	3130	5.03
HLSF-0085-SB-017 (50.0-52.0)***	50	52	Total Copper	0.5	2.6	mg/Kg	3130	12.1
HLSF-0085-SB-017 (30.0-31.0)	30	31	Total Lead	1	6.82	mg/Kg	400	15.8
HLSF-0085-SB-017 (41.0-42.0)	41	42	Total Lead	1	11	mg/Kg	400	12
HLSF-0085-SB-017 (50.0-52.0)***	50	52	Total Lead	1	4.88	mg/Kg	400	21.9
HLSF-0085-SB-015 (10.0-11.0)	10	11	Total Lead	1	2.96	mg/Kg	400	7.1
HLSF-0085-SB-015 (20.0-21.0)	20	21	Total Lead	1	36.5	mg/Kg	400	18.8
HLSF-0085-SB-015 (30.0-31.0)	30	31	Total Lead	1	10.4	mg/Kg	400	15.8
HLSF-0085-SB-015 (40.0-41.0)	40	41	Total Lead	1	6.44	mg/Kg	400	12
HLSF-0085-SB-015 (49.0-50.0)	49	50	Total Lead	1	12.6	mg/Kg	400	21.9
HLSF-0085-SB-018 (10.0-11.0)	10	11	Total Lead	1	3.4	mg/Kg	400	7.1
HLSF-0085-SB-018 (20.0-21.0)	20	21	Total Lead	1	19.2	mg/Kg	400	18.8
HLSF-0085-SB-018 (30.0-31.0)	30	31	Total Lead	1	9.76	mg/Kg	400	15.8
HLSF-0085-SB-018 (40.0-41.0)	40	41	Total Lead	1	12.5	mg/Kg	400	12
HLSF-0085-SB-018 (49.0-50.0)	49	50	Total Lead	1	6.04	mg/Kg	400	21.9
HLSF-0085-SB-019 (20.0-22.0)***	20	22	Total Lead	1	21.3	mg/Kg	400	18.8
HLSF-0085-SB-019 (30.0-31.0)	30	31	Total Lead	1	7.61	mg/Kg	400	15.8
HLSF-0085-SB-019 (40.0-41.0)	40	41	Total Lead	1	8.21	mg/Kg	400	12
HLSF-0085-SB-019 (49.0-50.0)	49	50	Total Lead	1	9.97	mg/Kg	400	21.9
HLSF-0085-SB-020 (10.0-11.0)	10	11	Total Lead	1	2.75	mg/Kg	400	7.1
HLSF-0085-SB-020 (20.0-21.0)	20	21	Total Lead	1	11.9	mg/Kg	400	18.8

Table D-2. HELSTF Diesel Spill Zone

Field Sample Id	Start Depth	End Depth	Constituent Name	Reporting Limit	Result	Units	Residential SSL	Background
HLSF-0085-SB-020 (30.0-31.0)	30	31	Total Lead	1	17.5	mg/Kg	400	15.8
HLSF-0085-SB-020 (40.0-41.0)	40	41	Total Lead	1	10.2	mg/Kg	400	12
HLSF-0085-SB-020 (49.0-50.0)	49	50	Total Lead	1	20.3	mg/Kg	400	21.9
HLSF-0085-SB-021 (10.0-11.0)	10	11	Total Lead	1	3.91	mg/Kg	400	7.1
HLSF-0085-SB-021 (20.0-21.0)	20	21	Total Lead	1	27.6	mg/Kg	400	18.8
HLSF-0085-SB-021 (30.0-31.0)	30	31	Total Lead	1	18	mg/Kg	400	15.8
HLSF-0085-SB-021 (40.0-41.0)	40	41	Total Lead	1	11.8	mg/Kg	400	12
HLSF-0085-SB-021 (49.0-50.0)	49	50	Total Lead	1	14.8	mg/Kg	400	21.9
HLSF-0085-SB-013 (10.0-11.0)	10	11	Total Lead	1	3.99	mg/Kg	400	7.1
HLSF-0085-SB-013 (20.0-21.0)	20	21	Total Lead	1	13.9	mg/Kg	400	18.8
HLSF-0085-SB-013 (30.0-31.0)	30	31	Total Lead	1	6.55	mg/Kg	400	15.8
HLSF-0085-SB-013 (40.0-41.0)	40	41	Total Lead	1	4.74	mg/Kg	400	12
HLSF-0085-SB-013 (49.0-50.0)	49	50	Total Lead	1	4.08	mg/Kg	400	21.9
HLSF-0085-SB-011 (10.0-11.0)	10	11	Total Lead	1	2.87	mg/Kg	400	7.1
HLSF-0085-SB-011 (20.0-21.0)	20	21	Total Lead	1	10.7	mg/Kg	400	18.8
HLSF-0085-SB-011 (30.0-32.0)***	30	32	Total Lead	1	9.31	mg/Kg	400	15.8
HLSF-0085-SB-011 (40.0-42.0)	40	42	Total Lead	1	7.84	mg/Kg	400	12
HLSF-0085-SB-011 (49.0-50.0)	49	50	Total Lead	1	11.2	mg/Kg	400	21.9
HLSF-0085-SB-016 (10.0-11.0)	10	11	Total Lead	1	4.36	mg/Kg	400	7.1
HLSF-0085-SB-016 (20.0-21.0)	20	21	Total Lead	1	17.5	mg/Kg	400	18.8
HLSF-0085-SB-016 (30.0-31.0)	30	31	Total Lead	1	4.36	mg/Kg	400	15.8
HLSF-0085-SB-016 (40.0-41.0)	40	41	Total Lead	1	5	mg/Kg	400	12
HLSF-0085-SB-016 (49.0-50.0)	49	50	Total Lead	1	8.79	mg/Kg	400	21.9
HLSF-0085-SB-014 (20.0-22.0)	20	22	Total Lead	1	5.11	mg/Kg	400	18.8
HLSF-0085-SB-014 (30.0-31.0)	30	31	Total Lead	1	7.74	mg/Kg	400	15.8
HLSF-0085-SB-014 (40.0-41.0)	40	41	Total Lead	1	5.3	mg/Kg	400	12
HLSF-0085-SB-014 (49.0-50.0)	49	50	Total Lead	1	16	mg/Kg	400	21.9
HLSF-0085-SB-017 (10.0-11.0)	10	11	Total Phosphorous	1	40.6	mg/Kg	NE	70
HLSF-0085-SB-017 (20.0-21.0)	20	21	Total Phosphorous	1	66.1	mg/Kg	NE	144
HLSF-0085-SB-017 (30.0-31.0)	30	31	Total Phosphorous	1	160	mg/Kg	NE	266
HLSF-0085-SB-017 (41.0-42.0)	41	42	Total Phosphorous	1	225	mg/Kg	NE	177
HLSF-0085-SB-017 (50.0-52.0)***	50	52	Total Phosphorous	1	121	mg/Kg	NE	329
HLSF-0085-SB-015 (10.0-11.0)	10	11	Total Phosphorous	1	13.8	mg/Kg	NE	70
HLSF-0085-SB-015 (20.0-21.0)	20	21	Total Phosphorous	1	207	mg/Kg	NE	144
HLSF-0085-SB-015 (30.0-31.0)	30	31	Total Phosphorous	1	135	mg/Kg	NE	266
HLSF-0085-SB-015 (40.0-41.0)	40	41	Total Phosphorous	1	88.4	mg/Kg	NE	177
HLSF-0085-SB-015 (49.0-50.0)	49	50	Total Phosphorous	1	125	mg/Kg	NE	329
HLSF-0085-SB-018 (10.0-11.0)	10	11	Total Phosphorous	1	7.15	mg/Kg	NE	70
HLSF-0085-SB-018 (20.0-21.0)	20	21	Total Phosphorous	1	124	mg/Kg	NE	144
HLSF-0085-SB-018 (30.0-31.0)	30	31	Total Phosphorous	1	167	mg/Kg	NE	266
HLSF-0085-SB-018 (40.0-41.0)	40	41	Total Phosphorous	1	154	mg/Kg	NE	177
HLSF-0085-SB-018 (49.0-50.0)	49	50	Total Phosphorous	1	81.7	mg/Kg	NE	329
HLSF-0085-SB-019 (20.0-22.0)***	20	22	Total Phosphorous	2	221.5	mg/Kg	NE	144
HLSF-0085-SB-019 (30.0-31.0)	30	31	Total Phosphorous	2	168	mg/Kg	NE	266
HLSF-0085-SB-019 (40.0-41.0)	40	41	Total Phosphorous	2	207	mg/Kg	NE	177
HLSF-0085-SB-019 (49.0-50.0)	49	50	Total Phosphorous	2	161	mg/Kg	NE	329
HLSF-0085-SB-020 (10.0-11.0)	10	11	Total Phosphorous	2	55.6	mg/Kg	NE	70
HLSF-0085-SB-020 (20.0-21.0)	20	21	Total Phosphorous	2	99.3	mg/Kg	NE	144
HLSF-0085-SB-020 (30.0-31.0)	30	31	Total Phosphorous	2	245	mg/Kg	NE	266
HLSF-0085-SB-020 (40.0-41.0)	40	41	Total Phosphorous	2	175	mg/Kg	NE	177
HLSF-0085-SB-020 (49.0-50.0)	49	50	Total Phosphorous	2	263	mg/Kg	NE	329
HLSF-0085-SB-021 (10.0-11.0)	10	11	Total Phosphorous	2	71.8	mg/Kg	NE	70
HLSF-0085-SB-021 (20.0-21.0)	20	21	Total Phosphorous	2	220	mg/Kg	NE	144
HLSF-0085-SB-021 (30.0-31.0)	30	31	Total Phosphorous	2	284	mg/Kg	NE	266
HLSF-0085-SB-021 (40.0-41.0)	40	41	Total Phosphorous	2	148	mg/Kg	NE	177
HLSF-0085-SB-021 (49.0-50.0)	49	50	Total Phosphorous	2	235	mg/Kg	NE	329
HLSF-0085-SB-013 (10.0-11.0)	10	11	Total Phosphorous	2	61.1	mg/Kg	NE	70
HLSF-0085-SB-013 (20.0-21.0)	20	21	Total Phosphorous	2	105	mg/Kg	NE	144
HLSF-0085-SB-013 (30.0-31.0)	30	31	Total Phosphorous	2	119	mg/Kg	NE	266
HLSF-0085-SB-013 (40.0-41.0)	40	41	Total Phosphorous	2	80.8	mg/Kg	NE	177
HLSF-0085-SB-013 (49.0-50.0)	49	50	Total Phosphorous	2	56.8	mg/Kg	NE	329
HLSF-0085-SB-011 (10.0-11.0)	10	11	Total Phosphorous	2	45.3	mg/Kg	NE	70
HLSF-0085-SB-011 (20.0-21.0)	20	21	Total Phosphorous	2	97.6	mg/Kg	NE	144
HLSF-0085-SB-011 (30.0-32.0)***	30	32	Total Phosphorous	2	119.5	mg/Kg	NE	266

Table D-2. HELSTF Diesel Spill Zone

Field Sample Id	Start Depth	End Depth	Constituent Name	Reporting Limit	Result	Units	Residential SSL	Background
HLSF-0085-SB-011 (40.0-42.0)	40	42	Total Phosphorous	2	113	mg/Kg	NE	177
HLSF-0085-SB-011 (49.0-50.0)	49	50	Total Phosphorous	2	143	mg/Kg	NE	329
HLSF-0085-SB-016 (10.0-11.0)	10	11	Total Phosphorous	2	65.2	mg/Kg	NE	70
HLSF-0085-SB-016 (20.0-21.0)	20	21	Total Phosphorous	2	140	mg/Kg	NE	144
HLSF-0085-SB-016 (30.0-31.0)	30	31	Total Phosphorous	1	150	mg/Kg	NE	266
HLSF-0085-SB-016 (40.0-41.0)	40	41	Total Phosphorous	1	189	mg/Kg	NE	177
HLSF-0085-SB-016 (49.0-50.0)	49	50	Total Phosphorous	1	230	mg/Kg	NE	329
HLSF-0085-SB-014 (10.0-12.0)***	10	12	Total Phosphorous	1	58.5	mg/Kg	NE	70
HLSF-0085-SB-014 (20.0-22.0)	20	22	Total Phosphorous	1	126	mg/Kg	NE	144
HLSF-0085-SB-014 (30.0-31.0)	30	31	Total Phosphorous	1	193	mg/Kg	NE	266
HLSF-0085-SB-014 (40.0-41.0)	40	41	Total Phosphorous	1	173	mg/Kg	NE	177
HLSF-0085-SB-014 (49.0-50.0)	49	50	Total Phosphorous	1	274	mg/Kg	NE	329
HLSF-0085-SB-017 (10.0-11.0)	10	11	Total Potassium	50	645	mg/Kg	NE	1933
HLSF-0085-SB-017 (20.0-21.0)	20	21	Total Potassium	50	1160	mg/Kg	NE	2363
HLSF-0085-SB-017 (30.0-31.0)	30	31	Total Potassium	50	1560	mg/Kg	NE	2387
HLSF-0085-SB-017 (41.0-42.0)	41	42	Total Potassium	50	1970	mg/Kg	NE	2058
HLSF-0085-SB-017 (50.0-52.0)***	50	52	Total Potassium	50	506	mg/Kg	NE	2877
HLSF-0085-SB-017 (10.0-11.0)	10	11	Total Sodium	50	232	mg/Kg	NE	1972
HLSF-0085-SB-017 (20.0-21.0)	20	21	Total Sodium	50	381	mg/Kg	NE	2731
HLSF-0085-SB-017 (30.0-31.0)	30	31	Total Sodium	50	456	mg/Kg	NE	2319
HLSF-0085-SB-017 (41.0-42.0)	41	42	Total Sodium	50	298	mg/Kg	NE	1830
HLSF-0085-SB-017 (50.0-52.0)***	50	52	Total Sodium	50	213	mg/Kg	NE	2543
HLSF-0085-SB-015 (10.0-11.0)	10	11	Total Sodium	50	357	mg/Kg	NE	1972
HLSF-0085-SB-015 (20.0-21.0)	20	21	Total Sodium	50	611	mg/Kg	NE	2731
HLSF-0085-SB-015 (30.0-31.0)	30	31	Total Sodium	50	513	mg/Kg	NE	2319
HLSF-0085-SB-015 (40.0-41.0)	40	41	Total Sodium	50	454	mg/Kg	NE	1830
HLSF-0085-SB-015 (49.0-50.0)	49	50	Total Sodium	50	540	mg/Kg	NE	2543
HLSF-0085-SB-018 (10.0-11.0)	10	11	Total Sodium	50	414	mg/Kg	NE	1972
HLSF-0085-SB-018 (20.0-21.0)	20	21	Total Sodium	50	500	mg/Kg	NE	2731
HLSF-0085-SB-018 (30.0-31.0)	30	31	Total Sodium	50	730	mg/Kg	NE	2319
HLSF-0085-SB-018 (40.0-41.0)	40	41	Total Sodium	50	710	mg/Kg	NE	1830
HLSF-0085-SB-018 (49.0-50.0)	49	50	Total Sodium	50	415	mg/Kg	NE	2543
HLSF-0085-SB-019 (20.0-22.0)***	20	22	Total Sodium	0.5	1178	mg/Kg	NE	2731
HLSF-0085-SB-019 (30.0-31.0)	30	31	Total Sodium	0.5	920	mg/Kg	NE	2319
HLSF-0085-SB-019 (40.0-41.0)	40	41	Total Sodium	0.5	766	mg/Kg	NE	1830
HLSF-0085-SB-019 (49.0-50.0)	49	50	Total Sodium	0.5	990	mg/Kg	NE	2543
HLSF-0085-SB-020 (10.0-11.0)	10	11	Total Sodium	0.5	472	mg/Kg	NE	1972
HLSF-0085-SB-020 (20.0-21.0)	20	21	Total Sodium	0.5	846	mg/Kg	NE	2731
HLSF-0085-SB-020 (30.0-31.0)	30	31	Total Sodium	0.5	1910	mg/Kg	NE	2319
HLSF-0085-SB-020 (40.0-41.0)	40	41	Total Sodium	0.5	813	mg/Kg	NE	1830
HLSF-0085-SB-020 (49.0-50.0)	49	50	Total Sodium	0.5	3300	mg/Kg	NE	2543
HLSF-0085-SB-021 (10.0-11.0)	10	11	Total Sodium	0.5	1410	mg/Kg	NE	1972
HLSF-0085-SB-021 (20.0-21.0)	20	21	Total Sodium	0.5	3410	mg/Kg	NE	2731
HLSF-0085-SB-021 (30.0-31.0)	30	31	Total Sodium	0.5	4110	mg/Kg	NE	2319
HLSF-0085-SB-021 (40.0-41.0)	40	41	Total Sodium	0.5	1220	mg/Kg	NE	1830
HLSF-0085-SB-021 (49.0-50.0)	49	50	Total Sodium	0.5	2520	mg/Kg	NE	2543
HLSF-0085-SB-013 (10.0-11.0)	10	11	Total Sodium	50	650	mg/Kg	NE	1972
HLSF-0085-SB-013 (20.0-21.0)	20	21	Total Sodium	50	378	mg/Kg	NE	2731
HLSF-0085-SB-013 (30.0-31.0)	30	31	Total Sodium	50	470	mg/Kg	NE	2319
HLSF-0085-SB-013 (40.0-41.0)	40	41	Total Sodium	50	384	mg/Kg	NE	1830
HLSF-0085-SB-013 (49.0-50.0)	49	50	Total Sodium	50	290	mg/Kg	NE	2543
HLSF-0085-SB-011 (10.0-11.0)	10	11	Total Sodium	50	560	mg/Kg	NE	1972
HLSF-0085-SB-011 (20.0-21.0)	20	21	Total Sodium	50	880	mg/Kg	NE	2731
HLSF-0085-SB-011 (30.0-32.0)***	30	32	Total Sodium	50	1050	mg/Kg	NE	2319
HLSF-0085-SB-011 (40.0-42.0)	40	42	Total Sodium	50	600	mg/Kg	NE	1830
HLSF-0085-SB-011 (49.0-50.0)	49	50	Total Sodium	50	560	mg/Kg	NE	2543
HLSF-0085-SB-016 (10.0-11.0)	10	11	Total Sodium	50	645	mg/Kg	NE	1972
HLSF-0085-SB-016 (20.0-21.0)	20	21	Total Sodium	50	1360	mg/Kg	NE	2731
HLSF-0085-SB-016 (30.0-31.0)	30	31	Total Sodium	0.5	2030	mg/Kg	NE	2319
HLSF-0085-SB-016 (40.0-41.0)	40	41	Total Sodium	0.5	1640	mg/Kg	NE	1830
HLSF-0085-SB-016 (49.0-50.0)	49	50	Total Sodium	0.5	3270	mg/Kg	NE	2543
HLSF-0085-SB-014 (10.0-12.0)***	10	12	Total Sodium	0.5	1130	mg/Kg	NE	1972
HLSF-0085-SB-014 (20.0-22.0)	20	22	Total Sodium	0.5	605	mg/Kg	NE	2731
HLSF-0085-SB-014 (30.0-31.0)	30	31	Total Sodium	0.5	1340	mg/Kg	NE	2319

Table D-2. HELSTF Diesel Spill Zone

Field Sample Id	Start Depth	End Depth	Constituent Name	Reporting Limit	Result	Units	Residential SSL	Background
HLSF-0085-SB-014 (40.0-41.0)	40	41	Total Sodium	0.5	1440	mg/Kg	NE	1830
HLSF-0085-SB-014 (49.0-50.0)	49	50	Total Sodium	0.5	3410	mg/Kg	NE	2543
HLSF-0085-SB-017 (10.0-11.0)	10	11	Total Zinc	1	13.5	mg/Kg	23500	21.5
HLSF-0085-SB-017 (20.0-21.0)	20	21	Total Zinc	1	18.4	mg/Kg	23500	21.6
HLSF-0085-SB-017 (30.0-31.0)	30	31	Total Zinc	1	22.8	mg/Kg	23500	30.7
HLSF-0085-SB-017 (41.0-42.0)	41	42	Total Zinc	1	34.4	mg/Kg	23500	20.2
HLSF-0085-SB-017 (50.0-52.0)***	50	52	Total Zinc	1	16.5	mg/Kg	23500	44.2
HLSF-0085-SB-010 (10.0-11.0)	10	11	Total Zinc	2	3.88	mg/Kg	23500	21.5
HLSF-0085-SB-010 (20.0-22.0)***	20	22	Total Zinc	2	39.2	mg/Kg	23500	21.6
HLSF-0085-SB-010 (30.0-31.0)	30	31	Total Zinc	2	18.5	mg/Kg	23500	30.7
HLSF-0085-SB-010 (40.0-41.0)	40	41	Total Zinc	2	50.7	mg/Kg	23500	20.2
HLSF-0085-SB-010 (49.0-50.0)	49	50	Total Zinc	2	43.3	mg/Kg	23500	44.2
HLSF-0085-SB-015 (10.0-11.0)	10	11	Total Zinc	2	6.54	mg/Kg	23500	21.5
HLSF-0085-SB-015 (20.0-21.0)	20	21	Total Zinc	2	45	mg/Kg	23500	21.6
HLSF-0085-SB-015 (30.0-31.0)	30	31	Total Zinc	2	16.1	mg/Kg	23500	30.7
HLSF-0085-SB-015 (40.0-41.0)	40	41	Total Zinc	2	10.2	mg/Kg	23500	20.2
HLSF-0085-SB-015 (49.0-50.0)	49	50	Total Zinc	2	17.2	mg/Kg	23500	44.2
HLSF-0085-SB-018 (10.0-11.0)	10	11	Total Zinc	2	3.64	mg/Kg	23500	21.5
HLSF-0085-SB-018 (20.0-21.0)	20	21	Total Zinc	2	19.9	mg/Kg	23500	21.6
HLSF-0085-SB-018 (30.0-31.0)	30	31	Total Zinc	2	18.2	mg/Kg	23500	30.7
HLSF-0085-SB-018 (40.0-41.0)	40	41	Total Zinc	2	21.2	mg/Kg	23500	20.2
HLSF-0085-SB-018 (49.0-50.0)	49	50	Total Zinc	2	11.3	mg/Kg	23500	44.2
HLSF-0085-SB-019 (20.0-22.0)***	20	22	Total Zinc	2	34.4	mg/Kg	23500	21.6
HLSF-0085-SB-019 (30.0-31.0)	30	31	Total Zinc	2	14.5	mg/Kg	23500	30.7
HLSF-0085-SB-019 (40.0-41.0)	40	41	Total Zinc	2	14.2	mg/Kg	23500	20.2
HLSF-0085-SB-019 (49.0-50.0)	49	50	Total Zinc	2	14.1	mg/Kg	23500	44.2
HLSF-0085-SB-020 (10.0-11.0)	10	11	Total Zinc	2	3.9	mg/Kg	23500	21.5
HLSF-0085-SB-020 (20.0-21.0)	20	21	Total Zinc	2	16.4	mg/Kg	23500	21.6
HLSF-0085-SB-020 (30.0-31.0)	30	31	Total Zinc	2	28.2	mg/Kg	23500	30.7
HLSF-0085-SB-020 (40.0-41.0)	40	41	Total Zinc	2	12.9	mg/Kg	23500	20.2
HLSF-0085-SB-020 (49.0-50.0)	49	50	Total Zinc	2	37.8	mg/Kg	23500	44.2
HLSF-0085-SB-021 (10.0-11.0)	10	11	Total Zinc	2	4.96	mg/Kg	23500	21.5
HLSF-0085-SB-021 (20.0-21.0)	20	21	Total Zinc	2	41.8	mg/Kg	23500	21.6
HLSF-0085-SB-021 (30.0-31.0)	30	31	Total Zinc	2	32.5	mg/Kg	23500	30.7
HLSF-0085-SB-021 (40.0-41.0)	40	41	Total Zinc	2	16.4	mg/Kg	23500	20.2
HLSF-0085-SB-021 (49.0-50.0)	49	50	Total Zinc	2	27.5	mg/Kg	23500	44.2
HLSF-0085-SB-013 (10.0-11.0)	10	11	Total Zinc	2	5.08	mg/Kg	23500	21.5
HLSF-0085-SB-013 (20.0-21.0)	20	21	Total Zinc	2	16.4	mg/Kg	23500	21.6
HLSF-0085-SB-013 (30.0-31.0)	30	31	Total Zinc	2	9.71	mg/Kg	23500	30.7
HLSF-0085-SB-013 (40.0-41.0)	40	41	Total Zinc	2	6.17	mg/Kg	23500	20.2
HLSF-0085-SB-013 (49.0-50.0)	49	50	Total Zinc	2	5.15	mg/Kg	23500	44.2
HLSF-0085-SB-011 (10.0-11.0)	10	11	Total Zinc	2	3.61	mg/Kg	23500	21.5
HLSF-0085-SB-011 (20.0-21.0)	20	21	Total Zinc	2	12.3	mg/Kg	23500	21.6
HLSF-0085-SB-011 (30.0-32.0)***	30	32	Total Zinc	2	12.85	mg/Kg	23500	30.7
HLSF-0085-SB-011 (40.0-42.0)	40	42	Total Zinc	2	9.45	mg/Kg	23500	20.2
HLSF-0085-SB-011 (49.0-50.0)	49	50	Total Zinc	2	13.7	mg/Kg	23500	44.2
HLSF-0085-SB-016 (10.0-11.0)	10	11	Total Zinc	2	5.11	mg/Kg	23500	21.5
HLSF-0085-SB-016 (20.0-21.0)	20	21	Total Zinc	2	24.4	mg/Kg	23500	21.6
HLSF-0085-SB-016 (30.0-31.0)	30	31	Total Zinc	1	14	mg/Kg	23500	30.7
HLSF-0085-SB-016 (40.0-41.0)	40	41	Total Zinc	1	16.4	mg/Kg	23500	20.2
HLSF-0085-SB-016 (49.0-50.0)	49	50	Total Zinc	1	29.6	mg/Kg	23500	44.2
HLSF-0085-SB-014 (10.0-12.0)***	10	12	Total Zinc	1	5.725	mg/Kg	23500	21.5
HLSF-0085-SB-014 (20.0-22.0)	20	22	Total Zinc	1	13.6	mg/Kg	23500	21.6
HLSF-0085-SB-014 (30.0-31.0)	30	31	Total Zinc	1	17.3	mg/Kg	23500	30.7
HLSF-0085-SB-014 (40.0-41.0)	40	41	Total Zinc	1	16.6	mg/Kg	23500	20.2
HLSF-0085-SB-014 (49.0-50.0)	49	50	Total Zinc	1	33.8	mg/Kg	23500	44.2

* Residential SSL from EPA Region 6.
** NMED TPH Screening Guideline Residential Direct Exposure.
*** Average of primary and duplicate sample.
^ NMED SSL for Total Xylenes
^^ NMED SSL for Nitrite. No SSL for combined Nitrate + Nitrite.

Table D-3. HELSTF Central Storage Zone

Field Sample Id	Start Depth	End Depth	Constituent Name	Reporting Limit	Result	Units	Residential SSL	Background
HLSF-0085-SB-024 (40.0-41.0)	40	41	Di-n-octylphthalate*	0.25	0.313	mg/Kg	2400	—
HLSF-0085-SB-023 (49.0-50.0)	49	50	Di-n-octylphthalate*	0.25	0.594	mg/Kg	2400	
HLSF-0085-SB-022 (10.0-11.0)	10	11	FOC	N/A	5.01	%	NE	2.73
HLSF-0085-SB-022 (20.0-22.0)***	20	22	FOC	N/A	4.605	%	NE	3.12
HLSF-0085-SB-022 (40.0-41.0)	40	41	FOC	N/A	1.57	%	NE	1.96
HLSF-0085-SB-022 (49.0-50.0)	49	50	FOC	N/A	4.04	%	NE	1.81
HLSF-0085-SB-025 (10.0-11.0)	10	11	FOC	N/A	5.19	%	NE	2.73
HLSF-0085-SB-025 (20.0-21.0)	20	21	FOC	N/A	5.73	%	NE	3.12
HLSF-0085-SB-025 (30.0-31.0)	30	31	FOC	N/A	2.15	%	NE	2.08
HLSF-0085-SB-025 (40.0-41.0)	40	41	FOC	N/A	1.89	%	NE	1.96
HLSF-0085-SB-026 (10.0-11.0)	10	11	FOC	N/A	4.9	%	NE	2.73
HLSF-0085-SB-026 (20.0-21.0)	20	21	FOC	N/A	3.25	%	NE	3.12
HLSF-0085-SB-026 (30.0-32.0)***	30	32	FOC	N/A	2.77	%	NE	2.08
HLSF-0085-SB-026 (40.0-41.0)	40	41	FOC	N/A	2.97	%	NE	1.96
HLSF-0085-SB-026 (49.0-50.0)	49	50	FOC	N/A	3.25	%	NE	1.81
HLSF-0085-SB-024 (10.0-11.0)	10	11	FOC	N/A	5.69	%	NE	2.73
HLSF-0085-SB-024 (20.0-21.0)	20	21	FOC	N/A	4.54	%	NE	3.12
HLSF-0085-SB-024 (30.0-31.0)	30	31	FOC	N/A	2.2	%	NE	2.08
HLSF-0085-SB-024 (40.0-41.0)	40	41	FOC	N/A	1.21	%	NE	1.96
HLSF-0085-SB-024 (49.0-50.0)	49	50	FOC	N/A	4.71	%	NE	1.81
HLSF-0085-SB-023 (10.0-11.0)	10	11	FOC	N/A	3.89	%	NE	2.73
HLSF-0085-SB-023 (20.0-21.0)	20	21	FOC	N/A	4.77	%	NE	3.12
HLSF-0085-SB-023 (30.0-31.0)	30	31	FOC	N/A	1	%	NE	2.08
HLSF-0085-SB-023 (40.0-41.0)	40	41	FOC	N/A	0.659	%	NE	1.96
HLSF-0085-SB-023 (49.0-50.0)	49	50	FOC	N/A	3.18	%	NE	1.81
HLSF-0085-SB-027 (10.0-12.0)***	10	12	FOC	N/A	4.96	%	NE	2.73
HLSF-0085-SB-027 (15.0-16.0)	15	16	FOC	N/A	4.98	%	NE	2.92
HLSF-0085-SB-027 (20.0-21.0)	20	21	FOC	N/A	3.25	%	NE	3.12
HLSF-0085-SB-027 (30.0-31.0)	30	31	FOC	N/A	2.65	%	NE	2.08
HLSF-0085-SB-027 (40.0-41.0)	40	41	FOC	N/A	5.03	%	NE	1.96
HLSF-0085-SB-027 (49.0-50.0)	49	50	FOC	N/A	3.26	%	NE	1.81
HLSF-0085-SB-028 (15.0-16.0)	15	16	FOC	N/A	6.52	%	NE	2.92
HLSF-0085-SB-028 (20.0-21.0)	20	21	FOC	N/A	2.62	%	NE	3.12
HLSF-0085-SB-028 (30.0-31.0)	30	31	FOC	N/A	4.48	%	NE	2.08
HLSF-0085-SB-028 (40.0-41.0)	40	41	FOC	N/A	6.24	%	NE	1.96
HLSF-0085-SB-028 (49.0-50.0)	49	50	FOC	N/A	5.45	%	NE	1.81
HLSF-0085-SB-022 (10.0-11.0)	10	11	Nitrate and Nitrite as N^^	0.1	0.81	mg/Kg	7820	182
HLSF-0085-SB-022 (20.0-22.0)***	20	22	Nitrate and Nitrite as N^^	0.1	10.63	mg/Kg	7820	171
HLSF-0085-SB-022 (40.0-41.0)	40	41	Nitrate and Nitrite as N^^	0.1	10.9	mg/Kg	7820	21.8
HLSF-0085-SB-022 (49.0-50.0)	49	50	Nitrate and Nitrite as N^^	0.1	15.7	mg/Kg	7820	34.4
HLSF-0085-SB-025 (10.0-11.0)	10	11	Nitrate and Nitrite as N^^	0.1	15.4	mg/Kg	7820	182
HLSF-0085-SB-025 (20.0-21.0)	20	21	Nitrate and Nitrite as N^^	0.1	15.2	mg/Kg	7820	171
HLSF-0085-SB-025 (30.0-31.0)	30	31	Nitrate and Nitrite as N^^	0.1	27.1	mg/Kg	7820	71.1
HLSF-0085-SB-025 (40.0-41.0)	40	41	Nitrate and Nitrite as N^^	0.1	26.3	mg/Kg	7820	21.8
HLSF-0085-SB-026 (10.0-11.0)	10	11	Nitrate and Nitrite as N^^	0.1	1.15	mg/Kg	7820	182
HLSF-0085-SB-026 (20.0-21.0)	20	21	Nitrate and Nitrite as N^^	0.1	1.44	mg/Kg	7820	171
HLSF-0085-SB-026 (30.0-32.0)***	30	32	Nitrate and Nitrite as N^^	0.1	1.215	mg/Kg	7820	71.1
HLSF-0085-SB-026 (40.0-41.0)	40	41	Nitrate and Nitrite as N^^	0.1	30.7	mg/Kg	7820	21.8
HLSF-0085-SB-026 (49.0-50.0)	49	50	Nitrate and Nitrite as N^^	0.1	24.8	mg/Kg	7820	34.4
HLSF-0085-SB-024 (10.0-11.0)	10	11	Nitrate and Nitrite as N^^	0.1	5.15	mg/Kg	7820	182
HLSF-0085-SB-024 (20.0-21.0)	20	21	Nitrate and Nitrite as N^^	0.1	3.2	mg/Kg	7820	171
HLSF-0085-SB-024 (30.0-31.0)	30	31	Nitrate and Nitrite as N^^	0.1	2.5	mg/Kg	7820	71.1
HLSF-0085-SB-024 (40.0-41.0)	40	41	Nitrate and Nitrite as N^^	0.1	1.1	mg/Kg	7820	21.8
HLSF-0085-SB-024 (49.0-50.0)	49	50	Nitrate and Nitrite as N^^	0.1	12.6	mg/Kg	7820	34.4
HLSF-0085-SB-023 (10.0-11.0)	10	11	Nitrate and Nitrite as N^^	0.1	5.82	mg/Kg	7820	182
HLSF-0085-SB-023 (20.0-21.0)	20	21	Nitrate and Nitrite as N^^	0.1	21.9	mg/Kg	7820	171
HLSF-0085-SB-023 (30.0-31.0)	30	31	Nitrate and Nitrite as N^^	0.1	14	mg/Kg	7820	71.1
HLSF-0085-SB-023 (40.0-41.0)	40	41	Nitrate and Nitrite as N^^	0.1	2.36	mg/Kg	7820	21.8
HLSF-0085-SB-023 (49.0-50.0)	49	50	Nitrate and Nitrite as N^^	0.1	24.1	mg/Kg	7820	34.4
HLSF-0085-SB-027 (10.0-12.0)***	10	12	Nitrate and Nitrite as N^^	0.1	3.025	mg/Kg	7820	182
HLSF-0085-SB-027 (20.0-21.0)	20	21	Nitrate and Nitrite as N^^	0.1	2.3	mg/Kg	7820	171
HLSF-0085-SB-027 (30.0-31.0)	30	31	Nitrate and Nitrite as N^^	0.1	15.5	mg/Kg	7820	71.1
HLSF-0085-SB-027 (40.0-41.0)	40	41	Nitrate and Nitrite as N^^	0.1	12.9	mg/Kg	7820	21.8

Table D-3. HELSTF Central Storage Zone

Field Sample Id	Start Depth	End Depth	Constituent Name	Reporting Limit	Result	Units	Residential SSL	Background
HLSF-0085-SB-027 (49.0-50.0)	49	50	Nitrate and Nitrite as N^^	0.1	18.1	mg/Kg	7820	34.4
HLSF-0085-SB-028 (15.0-16.0)	15	16	Nitrate and Nitrite as N^^	0.1	1.33	mg/Kg	7820	176
HLSF-0085-SB-028 (20.0-21.0)	20	21	Nitrate and Nitrite as N^^	0.1	0.641	mg/Kg	7820	171
HLSF-0085-SB-028 (30.0-31.0)	30	31	Nitrate and Nitrite as N^^	0.1	38.7	mg/Kg	7820	71.1
HLSF-0085-SB-028 (40.0-41.0)	40	41	Nitrate and Nitrite as N^^	0.1	32.2	mg/Kg	7820	21.8
HLSF-0085-SB-028 (49.0-50.0)	49	50	Nitrate and Nitrite as N^^	0.1	9.56	mg/Kg	7820	34.4
HLSF-0085-SB-022 (20.0-22.0)***	20	22	Total Arsenic	2	5.165	mg/Kg	3.9	5.58
HLSF-0085-SB-025 (20.0-21.0)	20	21	Total Arsenic	2	4.71	mg/Kg	3.9	5.58
HLSF-0085-SB-026 (30.0-32.0)***	30	32	Total Arsenic	2	4.295	mg/Kg	3.9	3.19
HLSF-0085-SB-024 (20.0-21.0)	20	21	Total Arsenic	2	4.05	mg/Kg	3.9	5.58
HLSF-0085-SB-023 (49.0-50.0)	49	50	Total Arsenic	2	5.83	mg/Kg	3.9	<2
HLSF-0085-SB-027 (30.0-31.0)	30	31	Total Arsenic	2	4.84	mg/Kg	3.9	3.19
HLSF-0085-SB-027 (40.0-41.0)	40	41	Total Arsenic	2	5.25	mg/Kg	3.9	3.55
HLSF-0085-SB-027 (49.0-50.0)	49	50	Total Arsenic	2	8.81	mg/Kg	3.9	<2
HLSF-0085-SB-028 (30.0-31.0)	30	31	Total Arsenic	2	3.88	mg/Kg	3.9	3.19
HLSF-0085-SB-037 (40.0-41.0)	40	41	Total Arsenic	2	4.02	mg/Kg	3.9	3.55
HLSF-0085-SB-037 (49.0-50.0)	49	50	Total Arsenic	2	7.13	mg/Kg	3.9	<2
HLSF-0085-SB-038 (20.0-21.0)	30	31	Total Arsenic	2	4.52	mg/Kg	3.9	3.19
HLSF-0085-SB-038 (30.0-32.0)***	30	32	Total Arsenic	2	2.655	mg/Kg	3.9	3.19
HLSF-0085-SB-038 (49.0-50.0)	49	50	Total Arsenic	2	3.61	mg/Kg	3.9	<2
HLSF-0085-SB-022 (10.0-11.0)	10	11	Total Barium	1	27.7	mg/Kg	15600	72.4
HLSF-0085-SB-022 (20.0-22.0)***	20	22	Total Barium	1	79.25	mg/Kg	15600	47.6
HLSF-0085-SB-022 (40.0-41.0)	40	41	Total Barium	1	75.9	mg/Kg	15600	62
HLSF-0085-SB-022 (49.0-50.0)	49	50	Total Barium	1	73.4	mg/Kg	15600	84.4
HLSF-0085-SB-025 (10.0-11.0)	10	11	Total Barium	1	31.8	mg/Kg	15600	72.4
HLSF-0085-SB-025 (20.0-21.0)	20	21	Total Barium	1	151	mg/Kg	15600	47.6
HLSF-0085-SB-025 (30.0-31.0)	30	31	Total Barium	1	56.9	mg/Kg	15600	72.5
HLSF-0085-SB-025 (40.0-41.0)	40	41	Total Barium	1	72	mg/Kg	15600	62
HLSF-0085-SB-026 (10.0-11.0)	10	11	Total Barium	1	22.3	mg/Kg	15600	72.4
HLSF-0085-SB-026 (20.0-21.0)	20	21	Total Barium	1	472	mg/Kg	15600	47.6
HLSF-0085-SB-026 (30.0-32.0)***	30	32	Total Barium	1	200.5	mg/Kg	15600	72.5
HLSF-0085-SB-026 (40.0-41.0)	40	41	Total Barium	1	121	mg/Kg	15600	62
HLSF-0085-SB-026 (49.0-50.0)	49	50	Total Barium	1	113	mg/Kg	15600	84.4
HLSF-0085-SB-024 (10.0-11.0)	10	11	Total Barium	1	27.2	mg/Kg	15600	72.4
HLSF-0085-SB-024 (20.0-21.0)	20	21	Total Barium	1	173	mg/Kg	15600	47.6
HLSF-0085-SB-024 (30.0-31.0)	30	31	Total Barium	1	59	mg/Kg	15600	72.5
HLSF-0085-SB-024 (40.0-41.0)	40	41	Total Barium	1	56.6	mg/Kg	15600	62
HLSF-0085-SB-024 (49.0-50.0)	49	50	Total Barium	1	90.9	mg/Kg	15600	84.4
HLSF-0085-SB-023 (10.0-11.0)	10	11	Total Barium	1	30.7	mg/Kg	15600	72.4
HLSF-0085-SB-023 (20.0-21.0)	20	21	Total Barium	1	156	mg/Kg	15600	47.6
HLSF-0085-SB-023 (30.0-31.0)	30	31	Total Barium	1	38.2	mg/Kg	15600	72.5
HLSF-0085-SB-023 (40.0-41.0)	40	41	Total Barium	1	36.1	mg/Kg	15600	62
HLSF-0085-SB-023 (49.0-50.0)	49	50	Total Barium	1	85.2	mg/Kg	15600	84.4
HLSF-0085-SB-027 (10.0-12.0)***	10	12	Total Barium	1	43.25	mg/Kg	15600	72.4
HLSF-0085-SB-027 (20.0-21.0)	20	21	Total Barium	1	188	mg/Kg	15600	47.6
HLSF-0085-SB-027 (30.0-31.0)	30	31	Total Barium	1	82.6	mg/Kg	15600	72.5
HLSF-0085-SB-027 (40.0-41.0)	40	41	Total Barium	1	106	mg/Kg	15600	62
HLSF-0085-SB-027 (49.0-50.0)	49	50	Total Barium	1	83.1	mg/Kg	15600	84.4
HLSF-0085-SB-028 (15.0-16.0)	15	16	Total Barium	1	31.3	mg/Kg	15600	60
HLSF-0085-SB-028 (20.0-21.0)	20	21	Total Barium	1	16.2	mg/Kg	15600	47.6
HLSF-0085-SB-028 (30.0-31.0)	30	31	Total Barium	1	62	mg/Kg	15600	72.5
HLSF-0085-SB-028 (40.0-41.0)	40	41	Total Barium	1	91.1	mg/Kg	15600	62
HLSF-0085-SB-028 (49.0-50.0)	49	50	Total Barium	1	56	mg/Kg	15600	84.4
HLSF-0085-SB-037 (10.0-11.0)	10	11	Total Barium	1	33	mg/Kg	15600	72.4
HLSF-0085-SB-037 (20.0-21.0)	20	21	Total Barium	1	106	mg/Kg	15600	47.6
HLSF-0085-SB-037 (30.0-31.0)	30	31	Total Barium	1	64.8	mg/Kg	15600	72.5
HLSF-0085-SB-037 (40.0-41.0)	40	41	Total Barium	1	44.3	mg/Kg	15600	62
HLSF-0085-SB-037 (49.0-50.0)	49	50	Total Barium	1	29.5	mg/Kg	15600	84.4
HLSF-0085-SB-039 (10.0-11.0)	10	11	Total Barium	1	38.4	mg/Kg	15600	72.4
HLSF-0085-SB-039 (20.0-21.0)	20	21	Total Barium	1	102	mg/Kg	15600	47.6
HLSF-0085-SB-039 (30.0-31.0)	30	31	Total Barium	1	77	mg/Kg	15600	72.5
HLSF-0085-SB-039 (40.0-41.0)	40	41	Total Barium	1	27.4	mg/Kg	15600	62
HLSF-0085-SB-039 (49.0-50.0)	49	50	Total Barium	1	29.1	mg/Kg	15600	84.4

Table D-3. HELSTF Central Storage Zone

Field Sample Id	Start Depth	End Depth	Constituent Name	Reporting Limit	Result	Units	Residential SSL	Background
HLSF-0085-SB-038 (10.0-11.0)	10	11	Total Barium	1	37.9	mg/Kg	15600	72.4
HLSF-0085-SB-038 (20.0-21.0)	20	21	Total Barium	1	116	mg/Kg	15600	47.6
HLSF-0085-SB-038 (30.0-32.0)***	30	32	Total Barium	1	70.6	mg/Kg	15600	72.5
HLSF-0085-SB-038 (40.0-41.0)	40	41	Total Barium	1	63.6	mg/Kg	15600	62
HLSF-0085-SB-038 (49.0-50.0)	49	50	Total Barium	1	67.1	mg/Kg	15600	84.4
HLSF-0085-SB-022 (10.0-11.0)	10	11	Total Chromium*	0.5	1.2	mg/Kg	210	4.48
HLSF-0085-SB-022 (20.0-22.0)***	20	22	Total Chromium*	0.5	9.175	mg/Kg	210	7.14
HLSF-0085-SB-022 (40.0-41.0)	40	41	Total Chromium*	0.5	5.19	mg/Kg	210	4.76
HLSF-0085-SB-022 (49.0-50.0)	49	50	Total Chromium*	0.5	12	mg/Kg	210	15.6
HLSF-0085-SB-025 (10.0-11.0)	10	11	Total Chromium*	0.5	2.61	mg/Kg	210	4.48
HLSF-0085-SB-025 (20.0-21.0)	20	21	Total Chromium*	0.5	13.9	mg/Kg	210	7.14
HLSF-0085-SB-025 (30.0-31.0)	30	31	Total Chromium*	0.5	6.98	mg/Kg	210	9.3
HLSF-0085-SB-025 (40.0-41.0)	40	41	Total Chromium*	0.5	9.75	mg/Kg	210	4.76
HLSF-0085-SB-026 (10.0-11.0)	10	11	Total Chromium*	0.5	3.81	mg/Kg	210	4.48
HLSF-0085-SB-026 (20.0-21.0)	20	21	Total Chromium*	0.5	8.38	mg/Kg	210	7.14
HLSF-0085-SB-026 (30.0-32.0)***	30	32	Total Chromium*	0.5	10.325	mg/Kg	210	9.3
HLSF-0085-SB-026 (40.0-41.0)	40	41	Total Chromium*	0.5	15.6	mg/Kg	210	4.76
HLSF-0085-SB-026 (49.0-50.0)	49	50	Total Chromium*	0.5	8.49	mg/Kg	210	15.6
HLSF-0085-SB-024 (10.0-11.0)	10	11	Total Chromium*	0.5	2.05	mg/Kg	210	4.48
HLSF-0085-SB-024 (20.0-21.0)	20	21	Total Chromium*	0.5	15.1	mg/Kg	210	7.14
HLSF-0085-SB-024 (30.0-31.0)	30	31	Total Chromium*	0.5	4.95	mg/Kg	210	9.3
HLSF-0085-SB-024 (40.0-41.0)	40	41	Total Chromium*	0.5	7.4	mg/Kg	210	4.76
HLSF-0085-SB-024 (49.0-50.0)	49	50	Total Chromium*	0.5	11.9	mg/Kg	210	15.6
HLSF-0085-SB-023 (10.0-11.0)	10	11	Total Chromium*	0.5	1.54	mg/Kg	210	4.48
HLSF-0085-SB-023 (20.0-21.0)	20	21	Total Chromium*	0.5	14.5	mg/Kg	210	7.14
HLSF-0085-SB-023 (30.0-31.0)	30	31	Total Chromium*	0.5	5.31	mg/Kg	210	9.3
HLSF-0085-SB-023 (40.0-41.0)	40	41	Total Chromium*	0.5	3.44	mg/Kg	210	4.76
HLSF-0085-SB-023 (49.0-50.0)	49	50	Total Chromium*	0.5	13	mg/Kg	210	15.6
HLSF-0085-SB-027 (10.0-12.0)***	10	12	Total Chromium*	0.5	2.755	mg/Kg	210	4.48
HLSF-0085-SB-027 (20.0-21.0)	20	21	Total Chromium*	0.5	9.3	mg/Kg	210	7.14
HLSF-0085-SB-027 (30.0-31.0)	30	31	Total Chromium*	0.5	10.4	mg/Kg	210	9.3
HLSF-0085-SB-027 (40.0-41.0)	40	41	Total Chromium*	0.5	17.1	mg/Kg	210	4.76
HLSF-0085-SB-027 (49.0-50.0)	49	50	Total Chromium*	0.5	10.6	mg/Kg	210	15.6
HLSF-0085-SB-028 (15.0-16.0)	15	16	Total Chromium*	0.5	8.04	mg/Kg	210	4.48
HLSF-0085-SB-028 (20.0-21.0)	20	21	Total Chromium*	0.5	8.2	mg/Kg	210	7.14
HLSF-0085-SB-028 (30.0-31.0)	30	31	Total Chromium*	0.5	9.83	mg/Kg	210	9.3
HLSF-0085-SB-028 (40.0-41.0)	40	41	Total Chromium*	0.5	15.5	mg/Kg	210	4.76
HLSF-0085-SB-028 (49.0-50.0)	49	50	Total Chromium*	0.5	13.1	mg/Kg	210	15.6
HLSF-0085-SB-037 (10.0-11.0)	10	11	Total Chromium*	0.5	3.27	mg/Kg	210	4.48
HLSF-0085-SB-037 (20.0-21.0)	20	21	Total Chromium*	0.5	12	mg/Kg	210	7.14
HLSF-0085-SB-037 (30.0-31.0)	30	31	Total Chromium*	0.5	7.17	mg/Kg	210	9.3
HLSF-0085-SB-037 (40.0-41.0)	40	41	Total Chromium*	0.5	5.6	mg/Kg	210	4.76
HLSF-0085-SB-037 (49.0-50.0)	49	50	Total Chromium*	0.5	11.3	mg/Kg	210	15.6
HLSF-0085-SB-039 (10.0-11.0)	10	11	Total Chromium*	0.5	3.97	mg/Kg	210	4.48
HLSF-0085-SB-039 (20.0-21.0)	20	21	Total Chromium*	0.5	8.37	mg/Kg	210	7.14
HLSF-0085-SB-039 (30.0-31.0)	30	31	Total Chromium*	0.5	12	mg/Kg	210	9.3
HLSF-0085-SB-039 (40.0-41.0)	40	41	Total Chromium*	0.5	4.63	mg/Kg	210	4.76
HLSF-0085-SB-039 (49.0-50.0)	49	50	Total Chromium*	0.5	4.99	mg/Kg	210	15.6
HLSF-0085-SB-038 (10.0-11.0)	10	11	Total Chromium*	0.5	4.32	mg/Kg	210	4.48
HLSF-0085-SB-038 (20.0-21.0)	20	21	Total Chromium*	0.5	11.6	mg/Kg	210	7.14
HLSF-0085-SB-038 (30.0-32.0)***	30	32	Total Chromium*	0.5	8.19	mg/Kg	210	9.3
HLSF-0085-SB-038 (40.0-41.0)	40	41	Total Chromium*	0.5	2.33	mg/Kg	210	4.76
HLSF-0085-SB-038 (49.0-50.0)	49	50	Total Chromium*	0.5	7.22	mg/Kg	210	15.6
HLSF-0085-SB-022 (10.0-11.0)	10	11	Total Copper	0.5	1.47	mg/Kg	3130	5.19
HLSF-0085-SB-022 (20.0-22.0)***	20	22	Total Copper	0.5	9.23	mg/Kg	3130	6.84
HLSF-0085-SB-022 (40.0-41.0)	40	41	Total Copper	0.5	5.23	mg/Kg	3130	5.03
HLSF-0085-SB-022 (49.0-50.0)	49	50	Total Copper	0.5	13.6	mg/Kg	3130	12.1
HLSF-0085-SB-025 (10.0-11.0)	10	11	Total Copper	0.5	1.5	mg/Kg	3130	5.19
HLSF-0085-SB-025 (20.0-21.0)	20	21	Total Copper	0.5	14.2	mg/Kg	3130	6.84
HLSF-0085-SB-025 (30.0-31.0)	30	31	Total Copper	0.5	4.23	mg/Kg	3130	8.02
HLSF-0085-SB-025 (40.0-41.0)	40	41	Total Copper	0.5	5.31	mg/Kg	3130	5.03
HLSF-0085-SB-026 (10.0-11.0)	10	11	Total Copper	0.5	2.08	mg/Kg	3130	5.19
HLSF-0085-SB-026 (20.0-21.0)	20	21	Total Copper	0.5	6.09	mg/Kg	3130	6.84

Table D-3. HELSTF Central Storage Zone

Field Sample Id	Start Depth	End Depth	Constituent Name	Reporting Limit	Result	Units	Residential SSL	Background
HLSF-0085-SB-026 (30.0-32.0)***	30	32	Total Copper	0.5	9.505	mg/Kg	3130	8.02
HLSF-0085-SB-026 (40.0-41.0)	40	41	Total Copper	0.5	13.1	mg/Kg	3130	5.03
HLSF-0085-SB-026 (49.0-50.0)	49	50	Total Copper	0.5	9.1	mg/Kg	3130	12.1
HLSF-0085-SB-024 (10.0-11.0)	10	11	Total Copper	0.5	1.63	mg/Kg	3130	5.19
HLSF-0085-SB-024 (20.0-21.0)	20	21	Total Copper	0.5	11.7	mg/Kg	3130	6.84
HLSF-0085-SB-024 (30.0-31.0)	30	31	Total Copper	0.5	4.03	mg/Kg	3130	8.02
HLSF-0085-SB-024 (40.0-41.0)	40	41	Total Copper	0.5	5.73	mg/Kg	3130	5.03
HLSF-0085-SB-024 (49.0-50.0)	49	50	Total Copper	0.5	11.6	mg/Kg	3130	12.1
HLSF-0085-SB-023 (10.0-11.0)	10	11	Total Copper	0.5	1.16	mg/Kg	3130	5.19
HLSF-0085-SB-023 (20.0-21.0)	20	21	Total Copper	0.5	12.7	mg/Kg	3130	6.84
HLSF-0085-SB-023 (30.0-31.0)	30	31	Total Copper	0.5	4.1	mg/Kg	3130	8.02
HLSF-0085-SB-023 (40.0-41.0)	40	41	Total Copper	0.5	3.07	mg/Kg	3130	5.03
HLSF-0085-SB-023 (49.0-50.0)	49	50	Total Copper	0.5	11.6	mg/Kg	3130	12.1
HLSF-0085-SB-027 (10.0-12.0)***	10	12	Total Copper	0.5	2.29	mg/Kg	3130	5.19
HLSF-0085-SB-027 (20.0-21.0)	20	21	Total Copper	0.5	10.7	mg/Kg	3130	6.84
HLSF-0085-SB-027 (30.0-31.0)	30	31	Total Copper	0.5	8.28	mg/Kg	3130	8.02
HLSF-0085-SB-027 (40.0-41.0)	40	41	Total Copper	0.5	14.4	mg/Kg	3130	5.03
HLSF-0085-SB-027 (49.0-50.0)	49	50	Total Copper	0.5	13.6	mg/Kg	3130	12.1
HLSF-0085-SB-028 (15.0-16.0)	15	16	Total Copper	0.5	6.78	mg/Kg	3130	5.19
HLSF-0085-SB-028 (20.0-21.0)	20	21	Total Copper	0.5	5.66	mg/Kg	3130	6.84
HLSF-0085-SB-028 (30.0-31.0)	30	31	Total Copper	0.5	7.71	mg/Kg	3130	8.02
HLSF-0085-SB-028 (40.0-41.0)	40	41	Total Copper	0.5	12.1	mg/Kg	3130	5.03
HLSF-0085-SB-028 (49.0-50.0)	49	50	Total Copper	0.5	11.4	mg/Kg	3130	12.1
HLSF-0085-SB-022 (10.0-11.0)	10	11	Total Lead	1	1.53	mg/Kg	400	7.1
HLSF-0085-SB-022 (20.0-22.0)***	20	22	Total Lead	1	23.4	mg/Kg	400	18.8
HLSF-0085-SB-022 (40.0-41.0)	40	41	Total Lead	1	14	mg/Kg	400	12
HLSF-0085-SB-022 (49.0-50.0)	49	50	Total Lead	1	24	mg/Kg	400	21.9
HLSF-0085-SB-025 (10.0-11.0)	10	11	Total Lead	1	2.3	mg/Kg	400	7.1
HLSF-0085-SB-025 (20.0-21.0)	20	21	Total Lead	1	26.9	mg/Kg	400	18.8
HLSF-0085-SB-025 (30.0-31.0)	30	31	Total Lead	1	17.2	mg/Kg	400	15.8
HLSF-0085-SB-025 (40.0-41.0)	40	41	Total Lead	1	12.4	mg/Kg	400	12
HLSF-0085-SB-026 (10.0-11.0)	10	11	Total Lead	1	2.92	mg/Kg	400	7.1
HLSF-0085-SB-026 (20.0-21.0)	20	21	Total Lead	1	20.2	mg/Kg	400	18.8
HLSF-0085-SB-026 (30.0-32.0)***	30	32	Total Lead	1	20.15	mg/Kg	400	15.8
HLSF-0085-SB-026 (40.0-41.0)	40	41	Total Lead	1	30.1	mg/Kg	400	12
HLSF-0085-SB-026 (49.0-50.0)	49	50	Total Lead	1	20.9	mg/Kg	400	21.9
HLSF-0085-SB-024 (20.0-21.0)	20	21	Total Lead	1	31.8	mg/Kg	400	7.1
HLSF-0085-SB-024 (30.0-31.0)	30	31	Total Lead	1	11.2	mg/Kg	400	18.8
HLSF-0085-SB-024 (40.0-41.0)	40	41	Total Lead	1	13.9	mg/Kg	400	15.8
HLSF-0085-SB-024 (49.0-50.0)	49	50	Total Lead	1	20.9	mg/Kg	400	12
HLSF-0085-SB-023 (10.0-11.0)	10	11	Total Lead	1	2.21	mg/Kg	400	7.1
HLSF-0085-SB-023 (20.0-21.0)	20	21	Total Lead	1	34.2	mg/Kg	400	18.8
HLSF-0085-SB-023 (30.0-31.0)	30	31	Total Lead	1	10.2	mg/Kg	400	15.8
HLSF-0085-SB-023 (40.0-41.0)	40	41	Total Lead	1	7.48	mg/Kg	400	12
HLSF-0085-SB-023 (49.0-50.0)	49	50	Total Lead	1	28.9	mg/Kg	400	21.9
HLSF-0085-SB-027 (10.0-12.0)***	10	12	Total Lead	1	4.82	mg/Kg	400	7.1
HLSF-0085-SB-027 (20.0-21.0)	20	21	Total Lead	1	27.7	mg/Kg	400	18.8
HLSF-0085-SB-027 (30.0-31.0)	30	31	Total Lead	1	23.2	mg/Kg	400	15.8
HLSF-0085-SB-027 (40.0-41.0)	40	41	Total Lead	1	40	mg/Kg	400	12
HLSF-0085-SB-027 (49.0-50.0)	49	50	Total Lead	1	29.8	mg/Kg	400	21.9
HLSF-0085-SB-028 (15.0-16.0)	15	16	Total Lead	1	13.9	mg/Kg	400	12.95
HLSF-0085-SB-028 (20.0-21.0)	20	21	Total Lead	1	16.1	mg/Kg	400	18.8
HLSF-0085-SB-028 (30.0-31.0)	30	31	Total Lead	1	19.6	mg/Kg	400	15.8
HLSF-0085-SB-028 (40.0-41.0)	40	41	Total Lead	1	30	mg/Kg	400	12
HLSF-0085-SB-028 (49.0-50.0)	49	50	Total Lead	1	24.7	mg/Kg	400	21.9
HLSF-0085-SB-037 (10.0-11.0)	10	11	Total Lead	1	3.52	mg/Kg	400	7.1
HLSF-0085-SB-037 (20.0-21.0)	20	21	Total Lead	1	20	mg/Kg	400	18.8
HLSF-0085-SB-037 (30.0-31.0)	30	31	Total Lead	1	11.9	mg/Kg	400	15.8
HLSF-0085-SB-037 (40.0-41.0)	40	41	Total Lead	1	10.6	mg/Kg	400	12
HLSF-0085-SB-037 (49.0-50.0)	49	50	Total Lead	1	20.2	mg/Kg	400	21.9
HLSF-0085-SB-039 (10.0-11.0)	10	11	Total Lead	1	4.13	mg/Kg	400	7.1
HLSF-0085-SB-039 (20.0-21.0)	20	21	Total Lead	1	12.8	mg/Kg	400	18.8
HLSF-0085-SB-039 (30.0-31.0)	30	31	Total Lead	1	18.5	mg/Kg	400	15.8

Table D-3. HELSTF Central Storage Zone

Field Sample Id	Start Depth	End Depth	Constituent Name	Reporting Limit	Result	Units	Residential SSL	Background
HLSF-0085-SB-039 (40.0-41.0)	40	41	Total Lead	1	10.2	mg/Kg	400	12
HLSF-0085-SB-039 (49.0-50.0)	49	50	Total Lead	1	11	mg/Kg	400	21.9
HLSF-0085-SB-038 (10.0-11.0)	10	11	Total Lead	1	3.61	mg/Kg	400	7.1
HLSF-0085-SB-038 (20.0-21.0)	30	31	Total Lead	1	20.6	mg/Kg	400	18.8
HLSF-0085-SB-038 (30.0-32.0)***	30	32	Total Lead	1	14.7	mg/Kg	400	15.8
HLSF-0085-SB-038 (40.0-41.0)	40	41	Total Lead	1	11.7	mg/Kg	400	12
HLSF-0085-SB-038 (49.0-50.0)	49	50	Total Lead	1	17	mg/Kg	400	21.9
HLSF-0085-SB-022 (10.0-11.0)	10	11	Total Phosphorous	2	36.8	mg/Kg	NE	70
HLSF-0085-SB-022 (20.0-22.0)***	20	22	Total Phosphorous	2	194.5	mg/Kg	NE	144
HLSF-0085-SB-022 (40.0-41.0)	40	41	Total Phosphorous	2	204	mg/Kg	NE	177
HLSF-0085-SB-022 (49.0-50.0)	49	50	Total Phosphorous	2	295	mg/Kg	NE	329
HLSF-0085-SB-025 (10.0-11.0)	10	11	Total Phosphorous	2	47	mg/Kg	NE	70
HLSF-0085-SB-025 (20.0-21.0)	20	21	Total Phosphorous	2	262	mg/Kg	NE	144
HLSF-0085-SB-025 (30.0-31.0)	30	31	Total Phosphorous	2	162	mg/Kg	NE	266
HLSF-0085-SB-025 (40.0-41.0)	40	41	Total Phosphorous	1	167	mg/Kg	NE	177
HLSF-0085-SB-026 (10.0-11.0)	10	11	Total Phosphorous	2	84.1	mg/Kg	NE	70
HLSF-0085-SB-026 (20.0-21.0)	20	21	Total Phosphorous	2	166	mg/Kg	NE	144
HLSF-0085-SB-026 (30.0-32.0)***	30	32	Total Phosphorous	2	303	mg/Kg	NE	266
HLSF-0085-SB-026 (40.0-41.0)	40	41	Total Phosphorous	2	310	mg/Kg	NE	177
HLSF-0085-SB-026 (49.0-50.0)	49	50	Total Phosphorous	2	280	mg/Kg	NE	329
HLSF-0085-SB-024 (10.0-11.0)	10	11	Total Phosphorous	2	34.9	mg/Kg	NE	70
HLSF-0085-SB-024 (20.0-21.0)	20	21	Total Phosphorous	2	250	mg/Kg	NE	144
HLSF-0085-SB-024 (30.0-31.0)	30	31	Total Phosphorous	2	154	mg/Kg	NE	266
HLSF-0085-SB-024 (40.0-41.0)	40	41	Total Phosphorous	2	260	mg/Kg	NE	177
HLSF-0085-SB-024 (49.0-50.0)	49	50	Total Phosphorous	2	285	mg/Kg	NE	329
HLSF-0085-SB-023 (10.0-11.0)	10	11	Total Phosphorous	2	35.5	mg/Kg	NE	70
HLSF-0085-SB-023 (20.0-21.0)	20	21	Total Phosphorous	2	300	mg/Kg	NE	144
HLSF-0085-SB-023 (30.0-31.0)	30	31	Total Phosphorous	2	150	mg/Kg	NE	266
HLSF-0085-SB-023 (40.0-41.0)	40	41	Total Phosphorous	2	156	mg/Kg	NE	177
HLSF-0085-SB-023 (49.0-50.0)	49	50	Total Phosphorous	2	276	mg/Kg	NE	329
HLSF-0085-SB-027 (10.0-12.0)***	10	12	Total Phosphorous	2	75.05	mg/Kg	NE	70
HLSF-0085-SB-027 (20.0-21.0)	20	21	Total Phosphorous	2	155	mg/Kg	NE	144
HLSF-0085-SB-027 (30.0-31.0)	30	31	Total Phosphorous	2	164	mg/Kg	NE	266
HLSF-0085-SB-027 (40.0-41.0)	40	41	Total Phosphorous	2	298	mg/Kg	NE	177
HLSF-0085-SB-027 (49.0-50.0)	49	50	Total Phosphorous	2	320	mg/Kg	NE	329
HLSF-0085-SB-028 (15.0-16.0)	15	16	Total Phosphorous	2	73.7	mg/Kg	NE	107
HLSF-0085-SB-028 (20.0-21.0)	20	21	Total Phosphorous	2	162	mg/Kg	NE	144
HLSF-0085-SB-028 (30.0-31.0)	30	31	Total Phosphorous	2	202	mg/Kg	NE	266
HLSF-0085-SB-028 (40.0-41.0)	40	41	Total Phosphorous	2	277	mg/Kg	NE	177
HLSF-0085-SB-028 (49.0-50.0)	49	50	Total Phosphorous	2	259	mg/Kg	NE	329
HLSF-0085-SB-022 (10.0-11.0)	10	11	Total Sodium	0.5	920	mg/Kg	NE	1972
HLSF-0085-SB-022 (20.0-22.0)***	20	22	Total Sodium	0.5	5330	mg/Kg	NE	2731
HLSF-0085-SB-022 (40.0-41.0)	40	41	Total Sodium	0.5	2930	mg/Kg	NE	1830
HLSF-0085-SB-022 (49.0-50.0)	49	50	Total Sodium	0.5	4650	mg/Kg	NE	2543
HLSF-0085-SB-025 (10.0-11.0)	10	11	Total Sodium	0.5	1760	mg/Kg	NE	1972
HLSF-0085-SB-025 (20.0-21.0)	20	21	Total Sodium	0.5	2290	mg/Kg	NE	2731
HLSF-0085-SB-025 (30.0-31.0)	30	31	Total Sodium	0.5	980	mg/Kg	NE	2319
HLSF-0085-SB-025 (40.0-41.0)	40	41	Total Sodium	50	619	mg/Kg	NE	1840
HLSF-0085-SB-026 (10.0-11.0)	10	11	Total Sodium	0.5	980	mg/Kg	NE	1972
HLSF-0085-SB-026 (20.0-21.0)	20	21	Total Sodium	0.5	735	mg/Kg	NE	2731
HLSF-0085-SB-026 (30.0-32.0)***	30	32	Total Sodium	0.5	1065	mg/Kg	NE	2319
HLSF-0085-SB-026 (40.0-41.0)	40	41	Total Sodium	0.5	7100	mg/Kg	NE	1840
HLSF-0085-SB-026 (49.0-50.0)	49	50	Total Sodium	0.5	7590	mg/Kg	NE	2543
HLSF-0085-SB-024 (10.0-11.0)	10	11	Total Sodium	0.5	655	mg/Kg	NE	1972
HLSF-0085-SB-024 (20.0-21.0)	20	21	Total Sodium	0.5	1290	mg/Kg	NE	2731
HLSF-0085-SB-024 (30.0-31.0)	30	31	Total Sodium	0.5	633	mg/Kg	NE	2319
HLSF-0085-SB-024 (40.0-41.0)	40	41	Total Sodium	0.5	1190	mg/Kg	NE	1840
HLSF-0085-SB-024 (49.0-50.0)	49	50	Total Sodium	0.5	10200	mg/Kg	NE	2543
HLSF-0085-SB-023 (10.0-11.0)	10	11	Total Sodium	0.5	870	mg/Kg	NE	1972
HLSF-0085-SB-023 (20.0-21.0)	20	21	Total Sodium	0.5	1290	mg/Kg	NE	2731
HLSF-0085-SB-023 (30.0-31.0)	30	31	Total Sodium	0.5	760	mg/Kg	NE	2319
HLSF-0085-SB-023 (40.0-41.0)	40	41	Total Sodium	0.5	365	mg/Kg	NE	1840
HLSF-0085-SB-023 (49.0-50.0)	49	50	Total Sodium	0.5	2800	mg/Kg	NE	2543

Table D-3. HELSTF Central Storage Zone

Field Sample Id	Start Depth	End Depth	Constituent Name	Reporting Limit	Result	Units	Residential SSL	Background
HLSF-0085-SB-027 (10.0-12.0)***	10	12	Total Sodium	0.5	715	mg/Kg	NE	1972
HLSF-0085-SB-027 (20.0-21.0)	20	21	Total Sodium	0.5	430	mg/Kg	NE	2731
HLSF-0085-SB-027 (30.0-31.0)	30	31	Total Sodium	0.5	2000	mg/Kg	NE	2319
HLSF-0085-SB-027 (40.0-41.0)	40	41	Total Sodium	0.5	13000	mg/Kg	NE	1840
HLSF-0085-SB-027 (49.0-50.0)	49	50	Total Sodium	0.5	10500	mg/Kg	NE	2543
HLSF-0085-SB-028 (15.0-16.0)	15	16	Total Sodium	0.5	274	mg/Kg	NE	2352
HLSF-0085-SB-028 (20.0-21.0)	20	21	Total Sodium	0.5	473	mg/Kg	NE	2731
HLSF-0085-SB-028 (30.0-31.0)	30	31	Total Sodium	0.5	2990	mg/Kg	NE	2319
HLSF-0085-SB-028 (40.0-41.0)	40	41	Total Sodium	0.5	4210	mg/Kg	NE	1840
HLSF-0085-SB-028 (49.0-50.0)	49	50	Total Sodium	0.5	4060	mg/Kg	NE	2543
HLSF-0085-SB-022 (10.0-11.0)	10	11	Total Zinc	2	3.8	mg/Kg	23500	21.5
HLSF-0085-SB-022 (20.0-22.0)***	20	22	Total Zinc	2	30.9	mg/Kg	23500	21.6
HLSF-0085-SB-022 (40.0-41.0)	40	41	Total Zinc	2	18.1	mg/Kg	23500	20.2
HLSF-0085-SB-022 (49.0-50.0)	49	50	Total Zinc	2	44.7	mg/Kg	23500	44.2
HLSF-0085-SB-025 (10.0-11.0)	10	11	Total Zinc	2	4.07	mg/Kg	23500	21.5
HLSF-0085-SB-025 (20.0-21.0)	20	21	Total Zinc	2	45.4	mg/Kg	23500	21.6
HLSF-0085-SB-025 (30.0-31.0)	30	31	Total Zinc	2	16.6	mg/Kg	23500	30.7
HLSF-0085-SB-025 (40.0-41.0)	40	41	Total Zinc	2	20.9	mg/Kg	23500	20.5
HLSF-0085-SB-026 (10.0-11.0)	10	11	Total Zinc	2	5.52	mg/Kg	23500	21.5
HLSF-0085-SB-026 (20.0-21.0)	20	21	Total Zinc	2	17.9	mg/Kg	23500	21.6
HLSF-0085-SB-026 (30.0-32.0)***	30	32	Total Zinc	2	33.5	mg/Kg	23500	30.7
HLSF-0085-SB-026 (40.0-41.0)	40	41	Total Zinc	2	47.3	mg/Kg	23500	20.5
HLSF-0085-SB-026 (49.0-50.0)	49	50	Total Zinc	2	30.1	mg/Kg	23500	44.2
HLSF-0085-SB-024 (10.0-11.0)	10	11	Total Zinc	2	3.73	mg/Kg	23500	21.5
HLSF-0085-SB-024 (20.0-21.0)	20	21	Total Zinc	2	40.2	mg/Kg	23500	21.6
HLSF-0085-SB-024 (30.0-31.0)	30	31	Total Zinc	2	13.3	mg/Kg	23500	30.7
HLSF-0085-SB-024 (40.0-41.0)	40	41	Total Zinc	2	21.6	mg/Kg	23500	20.5
HLSF-0085-SB-024 (49.0-50.0)	49	50	Total Zinc	2	39	mg/Kg	23500	44.2
HLSF-0085-SB-023 (10.0-11.0)	10	11	Total Zinc	2	3.88	mg/Kg	23500	21.5
HLSF-0085-SB-023 (20.0-21.0)	20	21	Total Zinc	2	45.1	mg/Kg	23500	21.6
HLSF-0085-SB-023 (30.0-31.0)	30	31	Total Zinc	2	18.6	mg/Kg	23500	30.7
HLSF-0085-SB-023 (40.0-41.0)	40	41	Total Zinc	2	13.4	mg/Kg	23500	20.5
HLSF-0085-SB-023 (49.0-50.0)	49	50	Total Zinc	2	41.2	mg/Kg	23500	44.2
HLSF-0085-SB-027 (10.0-12.0)***	10	12	Total Zinc	2	7.055	mg/Kg	23500	21.5
HLSF-0085-SB-027 (20.0-21.0)	20	21	Total Zinc	2	25.1	mg/Kg	23500	21.6
HLSF-0085-SB-027 (30.0-31.0)	30	31	Total Zinc	2	28.4	mg/Kg	23500	30.7
HLSF-0085-SB-027 (40.0-41.0)	40	41	Total Zinc	2	49.5	mg/Kg	23500	20.5
HLSF-0085-SB-027 (49.0-50.0)	49	50	Total Zinc	2	41.7	mg/Kg	23500	44.2
HLSF-0085-SB-028 (15.0-16.0)	15	16	Total Zinc	2	29.4	mg/Kg	23500	21.6
HLSF-0085-SB-028 (20.0-21.0)	20	21	Total Zinc	2	20.2	mg/Kg	23500	21.6
HLSF-0085-SB-028 (30.0-31.0)	30	31	Total Zinc	2	26.8	mg/Kg	23500	30.7
HLSF-0085-SB-028 (40.0-41.0)	40	41	Total Zinc	2	44.7	mg/Kg	23500	20.5
HLSF-0085-SB-028 (49.0-50.0)	49	50	Total Zinc	2	43.8	mg/Kg	23500	44.2

* Residential SSL from EPA Region 6.
** NMED TPH Screening Guideline Residential Direct Exposure.
*** Average of primary and duplicate sample.
^ NMED SSL for Total Xylenes
^^ NMED SSL for Nitrite. No SSL for combined Nitrate + Nitrite.

Table D-4. HELSTF Chemical Waste Tanks

Field Sample Id	Start Depth	End Depth	Constituent Name	Reporting Limit	Result	Units	Residential SSL	Background
HLSF-0085-SB-029 (0.5-1.0)	0.5	1	FOC		6.32	%	NE	3.89
HLSF-0085-SB-029 (10.0-10.5)	10	10.5	FOC		2.34	%	NE	2.73
HLSF-0085-SB-029 (20.0-21.0)	20	20.5	FOC		2.21	%	NE	3.12
HLSF-0085-SB-029 (30.0-31.0)	30	30.5	FOC		2.18	%	NE	2.08
HLSF-0085-SB-029 (40.0-41.0)	40	41	FOC		1.07	%	NE	1.96
HLSF-0085-SB-029 (49.0-50.0)	49	50	FOC		3.36	%	NE	1.81
HLSF-0085-SB-030 (0.5-1.0)	0.5	1	FOC		6.52	%	NE	3.89
HLSF-0085-SB-030 (10.0-11.0)	10	11	FOC		2.15	%	NE	2.73
HLSF-0085-SB-030 (20.0-22.0)***	20	22	FOC		2.16	%	NE	3.12
HLSF-0085-SB-030 (30.0-31.0)	30	31	FOC		2.22	%	NE	2.08
HLSF-0085-SB-030 (40.0-41.0)	40	41	FOC		1.29	%	NE	1.96
HLSF-0085-SB-030 (49.0-50.0)	49	50	FOC		3.57	%	NE	1.81
HLSF-0085-SB-031 (0.5-1.0)	0.5	1	FOC		6.26	%	NE	3.89
HLSF-0085-SB-031 (10.0-11.0)	10	11	FOC		1.68	%	NE	2.73
HLSF-0085-SB-031 (20.0-21.0)	20	21	FOC		1.94	%	NE	3.12
HLSF-0085-SB-031 (30.0-31.0)	30	31	FOC		2.65	%	NE	2.08
HLSF-0085-SB-031 (40.0-41.0)	40	41	FOC		0.921	%	NE	1.96
HLSF-0085-SB-031 (49.0-50.0)	49	50	FOC		3.22	%	NE	1.81
HLSF-0085-SB-029 (49.0-50.0)	49	50	Total Arsenic	2	4.23	mg/Kg	3.9	<2
HLSF-0085-SB-030 (10.0-11.0)	10	11	Total Arsenic	2	2.24	mg/Kg	3.9	<2
HLSF-0085-SB-030 (20.0-22.0)***	20	22	Total Arsenic	2	6.51	mg/Kg	3.9	5.58
HLSF-0085-SB-030 (30.0-31.0)	30	31	Total Arsenic	2	4.97	mg/Kg	3.9	3.19
HLSF-0085-SB-030 (40.0-41.0)	40	41	Total Arsenic	2	3.7	mg/Kg	3.9	3.55
HLSF-0085-SB-031 (49.0-50.0)	49	50	Total Arsenic	1	8.94	mg/Kg	3.9	<2
HLSF-0085-SB-029 (0.5-1.0)	0.5	1	Total Barium	1	27.6	mg/Kg	15600	14.9
HLSF-0085-SB-029 (10.0-10.5)	10	10.5	Total Barium	1	56.6	mg/Kg	15600	37.9
HLSF-0085-SB-029 (20.0-21.0)	20	20.5	Total Barium	1	121	mg/Kg	15600	37.9
HLSF-0085-SB-029 (30.0-31.0)	30	30.5	Total Barium	1	62.9	mg/Kg	15600	47
HLSF-0085-SB-029 (40.0-41.0)	40	41	Total Barium	1	127	mg/Kg	15600	40
HLSF-0085-SB-029 (49.0-50.0)	49	50	Total Barium	1	152	mg/Kg	15600	64.4
HLSF-0085-SB-030 (0.5-1.0)	0.5	1	Total Barium	1	26.3	mg/Kg	15600	14.9
HLSF-0085-SB-030 (10.0-11.0)	10	11	Total Barium	1	61.8	mg/Kg	15600	37.9
HLSF-0085-SB-030 (20.0-22.0)***	20	22	Total Barium	1	100.2	mg/Kg	15600	37.9
HLSF-0085-SB-030 (30.0-31.0)	30	31	Total Barium	1	45.9	mg/Kg	15600	47
HLSF-0085-SB-030 (40.0-41.0)	40	41	Total Barium	1	36	mg/Kg	15600	40
HLSF-0085-SB-030 (49.0-50.0)	49	50	Total Barium	1	100	mg/Kg	15600	64.4
HLSF-0085-SB-031 (0.5-1.0)	0.5	1	Total Barium	1	27	mg/Kg	15600	14.9
HLSF-0085-SB-031 (10.0-11.0)	10	11	Total Barium	1	42.1	mg/Kg	15600	37.9
HLSF-0085-SB-031 (20.0-21.0)	20	21	Total Barium	1	118	mg/Kg	15600	37.9
HLSF-0085-SB-031 (30.0-31.0)	30	31	Total Barium	1	114	mg/Kg	15600	47
HLSF-0085-SB-031 (40.0-41.0)	40	41	Total Barium	1	91.2	mg/Kg	15600	40
HLSF-0085-SB-031 (49.0-50.0)	49	50	Total Barium	1	116	mg/Kg	15600	64.4
HLSF-0085-SB-030 (49.0-50.0)	49	50	Total Cadmium	0.1	2.38	mg/Kg	39	<0.5
HLSF-0085-SB-031 (10.0-11.0)	10	11	Total Cadmium	0.1	2.07	mg/Kg	39	<0.5
HLSF-0085-SB-031 (20.0-21.0)	20	21	Total Cadmium	0.5	1.5	mg/Kg	39	<0.5
HLSF-0085-SB-031 (30.0-31.0)	30	31	Total Cadmium	0.5	1.15	mg/Kg	39	<0.5
HLSF-0085-SB-031 (40.0-41.0)	40	41	Total Cadmium	0.5	1.06	mg/Kg	39	<0.5
HLSF-0085-SB-031 (49.0-50.0)	49	50	Total Cadmium	0.5	1.86	mg/Kg	39	<0.5
HLSF-0085-SB-029 (0.5-1.0)	0.5	1	Total Chromium*	0.5	3.11	mg/Kg	210	1.02
HLSF-0085-SB-029 (10.0-10.5)	10	10.5	Total Chromium*	0.5	4.84	mg/Kg	210	4.48
HLSF-0085-SB-029 (20.0-21.0)	20	20.5	Total Chromium*	0.5	13.6	mg/Kg	210	7.14
HLSF-0085-SB-029 (30.0-31.0)	30	30.5	Total Chromium*	0.5	8.82	mg/Kg	210	9.3
HLSF-0085-SB-029 (40.0-41.0)	40	41	Total Chromium*	0.5	15.3	mg/Kg	210	4.76
HLSF-0085-SB-029 (49.0-50.0)	49	50	Total Chromium*	0.5	14.5	mg/Kg	210	15.6
HLSF-0085-SB-030 (0.5-1.0)	0.5	1	Total Chromium*	0.5	2.97	mg/Kg	210	1.02
HLSF-0085-SB-030 (10.0-11.0)	10	11	Total Chromium*	0.5	4.75	mg/Kg	210	4.48
HLSF-0085-SB-030 (20.0-22.0)***	20	22	Total Chromium*	0.5	13.55	mg/Kg	210	7.14
HLSF-0085-SB-030 (30.0-31.0)	30	31	Total Chromium*	0.5	11.9	mg/Kg	210	9.3
HLSF-0085-SB-030 (40.0-41.0)	40	41	Total Chromium*	0.5	11.3	mg/Kg	210	4.76
HLSF-0085-SB-030 (49.0-50.0)	49	50	Total Chromium*	0.5	14.2	mg/Kg	210	15.6

Table D-4. HELSTF Chemical Waste Tanks

Field Sample Id	Start Depth	End Depth	Constituent Name	Reporting Limit	Result	Units	Residential SSL	Background
HLSF-0085-SB-031 (0.5-1.0)	0.5	1	Total Chromium*	0.5	3.18	mg/Kg	210	1.02
HLSF-0085-SB-031 (10.0-11.0)	10	11	Total Chromium*	0.5	3.2	mg/Kg	210	4.48
HLSF-0085-SB-031 (20.0-21.0)	20	21	Total Chromium*	1	20.5	mg/Kg	210	7.14
HLSF-0085-SB-031 (30.0-31.0)	30	31	Total Chromium*	1	15.7	mg/Kg	210	9.3
HLSF-0085-SB-031 (40.0-41.0)	40	41	Total Chromium*	1	14.6	mg/Kg	210	4.76
HLSF-0085-SB-031 (49.0-50.0)	49	50	Total Chromium*	1	26.4	mg/Kg	210	15.6
HLSF-0085-SB-029 (10.0-10.5)	10	10.5	Total Lead	1	8.52	mg/Kg	400	7.1
HLSF-0085-SB-029 (20.0-21.0)	20	20.5	Total Lead	1	23.4	mg/Kg	400	18.8
HLSF-0085-SB-029 (30.0-31.0)	30	30.5	Total Lead	1	17.4	mg/Kg	400	15.6
HLSF-0085-SB-029 (40.0-41.0)	40	41	Total Lead	1	31.8	mg/Kg	400	12
HLSF-0085-SB-029 (49.0-50.0)	49	50	Total Lead	1	26.5	mg/Kg	400	21.9
HLSF-0085-SB-030 (0.5-1.0)	0.5	1	Total Lead	1	3.3	mg/Kg	400	<1
HLSF-0085-SB-030 (10.0-11.0)	10	11	Total Lead	1	8.84	mg/Kg	400	7.1
HLSF-0085-SB-030 (20.0-22.0)***	20	22	Total Lead	1	23.1	mg/Kg	400	18.8
HLSF-0085-SB-030 (30.0-31.0)	30	31	Total Lead	1	18.2	mg/Kg	400	15.6
HLSF-0085-SB-030 (40.0-41.0)	40	41	Total Lead	1	20.7	mg/Kg	400	12
HLSF-0085-SB-030 (49.0-50.0)	49	50	Total Lead	1	39.9	mg/Kg	400	21.9
HLSF-0085-SB-031 (10.0-11.0)	10	11	Total Lead	1	10.3	mg/Kg	400	7.1
HLSF-0085-SB-031 (20.0-21.0)	20	21	Total Lead	1	17.1	mg/Kg	400	18.8
HLSF-0085-SB-031 (30.0-31.0)	30	31	Total Lead	1	13.7	mg/Kg	400	15.6
HLSF-0085-SB-031 (40.0-41.0)	40	41	Total Lead	1	12.4	mg/Kg	400	12
HLSF-0085-SB-031 (49.0-50.0)	49	50	Total Lead	1	22.7	mg/Kg	400	21.9
HLSF-0085-SB-029 (0.5-1.0)	0.5	1	Total Phosphorous	2	55.4	mg/Kg	NE	51
HLSF-0085-SB-029 (10.0-10.5)	10	10.5	Total Phosphorous	2	65.9	mg/Kg	NE	70
HLSF-0085-SB-029 (20.0-21.0)	20	20.5	Total Phosphorous	2	294	mg/Kg	NE	144
HLSF-0085-SB-029 (30.0-31.0)	30	30.5	Total Phosphorous	2	243	mg/Kg	NE	266
HLSF-0085-SB-029 (40.0-41.0)	40	41	Total Phosphorous	2	270	mg/Kg	NE	177
HLSF-0085-SB-029 (49.0-50.0)	49	50	Total Phosphorous	2	300	mg/Kg	NE	329
HLSF-0085-SB-030 (0.5-1.0)	0.5	1	Total Phosphorous	2	80.1	mg/Kg	NE	51
HLSF-0085-SB-030 (10.0-11.0)	10	11	Total Phosphorous	2	92.1	mg/Kg	NE	70
HLSF-0085-SB-030 (20.0-22.0)***	20	22	Total Phosphorous	2	261.5	mg/Kg	NE	144
HLSF-0085-SB-030 (30.0-31.0)	30	31	Total Phosphorous	2	225	mg/Kg	NE	266
HLSF-0085-SB-030 (40.0-41.0)	40	41	Total Phosphorous	2	256	mg/Kg	NE	177
HLSF-0085-SB-030 (49.0-50.0)	49	50	Total Phosphorous	2	390	mg/Kg	NE	329
HLSF-0085-SB-031 (0.5-1.0)	0.5	1	Total Phosphorous	2	78.9	mg/Kg	NE	51
HLSF-0085-SB-031 (10.0-11.0)	10	11	Total Phosphorous	2	77.1	mg/Kg	NE	70
HLSF-0085-SB-031 (20.0-21.0)	20	21	Total Phosphorous	1	285	mg/Kg	NE	144
HLSF-0085-SB-031 (30.0-31.0)	30	31	Total Phosphorous	1	235	mg/Kg	NE	266
HLSF-0085-SB-031 (40.0-41.0)	40	41	Total Phosphorous	1	270	mg/Kg	NE	177
HLSF-0085-SB-031 (49.0-50.0)	49	50	Total Phosphorous	1	348	mg/Kg	NE	329
HLSF-0085-SB-029 (0.5-1.0)	0.5	1	Total Potassium	50	67.7	mg/Kg	NE	258
HLSF-0085-SB-029 (10.0-10.5)	10	10.5	Total Potassium	50	1410	mg/Kg	NE	1933
HLSF-0085-SB-029 (20.0-21.0)	20	20.5	Total Potassium	50	3460	mg/Kg	NE	2310
HLSF-0085-SB-029 (30.0-31.0)	30	30.5	Total Potassium	50	2200	mg/Kg	NE	2387
HLSF-0085-SB-029 (40.0-41.0)	40	41	Total Potassium	50	4010	mg/Kg	NE	2058
HLSF-0085-SB-029 (49.0-50.0)	49	50	Total Potassium	50	3190	mg/Kg	NE	2877
HLSF-0085-SB-030 (0.5-1.0)	0.5	1	Total Potassium	50	349	mg/Kg	NE	258
HLSF-0085-SB-030 (10.0-11.0)	10	11	Total Potassium	50	1500	mg/Kg	NE	1933
HLSF-0085-SB-030 (20.0-22.0)***	20	22	Total Potassium	50	3480	mg/Kg	NE	2310
HLSF-0085-SB-030 (30.0-31.0)	30	31	Total Potassium	50	3250	mg/Kg	NE	2387
HLSF-0085-SB-030 (40.0-41.0)	40	41	Total Potassium	50	2670	mg/Kg	NE	2058
HLSF-0085-SB-030 (49.0-50.0)	49	50	Total Potassium	50	3360	mg/Kg	NE	2877
HLSF-0085-SB-031 (0.5-1.0)	0.5	1	Total Potassium	50	368	mg/Kg	NE	258
HLSF-0085-SB-031 (10.0-11.0)	10	11	Total Potassium	50	1080	mg/Kg	NE	1933
HLSF-0085-SB-031 (20.0-21.0)	20	21	Total Potassium	50	4090	mg/Kg	NE	2310
HLSF-0085-SB-031 (30.0-31.0)	30	31	Total Potassium	50	2670	mg/Kg	NE	2387
HLSF-0085-SB-031 (40.0-41.0)	40	41	Total Potassium	50	2320	mg/Kg	NE	2058
HLSF-0085-SB-031 (49.0-50.0)	49	50	Total Potassium	50	3180	mg/Kg	NE	2877
HLSF-0085-SB-029 (10.0-10.5)	10	10.5	Total Sodium	50	397	mg/Kg	NE	1972
HLSF-0085-SB-029 (20.0-21.0)	20	20.5	Total Sodium	50	3660	mg/Kg	NE	2731

Table D-4. HELSTF Chemical Waste Tanks

Field Sample Id	Start Depth	End Depth	Constituent Name	Reporting Limit	Result	Units	Residential SSL	Background
HLSF-0085-SB-029 (30.0-31.0)	30	30.5	Total Sodium	50	2720	mg/Kg	NE	2319
HLSF-0085-SB-029 (40.0-41.0)	40	41	Total Sodium	50	5180	mg/Kg	NE	1830
HLSF-0085-SB-029 (49.0-50.0)	49	50	Total Sodium	50	4520	mg/Kg	NE	2543
HLSF-0085-SB-030 (10.0-11.0)	10	11	Total Sodium	50	741	mg/Kg	NE	1972
HLSF-0085-SB-030 (20.0-22.0)***	20	22	Total Sodium	50	2595	mg/Kg	NE	2731
HLSF-0085-SB-030 (30.0-31.0)	30	31	Total Sodium	50	2700	mg/Kg	NE	2319
HLSF-0085-SB-030 (40.0-41.0)	40	41	Total Sodium	50	2450	mg/Kg	NE	1830
HLSF-0085-SB-030 (49.0-50.0)	49	50	Total Sodium	50	4450	mg/Kg	NE	2543
HLSF-0085-SB-031 (0.5-1.0)	0.5	1	Total Sodium	50	262	mg/Kg	NE	335
HLSF-0085-SB-031 (10.0-11.0)	10	11	Total Sodium	50	273	mg/Kg	NE	1972
HLSF-0085-SB-031 (20.0-21.0)	20	21	Total Sodium	50	3490	mg/Kg	NE	2731
HLSF-0085-SB-031 (30.0-31.0)	30	31	Total Sodium	50	3590	mg/Kg	NE	2319
HLSF-0085-SB-031 (40.0-41.0)	40	41	Total Sodium	50	2840	mg/Kg	NE	1830
HLSF-0085-SB-031 (49.0-50.0)	49	50	Total Sodium	50	4210	mg/Kg	NE	2543
HLSF-0085-SB-029 (0.5-1.0)	0.5	1	Total Zinc	2	3.75	mg/Kg	23500	5.01
HLSF-0085-SB-029 (10.0-10.5)	10	10.5	Total Zinc	2	9.86	mg/Kg	23500	21.5
HLSF-0085-SB-029 (20.0-21.0)	20	20.5	Total Zinc	2	41	mg/Kg	23500	21.6
HLSF-0085-SB-029 (30.0-31.0)	30	30.5	Total Zinc	2	26.2	mg/Kg	23500	30.7
HLSF-0085-SB-029 (40.0-41.0)	40	41	Total Zinc	2	50	mg/Kg	23500	20.2
HLSF-0085-SB-029 (49.0-50.0)	49	50	Total Zinc	2	51.4	mg/Kg	23500	44.2
HLSF-0085-SB-030 (0.5-1.0)	0.5	1	Total Zinc	2	4.55	mg/Kg	23500	5.01
HLSF-0085-SB-030 (10.0-11.0)	10	11	Total Zinc	2	9.81	mg/Kg	23500	21.5
HLSF-0085-SB-030 (20.0-22.0)***	20	22	Total Zinc	2	37.15	mg/Kg	23500	21.6
HLSF-0085-SB-030 (30.0-31.0)	30	31	Total Zinc	2	29.2	mg/Kg	23500	30.7
HLSF-0085-SB-030 (40.0-41.0)	40	41	Total Zinc	2	28	mg/Kg	23500	20.2
HLSF-0085-SB-030 (49.0-50.0)	49	50	Total Zinc	2	102	mg/Kg	23500	44.2
HLSF-0085-SB-031 (0.5-1.0)	0.5	1	Total Zinc	2	43	mg/Kg	23500	5.01
HLSF-0085-SB-031 (10.0-11.0)	10	11	Total Zinc	2	53.5	mg/Kg	23500	21.5
HLSF-0085-SB-031 (20.0-21.0)	20	21	Total Zinc	1	46.1	mg/Kg	23500	21.6
HLSF-0085-SB-031 (30.0-31.0)	30	31	Total Zinc	1	40.5	mg/Kg	23500	30.7
HLSF-0085-SB-031 (40.0-41.0)	40	41	Total Zinc	1	38	mg/Kg	23500	20.2
HLSF-0085-SB-031 (49.0-50.0)	49	50	Total Zinc	1	64.5	mg/Kg	23500	44.2

* Residential SSL from EPA Region 6.

** NMED TPH Screening Guideline Residential Direct Exposure.

*** Average of primary and duplicate sample.

^ NMED SSL for Total Xylenes

^^ NMED SSL for Nitrite. No SSL for combined Nitrate + Nitrite.

Table D-5. HELSTF Dry Pond

Field Sample Id	Start Depth	End Depth	Constituent Name	Reporting Limit	Result	Units	Residential SSL	Background
HLSF-0085-SB-033 (0.5-1.0)	0.5	1	FOC	N/A	6.21	%	NE	3.89
HLSF-0085-SB-033 (10.0-11.0)	10	11	FOC	N/A	2.49	%	NE	2.73
HLSF-0085-SB-033 (20.0-21.0)	20	21	FOC	N/A	2.15	%	NE	3.12
HLSF-0085-SB-033 (30.0-31.0)	30	31	FOC	N/A	1.16	%	NE	2.08
HLSF-0085-SB-033 (40.0-42.0)***	40	42	FOC	N/A	2.645	%	NE	1.96
HLSF-0085-SB-033 (49.0-50.0)	49	50	FOC	N/A	0.467	%	NE	1.81
HLSF-0085-SB-034 (0.5-1.0)	0.5	1	FOC	N/A	6.16	%	NE	3.89
HLSF-0085-SB-034 (10.0-11.0)	10	11	FOC	N/A	3.31	%	NE	2.73
HLSF-0085-SB-034 (20.0-21.0)	20	21	FOC	N/A	2.92	%	NE	3.12
HLSF-0085-SB-034 (30.0-31.0)	30	31	FOC	N/A	0.503	%	NE	2.08
HLSF-0085-SB-034 (40.0-41.0)	40	41	FOC	N/A	3.25	%	NE	1.96
HLSF-0085-SB-034 (49.0-50.0)	49	50	FOC	N/A	0.499	%	NE	1.81
HLSF-0085-SB-035 (0.5-1.0)	0.5	1	FOC	N/A	4.93	%	NE	3.89
HLSF-0085-SB-035 (10.0-11.0)	10	11	FOC	N/A	3.29	%	NE	2.73
HLSF-0085-SB-035 (20.0-21.0)	20	21	FOC	N/A	1.91	%	NE	3.12
HLSF-0085-SB-035 (30.0-31.0)	30	31	FOC	N/A	2.38	%	NE	2.08
HLSF-0085-SB-035 (40.0-41.0)	40	41	FOC	N/A	3.95	%	NE	1.96
HLSF-0085-SB-035 (49.0-50.0)	49	50	FOC	N/A	0.75	%	NE	1.81
HLSF-0085-SB-036 (0.5-1.0)***	0.5	1	FOC	N/A	5.995	%	NE	3.89
HLSF-0085-SB-036 (10.0-11.0)	10	11	FOC	N/A	2.03	%	NE	2.73
HLSF-0085-SB-036 (20.0-22.0)***	20	22	FOC	N/A	2.275	%	NE	3.12
HLSF-0085-SB-036 (30.0-31.0)	30	31	FOC	N/A	2.11	%	NE	2.08
HLSF-0085-SB-036 (40.0-41.0)	40	41	FOC	N/A	3.43	%	NE	1.96
HLSF-0085-SB-033 (20.0-21.0)	20	21	Total Arsenic	2	11.6	mg/Kg	3.9	5.58
HLSF-0085-SB-033 (30.0-31.0)	30	31	Total Arsenic	2	3.86	mg/Kg	3.9	3.19
HLSF-0085-SB-034 (20.0-21.0)	20	21	Total Arsenic	2	9.81	mg/Kg	3.9	5.58
HLSF-0085-SB-034 (40.0-41.0)	40	41	Total Arsenic	2	10.4	mg/Kg	3.9	3.55
HLSF-0085-SB-035 (0.5-1.0)	0.5	1	Total Arsenic	2	2.68	mg/Kg	3.9	<2
HLSF-0085-SB-035 (20.0-21.0)	20	21	Total Arsenic	2	5.94	mg/Kg	3.9	5.58
HLSF-0085-SB-035 (30.0-31.0)	30	31	Total Arsenic	2	5.62	mg/Kg	3.9	3.19
HLSF-0085-SB-035 (40.0-41.0)	40	41	Total Arsenic	2	10.1	mg/Kg	3.9	3.55
HLSF-0085-SB-036 (20.0-22.0)***	20	22	Total Arsenic	2	6.14	mg/Kg	3.9	5.58
HLSF-0085-SB-036 (30.0-31.0)	30	31	Total Arsenic	2	5.13	mg/Kg	3.9	3.19
HLSF-0085-SB-036 (40.0-41.0)	40	41	Total Arsenic	2	8.77	mg/Kg	3.9	3.55
HLSF-0085-SB-033 (0.5-1.0)	0.5	1	Total Barium	1	26.3	mg/Kg	15600	18.7
HLSF-0085-SB-033 (10.0-11.0)	10	11	Total Barium	1	71.4	mg/Kg	15600	72.4
HLSF-0085-SB-033 (20.0-21.0)	20	21	Total Barium	1	71.5	mg/Kg	15600	47.6
HLSF-0085-SB-033 (30.0-31.0)	30	31	Total Barium	1	1560	mg/Kg	15600	72.5
HLSF-0085-SB-033 (40.0-42.0)***	40	42	Total Barium	1	96.85	mg/Kg	15600	62
HLSF-0085-SB-033 (49.0-50.0)	49	50	Total Barium	1	32.9	mg/Kg	15600	84.4
HLSF-0085-SB-034 (0.5-1.0)	0.5	1	Total Barium	1	41.7	mg/Kg	15600	18.7
HLSF-0085-SB-034 (10.0-11.0)	10	11	Total Barium	1	64.6	mg/Kg	15600	72.4
HLSF-0085-SB-034 (20.0-21.0)	20	21	Total Barium	1	207	mg/Kg	15600	47.6
HLSF-0085-SB-034 (30.0-31.0)	30	31	Total Barium	1	44.2	mg/Kg	15600	72.5
HLSF-0085-SB-034 (40.0-41.0)	40	41	Total Barium	1	95.5	mg/Kg	15600	62
HLSF-0085-SB-034 (49.0-50.0)	49	50	Total Barium	1	32.7	mg/Kg	15600	84.4
HLSF-0085-SB-035 (0.5-1.0)	0.5	1	Total Barium	1	48.6	mg/Kg	15600	18.7
HLSF-0085-SB-035 (10.0-11.0)	10	11	Total Barium	1	102	mg/Kg	15600	72.4
HLSF-0085-SB-035 (20.0-21.0)	20	21	Total Barium	1	17.3	mg/Kg	15600	47.6
HLSF-0085-SB-035 (30.0-31.0)	30	31	Total Barium	1	92.2	mg/Kg	15600	72.5
HLSF-0085-SB-035 (40.0-41.0)	40	41	Total Barium	1	90.1	mg/Kg	15600	62
HLSF-0085-SB-035 (49.0-50.0)	49	50	Total Barium	1	31.1	mg/Kg	15600	84.4
HLSF-0085-SB-036 (0.5-1.0)***	0.5	1	Total Barium	1	43.8	mg/Kg	15600	18.7
HLSF-0085-SB-036 (10.0-11.0)	10	11	Total Barium	1	71.5	mg/Kg	15600	72.4
HLSF-0085-SB-036 (20.0-22.0)***	20	22	Total Barium	1	95.85	mg/Kg	15600	47.6
HLSF-0085-SB-036 (30.0-31.0)	30	31	Total Barium	1	115	mg/Kg	15600	72.5
HLSF-0085-SB-036 (40.0-41.0)	40	41	Total Barium	1	115	mg/Kg	15600	62
HLSF-0085-SB-033 (0.5-1.0)	0.5	1	Total Cadmium	0.1	0.134	mg/Kg	39	<0.5

Table D-5. HELSTF Dry Pond

Field Sample Id	Start Depth	End Depth	Constituent Name	Reporting Limit	Result	Units	Residential SSL	Background
HLSF-0085-SB-033 (0.5-1.0)	0.5	1	Total Chromium*	0.5	2.21	mg/Kg	210	1.02
HLSF-0085-SB-033 (10.0-11.0)	10	11	Total Chromium*	0.5	6.26	mg/Kg	210	4.48
HLSF-0085-SB-033 (20.0-21.0)	20	21	Total Chromium*	0.5	9.61	mg/Kg	210	7.14
HLSF-0085-SB-033 (30.0-31.0)	30	31	Total Chromium*	0.5	11.3	mg/Kg	210	9.3
HLSF-0085-SB-033 (40.0-42.0)***	40	42	Total Chromium*	0.5	14.7	mg/Kg	210	4.76
HLSF-0085-SB-033 (49.0-50.0)	49	50	Total Chromium*	0.5	2.83	mg/Kg	210	15.6
HLSF-0085-SB-034 (0.5-1.0)	0.5	1	Total Chromium*	0.5	3.33	mg/Kg	210	1.02
HLSF-0085-SB-034 (10.0-11.0)	10	11	Total Chromium*	0.5	5.54	mg/Kg	210	4.48
HLSF-0085-SB-034 (20.0-21.0)	20	21	Total Chromium*	0.5	12.2	mg/Kg	210	7.14
HLSF-0085-SB-034 (30.0-31.0)	30	31	Total Chromium*	0.5	4.7	mg/Kg	210	9.3
HLSF-0085-SB-034 (40.0-41.0)	40	41	Total Chromium*	0.5	15.2	mg/Kg	210	4.76
HLSF-0085-SB-034 (49.0-50.0)	49	50	Total Chromium*	0.5	2.74	mg/Kg	210	15.6
HLSF-0085-SB-035 (0.5-1.0)	0.5	1	Total Chromium*	0.5	3.93	mg/Kg	210	1.02
HLSF-0085-SB-035 (10.0-11.0)	10	11	Total Chromium*	0.5	7.65	mg/Kg	210	4.48
HLSF-0085-SB-035 (20.0-21.0)	20	21	Total Chromium*	0.5	8.67	mg/Kg	210	7.14
HLSF-0085-SB-035 (30.0-31.0)	30	31	Total Chromium*	0.5	11.7	mg/Kg	210	9.3
HLSF-0085-SB-035 (40.0-41.0)	40	41	Total Chromium*	0.5	14.2	mg/Kg	210	4.76
HLSF-0085-SB-035 (49.0-50.0)	49	50	Total Chromium*	0.5	4.31	mg/Kg	210	15.6
HLSF-0085-SB-036 (0.5-1.0)***	0.5	1	Total Chromium*	0.5	3	mg/Kg	210	1.02
HLSF-0085-SB-036 (10.0-11.0)	10	11	Total Chromium*	0.5	7.44	mg/Kg	210	4.48
HLSF-0085-SB-036 (20.0-22.0)***	20	22	Total Chromium*	0.5	12.6	mg/Kg	210	7.14
HLSF-0085-SB-036 (30.0-31.0)	30	31	Total Chromium*	0.5	12.6	mg/Kg	210	9.3
HLSF-0085-SB-036 (40.0-41.0)	40	41	Total Chromium*	0.5	15.5	mg/Kg	210	4.76
HLSF-0085-SB-033 (0.5-1.0)	0.5	1	Total Lead	1	2.73	mg/Kg	400	<1
HLSF-0085-SB-033 (10.0-11.0)	10	11	Total Lead	1	10.4	mg/Kg	400	7.1
HLSF-0085-SB-033 (20.0-21.0)	20	21	Total Lead	1	20.1	mg/Kg	400	18.8
HLSF-0085-SB-033 (30.0-31.0)	30	31	Total Lead	1	23.1	mg/Kg	400	15.8
HLSF-0085-SB-033 (40.0-42.0)***	40	42	Total Lead	1	28.95	mg/Kg	400	12
HLSF-0085-SB-033 (49.0-50.0)	49	50	Total Lead	1	6.93	mg/Kg	400	21.9
HLSF-0085-SB-034 (10.0-11.0)	10	11	Total Lead	1	8.85	mg/Kg	400	7.1
HLSF-0085-SB-034 (20.0-21.0)	20	21	Total Lead	1	25.3	mg/Kg	400	18.8
HLSF-0085-SB-034 (30.0-31.0)	30	31	Total Lead	1	8.21	mg/Kg	400	15.8
HLSF-0085-SB-034 (40.0-41.0)	40	41	Total Lead	1	27.4	mg/Kg	400	12
HLSF-0085-SB-034 (49.0-50.0)	49	50	Total Lead	1	6.9	mg/Kg	400	21.9
HLSF-0085-SB-035 (10.0-11.0)	10	11	Total Lead	1	12	mg/Kg	400	7.1
HLSF-0085-SB-035 (20.0-21.0)	20	21	Total Lead	1	17.1	mg/Kg	400	18.8
HLSF-0085-SB-035 (30.0-31.0)	30	31	Total Lead	1	23.3	mg/Kg	400	15.8
HLSF-0085-SB-035 (40.0-41.0)	40	41	Total Lead	1	30.7	mg/Kg	400	12
HLSF-0085-SB-035 (49.0-50.0)	49	50	Total Lead	1	10.2	mg/Kg	400	21.9
HLSF-0085-SB-036 (10.0-11.0)	10	11	Total Lead	1	10.3	mg/Kg	400	7.1
HLSF-0085-SB-036 (20.0-22.0)***	20	22	Total Lead	1	25.8	mg/Kg	400	18.8
HLSF-0085-SB-036 (30.0-31.0)	30	31	Total Lead	1	26.9	mg/Kg	400	15.8
HLSF-0085-SB-036 (40.0-41.0)	40	41	Total Lead	1	32.1	mg/Kg	400	12
HLSF-0085-SB-033 (0.5-1.0)	0.5	1	Total Phosphorous	2	67.7	mg/Kg	NE	51
HLSF-0085-SB-033 (10.0-11.0)	10	11	Total Phosphorous	2	79.3	mg/Kg	NE	70
HLSF-0085-SB-033 (20.0-21.0)	20	21	Total Phosphorous	2	275	mg/Kg	NE	144
HLSF-0085-SB-033 (30.0-31.0)	30	31	Total Phosphorous	2	261	mg/Kg	NE	266
HLSF-0085-SB-033 (40.0-42.0)***	40	42	Total Phosphorous	2	281.5	mg/Kg	NE	177
HLSF-0085-SB-033 (49.0-50.0)	49	50	Total Phosphorous	2	96.6	mg/Kg	NE	329
HLSF-0085-SB-034 (0.5-1.0)	0.5	1	Total Phosphorous	2	74.7	mg/Kg	NE	51
HLSF-0085-SB-034 (10.0-11.0)	10	11	Total Phosphorous	2	83.4	mg/Kg	NE	70
HLSF-0085-SB-034 (20.0-21.0)	20	21	Total Phosphorous	2	272	mg/Kg	NE	144
HLSF-0085-SB-034 (30.0-31.0)	30	31	Total Phosphorous	2	163	mg/Kg	NE	266
HLSF-0085-SB-034 (40.0-41.0)	40	41	Total Phosphorous	2	265	mg/Kg	NE	177
HLSF-0085-SB-034 (49.0-50.0)	49	50	Total Phosphorous	2	116	mg/Kg	NE	329
HLSF-0085-SB-035 (0.5-1.0)	0.5	1	Total Phosphorous	2	120	mg/Kg	NE	51
HLSF-0085-SB-035 (10.0-11.0)	10	11	Total Phosphorous	2	131	mg/Kg	NE	70
HLSF-0085-SB-035 (20.0-21.0)	20	21	Total Phosphorous	2	213	mg/Kg	NE	144

Table D-5. HELSTF Dry Pond

Field Sample Id	Start Depth	End Depth	Constituent Name	Reporting Limit	Result	Units	Residential SSL	Background
HLSF-0085-SB-035 (30.0-31.0)	30	31	Total Phosphorous	2	294	mg/Kg	NE	266
HLSF-0085-SB-035 (40.0-41.0)	40	41	Total Phosphorous	2	294	mg/Kg	NE	177
HLSF-0085-SB-035 (49.0-50.0)	49	50	Total Phosphorous	2	136	mg/Kg	NE	329
HLSF-0085-SB-036 (0.5-1.0)***	0.5	1	Total Phosphorous	2	103	mg/Kg	NE	51
HLSF-0085-SB-036 (10.0-11.0)	10	11	Total Phosphorous	2	95.9	mg/Kg	NE	70
HLSF-0085-SB-036 (20.0-22.0)***	20	22	Total Phosphorous	2	286.5	mg/Kg	NE	144
HLSF-0085-SB-036 (30.0-31.0)	30	31	Total Phosphorous	2	300	mg/Kg	NE	266
HLSF-0085-SB-036 (40.0-41.0)	40	41	Total Phosphorous	2	316	mg/Kg	NE	177
HLSF-0085-SB-033 (0.5-1.0)	0.5	1	Total Potassium	50	407	mg/Kg	NE	258
HLSF-0085-SB-033 (10.0-11.0)	10	11	Total Potassium	50	1620	mg/Kg	NE	1933
HLSF-0085-SB-033 (20.0-21.0)	20	21	Total Potassium	50	2210	mg/Kg	NE	2363
HLSF-0085-SB-033 (30.0-31.0)	30	31	Total Potassium	50	2850	mg/Kg	NE	2387
HLSF-0085-SB-033 (40.0-42.0)***	40	42	Total Potassium	50	3680	mg/Kg	NE	2058
HLSF-0085-SB-033 (49.0-50.0)	49	50	Total Potassium	50	503	mg/Kg	NE	2877
HLSF-0085-SB-034 (0.5-1.0)	0.5	1	Total Potassium	50	709	mg/Kg	NE	258
HLSF-0085-SB-034 (10.0-11.0)	10	11	Total Potassium	50	1420	mg/Kg	NE	1933
HLSF-0085-SB-034 (20.0-21.0)	20	21	Total Potassium	50	2930	mg/Kg	NE	2363
HLSF-0085-SB-034 (30.0-31.0)	30	31	Total Potassium	50	744	mg/Kg	NE	2387
HLSF-0085-SB-034 (40.0-41.0)	40	41	Total Potassium	50	3810	mg/Kg	NE	2058
HLSF-0085-SB-034 (49.0-50.0)	49	50	Total Potassium	50	519	mg/Kg	NE	2877
HLSF-0085-SB-035 (0.5-1.0)	0.5	1	Total Potassium	50	632	mg/Kg	NE	258
HLSF-0085-SB-035 (10.0-11.0)	10	11	Total Potassium	50	2180	mg/Kg	NE	1933
HLSF-0085-SB-035 (20.0-21.0)	20	21	Total Potassium	50	2180	mg/Kg	NE	2363
HLSF-0085-SB-035 (30.0-31.0)	30	31	Total Potassium	50	2650	mg/Kg	NE	2387
HLSF-0085-SB-035 (40.0-41.0)	40	41	Total Potassium	50	3250	mg/Kg	NE	2058
HLSF-0085-SB-035 (49.0-50.0)	49	50	Total Potassium	50	812	mg/Kg	NE	2877
HLSF-0085-SB-036 (0.5-1.0)***	0.5	1	Total Potassium	50	823.5	mg/Kg	NE	258
HLSF-0085-SB-036 (10.0-11.0)	10	11	Total Potassium	50	1830	mg/Kg	NE	1933
HLSF-0085-SB-036 (20.0-22.0)***	20	22	Total Potassium	50	3210	mg/Kg	NE	2363
HLSF-0085-SB-036 (30.0-31.0)	30	31	Total Potassium	50	2840	mg/Kg	NE	2387
HLSF-0085-SB-036 (40.0-41.0)	40	41	Total Potassium	50	3480	mg/Kg	NE	2058
HLSF-0085-SB-033 (0.5-1.0)	0.5	1	Total Sodium	50	332	mg/Kg	NE	335
HLSF-0085-SB-033 (10.0-11.0)	10	11	Total Sodium	50	541	mg/Kg	NE	1972
HLSF-0085-SB-033 (20.0-21.0)	20	21	Total Sodium	50	829	mg/Kg	NE	2731
HLSF-0085-SB-033 (30.0-31.0)	30	31	Total Sodium	50	1830	mg/Kg	NE	2319
HLSF-0085-SB-033 (40.0-42.0)***	40	42	Total Sodium	50	3870	mg/Kg	NE	1830
HLSF-0085-SB-033 (49.0-50.0)	49	50	Total Sodium	50	1130	mg/Kg	NE	2543
HLSF-0085-SB-034 (0.5-1.0)	0.5	1	Total Sodium	50	253	mg/Kg	NE	335
HLSF-0085-SB-034 (10.0-11.0)	10	11	Total Sodium	50	708	mg/Kg	NE	1972
HLSF-0085-SB-034 (20.0-21.0)	20	21	Total Sodium	50	730	mg/Kg	NE	2731
HLSF-0085-SB-034 (30.0-31.0)	30	31	Total Sodium	50	572	mg/Kg	NE	2319
HLSF-0085-SB-034 (40.0-41.0)	40	41	Total Sodium	50	4250	mg/Kg	NE	1830
HLSF-0085-SB-034 (49.0-50.0)	49	50	Total Sodium	50	1060	mg/Kg	NE	2543
HLSF-0085-SB-035 (0.5-1.0)	0.5	1	Total Sodium	50	214	mg/Kg	NE	335
HLSF-0085-SB-035 (10.0-11.0)	10	11	Total Sodium	50	696	mg/Kg	NE	1972
HLSF-0085-SB-035 (20.0-21.0)	20	21	Total Sodium	50	1260	mg/Kg	NE	2731
HLSF-0085-SB-035 (30.0-31.0)	30	31	Total Sodium	50	3390	mg/Kg	NE	2319
HLSF-0085-SB-035 (40.0-41.0)	40	41	Total Sodium	50	4590	mg/Kg	NE	1830
HLSF-0085-SB-035 (49.0-50.0)	49	50	Total Sodium	50	820	mg/Kg	NE	2543
HLSF-0085-SB-036 (0.5-1.0)***	0.5	1	Total Sodium	50	176	mg/Kg	NE	335
HLSF-0085-SB-036 (10.0-11.0)	10	11	Total Sodium	50	497	mg/Kg	NE	1972
HLSF-0085-SB-036 (20.0-22.0)***	20	22	Total Sodium	50	1710	mg/Kg	NE	2731
HLSF-0085-SB-036 (30.0-31.0)	30	31	Total Sodium	50	3130	mg/Kg	NE	2319
HLSF-0085-SB-036 (40.0-41.0)	40	41	Total Sodium	50	4350	mg/Kg	NE	1830
HLSF-0085-SB-033 (0.5-1.0)	0.5	1	Total Zinc	2	4.55	mg/Kg	23500	5.01
HLSF-0085-SB-033 (10.0-11.0)	10	11	Total Zinc	2	12.6	mg/Kg	23500	21.5
HLSF-0085-SB-033 (20.0-21.0)	20	21	Total Zinc	2	30.3	mg/Kg	23500	21.6
HLSF-0085-SB-033 (30.0-31.0)	30	31	Total Zinc	2	30.9	mg/Kg	23500	30.7

Table D-5. HELSTF Dry Pond

Field Sample Id	Start Depth	End Depth	Constituent Name	Reporting Limit	Result	Units	Residential SSL	Background
HLSF-0085-SB-033 (40.0-42.0)***	40	42	Total Zinc	2	48.2	mg/Kg	23500	20.2
HLSF-0085-SB-033 (49.0-50.0)	49	50	Total Zinc	2	11.7	mg/Kg	23500	44.2
HLSF-0085-SB-034 (0.5-1.0)	0.5	1	Total Zinc	2	6.98	mg/Kg	23500	5.01
HLSF-0085-SB-034 (10.0-11.0)	10	11	Total Zinc	2	9.76	mg/Kg	23500	21.5
HLSF-0085-SB-034 (20.0-21.0)	20	21	Total Zinc	2	37.3	mg/Kg	23500	21.6
HLSF-0085-SB-034 (30.0-31.0)	30	31	Total Zinc	2	13.5	mg/Kg	23500	30.7
HLSF-0085-SB-034 (40.0-41.0)	40	41	Total Zinc	2	49.3	mg/Kg	23500	20.2
HLSF-0085-SB-034 (49.0-50.0)	49	50	Total Zinc	2	10.2	mg/Kg	23500	44.2
HLSF-0085-SB-035 (0.5-1.0)	0.5	1	Total Zinc	2	7.91	mg/Kg	23500	5.01
HLSF-0085-SB-035 (10.0-11.0)	10	11	Total Zinc	2	16.8	mg/Kg	23500	21.5
HLSF-0085-SB-035 (20.0-21.0)	20	21	Total Zinc	2	26.2	mg/Kg	23500	21.6
HLSF-0085-SB-035 (30.0-31.0)	30	31	Total Zinc	2	39.6	mg/Kg	23500	30.7
HLSF-0085-SB-035 (40.0-41.0)	40	41	Total Zinc	2	51	mg/Kg	23500	20.2
HLSF-0085-SB-035 (49.0-50.0)	49	50	Total Zinc	2	16.1	mg/Kg	23500	44.2
HLSF-0085-SB-036 (0.5-1.0)***	0.5	1	Total Zinc	2	6.65	mg/Kg	23500	5.01
HLSF-0085-SB-036 (10.0-11.0)	10	11	Total Zinc	2	14.4	mg/Kg	23500	21.5
HLSF-0085-SB-036 (20.0-22.0)***	20	22	Total Zinc	2	38.65	mg/Kg	23500	21.6
HLSF-0085-SB-036 (30.0-31.0)	30	31	Total Zinc	2	43.4	mg/Kg	23500	30.7
HLSF-0085-SB-036 (40.0-41.0)	40	41	Total Zinc	2	56.3	mg/Kg	23500	20.2

* Residential SSL from EPA Region 6.

** NMED TPH Screening Guideline Residential Direct Exposure.

*** Average of primary and duplicate sample.

^ NMED SSL for Total Xylenes

^^ NMED SSL for Nitrite. No SSL for combined Nitrate + Nitrite.

Table D-6. HELSTF MAR Dump Site

Field Sample Id	Start Depth	End Depth	Constituents Name	Reporting Limit	Result	Units	Residential SSL	Background
HLSF-0085-SB-007 (0.5-1.0)	0.5	1	FOC		2.49	%	NE	3.86
HLSF-0085-SB-007 (10.0-11.0)	10	11	FOC		5.3	%	NE	2.73
HLSF-0085-SB-007 (20.0-21.0)	20	21	FOC		5.08	%	NE	3.12
HLSF-0085-SB-007 (30.0-31.0)	30	31	FOC		4.85	%	NE	2.08
HLSF-0085-SB-007 (40.0-41.0)	40	41	FOC		6.06	%	NE	1.96
HLSF-0085-SB-007 (49.0-50.0)	49	50	FOC		3.26	%	NE	1.81
HLSF-0085-SB-008 (0.5-1.0)	0.5	1	FOC		3	%	NE	3.86
HLSF-0085-SB-008 (10.0-11.0)	10	11	FOC		5.27	%	NE	2.73
HLSF-0085-SB-008 (20.0-21.0)	20	21	FOC		5.6	%	NE	3.12
HLSF-0085-SB-008 (30.0-31.0)	30	31	FOC		3.84	%	NE	2.08
HLSF-0085-SB-008 (40.0-41.0)	40	41	FOC		2.21	%	NE	1.96
HLSF-0085-SB-008 (49.0-50.0)	49	50	FOC		2.3	%	NE	1.81
HLSF-0085-SB-009 (0.5-1.0)	0.5	1	FOC		2.51	%	NE	3.86
HLSF-0085-SB-009 (10.0-11.0)	10	11	FOC		5.63	%	NE	2.73
HLSF-0085-SB-009 (20.0-21.0)	20	21	FOC		5.25	%	NE	3.12
HLSF-0085-SB-009 (30.0-31.0)	30	31	FOC		4.59	%	NE	2.08
HLSF-0085-SB-009 (40.0-42.0)***	40	42	FOC		1.94	%	NE	1.96
HLSF-0085-SB-009 (49.0-50.0)	49	50	FOC		3.36	%	NE	1.81
HLSF-0085-SB-007 (0.5-1.0)	0.5	1	Nitrate and Nitrite as N^^	0.1	15.4	mg/Kg	7820	2.74
HLSF-0085-SB-007 (10.0-11.0)	10	11	Nitrate and Nitrite as N^^	0.1	1.56	mg/Kg	7820	182
HLSF-0085-SB-007 (20.0-21.0)	20	21	Nitrate and Nitrite as N^^	0.1	1.22	mg/Kg	7820	171
HLSF-0085-SB-007 (30.0-31.0)	30	31	Nitrate and Nitrite as N^^	0.1	1.23	mg/Kg	7820	71.1
HLSF-0085-SB-007 (40.0-41.0)	40	41	Nitrate and Nitrite as N^^	0.1	1.94	mg/Kg	7820	21.8
HLSF-0085-SB-007 (49.0-50.0)	49	50	Nitrate and Nitrite as N^^	0.1	3.82	mg/Kg	7820	34.4
HLSF-0085-SB-008 (0.5-1.0)	0.5	1	Nitrate and Nitrite as N^^	0.1	1.26	mg/Kg	7820	2.74
HLSF-0085-SB-008 (10.0-11.0)	10	11	Nitrate and Nitrite as N^^	0.1	0.579	mg/Kg	7820	182
HLSF-0085-SB-008 (20.0-21.0)	20	21	Nitrate and Nitrite as N^^	0.1	1.9	mg/Kg	7820	171
HLSF-0085-SB-008 (30.0-31.0)	30	31	Nitrate and Nitrite as N^^	0.1	2.16	mg/Kg	7820	71.1
HLSF-0085-SB-008 (40.0-41.0)	40	41	Nitrate and Nitrite as N^^	0.1	4.77	mg/Kg	7820	21.8
HLSF-0085-SB-008 (49.0-50.0)	49	50	Nitrate and Nitrite as N^^	0.1	3.2	mg/Kg	7820	34.4
HLSF-0085-SB-009 (20.0-21.0)	20	21	Nitrate and Nitrite as N^^	0.1	8.79	mg/Kg	7820	171
HLSF-0085-SB-009 (30.0-31.0)	30	31	Nitrate and Nitrite as N^^	0.1	8.97	mg/Kg	7820	71.1
HLSF-0085-SB-009 (40.0-42.0)***	40	42	Nitrate and Nitrite as N^^	0.1	5.18	mg/Kg	7820	21.8
HLSF-0085-SB-009 (49.0-50.0)	49	50	Nitrate and Nitrite as N^^	0.1	4.66	mg/Kg	7820	34.4
HLSF-0085-SB-007 (30.0-31.0)	30	31	Total Arsenic	2	2.93	mg/Kg	3.9	3.19
HLSF-0085-SB-007 (49.0-50.0)	49	50	Total Arsenic	2	3.19	mg/Kg	3.9	<2
HLSF-0085-SB-008 (40.0-41.0)	40	41	Total Arsenic	2	4.46	mg/Kg	3.9	3.55
HLSF-0085-SB-007 (0.5-1.0)	0.5	1	Total Barium	1	75.2	mg/Kg	15600	18.7
HLSF-0085-SB-007 (10.0-11.0)	10	11	Total Barium	1	31.9	mg/Kg	15600	72.4
HLSF-0085-SB-007 (20.0-21.0)	20	21	Total Barium	1	75.5	mg/Kg	15600	47.6
HLSF-0085-SB-007 (30.0-31.0)	30	31	Total Barium	1	14.8	mg/Kg	15600	72.5
HLSF-0085-SB-007 (40.0-41.0)	40	41	Total Barium	1	53.3	mg/Kg	15600	62
HLSF-0085-SB-007 (49.0-50.0)	49	50	Total Barium	1	17.3	mg/Kg	15600	84.4
HLSF-0085-SB-008 (0.5-1.0)	0.5	1	Total Barium	1	70.6	mg/Kg	15600	18.7
HLSF-0085-SB-008 (10.0-11.0)	10	11	Total Barium	1	32.9	mg/Kg	15600	72.4
HLSF-0085-SB-008 (20.0-21.0)	20	21	Total Barium	1	82.1	mg/Kg	15600	47.6
HLSF-0085-SB-008 (30.0-31.0)	30	31	Total Barium	1	15.8	mg/Kg	15600	72.5
HLSF-0085-SB-008 (40.0-41.0)	40	41	Total Barium	1	34.4	mg/Kg	15600	62
HLSF-0085-SB-008 (49.0-50.0)	49	50	Total Barium	1	12.5	mg/Kg	15600	84.4
HLSF-0085-SB-009 (0.5-1.0)	0.5	1	Total Barium	1	63.1	mg/Kg	15600	18.7
HLSF-0085-SB-009 (10.0-11.0)	10	11	Total Barium	1	28.8	mg/Kg	15600	72.4
HLSF-0085-SB-009 (20.0-21.0)	20	21	Total Barium	1	84.5	mg/Kg	15600	47.6
HLSF-0085-SB-009 (30.0-31.0)	30	31	Total Barium	1	29.7	mg/Kg	15600	72.5
HLSF-0085-SB-009 (40.0-42.0)***	40	42	Total Barium	1	13.2	mg/Kg	15600	62
HLSF-0085-SB-009 (49.0-50.0)	49	50	Total Barium	1	175	mg/Kg	15600	84.4
HLSF-0085-SB-007 (0.5-1.0)	0.5	1	Total Chromium*	0.5	8.8	mg/Kg	210	1.02
HLSF-0085-SB-007 (10.0-11.0)	10	11	Total Chromium*	0.5	2.99	mg/Kg	210	4.48
HLSF-0085-SB-007 (20.0-21.0)	20	21	Total Chromium*	0.5	7.57	mg/Kg	210	7.14
HLSF-0085-SB-007 (30.0-31.0)	30	31	Total Chromium*	0.5	8.67	mg/Kg	210	9.3
HLSF-0085-SB-007 (40.0-41.0)	40	41	Total Chromium*	0.5	16.9	mg/Kg	210	4.76
HLSF-0085-SB-007 (49.0-50.0)	49	50	Total Chromium*	0.5	12	mg/Kg	210	15.6
HLSF-0085-SB-008 (0.5-1.0)	0.5	1	Total Chromium*	0.5	9.06	mg/Kg	210	1.02

Table D-6. HELSTF MAR Dump Site

Field Sample Id	Start Depth	End Depth	Constituents Name	Reporting Limit	Result	Units	Residential SSL	Background
HLSF-0085-SB-008 (10.0-11.0)	10	11	Total Chromium*	0.5	3.28	mg/Kg	210	4.48
HLSF-0085-SB-008 (20.0-21.0)	20	21	Total Chromium*	0.5	6.92	mg/Kg	210	7.14
HLSF-0085-SB-008 (30.0-31.0)	30	31	Total Chromium*	0.5	5.91	mg/Kg	210	9.3
HLSF-0085-SB-008 (40.0-41.0)	40	41	Total Chromium*	0.5	15.6	mg/Kg	210	4.76
HLSF-0085-SB-008 (49.0-50.0)	49	50	Total Chromium*	0.5	7.97	mg/Kg	210	15.6
HLSF-0085-SB-009 (0.5-1.0)	0.5	1	Total Chromium*	0.5	7.21	mg/Kg	210	1.02
HLSF-0085-SB-009 (10.0-11.0)	10	11	Total Chromium*	0.5	2.36	mg/Kg	210	4.48
HLSF-0085-SB-009 (20.0-21.0)	20	21	Total Chromium*	0.5	5.08	mg/Kg	210	7.14
HLSF-0085-SB-009 (30.0-31.0)	30	31	Total Chromium*	0.5	6.91	mg/Kg	210	9.3
HLSF-0085-SB-009 (40.0-42.0)***	40	42	Total Chromium*	0.5	4.405	mg/Kg	210	4.76
HLSF-0085-SB-009 (49.0-50.0)	49	50	Total Chromium*	0.5	7.18	mg/Kg	210	15.6
HLSF-0085-SB-007 (0.5-1.0)	0.5	1	Total Lead	1	16.3	mg/Kg	400	<1
HLSF-0085-SB-007 (10.0-11.0)	10	11	Total Lead	1	2.98	mg/Kg	400	7.1
HLSF-0085-SB-007 (20.0-21.0)	20	21	Total Lead	1	11.9	mg/Kg	400	18.8
HLSF-0085-SB-007 (30.0-31.0)	30	31	Total Lead	1	13.5	mg/Kg	400	15.8
HLSF-0085-SB-007 (40.0-41.0)	40	41	Total Lead	1	37.1	mg/Kg	400	12
HLSF-0085-SB-007 (49.0-50.0)	49	50	Total Lead	1	30.5	mg/Kg	400	21.9
HLSF-0085-SB-008 (0.5-1.0)	0.5	1	Total Lead	1	17.3	mg/Kg	400	<1
HLSF-0085-SB-008 (10.0-11.0)	10	11	Total Lead	1	3.57	mg/Kg	400	7.1
HLSF-0085-SB-008 (20.0-21.0)	20	21	Total Lead	1	10.8	mg/Kg	400	18.8
HLSF-0085-SB-008 (30.0-31.0)	30	31	Total Lead	1	8.01	mg/Kg	400	15.8
HLSF-0085-SB-008 (40.0-41.0)	40	41	Total Lead	1	35.9	mg/Kg	400	12
HLSF-0085-SB-008 (49.0-50.0)	49	50	Total Lead	1	15.9	mg/Kg	400	21.9
HLSF-0085-SB-009 (0.5-1.0)	0.5	1	Total Lead	1	13.3	mg/Kg	400	<1
HLSF-0085-SB-009 (10.0-11.0)	10	11	Total Lead	1	2.15	mg/Kg	400	7.1
HLSF-0085-SB-009 (20.0-21.0)	20	21	Total Lead	1	8.42	mg/Kg	400	18.8
HLSF-0085-SB-009 (30.0-31.0)	30	31	Total Lead	1	16.1	mg/Kg	400	15.8
HLSF-0085-SB-009 (40.0-42.0)***	40	42	Total Lead	1	7.575	mg/Kg	400	12
HLSF-0085-SB-009 (49.0-50.0)	49	50	Total Lead	1	18.5	mg/Kg	400	21.9

* Residential SSL from EPA Region 6.
** NMED TPH Screening Guideline Residential Direct Exposure.
*** Average of primary and duplicate sample.
^ NMED SSL for Total Xylenes
^^ NMED SSL for Nitrite. No SSL for combined Nitrate + Nitrite.

Table D-7. Upper Perched Monitoring Well Sample Results

Field_Sample_Id	Well_Name	Analyte_Name	Result	Units	WQCC Standard	Background***
HLSF-0085-HMW-004-1206	HMW04	1,1-Dichloroethane	3.62	ug/L	25	—
HLSF-0085-HMW-036-1206	HMW36	1,1-Dichloroethane	2.35	ug/L	25	
HLSF-0085-HMW-004-1206	HMW04	1,1-Dichloroethene	5.43	ug/L	5	—
HLSF-0085-HMW-036-1206	HMW36	1-Methylnaphthalene	0.0053	mg/L	NE	—
HLSF-0085-HMW-001-1206	HMW01	Bicarbonate Alkalinity	170	mg/L**	NE	214
HLSF-0085-HMW-002-1206	HMW02	Bicarbonate Alkalinity	308	mg/L**	NE	
HLSF-0085-HMW-003-1206	HMW03	Bicarbonate Alkalinity	338	mg/L**	NE	
HLSF-0085-HMW-004-1206	HMW04	Bicarbonate Alkalinity	110	mg/L**	NE	
HLSF-0085-HMW-017-1206	HMW17	Bicarbonate Alkalinity	102	mg/L**	NE	
HLSF-0085-HMW-024-1206	HMW24	Bicarbonate Alkalinity	80	mg/L**	NE	
HLSF-0085-HMW-036-1206	HMW36	Bicarbonate Alkalinity	362	mg/L**	NE	
HLSF-0085-HMW-001-1206	HMW01	Bromide	7.78	mg/L	NE	195
HLSF-0085-HMW-004-1206	HMW04	Bromide	4.13	mg/L	NE	
HLSF-0085-HMW-017-1206	HMW17	Carbonate Alkalinity	4	mg/L**	NE	<1
HLSF-0085-HMW-001-1206	HMW01	Chloride	721	mg/L	250	2220
HLSF-0085-HMW-002-1206	HMW02	Chloride	405	mg/L	250	
HLSF-0085-HMW-003-1206	HMW03	Chloride	370	mg/L	250	
HLSF-0085-HMW-004-1206	HMW04	Chloride	1600	mg/L	250	
HLSF-0085-HMW-017-1206	HMW17	Chloride	88.2	mg/L	250	
HLSF-0085-HMW-024-1206	HMW24	Chloride	2170	mg/L	250	
HLSF-0085-HMW-036-1206	HMW36	Chloride	492	mg/L	250	
HLSF-0085-HMW-004-1206	HMW04	Chloroform	1.37	ug/L	100	—
HLSF-0085-HMW-024-1206	HMW24	Dissolved Barium	0.01	mg/L	1	<0.01
HLSF-0085-HMW-002-1206	HMW02	Dissolved Cadmium	0.002	mg/L	0.01	<0.01
HLSF-0085-HMW-004-1206	HMW04	Dissolved Cadmium	0.002	mg/L	0.01	
HLSF-0085-HMW-017-1206	HMW17	Dissolved Cadmium	0.002	mg/L	0.01	
HLSF-0085-HMW-017-1206	HMW17	Dissolved Chromium	0.015	mg/L	0.05	0.6
HLSF-0085-HMW-024-1206	HMW24	Dissolved Selenium	0.099	mg/L	0.05	0.072
HLSF-0085-HMW-001-1206	HMW01	Dissolved Sodium	7760	mg/L	NE	2870
HLSF-0085-HMW-002-1206	HMW02	Dissolved Sodium	430	mg/L	NE	
HLSF-0085-HMW-003-1206	HMW03	Dissolved Sodium	312	mg/L	NE	
HLSF-0085-HMW-004-1206	HMW04	Dissolved Sodium	3340	mg/L	NE	
HLSF-0085-HMW-017-1206	HMW17	Dissolved Sodium	1650	mg/L	NE	
HLSF-0085-HMW-024-1206	HMW24	Dissolved Sodium	4040	mg/L	NE	
HLSF-0085-HMW-036-1206	HMW36	Dissolved Sodium	919	mg/L	NE	
HLSF-0085-HMW-001-1206	HMW01	Fluoride	7.05	mg/L	1.6	2.04
HLSF-0085-HMW-002-1206	HMW02	Fluoride	6.08	mg/L	1.6	
HLSF-0085-HMW-003-1206	HMW03	Fluoride	6.14	mg/L	1.6	
HLSF-0085-HMW-004-1206	HMW04	Fluoride	11.2	mg/L	1.6	
HLSF-0085-HMW-017-1206	HMW17	Fluoride	5.34	mg/L	1.6	
HLSF-0085-HMW-024-1206	HMW24	Fluoride	5.75	mg/L	1.6	
HLSF-0085-HMW-036-1206	HMW36	Fluoride	5.62	mg/L	1.6	
HLSF-0085-HMW-001-1206	HMW01	Nitrate-N	162	mg/L	10	82.5
HLSF-0085-HMW-002-1206	HMW02	Nitrate-N	4.05	mg/L	10	
HLSF-0085-HMW-003-1206	HMW03	Nitrate-N	5.14	mg/L	10	
HLSF-0085-HMW-004-1206	HMW04	Nitrate-N	4.04	mg/L	10	
HLSF-0085-HMW-017-1206	HMW17	Nitrate-N	8.13	mg/L	10	
HLSF-0085-HMW-024-1206	HMW24	Nitrate-N	67.5	mg/L	10	
HLSF-0085-HMW-036-1206	HMW36	Nitrate-N	20.4	mg/L	10	
HLSF-0085-HMW-001-1206	HMW01	pH	7.79	s.u.	6-9	7.48
HLSF-0085-HMW-002-1206	HMW02	pH	7.28	s.u.	6-9	
HLSF-0085-HMW-003-1206	HMW03	pH	7.32	s.u.	6-9	
HLSF-0085-HMW-004-1206	HMW04	pH	7.6	s.u.	6-9	

Table D-7. Upper Perched Monitoring Well Sample Results

Field_Sample_Id	Well_Name	Analyte_Name	Result	Units	WQCC Standard	Background***
HLSF-0085-HMW-017-1206	HMW17	pH	8.53	s.u.	6-9	
HLSF-0085-HMW-024-1206	HMW24	pH	7.9	s.u.	6-9	
HLSF-0085-HMW-036-1206	HMW36	pH	7.25	s.u.	6-9	
HLSF-0085-HMW-001-1206	HMW01	Specific Conductance	32000	µmhos/cm	NE	14725
HLSF-0085-HMW-002-1206	HMW02	Specific Conductance	46100	µmhos/cm	NE	
HLSF-0085-HMW-003-1206	HMW03	Specific Conductance	46500	µmhos/cm	NE	
HLSF-0085-HMW-004-1206	HMW04	Specific Conductance	16900	µmhos/cm	NE	
HLSF-0085-HMW-017-1206	HMW17	Specific Conductance	4550	µmhos/cm	NE	
HLSF-0085-HMW-024-1206	HMW24	Specific Conductance	18100	µmhos/cm	NE	
HLSF-0085-HMW-036-1206	HMW36	Specific Conductance	77000	µmhos/cm	NE	
HLSF-0085-HMW-001-1206	HMW01	Sulfate	1520	mg/L	600	7295
HLSF-0085-HMW-002-1206	HMW02	Sulfate	2590	mg/L	600	
HLSF-0085-HMW-003-1206	HMW03	Sulfate	2610	mg/L	600	
HLSF-0085-HMW-004-1206	HMW04	Sulfate	11400	mg/L	600	
HLSF-0085-HMW-017-1206	HMW17	Sulfate	2950	mg/L	600	
HLSF-0085-HMW-024-1206	HMW24	Sulfate	8570	mg/L	600	
HLSF-0085-HMW-036-1206	HMW36	Sulfate	4970	mg/L	600	
HLSF-0085-HMW-001-1206	HMW01	Total Alkalinity	170	mg/L**	NE	214
HLSF-0085-HMW-002-1206	HMW02	Total Alkalinity	308	mg/L**	NE	
HLSF-0085-HMW-003-1206	HMW03	Total Alkalinity	338	mg/L**	NE	
HLSF-0085-HMW-004-1206	HMW04	Total Alkalinity	110	mg/L**	NE	
HLSF-0085-HMW-017-1206	HMW17	Total Alkalinity	106	mg/L**	NE	
HLSF-0085-HMW-024-1206	HMW24	Total Alkalinity	80	mg/L**	NE	
HLSF-0085-HMW-036-1206	HMW36	Total Alkalinity	362	mg/L**	NE	
HLSF-0085-HMW-024-1206	HMW24	Total Barium	0.01	mg/L	1.0	<0.01
HLSF-0085-HMW-017-1206	HMW17	Total Cadmium	0.002	mg/L	0.01	<0.01
HLSF-0085-HMW-017-1206	HMW17	Total Chromium	0.015	mg/L	0.05	0.6
HLSF-0085-HMW-001-1206	HMW01	Total Dissolved Solids	30800	mg/L	1000	15650
HLSF-0085-HMW-002-1206	HMW02	Total Dissolved Solids	4640	mg/L	1000	
HLSF-0085-HMW-003-1206	HMW03	Total Dissolved Solids	4720	mg/L	1000	
HLSF-0085-HMW-004-1206	HMW04	Total Dissolved Solids	16700	mg/L	1000	
HLSF-0085-HMW-017-1206	HMW17	Total Dissolved Solids	4580	mg/L	1000	
HLSF-0085-HMW-024-1206	HMW24	Total Dissolved Solids	18200	mg/L	1000	
HLSF-0085-HMW-036-1206	HMW36	Total Dissolved Solids	8060	mg/L	1000	
HLSF-0085-HMW-001-1206	HMW01	Total Phosphorous	0.058	mg/L	NE	<0.05
HLSF-0085-HMW-002-1206	HMW02	Total Phosphorous	0.057	mg/L	NE	
HLSF-0085-HMW-003-1206	HMW03	Total Phosphorous	0.059	mg/L	NE	
HLSF-0085-HMW-004-1206	HMW04	Total Phosphorous	0.08	mg/L	NE	
HLSF-0085-HMW-024-1206	HMW24	Total Selenium	0.114	mg/L	0.05	0.076
HLSF-0085-HMW-001-1206	HMW01	Total Sodium	6960	mg/L	NE	3030
HLSF-0085-HMW-002-1206	HMW02	Total Sodium	351	mg/L	NE	
HLSF-0085-HMW-003-1206	HMW03	Total Sodium	312	mg/L	NE	
HLSF-0085-HMW-004-1206	HMW04	Total Sodium	4340	mg/L	NE	
HLSF-0085-HMW-017-1206	HMW17	Total Sodium	1110	mg/L	NE	
HLSF-0085-HMW-024-1206	HMW24	Total Sodium	3460	mg/L	NE	
HLSF-0085-HMW-036-1206	HMW36	Total Sodium	948	mg/L	NE	

NOTES:

* Mean of Duplicate Analyses

** mg/L as CaCO3

*** Regional Aquifer Background

Table D-8. Lower Perched Monitoring Well Results

Field_Sample_Id	Well_Name	Analyte_Name	Result	Units	WQCC Standard	Background***
HLSF-0085-DRW-008-0107	DRW08	1,1,1-Trichloroethane	1.39	ug/L	60	—
HLSF-0085-DRW-005-0107	DRW05	1,1-Dichloroethane	34.9	ug/L	25	
HLSF-0085-DRW-006-0107	DRW06	1,1-Dichloroethane	12.5	ug/L	25	
HLSF-0085-DRW-007-0107	DRW07	1,1-Dichloroethane	8.34	ug/L	25	
HLSF-0085-DRW-008-0107	DRW08	1,1-Dichloroethane	3.18	ug/L	25	
HLSF-0085-HCF-002-0107	HCF2	1,1-Dichloroethane	73.4	ug/L	25	
HLSF-0085-HMW-011-1206	HMW11	1,1-Dichloroethane	1.53	ug/L	25	
HLSF-0085-HMW-041-1206	HMW41	1,1-Dichloroethane	1.1	ug/L	25	
HLSF-0085-DRW-007-0107	DRW07	1,1-Dichloroethene	2.54	ug/L	5	—
HLSF-0085-HMW-007-0107	HMW07	1,1-Dichloroethene	3.05	ug/L	5	
HLSF-0085-HMW-031-1206	HMW31	1,1-Dichloroethene	4.8	ug/L	5	
HLSF-0085-HMW-033-1206	HMW33	1,1-Dichloroethene	5.14	ug/L	5	
HLSF-0085-HMW-039-1206	HMW39	1,1-Dichloroethene	1.29	ug/L	5	
HLSF-0085-HMW-041-1206	HMW41	1,1-Dichloroethene	4.4	ug/L	5	
HLSF-0085-HCF-002-0107	HCF2	1-Methylnaphthalene	0.0653	mg/L	NE	
HLSF-0085-HCF-002-0107	HCF2	2-Methylnaphthalene	0.0269	mg/L	NE	
HLSF-0085-DRW-011-0107*	DRW11	Ammonia-N	1.01	mg/L	NE	—
HLSF-0085-HCF-002-0107	HCF2	Anthracene	0.0201	mg/L	1.83^	—
HLSF-0085-DRW-005-0107	DRW05	Benzene	3.81	ug/L	10	—
HLSF-0085-HCF-002-0107	HCF2	Benzene	33.2	ug/L	10	
HLSF-0085-HMW-021-1206	HMW21	Bicarbonate Alkalinity	174	mg/L	NE	214
HLSF-0085-DRW-005-0107	DRW05	Bicarbonate Alkalinity	3140	mg/L**	NE	
HLSF-0085-DRW-006-0107	DRW06	Bicarbonate Alkalinity	892	mg/L**	NE	
HLSF-0085-DRW-007-0107	DRW07	Bicarbonate Alkalinity	542	mg/L**	NE	
HLSF-0085-DRW-008-0107	DRW08	Bicarbonate Alkalinity	248	mg/L**	NE	
HLSF-0085-DRW-009-1206	DRW09	Bicarbonate Alkalinity	134	mg/L**	NE	
HLSF-0085-DRW-010-1206*	DRW10	Bicarbonate Alkalinity	182	mg/L**	NE	
HLSF-0085-DRW-011-0107*	DRW11	Bicarbonate Alkalinity	120	mg/L**	NE	
HLSF-0085-DRW-012-0107	DRW12	Bicarbonate Alkalinity	206	mg/L**	NE	
HLSF-0085-DRW-013-0107*	DRW13	Bicarbonate Alkalinity	146	mg/L**	NE	
HLSF-0085-HCF-002-0107	HCF2	Bicarbonate Alkalinity	1190	mg/L**	NE	
HLSF-0085-HMW-007-0107	HMW07	Bicarbonate Alkalinity	120	mg/L**	NE	
HLSF-0085-HMW-009-0107	HMW09	Bicarbonate Alkalinity	118	mg/L**	NE	
HLSF-0085-HMW-010-0107	HMW10	Bicarbonate Alkalinity	368	mg/L**	NE	
HLSF-0085-HMW-011-1206	HMW11	Bicarbonate Alkalinity	154	mg/L**	NE	
HLSF-0085-HMW-012-1206	HMW12	Bicarbonate Alkalinity	192	mg/L**	NE	
HLSF-0085-HMW-014-1206	HMW14	Bicarbonate Alkalinity	200	mg/L**	NE	
HLSF-0085-HMW-015-0107	HMW15	Bicarbonate Alkalinity	102	mg/L**	NE	
HLSF-0085-HMW-023-1206*	HMW23	Bicarbonate Alkalinity	66.5	mg/L**	NE	
HLSF-0085-HMW-026-0107	HMW26	Bicarbonate Alkalinity	132	mg/L**	NE	
HLSF-0085-HMW-031-1206	HMW31	Bicarbonate Alkalinity	148	mg/L**	NE	
HLSF-0085-HMW-033-1206	HMW33	Bicarbonate Alkalinity	188	mg/L**	NE	
HLSF-0085-HMW-037-1206	HMW37	Bicarbonate Alkalinity	138	mg/L**	NE	
HLSF-0085-HMW-038-1206	HMW38	Bicarbonate Alkalinity	154	mg/L**	NE	
HLSF-0085-HMW-039-1206	HMW39	Bicarbonate Alkalinity	170	mg/L**	NE	
HLSF-0085-HMW-040-1206	HMW40	Bicarbonate Alkalinity	134	mg/L**	NE	
HLSF-0085-HMW-041-1206	HMW41	Bicarbonate Alkalinity	220	mg/L**	NE	
HLSF-0085-HMW-043-1206	HMW43	Bicarbonate Alkalinity	154	mg/L**	NE	
HLSF-0085-HMW-045-0107*	HMW45	Bicarbonate Alkalinity	91	mg/L**	NE	
HLSF-0085-HMW-053-1206	HMW53	Bicarbonate Alkalinity	184	mg/L**	NE	
HLSF-0085-DRW-006-0107	DRW06	Bromide	3.5	mg/L	NE	195
HLSF-0085-DRW-009-1206	DRW09	Bromide	2.13	mg/L	NE	
HLSF-0085-DRW-010-1206*	DRW10	Bromide	3.63	mg/L	NE	
HLSF-0085-HMW-010-0107	HMW10	Bromide	3.86	mg/L	NE	

Table D-8. Lower Perched Monitoring Well Results

Field_Sample_Id	Well_Name	Analyte_Name	Result	Units	WQCC Standard	Background***
HLSF-0085-HMW-011-1206	HMW11	Bromide	3.43	mg/L	NE	
HLSF-0085-HMW-012-1206	HMW12	Bromide	5.9	mg/L	NE	
HLSF-0085-HMW-014-1206	HMW14	Bromide	6.51	mg/L	NE	
HLSF-0085-HMW-031-1206	HMW31	Bromide	1.81	mg/L	NE	
HLSF-0085-HMW-033-1206	HMW33	Bromide	3.61	mg/L	NE	
HLSF-0085-HMW-038-1206	HMW38	Bromide	1.87	mg/L	NE	
HLSF-0085-HMW-039-1206	HMW39	Bromide	1.77	mg/L	NE	
HLSF-0085-HMW-040-1206	HMW40	Bromide	2.42	mg/L	NE	
HLSF-0085-HMW-041-1206	HMW41	Bromide	2.26	mg/L	NE	
HLSF-0085-HMW-053-1206	HMW53	Bromide	6.65	mg/L	NE	
HLSF-0085-HMW-012-1206	HMW12	Bromoform	1.02	ug/L	8.5^^	—
HLSF-0085-HMW-021-1206	HMW21	Chloride	2240	mg/L	250	2220
HLSF-0085-DRW-005-0107	DRW05	Chloride	906	mg/L	250	
HLSF-0085-DRW-006-0107	DRW06	Chloride	4460	mg/L	250	
HLSF-0085-DRW-007-0107	DRW07	Chloride	1420	mg/L	250	
HLSF-0085-DRW-008-0107	DRW08	Chloride	1010	mg/L	250	
HLSF-0085-DRW-009-1206	DRW09	Chloride	13200	mg/L	250	
HLSF-0085-DRW-010-1206*	DRW10	Chloride	17100	mg/L	250	
HLSF-0085-DRW-011-0107*	DRW11	Chloride	138	mg/L	250	
HLSF-0085-DRW-012-0107	DRW12	Chloride	5320	mg/L	250	
HLSF-0085-DRW-013-0107*	DRW13	Chloride	692	mg/L	250	
HLSF-0085-HCF-002-0107	HCF2	Chloride	912	mg/L	250	
HLSF-0085-HMW-009-0107	HMW09	Chloride	1080	mg/L	250	
HLSF-0085-HMW-010-0107	HMW10	Chloride	5330	mg/L	250	
HLSF-0085-HMW-011-1206	HMW11	Chloride	2160	mg/L	250	
HLSF-0085-HMW-012-1206	HMW12	Chloride	9350	mg/L	250	
HLSF-0085-HMW-014-1206	HMW14	Chloride	9770	mg/L	250	
HLSF-0085-HMW-015-0107	HMW15	Chloride	2210	mg/L	250	
HLSF-0085-HMW-023-1206*	HMW23	Chloride	1455	mg/L	250	
HLSF-0085-HMW-031-1206	HMW31	Chloride	3100	mg/L	250	
HLSF-0085-HMW-033-1206	HMW33	Chloride	3450	mg/L	250	
HLSF-0085-HMW-037-1206	HMW37	Chloride	456	mg/L	250	
HLSF-0085-HMW-038-1206	HMW38	Chloride	1530	mg/L	250	
HLSF-0085-HMW-039-1206	HMW39	Chloride	1780	mg/L	250	
HLSF-0085-HMW-040-1206	HMW40	Chloride	3680	mg/L	250	
HLSF-0085-HMW-041-1206	HMW41	Chloride	3590	mg/L	250	
HLSF-0085-HMW-043-1206	HMW43	Chloride	595	mg/L	250	
HLSF-0085-HMW-045-0107*	HMW45	Chloride	2260	mg/L	250	
HLSF-0085-HMW-053-1206	HMW53	Chloride	11000	mg/L	250	
HLSF-0085-HMW-021-1206	HMW21	Chloroform	7.37	ug/L	100	—
HLSF-0085-DRW-007-0107	DRW07	Chloroform	2.4	ug/L	100	
HLSF-0085-DRW-008-0107	DRW08	Chloroform	1.22	ug/L	100	
HLSF-0085-DRW-011-0107*	DRW11	Chloroform	3.94	ug/L	100	
HLSF-0085-DRW-013-0107*	DRW13	Chloroform	3.845	ug/L	100	
HLSF-0085-HMW-007-0107	HMW07	Chloroform	3.32	ug/L	100	
HLSF-0085-HMW-009-0107	HMW09	Chloroform	7.12	ug/L	100	
HLSF-0085-HMW-010-0107	HMW10	Chloroform	1.94	ug/L	100	
HLSF-0085-HMW-011-1206	HMW11	Chloroform	1.83	ug/L	100	
HLSF-0085-HMW-023-1206*	HMW23	Chloroform	5.2	ug/L	100	
HLSF-0085-HMW-031-1206	HMW31	Chloroform	3.61	ug/L	100	
HLSF-0085-HMW-033-1206	HMW33	Chloroform	1.63	ug/L	100	
HLSF-0085-HMW-041-1206	HMW41	Chloroform	1.58	ug/L	100	
HLSF-0085-HMW-045-0107*	HMW45	Chloroform	10.2	ug/L	100	
HLSF-0085-HCF-002-0107	HCF2	Dibenzofuran	0.0072	mg/L	0.0122^	—

Table D-8. Lower Perched Monitoring Well Results

Field_Sample_Id	Well_Name	Analyte_Name	Result	Units	WQCC Standard	Background***
HLSF-0085-DRW-012-0107	DRW12	Dissolved Barium	0.011	mg/L	1	<0.01
HLSF-0085-HMW-007-0107	HMW07	Dissolved Barium	0.012	mg/L	1	
HLSF-0085-HMW-023-1206*	HMW23	Dissolved Barium	0.01	mg/L	1	
HLSF-0085-DRW-009-1206	DRW09	Dissolved Cadmium	0.002	mg/L	0.01	<0.01
HLSF-0085-HMW-007-0107	HMW07	Dissolved Chromium	0.673	mg/L	0.05	0.6
HLSF-0085-HMW-011-1206	HMW11	Dissolved Chromium	0.095	mg/L	0.05	
HLSF-0085-HMW-012-1206	HMW12	Dissolved Chromium	0.174	mg/L	0.05	
HLSF-0085-HMW-026-0107	HMW26	Dissolved Chromium	0.006	mg/L	0.05	
HLSF-0085-HMW-031-1206	HMW31	Dissolved Chromium	1.05	mg/L	0.05	
HLSF-0085-HMW-033-1206	HMW33	Dissolved Chromium	0.661	mg/L	0.05	
HLSF-0085-HMW-039-1206	HMW39	Dissolved Chromium	0.158	mg/L	0.05	
HLSF-0085-HMW-041-1206	HMW41	Dissolved Chromium	0.682	mg/L	0.05	
HLSF-0085-HMW-039-1206	HMW39	Dissolved Phosphorus	0	mg/L	NE	<0.05
HLSF-0085-HMW-043-1206	HMW43	Dissolved Phosphorus	0	mg/L	NE	
HLSF-0085-HMW-015-0107	HMW15	Dissolved Potassium	74	mg/L	NE	84
HLSF-0085-DRW-012-0107	DRW12	Dissolved Selenium	0.144	mg/L	0.05	0.072
HLSF-0085-HMW-007-0107	HMW07	Dissolved Selenium	0.135	mg/L	0.05	
HLSF-0085-HMW-023-1206*	HMW23	Dissolved Selenium	0.054	mg/L	0.05	
HLSF-0085-HMW-026-0107	HMW26	Dissolved Selenium	0.262	mg/L	0.05	
HLSF-0085-HMW-031-1206	HMW31	Dissolved Selenium	0.329	mg/L	0.05	
HLSF-0085-HMW-033-1206	HMW33	Dissolved Selenium	0.524	mg/L	0.05	
HLSF-0085-HMW-039-1206	HMW39	Dissolved Selenium	0.057	mg/L	0.05	
HLSF-0085-HMW-021-1206	HMW21	Dissolved Sodium	2760	mg/L	NE	2870
HLSF-0085-DRW-005-0107	DRW05	Dissolved Sodium	2170	mg/L	NE	
HLSF-0085-DRW-006-0107	DRW06	Dissolved Sodium	6990	mg/L	NE	
HLSF-0085-DRW-007-0107	DRW07	Dissolved Sodium	2560	mg/L	NE	
HLSF-0085-DRW-008-0107	DRW08	Dissolved Sodium	2380	mg/L	NE	
HLSF-0085-DRW-009-1206	DRW09	Dissolved Sodium	11400	mg/L	NE	
HLSF-0085-DRW-010-1206*	DRW10	Dissolved Sodium	12400	mg/L	NE	
HLSF-0085-DRW-011-0107*	DRW11	Dissolved Sodium	225	mg/L	NE	
HLSF-0085-DRW-012-0107	DRW12	Dissolved Sodium	6470	mg/L	NE	
HLSF-0085-DRW-013-0107*	DRW13	Dissolved Sodium	1110	mg/L	NE	
HLSF-0085-HCF-002-0107	HCF2	Dissolved Sodium	2000	mg/L	NE	
HLSF-0085-HMW-007-0107	HMW07	Dissolved Sodium	642	mg/L	NE	
HLSF-0085-HMW-010-0107	HMW10	Dissolved Sodium	7180	mg/L	NE	
HLSF-0085-HMW-011-1206	HMW11	Dissolved Sodium	3360	mg/L	NE	
HLSF-0085-HMW-012-1206	HMW12	Dissolved Sodium	13200	mg/L	NE	
HLSF-0085-HMW-014-1206	HMW14	Dissolved Sodium	13400	mg/L	NE	
HLSF-0085-HMW-015-0107	HMW15	Dissolved Sodium	2760	mg/L	NE	
HLSF-0085-HMW-023-1206*	HMW23	Dissolved Sodium	1795	mg/L	NE	
HLSF-0085-HMW-026-0107	HMW26	Dissolved Sodium	4320	mg/L	NE	
HLSF-0085-HMW-037-1206	HMW37	Dissolved Sodium	927	mg/L	NE	
HLSF-0085-HMW-038-1206	HMW38	Dissolved Sodium	2320	mg/L	NE	
HLSF-0085-HMW-039-1206	HMW39	Dissolved Sodium	3570	mg/L	NE	
HLSF-0085-HMW-040-1206	HMW40	Dissolved Sodium	6330	mg/L	NE	
HLSF-0085-HMW-041-1206	HMW41	Dissolved Sodium	5220	mg/L	NE	
HLSF-0085-HMW-043-1206	HMW43	Dissolved Sodium	997	mg/L	NE	
HLSF-0085-HMW-053-1206	HMW53	Dissolved Sodium	10900	mg/L	NE	
HLSF-0085-HCF-002-0107	HCF2	Ethylbenzene	1.75	ug/L	750	—
HLSF-0085-HMW-021-1206	HMW21	Fluoride	4.26	mg/L	1.6	2.04
HLSF-0085-DRW-005-0107	DRW05	Fluoride	1.87	mg/L	1.6	
HLSF-0085-DRW-006-0107	DRW06	Fluoride	5.36	mg/L	1.6	
HLSF-0085-DRW-007-0107	DRW07	Fluoride	2.99	mg/L	1.6	
HLSF-0085-DRW-008-0107	DRW08	Fluoride	3.78	mg/L	1.6	

Table D-8. Lower Perched Monitoring Well Results

Field_Sample_Id	Well_Name	Analyte_Name	Result	Units	WQCC Standard	Background***
HLSF-0085-DRW-009-1206	DRW09	Fluoride	2.56	mg/L	1.6	
HLSF-0085-DRW-010-1206*	DRW10	Fluoride	8.075	mg/L	1.6	
HLSF-0085-DRW-011-0107*	DRW11	Fluoride	3.83	mg/L	1.6	
HLSF-0085-DRW-012-0107	DRW12	Fluoride	3.76	mg/L	1.6	
HLSF-0085-DRW-013-0107*	DRW13	Fluoride	4.68	mg/L	1.6	
HLSF-0085-HCF-002-0107	HCF2	Fluoride	4.88	mg/L	1.6	
HLSF-0085-HMW-009-0107	HMW09	Fluoride	2.57	mg/L	1.6	
HLSF-0085-HMW-010-0107	HMW10	Fluoride	3.37	mg/L	1.6	
HLSF-0085-HMW-011-1206	HMW11	Fluoride	6.68	mg/L	1.6	
HLSF-0085-HMW-012-1206	HMW12	Fluoride	7.31	mg/L	1.6	
HLSF-0085-HMW-014-1206	HMW14	Fluoride	5.13	mg/L	1.6	
HLSF-0085-HMW-015-0107	HMW15	Fluoride	2.57	mg/L	1.6	
HLSF-0085-HMW-023-1206*	HMW23	Fluoride	3.815	mg/L	1.6	
HLSF-0085-HMW-031-1206	HMW31	Fluoride	2.17	mg/L	1.6	
HLSF-0085-HMW-033-1206	HMW33	Fluoride	3.05	mg/L	1.6	
HLSF-0085-HMW-037-1206	HMW37	Fluoride	4.28	mg/L	1.6	
HLSF-0085-HMW-038-1206	HMW38	Fluoride	4.01	mg/L	1.6	
HLSF-0085-HMW-039-1206	HMW39	Fluoride	5.64	mg/L	1.6	
HLSF-0085-HMW-040-1206	HMW40	Fluoride	7.72	mg/L	1.6	
HLSF-0085-HMW-041-1206	HMW41	Fluoride	3.36	mg/L	1.6	
HLSF-0085-HMW-043-1206	HMW43	Fluoride	4.01	mg/L	1.6	
HLSF-0085-HMW-045-0107*	HMW45	Fluoride	3.31	mg/L	1.6	
HLSF-0085-HMW-053-1206	HMW53	Fluoride	3.37	mg/L	1.6	
HLSF-0085-HCF-002-0107	HCF2	GRO	0.454	mg/L	NE	—
HLSF-0085-HMW-041-1206	HMW41	Isopropyl Alcohol	41.9	ug/L	NE	—
HLSF-0085-HMW-145-0107	HMW45	Isopropyl Alcohol	62.2	ug/L	NE	
HLSF-0085-HCF-002-0107	HCF2	Isopropylbenzene	1.53	ug/L	NE	—
HLSF-0085-HCF-002-0107	HCF2	MTBE	10.2	ug/L	100	—
HLSF-0085-HCF-002-0107	HCF2	Naphthalene	37	ug/L	30	—
HLSF-0085-HCF-002-0107	HCF2	Naphthalene	0.0096	mg/L	0.03	
HLSF-0085-DRW-008-0107	DRW08	Nitrate and Nitrite as N	40.4	mg/L	10	82.5
HLSF-0085-DRW-009-1206	DRW09	Nitrate and Nitrite as N	252	mg/L	10	
HLSF-0085-DRW-010-1206*	DRW10	Nitrate and Nitrite as N	351.5	mg/L	10	
HLSF-0085-HMW-010-0107	HMW10	Nitrate and Nitrite as N	191	mg/L	10	
HLSF-0085-HMW-015-0107	HMW15	Nitrate and Nitrite as N	77.1	mg/L	10	
HLSF-0085-HMW-023-1206*	HMW23	Nitrate and Nitrite as N	51.85	mg/L	10	
HLSF-0085-HMW-021-1206	HMW21	Nitrate-N	63.8	mg/L	10	82.5
HLSF-0085-DRW-006-0107	DRW06	Nitrate-N	220	mg/L	10	
HLSF-0085-DRW-007-0107	DRW07	Nitrate-N	36.3	mg/L	10	
HLSF-0085-DRW-011-0107*	DRW11	Nitrate-N	7.71	mg/L	10	
HLSF-0085-DRW-012-0107	DRW12	Nitrate-N	159	mg/L	10	
HLSF-0085-DRW-013-0107*	DRW13	Nitrate-N	25.05	mg/L	10	
HLSF-0085-HCF-002-0107	HCF2	Nitrate-N	4.35	mg/L	10	
HLSF-0085-HMW-009-0107	HMW09	Nitrate-N	55.4	mg/L	10	
HLSF-0085-HMW-011-1206	HMW11	Nitrate-N	78.2	mg/L	10	
HLSF-0085-HMW-012-1206	HMW12	Nitrate-N	126	mg/L	10	
HLSF-0085-HMW-014-1206	HMW14	Nitrate-N	223	mg/L	10	
HLSF-0085-HMW-023-1206*	HMW23	Nitrate-N	64.45	mg/L	10	
HLSF-0085-HMW-031-1206	HMW31	Nitrate-N	95.3	mg/L	10	
HLSF-0085-HMW-033-1206	HMW33	Nitrate-N	96.3	mg/L	10	
HLSF-0085-HMW-037-1206	HMW37	Nitrate-N	26.2	mg/L	10	
HLSF-0085-HMW-038-1206	HMW38	Nitrate-N	71.2	mg/L	10	
HLSF-0085-HMW-039-1206	HMW39	Nitrate-N	61.2	mg/L	10	
HLSF-0085-HMW-040-1206	HMW40	Nitrate-N	93	mg/L	10	

Table D-8. Lower Perched Monitoring Well Results

Field_Sample_Id	Well_Name	Analyte_Name	Result	Units	WQCC Standard	Background***
HLSF-0085-HMW-041-1206	HMW41	Nitrate-N	99.4	mg/L	10	
HLSF-0085-HMW-043-1206	HMW43	Nitrate-N	24.7	mg/L	10	
HLSF-0085-HMW-045-0107*	HMW45	Nitrate-N	91.5	mg/L	10	
HLSF-0085-HMW-053-1206	HMW53	Nitrate-N	301	mg/L	10	
HLSF-0085-DRW-007-0107	DRW07	Nitrite-N	1.84	mg/L	3.65^	—
HLSF-0085-HCF-002-0107	HCF2	Nitrite-N	2.45	mg/L	3.65^	
HLSF-0085-HCF-002-0107	HCF2	o-Xylene	2.39	ug/L	7,300^	—
HLSF-0085-HMW-021-1206	HMW21	pH	7.82	s.u.	6-9	7.48
HLSF-0085-DRW-005-0107	DRW05	pH	7.45	s.u.	6-9	
HLSF-0085-DRW-006-0107	DRW06	pH	7.04	s.u.	6-9	
HLSF-0085-DRW-007-0107	DRW07	pH	7.53	s.u.	6-9	
HLSF-0085-DRW-008-0107	DRW08	pH	6.9	s.u.	6-9	
HLSF-0085-DRW-009-1206	DRW09	pH	7.91	s.u.	6-9	
HLSF-0085-DRW-010-1206*	DRW10	pH	8.005	s.u.	6-9	
HLSF-0085-DRW-011-0107*	DRW11	pH	7.345	s.u.	6-9	
HLSF-0085-DRW-012-0107	DRW12	pH	7.14	s.u.	6-9	
HLSF-0085-DRW-013-0107*	DRW13	pH	7.865	s.u.	6-9	
HLSF-0085-HCF-002-0107	HCF2	pH	6.59	s.u.	6-9	
HLSF-0085-HMW-007-0107	HMW07	pH	7.15	s.u.	6-9	
HLSF-0085-HMW-009-0107	HMW09	pH	7.55	s.u.	6-9	
HLSF-0085-HMW-010-0107	HMW10	pH	7.28	s.u.	6-9	
HLSF-0085-HMW-011-1206	HMW11	pH	7.53	s.u.	6-9	
HLSF-0085-HMW-012-1206	HMW12	pH	7.62	s.u.	6-9	
HLSF-0085-HMW-014-1206	HMW14	pH	8	s.u.	6-9	
HLSF-0085-HMW-015-0107	HMW15	pH	7.55	s.u.	6-9	
HLSF-0085-HMW-023-1206*	HMW23	pH	7.525	s.u.	6-9	
HLSF-0085-HMW-026-0107	HMW26	pH	7.57	s.u.	6-9	
HLSF-0085-HMW-031-1206	HMW31	pH	7.62	s.u.	6-9	
HLSF-0085-HMW-033-1206	HMW33	pH	7.53	s.u.	6-9	
HLSF-0085-HMW-037-1206	HMW37	pH	7.58	s.u.	6-9	
HLSF-0085-HMW-038-1206	HMW38	pH	7.67	s.u.	6-9	
HLSF-0085-HMW-039-1206	HMW39	pH	7.59	s.u.	6-9	
HLSF-0085-HMW-040-1206	HMW40	pH	7.66	s.u.	6-9	
HLSF-0085-HMW-041-1206	HMW41	pH	7.53	s.u.	6-9	
HLSF-0085-HMW-043-1206	HMW43	pH	7.62	s.u.	6-9	
HLSF-0085-HMW-045-0107*	HMW45	pH	7.52	s.u.	6-9	
HLSF-0085-HMW-053-1206	HMW53	pH	7.5	s.u.	6-9	
HLSF-0085-HMW-021-1206	HMW21	Specific Conductance	15000	µMHOS/cm	NE	14725
HLSF-0085-DRW-005-0107	DRW05	Specific Conductance	10400	µmhos/cm	NE	
HLSF-0085-DRW-006-0107	DRW06	Specific Conductance	28900	µmhos/cm	NE	
HLSF-0085-DRW-007-0107	DRW07	Specific Conductance	12200	µmhos/cm	NE	
HLSF-0085-DRW-008-0107	DRW08	Specific Conductance	12100	µmhos/cm	NE	
HLSF-0085-DRW-009-1206	DRW09	Specific Conductance	47200	µmhos/cm	NE	
HLSF-0085-DRW-010-1206*	DRW10	Specific Conductance	53650	µmhos/cm	NE	
HLSF-0085-DRW-011-0107*	DRW11	Specific Conductance	3800	µmhos/cm	NE	
HLSF-0085-DRW-012-0107	DRW12	Specific Conductance	29000	µmhos/cm	NE	
HLSF-0085-DRW-013-0107*	DRW13	Specific Conductance	7905	µmhos/cm	NE	
HLSF-0085-HCF-002-0107	HCF2	Specific Conductance	11600	µmhos/cm	NE	
HLSF-0085-HMW-007-0107	HMW07	Specific Conductance	8600	µmhos/cm	NE	
HLSF-0085-HMW-009-0107	HMW09	Specific Conductance	11200	µmhos/cm	NE	
HLSF-0085-HMW-010-0107	HMW10	Specific Conductance	27800	µmhos/cm	NE	
HLSF-0085-HMW-011-1206	HMW11	Specific Conductance	15600	µmhos/cm	NE	
HLSF-0085-HMW-012-1206	HMW12	Specific Conductance	42000	µmhos/cm	NE	
HLSF-0085-HMW-014-1206	HMW14	Specific Conductance	41000	µmhos/cm	NE	

Table D-8. Lower Perched Monitoring Well Results

Field_Sample_Id	Well_Name	Analyte_Name	Result	Units	WQCC Standard	Background***
HLSF-0085-HMW-015-0107	HMW15	Specific Conductance	13800	µmhos/cm	NE	
HLSF-0085-HMW-023-1206*	HMW23	Specific Conductance	11100	µmhos/cm	NE	
HLSF-0085-HMW-026-0107	HMW26	Specific Conductance	18800	µmhos/cm	NE	
HLSF-0085-HMW-031-1206	HMW31	Specific Conductance	19800	µmhos/cm	NE	
HLSF-0085-HMW-033-1206	HMW33	Specific Conductance	31400	µmhos/cm	NE	
HLSF-0085-HMW-037-1206	HMW37	Specific Conductance	67400	µmhos/cm	NE	
HLSF-0085-HMW-038-1206	HMW38	Specific Conductance	12100	µmhos/cm	NE	
HLSF-0085-HMW-039-1206	HMW39	Specific Conductance	16000	µmhos/cm	NE	
HLSF-0085-HMW-040-1206	HMW40	Specific Conductance	22500	µmhos/cm	NE	
HLSF-0085-HMW-041-1206	HMW41	Specific Conductance	21400	µmhos/cm	NE	
HLSF-0085-HMW-043-1206	HMW43	Specific Conductance	73500	µmhos/cm	NE	
HLSF-0085-HMW-045-0107*	HMW45	Specific Conductance	12250	µmhos/cm	NE	
HLSF-0085-HMW-053-1206	HMW53	Specific Conductance	46500	µmhos/cm	NE	
HLSF-0085-HMW-021-1206	HMW21	Sulfate	6470	mg/L	600	7295
HLSF-0085-DRW-005-0107	DRW05	Sulfate	2470	mg/L	600	
HLSF-0085-DRW-006-0107	DRW06	Sulfate	13400	mg/L	600	
HLSF-0085-DRW-007-0107	DRW07	Sulfate	4940	mg/L	600	
HLSF-0085-DRW-008-0107	DRW08	Sulfate	6140	mg/L	600	
HLSF-0085-DRW-009-1206	DRW09	Sulfate	22200	mg/L	600	
HLSF-0085-DRW-010-1206*	DRW10	Sulfate	22300	mg/L	600	
HLSF-0085-DRW-011-0107*	DRW11	Sulfate	2160	mg/L	600	
HLSF-0085-DRW-012-0107	DRW12	Sulfate	13200	mg/L	600	
HLSF-0085-DRW-013-0107*	DRW13	Sulfate	3905	mg/L	600	
HLSF-0085-HCF-002-0107	HCF2	Sulfate	5190	mg/L	600	
HLSF-0085-HMW-009-0107	HMW09	Sulfate	5320	mg/L	600	
HLSF-0085-HMW-010-0107	HMW10	Sulfate	11700	mg/L	600	
HLSF-0085-HMW-011-1206	HMW11	Sulfate	7590	mg/L	600	
HLSF-0085-HMW-012-1206	HMW12	Sulfate	16300	mg/L	600	
HLSF-0085-HMW-014-1206	HMW14	Sulfate	16400	mg/L	600	
HLSF-0085-HMW-015-0107	HMW15	Sulfate	5680	mg/L	600	
HLSF-0085-HMW-023-1206*	HMW23	Sulfate	5815	mg/L	600	
HLSF-0085-HMW-031-1206	HMW31	Sulfate	11400	mg/L	600	
HLSF-0085-HMW-033-1206	HMW33	Sulfate	8060	mg/L	600	
HLSF-0085-HMW-037-1206	HMW37	Sulfate	4220	mg/L	600	
HLSF-0085-HMW-038-1206	HMW38	Sulfate	6840	mg/L	600	
HLSF-0085-HMW-039-1206	HMW39	Sulfate	8450	mg/L	600	
HLSF-0085-HMW-040-1206	HMW40	Sulfate	11100	mg/L	600	
HLSF-0085-HMW-041-1206	HMW41	Sulfate	11600	mg/L	600	
HLSF-0085-HMW-043-1206	HMW43	Sulfate	4570	mg/L	600	
HLSF-0085-HMW-045-0107*	HMW45	Sulfate	4230	mg/L	600	
HLSF-0085-HMW-053-1206	HMW53	Sulfate	17500	mg/L	600	
HLSF-0085-HMW-021-1206	HMW21	Total Alkalinity	174	mg/L as Ca	NE	214
HLSF-0085-DRW-005-0107	DRW05	Total Alkalinity	3140	mg/L**	NE	
HLSF-0085-DRW-006-0107	DRW06	Total Alkalinity	892	mg/L**	NE	
HLSF-0085-DRW-007-0107	DRW07	Total Alkalinity	542	mg/L**	NE	
HLSF-0085-DRW-008-0107	DRW08	Total Alkalinity	248	mg/L**	NE	
HLSF-0085-DRW-009-1206	DRW09	Total Alkalinity	134	mg/L**	NE	
HLSF-0085-DRW-010-1206*	DRW10	Total Alkalinity	182	mg/L**	NE	
HLSF-0085-DRW-011-0107*	DRW11	Total Alkalinity	120	mg/L**	NE	
HLSF-0085-DRW-012-0107	DRW12	Total Alkalinity	206	mg/L**	NE	
HLSF-0085-DRW-013-0107*	DRW13	Total Alkalinity	146	mg/L**	NE	
HLSF-0085-HCF-002-0107	HCF2	Total Alkalinity	1190	mg/L**	NE	
HLSF-0085-HMW-007-0107	HMW07	Total Alkalinity	120	mg/L**	NE	
HLSF-0085-HMW-009-0107	HMW09	Total Alkalinity	118	mg/L**	NE	

Table D-8. Lower Perched Monitoring Well Results

Field_Sample_Id	Well_Name	Analyte_Name	Result	Units	WQCC Standard	Background***
HLSF-0085-HMW-010-0107	HMW10	Total Alkalinity	368	mg/L**	NE	
HLSF-0085-HMW-011-1206	HMW11	Total Alkalinity	154	mg/L**	NE	
HLSF-0085-HMW-012-1206	HMW12	Total Alkalinity	192	mg/L**	NE	
HLSF-0085-HMW-014-1206	HMW14	Total Alkalinity	200	mg/L**	NE	
HLSF-0085-HMW-015-0107	HMW15	Total Alkalinity	102	mg/L**	NE	
HLSF-0085-HMW-023-1206*	HMW23	Total Alkalinity	67	mg/L**	NE	
HLSF-0085-HMW-026-0107	HMW26	Total Alkalinity	132	mg/L**	NE	
HLSF-0085-HMW-031-1206	HMW31	Total Alkalinity	148	mg/L**	NE	
HLSF-0085-HMW-033-1206	HMW33	Total Alkalinity	188	mg/L**	NE	
HLSF-0085-HMW-037-1206	HMW37	Total Alkalinity	138	mg/L**	NE	
HLSF-0085-HMW-038-1206	HMW38	Total Alkalinity	154	mg/L**	NE	
HLSF-0085-HMW-039-1206	HMW39	Total Alkalinity	170	mg/L**	NE	
HLSF-0085-HMW-040-1206	HMW40	Total Alkalinity	134	mg/L**	NE	
HLSF-0085-HMW-041-1206	HMW41	Total Alkalinity	220	mg/L**	NE	
HLSF-0085-HMW-043-1206	HMW43	Total Alkalinity	154	mg/L**	NE	
HLSF-0085-HMW-045-0107*	HMW45	Total Alkalinity	91	mg/L**	NE	
HLSF-0085-HMW-053-1206	HMW53	Total Alkalinity	184	mg/L**	NE	
HLSF-0085-HMW-007-0107	HMW07	Total Barium	0.014	mg/L	1	<0.01
HLSF-0085-HMW-015-0107	HMW15	Total Barium	0.017	mg/L	1	
HLSF-0085-HMW-023-1206*	HMW23	Total Barium	0.01	mg/L	1	
HLSF-0085-HMW-031-1206	HMW31	Total Barium	0.011	mg/L	1	
HLSF-0085-DRW-006-0107	DRW06	Total Cadmium	0.003	mg/L	0.01	<0.01
HLSF-0085-DRW-007-0107	DRW07	Total Cadmium	0.003	mg/L	0.01	
HLSF-0085-DRW-009-1206	DRW09	Total Cadmium	0.002	mg/L	0.01	
HLSF-0085-HMW-010-0107	HMW10	Total Cadmium	0.003	mg/L	0.01	
HLSF-0085-HMW-011-1206	HMW11	Total Cadmium	0.003	mg/L	0.01	
HLSF-0085-HMW-012-1206	HMW12	Total Cadmium	0.001	mg/L	0.01	
HLSF-0085-HMW-015-0107	HMW15	Total Cadmium	0.002	mg/L	0.01	
HLSF-0085-HMW-026-0107	HMW26	Total Cadmium	0.002	mg/L	0.01	
HLSF-0085-HMW-031-1206	HMW31	Total Cadmium	0.003	mg/L	0.01	
HLSF-0085-HMW-039-1206	HMW39	Total Cadmium	0.003	mg/L	0.01	
HLSF-0085-HMW-033-1206	HMW33	Total Calcium	526	mg/L	NE	—
HLSF-0085-DRW-007-0107	DRW07	Total Chromium	0.034	mg/L	0.05	
HLSF-0085-DRW-008-0107	DRW08	Total Chromium	1.06	mg/L	0.05	0.6
HLSF-0085-DRW-009-1206	DRW09	Total Chromium	0.033	mg/L	0.05	
HLSF-0085-DRW-010-1206*	DRW10	Total Chromium	0.2375	mg/L	0.05	
HLSF-0085-DRW-012-0107	DRW12	Total Chromium	0.636	mg/L	0.05	
HLSF-0085-DRW-013-0107*	DRW13	Total Chromium	0.009	mg/L	0.05	
HLSF-0085-HMW-007-0107	HMW07	Total Chromium	0.607	mg/L	0.05	
HLSF-0085-HMW-009-0107	HMW09	Total Chromium	0.011	mg/L	0.05	
HLSF-0085-HMW-010-0107	HMW10	Total Chromium	0.014	mg/L	0.05	
HLSF-0085-HMW-011-1206	HMW11	Total Chromium	0.121	mg/L	0.05	
HLSF-0085-HMW-012-1206	HMW12	Total Chromium	0.181	mg/L	0.05	
HLSF-0085-HMW-015-0107	HMW15	Total Chromium	0.016	mg/L	0.05	
HLSF-0085-HMW-026-0107	HMW26	Total Chromium	0.006	mg/L	0.05	
HLSF-0085-HMW-031-1206	HMW31	Total Chromium	0.987	mg/L	0.05	
HLSF-0085-HMW-033-1206	HMW33	Total Chromium	0.67	mg/L	0.05	
HLSF-0085-HMW-038-1206	HMW38	Total Chromium	0.023	mg/L	0.05	
HLSF-0085-HMW-039-1206	HMW39	Total Chromium	0.168	mg/L	0.05	
HLSF-0085-HMW-041-1206	HMW41	Total Chromium	0.801	mg/L	0.05	
HLSF-0085-HMW-045-0107*	HMW45	Total Chromium	0.011	mg/L	0.05	
HLSF-0085-DRW-008-0107	DRW08	Total Copper	0.026	mg/L	1.46^	<0.005
HLSF-0085-DRW-010-1206*	DRW10	Total Copper	0.0275	mg/L	1.46^	
HLSF-0085-DRW-012-0107	DRW12	Total Copper	0.012	mg/L	1.46^	

Table D-8. Lower Perched Monitoring Well Results

Field_Sample_Id	Well_Name	Analyte_Name	Result	Units	WQCC Standard	Background***
HLSF-0085-HMW-053-1206	HMW53	Total Copper	0.006	mg/L	1.46^	
HLSF-0085-HMW-021-1206	HMW21	Total Dissolved Solids	14500	mg/L	1000	15650
HLSF-0085-DRW-005-0107	DRW05	Total Dissolved Solids	8050	mg/L	1000	
HLSF-0085-DRW-006-0107	DRW06	Total Dissolved Solids	30300	mg/L	1000	
HLSF-0085-DRW-007-0107	DRW07	Total Dissolved Solids	10500	mg/L	1000	
HLSF-0085-DRW-008-0107	DRW08	Total Dissolved Solids	11500	mg/L	1000	
HLSF-0085-DRW-009-1206	DRW09	Total Dissolved Solids	46800	mg/L	1000	
HLSF-0085-DRW-010-1206*	DRW10	Total Dissolved Solids	52550	mg/L	1000	
HLSF-0085-DRW-011-0107*	DRW11	Total Dissolved Solids	3710	mg/L	1000	
HLSF-0085-DRW-012-0107	DRW12	Total Dissolved Solids	29300	mg/L	1000	
HLSF-0085-DRW-013-0107*	DRW13	Total Dissolved Solids	7335	mg/L	1000	
HLSF-0085-HCF-002-0107	HCF2	Total Dissolved Solids	11600	mg/L	1000	
HLSF-0085-HMW-007-0107	HMW07	Total Dissolved Solids	7000	mg/L	1000	
HLSF-0085-HMW-009-0107	HMW09	Total Dissolved Solids	10400	mg/L	1000	
HLSF-0085-HMW-010-0107	HMW10	Total Dissolved Solids	27500	mg/L	1000	
HLSF-0085-HMW-011-1206	HMW11	Total Dissolved Solids	14200	mg/L	1000	
HLSF-0085-HMW-012-1206	HMW12	Total Dissolved Solids	43000	mg/L	1000	
HLSF-0085-HMW-014-1206	HMW14	Total Dissolved Solids	39900	mg/L	1000	
HLSF-0085-HMW-015-0107	HMW15	Total Dissolved Solids	12800	mg/L	1000	
HLSF-0085-HMW-023-1206*	HMW23	Total Dissolved Solids	9995	mg/L	1000	
HLSF-0085-HMW-026-0107	HMW26	Total Dissolved Solids	16600	mg/L	1000	
HLSF-0085-HMW-031-1206	HMW31	Total Dissolved Solids	20000	mg/L	1000	
HLSF-0085-HMW-033-1206	HMW33	Total Dissolved Solids	31400	mg/L	1000	
HLSF-0085-HMW-037-1206	HMW37	Total Dissolved Solids	6540	mg/L	1000	
HLSF-0085-HMW-038-1206	HMW38	Total Dissolved Solids	10800	mg/L	1000	
HLSF-0085-HMW-039-1206	HMW39	Total Dissolved Solids	14600	mg/L	1000	
HLSF-0085-HMW-040-1206	HMW40	Total Dissolved Solids	21400	mg/L	1000	
HLSF-0085-HMW-041-1206	HMW41	Total Dissolved Solids	20600	mg/L	1000	
HLSF-0085-HMW-043-1206	HMW43	Total Dissolved Solids	6540	mg/L	1000	
HLSF-0085-HMW-045-0107*	HMW45	Total Dissolved Solids	10030	mg/L	1000	
HLSF-0085-HMW-053-1206	HMW53	Total Dissolved Solids	48800	mg/L	1000	
HLSF-0085-HMW-033-1206	HMW33	Total Magnesium	2290	mg/L	NE	—
HLSF-0085-DRW-005-0107	DRW05	Total Organic Carbon	15.1	mg/L	NE	2.5
HLSF-0085-DRW-006-0107	DRW06	Total Organic Carbon	7.7	mg/L	NE	
HLSF-0085-DRW-007-0107	DRW07	Total Organic Carbon	2.89	mg/L	NE	
HLSF-0085-DRW-012-0107	DRW12	Total Organic Carbon	1.45	mg/L	NE	
HLSF-0085-HCF-002-0107	HCF2	Total Organic Carbon	12.2	mg/L	NE	
HLSF-0085-HMW-007-0107	HMW07	Total Organic Carbon	3.75	mg/L	NE	
HLSF-0085-HMW-010-0107	HMW10	Total Organic Carbon	2.51	mg/L	NE	
HLSF-0085-HMW-026-0107	HMW26	Total Organic Carbon	3.47	mg/L	NE	
HLSF-0085-DRW-008-0107	DRW08	Total Phosphorous	0.052	mg/L	NE	<0.05
HLSF-0085-DRW-010-1206*	DRW10	Total Phosphorous	0.067	mg/L	NE	
HLSF-0085-HMW-011-1206	HMW11	Total Phosphorous	0.069	mg/L	NE	
HLSF-0085-HMW-041-1206	HMW41	Total Phosphorous	0.069	mg/L	NE	
HLSF-0085-HMW-053-1206	HMW53	Total Phosphorous	0.099	mg/L	NE	
HLSF-0085-HMW-015-0107	HMW15	Total Potassium	74.6	mg/L	NE	84
HLSF-0085-HMW-033-1206	HMW33	Total Potassium	206	mg/L	NE	
HLSF-0085-DRW-012-0107	DRW12	Total Selenium	0.101	mg/L	0.05	0.076
HLSF-0085-HMW-007-0107	HMW07	Total Selenium	0.164	mg/L	0.05	
HLSF-0085-HMW-015-0107	HMW15	Total Selenium	0.09	mg/L	0.05	
HLSF-0085-HMW-023-1206*	HMW23	Total Selenium	0.068	mg/L	0.05	
HLSF-0085-HMW-026-0107	HMW26	Total Selenium	0.169	mg/L	0.05	
HLSF-0085-HMW-031-1206	HMW31	Total Selenium	0.325	mg/L	0.05	
HLSF-0085-HMW-033-1206	HMW33	Total Selenium	0.527	mg/L	0.05	

Table D-8. Lower Perched Monitoring Well Results

Field_Sample_Id	Well_Name	Analyte_Name	Result	Units	WQCC Standard	Background***
HLSF-0085-HMW-021-1206	HMW21	Total Sodium	2290	mg/L	NE	3030
HLSF-0085-DRW-005-0107	DRW05	Total Sodium	2640	mg/L	NE	
HLSF-0085-DRW-006-0107	DRW06	Total Sodium	7470	mg/L	NE	
HLSF-0085-DRW-007-0107	DRW07	Total Sodium	2820	mg/L	NE	
HLSF-0085-DRW-008-0107	DRW08	Total Sodium	2560	mg/L	NE	
HLSF-0085-DRW-009-1206	DRW09	Total Sodium	12100	mg/L	NE	
HLSF-0085-DRW-010-1206*	DRW10	Total Sodium	12950	mg/L	NE	
HLSF-0085-DRW-011-0107*	DRW11	Total Sodium	235	mg/L	NE	
HLSF-0085-DRW-012-0107	DRW12	Total Sodium	6770	mg/L	NE	
HLSF-0085-DRW-013-0107*	DRW13	Total Sodium	1265	mg/L	NE	
HLSF-0085-HCF-002-0107	HCF2	Total Sodium	2180	mg/L	NE	
HLSF-0085-HMW-007-0107	HMW07	Total Sodium	635	mg/L	NE	
HLSF-0085-HMW-010-0107	HMW10	Total Sodium	6560	mg/L	NE	
HLSF-0085-HMW-011-1206	HMW11	Total Sodium	3640	mg/L	NE	
HLSF-0085-HMW-012-1206	HMW12	Total Sodium	14800	mg/L	NE	
HLSF-0085-HMW-014-1206	HMW14	Total Sodium	12200	mg/L	NE	
HLSF-0085-HMW-015-0107	HMW15	Total Sodium	2620	mg/L	NE	
HLSF-0085-HMW-023-1206*	HMW23	Total Sodium	2085	mg/L	NE	
HLSF-0085-HMW-026-0107	HMW26	Total Sodium	4130	mg/L	NE	
HLSF-0085-HMW-033-1206	HMW33	Total Sodium	6430	mg/L	NE	
HLSF-0085-HMW-037-1206	HMW37	Total Sodium	783	mg/L	NE	
HLSF-0085-HMW-038-1206	HMW38	Total Sodium	2330	mg/L	NE	
HLSF-0085-HMW-039-1206	HMW39	Total Sodium	3990	mg/L	NE	
HLSF-0085-HMW-040-1206	HMW40	Total Sodium	4760	mg/L	NE	
HLSF-0085-HMW-041-1206	HMW41	Total Sodium	4970	mg/L	NE	
HLSF-0085-HMW-043-1206	HMW43	Total Sodium	1190	mg/L	NE	
HLSF-0085-HMW-053-1206	HMW53	Total Sodium	9100	mg/L	NE	
HLSF-0085-DRW-006-0107	DRW06	Total Zinc	0.005	mg/L	10	0.024
HLSF-0085-DRW-007-0107	DRW07	Trichloroethene (TCE)	3.71	ug/L	100	—
HLSF-0085-DRW-012-0107	DRW12	Trichloroethene (TCE)	9.48	ug/L	100	
HLSF-0085-DRW-013-0107*	DRW13	Trichloroethene (TCE)	1.125	ug/L	100	
HLSF-0085-HMW-007-0107	HMW07	Trichloroethene (TCE)	4.06	ug/L	100	
HLSF-0085-HMW-011-1206	HMW11	Trichloroethene (TCE)	31.8	ug/L	100	
HLSF-0085-HMW-014-1206	HMW14	Trichloroethene (TCE)	1.76	ug/L	100	
HLSF-0085-HMW-026-0107	HMW26	Trichloroethene (TCE)	3.13	ug/L	100	
HLSF-0085-HMW-031-1206	HMW31	Trichloroethene (TCE)	5.2	ug/L	100	
HLSF-0085-HMW-033-1206	HMW33	Trichloroethene (TCE)	6.46	ug/L	100	
HLSF-0085-HMW-038-1206	HMW38	Trichloroethene (TCE)	5.6	ug/L	100	
HLSF-0085-HMW-039-1206	HMW39	Trichloroethene (TCE)	54.6	ug/L	100	
HLSF-0085-HMW-041-1206	HMW41	Trichloroethene (TCE)	182	ug/L	100	
HLSF-0085-HMW-007-0107	HMW07	Trichlorofluoromethane	1.51	ug/L	1290^	—
HLSF-0085-HMW-031-1206	HMW31	Trichlorofluoromethane	1.17	ug/L	1290^	

NOTES:
* Mean of Duplicate Analyses
** mg/L as CaCO3
*** Regional Aquifer Background
^ NMED SSL Tap Water Standard
^^ EPA Region VI Human Health Tap Water Standard

Table D-9. Regional Aquifer Monitoring Well Results

Field_Sample_Id	Well_Name	Analyte_Name	Result	Units	WQCC Standard	Background
HLSF-0085-DRW-014-1206	DRW14	1,1-Dichloroethene	8.25	ug/L	5	—
HLSF-0085-HMW-032-1206	HMW32	1,4-Dioxane	101	ug/L	6.1^^	—
HLSF-0085-DRW-014-1206	DRW14	Bicarbonate Alkalinity	226	mg/L**	NE	214
HLSF-0085-DRW-015-0107	DRW15	Bicarbonate Alkalinity	214	mg/L**	NE	
HLSF-0085-DRW-016-0107	DRW16	Bicarbonate Alkalinity	204	mg/L**	NE	
HLSF-0085-DRW-017-0107	DRW17	Bicarbonate Alkalinity	222	mg/L**	NE	
HLSF-0085-HELSTF-001-1206*	HELSTF1	Bicarbonate Alkalinity	210	mg/L**	NE	
HLSF-0085-HMW-029-1206*	HMW29	Bicarbonate Alkalinity	220	mg/L**	NE	
HLSF-0085-HMW-030-1206	HMW30	Bicarbonate Alkalinity	154	mg/L**	NE	
HLSF-0085-HMW-032-1206	HMW32	Bicarbonate Alkalinity	120	mg/L**	NE	
HLSF-0085-HMW-034-1206	HMW34	Bicarbonate Alkalinity	174	mg/L**	NE	
HLSF-0085-HMW-035-1206	HMW35	Bicarbonate Alkalinity	174	mg/L**	NE	
HLSF-0085-HMW-054-0107	HMW54	Bicarbonate Alkalinity	220	mg/L**	NE	
HLSF-0085-HMW-055-0107	HMW55	Bicarbonate Alkalinity	228	mg/L**	NE	
HLSF-0085-HMW-056-0107	HMW56	Bicarbonate Alkalinity	216	mg/L**	NE	
HLSF-0085-HMW-057-1206	HMW57	Bicarbonate Alkalinity	234	mg/L**	NE	
HLSF-0085-HMW-058-1206	HMW58	Bicarbonate Alkalinity	232	mg/L**	NE	
HLSF-0085-HMW-059-0107	HMW59	Bicarbonate Alkalinity	204	mg/L**	NE	
HLSF-0085-HMW-060-1206	HMW60	Bicarbonate Alkalinity	206	mg/L**	NE	
HLSF-0085-HMW-061-0107*	HMW61	Bicarbonate Alkalinity	205	mg/L**	NE	
HLSF-0085-HMW-062-1206	HMW62	Bicarbonate Alkalinity	208	mg/L**	NE	
HLSF-0085-HMW-063-1206	HMW63	Bicarbonate Alkalinity	194	mg/L**	NE	
HLSF-0085-HMW-064-0107	HMW64	Bicarbonate Alkalinity	218	mg/L**	NE	
HLSF-0085-HMW-065-0107	HMW65	Bicarbonate Alkalinity	210	mg/L**	NE	
HLSF-0085-HMW-008-1206	HMW08	Bicarbonate Alkalinity	232	mg/L	NE	
HLSF-0085-DRW-014-1206	DRW14	Bromide	3.59	mg/L	NE	195
HLSF-0085-HMW-062-1206	HMW62	Bromide	0.95	mg/L	NE	
HLSF-0085-HMW-064-0107	HMW64	Bromide	1.55	mg/L	NE	
HLSF-0085-HMW-058-1206	HMW58	Carbon Disulfide	1.07	ug/L	1040^	—
HLSF-0085-DRW-014-1206	DRW14	Chloride	4650	mg/L	250	2220
HLSF-0085-DRW-015-0107	DRW15	Chloride	1410	mg/L	250	
HLSF-0085-DRW-016-0107	DRW16	Chloride	2630	mg/L	250	
HLSF-0085-DRW-017-0107	DRW17	Chloride	1620	mg/L	250	
HLSF-0085-HMW-029-1206*	HMW29	Chloride	1160	mg/L	250	
HLSF-0085-HMW-030-1206	HMW30	Chloride	660	mg/L	250	
HLSF-0085-HMW-032-1206	HMW32	Chloride	1190	mg/L	250	
HLSF-0085-HMW-034-1206	HMW34	Chloride	828	mg/L	250	
HLSF-0085-HMW-035-1206	HMW35	Chloride	1020	mg/L	250	
HLSF-0085-HMW-054-0107	HMW54	Chloride	1940	mg/L	250	
HLSF-0085-HMW-055-0107	HMW55	Chloride	2180	mg/L	250	
HLSF-0085-HMW-056-0107	HMW56	Chloride	1700	mg/L	250	
HLSF-0085-HMW-057-1206	HMW57	Chloride	1930	mg/L	250	
HLSF-0085-HMW-058-1206	HMW58	Chloride	1920	mg/L	250	
HLSF-0085-HMW-059-0107	HMW59	Chloride	896	mg/L	250	
HLSF-0085-HMW-060-1206	HMW60	Chloride	1180	mg/L	250	
HLSF-0085-HMW-061-0107*	HMW61	Chloride	3410	mg/L	250	
HLSF-0085-HMW-062-1206	HMW62	Chloride	1790	mg/L	250	
HLSF-0085-HMW-063-1206	HMW63	Chloride	931	mg/L	250	
HLSF-0085-HMW-064-0107	HMW64	Chloride	1430	mg/L	250	
HLSF-0085-HMW-065-0107	HMW65	Chloride	1620	mg/L	250	
HLSF-0085-HMW-008-1206	HMW08	Chloride	1170	mg/L	250	
HLSF-0085-DRW-014-1206	DRW14	Chloroform	1.66	ug/L	100	—
HLSF-0085-DRW-016-0107	DRW16	Chloroform	1.23	ug/L	100	
HLSF-0085-HMW-034-1206	HMW34	Dissolved Barium	0.011	mg/L	1	<0.01
HLSF-0085-HMW-059-0107	HMW59	Dissolved Barium	0.014	mg/L	1	

Table D-9. Regional Aquifer Monitoring Well Results

Field_Sample_Id	Well_Name	Analyte_Name	Result	Units	WQCC Standard	Background
HLSF-0085-HMW-060-1206	HMW60	Dissolved Barium	0.013	mg/L	1	
HLSF-0085-DRW-014-1206	DRW14	Dissolved Cadmium	0.003	mg/L	0.01	<0.01
HLSF-0085-HMW-058-1206	HMW58	Dissolved Cadmium	0.002	mg/L	0.01	
HLSF-0085-HMW-060-1206	HMW60	Dissolved Cadmium	0.003	mg/L	0.01	
HLSF-0085-HMW-062-1206	HMW62	Dissolved Cadmium	0.001	mg/L	0.01	
HLSF-0085-HMW-063-1206	HMW63	Dissolved Cadmium	0.003	mg/L	0.01	
HLSF-0085-DRW-014-1206	DRW14	Dissolved Chromium	2.04	mg/L	0.05	0.6
HLSF-0085-DRW-016-0107	DRW16	Dissolved Chromium	0.61	mg/L	0.05	
HLSF-0085-HMW-055-0107	HMW55	Dissolved Chromium	0.042	mg/L	0.05	
HLSF-0085-HMW-061-0107*	HMW61	Dissolved Chromium	0.5545	mg/L	0.05	
HLSF-0085-HMW-062-1206	HMW62	Dissolved Chromium	0.024	mg/L	0.05	
HLSF-0085-HMW-063-1206	HMW63	Dissolved Chromium	0.022	mg/L	0.05	
HLSF-0085-HMW-058-1206	HMW58	Dissolved Copper	0.014	mg/L	1.46^	<0.005
HLSF-0085-HMW-060-1206	HMW60	Dissolved Potassium	64.2	mg/L	NE	84
HLSF-0085-HMW-061-0107*	HMW61	Dissolved Potassium	73.85	mg/L	NE	
HLSF-0085-HMW-008-1206	HMW08	Dissolved Potassium	72	mg/L	NE	
HLSF-0085-HMW-029-1206*	HMW29	Dissolved Selenium	0.074	mg/L	0.05	0.072
HLSF-0085-HMW-035-1206	HMW35	Dissolved Selenium	0.147	mg/L	0.05	
HLSF-0085-HMW-061-0107*	HMW61	Dissolved Selenium	0.0955	mg/L	0.05	
HLSF-0085-DRW-014-1206	DRW14	Dissolved Sodium	4030	mg/L	NE	2870
HLSF-0085-DRW-015-0107	DRW15	Dissolved Sodium	2840	mg/L	NE	
HLSF-0085-DRW-016-0107	DRW16	Dissolved Sodium	2960	mg/L	NE	
HLSF-0085-DRW-017-0107	DRW17	Dissolved Sodium	2660	mg/L	NE	
HLSF-0085-HELSTF-001-1206*	HELSTF1	Dissolved Sodium	2815	mg/L	NE	
HLSF-0085-HMW-054-0107	HMW54	Dissolved Sodium	2960	mg/L	NE	
HLSF-0085-HMW-055-0107	HMW55	Dissolved Sodium	3380	mg/L	NE	
HLSF-0085-HMW-057-1206	HMW57	Dissolved Sodium	2760	mg/L	NE	
HLSF-0085-HMW-058-1206	HMW58	Dissolved Sodium	3900	mg/L	NE	
HLSF-0085-HMW-060-1206	HMW60	Dissolved Sodium	2910	mg/L	NE	
HLSF-0085-HMW-061-0107*	HMW61	Dissolved Sodium	3315	mg/L	NE	
HLSF-0085-HMW-062-1206	HMW62	Dissolved Sodium	5300	mg/L	NE	
HLSF-0085-HMW-063-1206	HMW63	Dissolved Sodium	2460	mg/L	NE	
HLSF-0085-HMW-064-0107	HMW64	Dissolved Sodium	3090	mg/L	NE	
HLSF-0085-HMW-065-0107	HMW65	Dissolved Sodium	2720	mg/L	NE	
HLSF-0085-HMW-008-1206	HMW08	Dissolved Sodium	3030	mg/L	NE	
HLSF-0085-HMW-058-1206	HMW58	Dissolved Zinc	0.348	mg/L	10	0.024
HLSF-0085-DRW-014-1206	DRW14	Fluoride	2.41	mg/L	1.6	2.04
HLSF-0085-DRW-015-0107	DRW15	Fluoride	1.99	mg/L	1.6	
HLSF-0085-DRW-016-0107	DRW16	Fluoride	2.04	mg/L	1.6	
HLSF-0085-DRW-017-0107	DRW17	Fluoride	2.16	mg/L	1.6	
HLSF-0085-HMW-029-1206*	HMW29	Fluoride	1.75	mg/L	1.6	
HLSF-0085-HMW-030-1206	HMW30	Fluoride	2.39	mg/L	1.6	
HLSF-0085-HMW-034-1206	HMW34	Fluoride	1.15	mg/L	1.6	
HLSF-0085-HMW-035-1206	HMW35	Fluoride	2.97	mg/L	1.6	
HLSF-0085-HMW-054-0107	HMW54	Fluoride	2.2	mg/L	1.6	
HLSF-0085-HMW-055-0107	HMW55	Fluoride	2.44	mg/L	1.6	
HLSF-0085-HMW-056-0107	HMW56	Fluoride	1.82	mg/L	1.6	
HLSF-0085-HMW-057-1206	HMW57	Fluoride	1.65	mg/L	1.6	
HLSF-0085-HMW-058-1206	HMW58	Fluoride	2.15	mg/L	1.6	
HLSF-0085-HMW-059-0107	HMW59	Fluoride	1.34	mg/L	1.6	
HLSF-0085-HMW-060-1206	HMW60	Fluoride	2.06	mg/L	1.6	
HLSF-0085-HMW-061-0107*	HMW61	Fluoride	1.86	mg/L	1.6	
HLSF-0085-HMW-062-1206	HMW62	Fluoride	1.92	mg/L	1.6	
HLSF-0085-HMW-063-1206	HMW63	Fluoride	2.04	mg/L	1.6	
HLSF-0085-HMW-064-0107	HMW64	Fluoride	2.47	mg/L	1.6	

Table D-9. Regional Aquifer Monitoring Well Results

Field_Sample_Id	Well_Name	Analyte_Name	Result	Units	WQCC Standard	Background
HLSF-0085-HMW-065-0107	HMW65	Fluoride	2.07	mg/L	1.6	
HLSF-0085-HMW-008-1206	HMW08	Fluoride	2.54	mg/L	1.6	
HLSF-0085-HMW-057-1206	HMW57	Isopropyl Alcohol	64.6	ug/L	NE	—
HLSF-0085-DRW-014-1206	DRW14	Nitrate and Nitrite as N	127	mg/L	10	82.5
HLSF-0085-DRW-017-0107	DRW17	Nitrate and Nitrite as N	59.8	mg/L	10	
HLSF-0085-HMW-055-0107	HMW55	Nitrate and Nitrite as N	56	mg/L	10	
HLSF-0085-HMW-057-1206	HMW57	Nitrate and Nitrite as N	46.9	mg/L	10	
HLSF-0085-HMW-065-0107	HMW65	Nitrate and Nitrite as N	44.5	mg/L	10	
HLSF-0085-DRW-014-1206	DRW14	Nitrate-N	110	mg/L	10	82.5
HLSF-0085-DRW-015-0107	DRW15	Nitrate-N	38.7	mg/L	10	
HLSF-0085-DRW-016-0107	DRW16	Nitrate-N	78.8	mg/L	10	
HLSF-0085-HMW-029-1206*	HMW29	Nitrate-N	38.2	mg/L	10	
HLSF-0085-HMW-030-1206	HMW30	Nitrate-N	13.5	mg/L	10	
HLSF-0085-HMW-032-1206	HMW32	Nitrate-N	29.6	mg/L	10	
HLSF-0085-HMW-034-1206	HMW34	Nitrate-N	15.1	mg/L	10	
HLSF-0085-HMW-035-1206	HMW35	Nitrate-N	25.4	mg/L	10	
HLSF-0085-HMW-054-0107	HMW54	Nitrate-N	52.8	mg/L	10	
HLSF-0085-HMW-056-0107	HMW56	Nitrate-N	43.6	mg/L	10	
HLSF-0085-HMW-057-1206	HMW57	Nitrate-N	36.7	mg/L	10	
HLSF-0085-HMW-058-1206	HMW58	Nitrate-N	46.7	mg/L	10	
HLSF-0085-HMW-059-0107	HMW59	Nitrate-N	9.72	mg/L	10	
HLSF-0085-HMW-060-1206	HMW60	Nitrate-N	25.7	mg/L	10	
HLSF-0085-HMW-061-0107*	HMW61	Nitrate-N	71.5	mg/L	10	
HLSF-0085-HMW-062-1206	HMW62	Nitrate-N	32.7	mg/L	10	
HLSF-0085-HMW-063-1206	HMW63	Nitrate-N	21.1	mg/L	10	
HLSF-0085-HMW-064-0107	HMW64	Nitrate-N	44.8	mg/L	10	
HLSF-0085-HMW-008-1206	HMW08	Nitrate-N	36.1	mg/L	10	
HLSF-0085-DRW-014-1206	DRW14	pH	7.48	s.u.	6-9	7.48
HLSF-0085-DRW-015-0107	DRW15	pH	7.48	s.u.	6-9	
HLSF-0085-DRW-016-0107	DRW16	pH	7.41	s.u.	6-9	
HLSF-0085-DRW-017-0107	DRW17	pH	7.79	s.u.	6-9	
HLSF-0085-HELSTF-001-1206*	HELSTF1	pH	7.47	s.u.	6-9	
HLSF-0085-HMW-029-1206*	HMW29	pH	7.405	s.u.	6-9	
HLSF-0085-HMW-030-1206	HMW30	pH	7.74	s.u.	6-9	
HLSF-0085-HMW-032-1206	HMW32	pH	7.78	s.u.	6-9	
HLSF-0085-HMW-034-1206	HMW34	pH	7.58	s.u.	6-9	
HLSF-0085-HMW-035-1206	HMW35	pH	7.53	s.u.	6-9	
HLSF-0085-HMW-054-0107	HMW54	pH	7.39	s.u.	6-9	
HLSF-0085-HMW-055-0107	HMW55	pH	7.45	s.u.	6-9	
HLSF-0085-HMW-056-0107	HMW56	pH	7.35	s.u.	6-9	
HLSF-0085-HMW-057-1206	HMW57	pH	7.48	s.u.	6-9	
HLSF-0085-HMW-058-1206	HMW58	pH	7.66	s.u.	6-9	
HLSF-0085-HMW-059-0107	HMW59	pH	7.67	s.u.	6-9	
HLSF-0085-HMW-060-1206	HMW60	pH	7.49	s.u.	6-9	
HLSF-0085-HMW-061-0107*	HMW61	pH	7.25	s.u.	6-9	
HLSF-0085-HMW-062-1206	HMW62	pH	7.36	s.u.	6-9	
HLSF-0085-HMW-063-1206	HMW63	pH	7.38	s.u.	6-9	
HLSF-0085-HMW-064-0107	HMW64	pH	7.35	s.u.	6-9	
HLSF-0085-HMW-065-0107	HMW65	pH	7.52	s.u.	6-9	
HLSF-0085-HMW-008-1206	HMW08	pH	7.45	s.u.	6-9	
HLSF-0085-DRW-014-1206	DRW14	Specific Conductance	21000	µmhos/cm	NE	14725
HLSF-0085-DRW-015-0107	DRW15	Specific Conductance	13200	µmhos/cm	NE	
HLSF-0085-DRW-016-0107	DRW16	Specific Conductance	16100	µmhos/cm	NE	
HLSF-0085-DRW-017-0107	DRW17	Specific Conductance	13600	µmhos/cm	NE	
HLSF-0085-HELSTF-001-1206*	HELSTF1	Specific Conductance	13100	µmhos/cm	NE	

Table D-9. Regional Aquifer Monitoring Well Results

Field_Sample_Id	Well_Name	Analyte_Name	Result	Units	WQCC Standard	Background
HLSF-0085-HMW-029-1206*	HMW29	Specific Conductance	12700	µmhos/cm	NE	
HLSF-0085-HMW-030-1206	HMW30	Specific Conductance	10500	µmhos/cm	NE	
HLSF-0085-HMW-032-1206	HMW32	Specific Conductance	12800	µmhos/cm	NE	
HLSF-0085-HMW-034-1206	HMW34	Specific Conductance	12100	µmhos/cm	NE	
HLSF-0085-HMW-035-1206	HMW35	Specific Conductance	11600	µmhos/cm	NE	
HLSF-0085-HMW-054-0107	HMW54	Specific Conductance	14700	µmhos/cm	NE	
HLSF-0085-HMW-055-0107	HMW55	Specific Conductance	16500	µmhos/cm	NE	
HLSF-0085-HMW-056-0107	HMW56	Specific Conductance	15600	µmhos/cm	NE	
HLSF-0085-HMW-057-1206	HMW57	Specific Conductance	15800	µmhos/cm	NE	
HLSF-0085-HMW-058-1206	HMW58	Specific Conductance	17300	µmhos/cm	NE	
HLSF-0085-HMW-059-0107	HMW59	Specific Conductance	12200	µmhos/cm	NE	
HLSF-0085-HMW-060-1206	HMW60	Specific Conductance	12500	µmhos/cm	NE	
HLSF-0085-HMW-061-0107*	HMW61	Specific Conductance	17650	µmhos/cm	NE	
HLSF-0085-HMW-062-1206	HMW62	Specific Conductance	13700	µmhos/cm	NE	
HLSF-0085-HMW-063-1206	HMW63	Specific Conductance	12100	µmhos/cm	NE	
HLSF-0085-HMW-064-0107	HMW64	Specific Conductance	13900	µmhos/cm	NE	
HLSF-0085-HMW-065-0107	HMW65	Specific Conductance	13800	µmhos/cm	NE	
HLSF-0085-HMW-008-1206	HMW08	Specific Conductance	13500	µMHOS/cn	NE	
HLSF-0085-DRW-014-1206	DRW14	Sulfate	9630	mg/L	600	7295
HLSF-0085-DRW-015-0107	DRW15	Sulfate	6520	mg/L	600	
HLSF-0085-DRW-016-0107	DRW16	Sulfate	3430	mg/L	600	
HLSF-0085-DRW-017-0107	DRW17	Sulfate	6490	mg/L	600	
HLSF-0085-HMW-029-1206*	HMW29	Sulfate	7590	mg/L	600	
HLSF-0085-HMW-030-1206	HMW30	Sulfate	6650	mg/L	600	
HLSF-0085-HMW-032-1206	HMW32	Sulfate	6990	mg/L	600	
HLSF-0085-HMW-034-1206	HMW34	Sulfate	7400	mg/L	600	
HLSF-0085-HMW-035-1206	HMW35	Sulfate	6700	mg/L	600	
HLSF-0085-HMW-054-0107	HMW54	Sulfate	6840	mg/L	600	
HLSF-0085-HMW-055-0107	HMW55	Sulfate	8040	mg/L	600	
HLSF-0085-HMW-056-0107	HMW56	Sulfate	7510	mg/L	600	
HLSF-0085-HMW-057-1206	HMW57	Sulfate	9670	mg/L	600	
HLSF-0085-HMW-058-1206	HMW58	Sulfate	9780	mg/L	600	
HLSF-0085-HMW-059-0107	HMW59	Sulfate	7650	mg/L	600	
HLSF-0085-HMW-060-1206	HMW60	Sulfate	6900	mg/L	600	
HLSF-0085-HMW-061-0107*	HMW61	Sulfate	7670	mg/L	600	
HLSF-0085-HMW-062-1206	HMW62	Sulfate	6530	mg/L	600	
HLSF-0085-HMW-063-1206	HMW63	Sulfate	7970	mg/L	600	
HLSF-0085-HMW-064-0107	HMW64	Sulfate	7030	mg/L	600	
HLSF-0085-HMW-065-0107	HMW65	Sulfate	6560	mg/L	600	
HLSF-0085-HMW-008-1206	HMW08	Sulfate	8310	mg/L	600	
HLSF-0085-DRW-014-1206	DRW14	Total Alkalinity	226	mg/L**	NE	214
HLSF-0085-DRW-015-0107	DRW15	Total Alkalinity	214	mg/L**	NE	
HLSF-0085-DRW-016-0107	DRW16	Total Alkalinity	204	mg/L**	NE	
HLSF-0085-DRW-017-0107	DRW17	Total Alkalinity	222	mg/L**	NE	
HLSF-0085-HELSTF-001-1206*	HELSTF1	Total Alkalinity	210	mg/L**	NE	
HLSF-0085-HMW-029-1206*	HMW29	Total Alkalinity	220	mg/L**	NE	
HLSF-0085-HMW-030-1206	HMW30	Total Alkalinity	154	mg/L**	NE	
HLSF-0085-HMW-032-1206	HMW32	Total Alkalinity	120	mg/L**	NE	
HLSF-0085-HMW-034-1206	HMW34	Total Alkalinity	174	mg/L**	NE	
HLSF-0085-HMW-035-1206	HMW35	Total Alkalinity	174	mg/L**	NE	
HLSF-0085-HMW-054-0107	HMW54	Total Alkalinity	220	mg/L**	NE	
HLSF-0085-HMW-055-0107	HMW55	Total Alkalinity	228	mg/L**	NE	
HLSF-0085-HMW-056-0107	HMW56	Total Alkalinity	216	mg/L**	NE	
HLSF-0085-HMW-057-1206	HMW57	Total Alkalinity	234	mg/L**	NE	
HLSF-0085-HMW-058-1206	HMW58	Total Alkalinity	232	mg/L**	NE	

Table D-9. Regional Aquifer Monitoring Well Results

Field_Sample_Id	Well_Name	Analyte_Name	Result	Units	WQCC Standard	Background
HLSF-0085-HMW-059-0107	HMW59	Total Alkalinity	204	mg/L**	NE	
HLSF-0085-HMW-060-1206	HMW60	Total Alkalinity	206	mg/L**	NE	
HLSF-0085-HMW-061-0107*	HMW61	Total Alkalinity	205	mg/L**	NE	
HLSF-0085-HMW-062-1206	HMW62	Total Alkalinity	208	mg/L**	NE	
HLSF-0085-HMW-063-1206	HMW63	Total Alkalinity	194	mg/L**	NE	
HLSF-0085-HMW-064-0107	HMW64	Total Alkalinity	218	mg/L**	NE	
HLSF-0085-HMW-065-0107	HMW65	Total Alkalinity	210	mg/L**	NE	
HLSF-0085-HMW-008-1206	HMW08	Total Alkalinity	232	mg/L as Ca	NE	
HLSF-0085-HMW-029-1206*	HMW29	Total Barium	0.0105	mg/L	1	<0.01
HLSF-0085-HMW-034-1206	HMW34	Total Barium	0.014	mg/L	1	
HLSF-0085-HMW-059-0107	HMW59	Total Barium	0.016	mg/L	1	
HLSF-0085-HMW-060-1206	HMW60	Total Barium	0.014	mg/L	1	
HLSF-0085-HMW-029-1206*	HMW29	Total Cadmium	0.002	mg/L	0.01	<0.01
HLSF-0085-HMW-055-0107	HMW55	Total Cadmium	0.002	mg/L	0.01	
HLSF-0085-HMW-060-1206	HMW60	Total Cadmium	0.003	mg/L	0.01	
HLSF-0085-HMW-062-1206	HMW62	Total Cadmium	0.001	mg/L	0.01	
HLSF-0085-HMW-065-0107	HMW65	Total Cadmium	0.003	mg/L	0.01	
HLSF-0085-DRW-014-1206	DRW14	Total Chromium	4.99	mg/L	0.05	0.6
HLSF-0085-DRW-015-0107	DRW15	Total Chromium	0.131	mg/L	0.05	
HLSF-0085-DRW-016-0107	DRW16	Total Chromium	4.25	mg/L	0.05	
HLSF-0085-DRW-017-0107	DRW17	Total Chromium	0.027	mg/L	0.05	
HLSF-0085-HMW-029-1206*	HMW29	Total Chromium	0.0055	mg/L	0.05	
HLSF-0085-HMW-055-0107	HMW55	Total Chromium	0.047	mg/L	0.05	
HLSF-0085-HMW-061-0107*	HMW61	Total Chromium	0.552	mg/L	0.05	
HLSF-0085-HMW-062-1206	HMW62	Total Chromium	0.024	mg/L	0.05	
HLSF-0085-HMW-063-1206	HMW63	Total Chromium	0.031	mg/L	0.05	
HLSF-0085-DRW-014-1206	DRW14	Total Copper	0.026	mg/L	1.46^	<0.005
HLSF-0085-DRW-016-0107	DRW16	Total Copper	0.013	mg/L	1.46^	
HLSF-0085-HMW-058-1206	HMW58	Total Copper	0.014	mg/L	1.46^	
HLSF-0085-DRW-014-1206	DRW14	Total Dissolved Solids	18700	mg/L	1000	15650
HLSF-0085-DRW-015-0107	DRW15	Total Dissolved Solids	12900	mg/L	1000	
HLSF-0085-DRW-016-0107	DRW16	Total Dissolved Solids	15500	mg/L	1000	
HLSF-0085-DRW-017-0107	DRW17	Total Dissolved Solids	12500	mg/L	1000	
HLSF-0085-HELSTF-001-1206*	HELSTF1	Total Dissolved Solids	12750	mg/L	1000	
HLSF-0085-HMW-029-1206*	HMW29	Total Dissolved Solids	12200	mg/L	1000	
HLSF-0085-HMW-030-1206	HMW30	Total Dissolved Solids	10300	mg/L	1000	
HLSF-0085-HMW-032-1206	HMW32	Total Dissolved Solids	11800	mg/L	1000	
HLSF-0085-HMW-034-1206	HMW34	Total Dissolved Solids	11500	mg/L	1000	
HLSF-0085-HMW-035-1206	HMW35	Total Dissolved Solids	10000	mg/L	1000	
HLSF-0085-HMW-054-0107	HMW54	Total Dissolved Solids	13600	mg/L	1000	
HLSF-0085-HMW-055-0107	HMW55	Total Dissolved Solids	16100	mg/L	1000	
HLSF-0085-HMW-056-0107	HMW56	Total Dissolved Solids	13700	mg/L	1000	
HLSF-0085-HMW-057-1206	HMW57	Total Dissolved Solids	14500	mg/L	1000	
HLSF-0085-HMW-058-1206	HMW58	Total Dissolved Solids	16000	mg/L	1000	
HLSF-0085-HMW-059-0107	HMW59	Total Dissolved Solids	11500	mg/L	1000	
HLSF-0085-HMW-060-1206	HMW60	Total Dissolved Solids	11600	mg/L	1000	
HLSF-0085-HMW-061-0107*	HMW61	Total Dissolved Solids	16200	mg/L	1000	
HLSF-0085-HMW-062-1206	HMW62	Total Dissolved Solids	12700	mg/L	1000	
HLSF-0085-HMW-063-1206	HMW63	Total Dissolved Solids	11800	mg/L	1000	
HLSF-0085-HMW-064-0107	HMW64	Total Dissolved Solids	12800	mg/L	1000	
HLSF-0085-HMW-065-0107	HMW65	Total Dissolved Solids	13300	mg/L	1000	
HLSF-0085-HMW-008-1206	HMW08	Total Dissolved Solids	13000	mg/L	1000	
HLSF-0085-HMW-059-0107	HMW59	Total Organic Carbon	1.51	mg/L	NE	2.5
HLSF-0085-HMW-061-0107*	HMW61	Total Organic Carbon	2.505	mg/L	NE	
HLSF-0085-DRW-016-0107	DRW16	Total Phosphorous	0.088	mg/L	NE	<0.05

Table D-9. Regional Aquifer Monitoring Well Results

Field_Sample_Id	Well_Name	Analyte_Name	Result	Units	WQCC Standard	Background
HLSF-0085-HMW-058-1206	HMW58	Total Phosphorous	0.052	mg/L	NE	
HLSF-0085-HMW-060-1206	HMW60	Total Phosphorous	0.082	mg/L	NE	
HLSF-0085-HMW-065-0107	HMW65	Total Phosphorous	0.052	mg/L	NE	
HLSF-0085-HMW-008-1206	HMW08	Total Phosphorous	0.058	mg/L	NE	
HLSF-0085-HMW-060-1206	HMW60	Total Potassium	65.9	mg/L	NE	84
HLSF-0085-HMW-061-0107*	HMW61	Total Potassium	74.45	mg/L	NE	
HLSF-0085-HMW-008-1206	HMW08	Total Potassium	63.5	mg/L	NE	
HLSF-0085-HMW-035-1206	HMW35	Total Selenium	0.158	mg/L	0.05	0.076
HLSF-0085-HMW-061-0107*	HMW61	Total Selenium	0.112	mg/L	0.05	
HLSF-0085-DRW-014-1206	DRW14	Total Sodium	4620	mg/L	NE	3030
HLSF-0085-DRW-015-0107	DRW15	Total Sodium	2810	mg/L	NE	
HLSF-0085-DRW-016-0107	DRW16	Total Sodium	3260	mg/L	NE	
HLSF-0085-DRW-017-0107	DRW17	Total Sodium	2760	mg/L	NE	
HLSF-0085-HELSTF-001-1206*	HELSTF1	Total Sodium	2635	mg/L	NE	
HLSF-0085-HMW-054-0107	HMW54	Total Sodium	3160	mg/L	NE	
HLSF-0085-HMW-055-0107	HMW55	Total Sodium	3660	mg/L	NE	
HLSF-0085-HMW-057-1206	HMW57	Total Sodium	2840	mg/L	NE	
HLSF-0085-HMW-058-1206	HMW58	Total Sodium	4330	mg/L	NE	
HLSF-0085-HMW-060-1206	HMW60	Total Sodium	2920	mg/L	NE	
HLSF-0085-HMW-061-0107*	HMW61	Total Sodium	3460	mg/L	NE	
HLSF-0085-HMW-062-1206	HMW62	Total Sodium	3130	mg/L	NE	
HLSF-0085-HMW-063-1206	HMW63	Total Sodium	2550	mg/L	NE	
HLSF-0085-HMW-064-0107	HMW64	Total Sodium	2950	mg/L	NE	
HLSF-0085-HMW-065-0107	HMW65	Total Sodium	3020	mg/L	NE	
HLSF-0085-HMW-008-1206	HMW08	Total Sodium	2960	mg/L	NE	
HLSF-0085-HMW-034-1206	HMW34	Total Zinc	0.018	mg/L	10	0.024
HLSF-0085-HMW-058-1206	HMW58	Total Zinc	0.362	mg/L	10	
HLSF-0085-DRW-014-1206	DRW14	Trichloroethene (TCE)	131	ug/L	100	—
HLSF-0085-DRW-015-0107	DRW15	Trichloroethene (TCE)	12.7	ug/L	100	
HLSF-0085-DRW-016-0107	DRW16	Trichloroethene (TCE)	119	ug/L	100	
HLSF-0085-DRW-017-0107	DRW17	Trichloroethene (TCE)	4.43	ug/L	100	
HLSF-0085-HELSTF-001-1206*	HELSTF1	Trichloroethene (TCE)	35.5	ug/L	100	
HLSF-0085-HMW-054-0107	HMW54	Trichloroethene (TCE)	6.31	ug/L	100	
HLSF-0085-HMW-055-0107	HMW55	Trichloroethene (TCE)	34.9	ug/L	100	
HLSF-0085-HMW-062-1206	HMW62	Trichloroethene (TCE)	3.78	ug/L	100	
HLSF-0085-HMW-064-0107	HMW64	Trichloroethene (TCE)	9.25	ug/L	100	

NOTES:
* Mean of Duplicate Analyses
** mg/L as CaCO3
^ NMED SSL Tap Water Standard
^^ EPA Region VI Human Health Tap Water Standard

Data File

Variable: Sub NO3 Bkg **91.4**

Raw Statistics	
Number of Valid Samples	30
Number of Unique Samples	29
Minimum	1.22
Maximum	232
Mean	62.108
Median	40.4
Standard Deviation	64.60036
Variance	4173.207
Coefficient of Variation	1.040129
Skewness	1.195163

Gamma Statistics	
k hat	0.804958
k star (bias corrected)	0.746685
Theta hat	77.15679
Theta star	83.17834
nu hat	48.2975
nu star	44.80108
Approx.Chi Square Value (.05)	30.44549
Adjusted Level of Significance	0.041
Adjusted Chi Square Value	29.7624

Log-transformed Statistics	
Minimum of log data	0.198851
Maximum of log data	5.446737
Mean of log data	3.392178
Standard Deviation of log data	1.456312
Variance of log data	2.120845

RECOMMENDATION

Data follow gamma distribution (0.05)

Use Approximate Gamma UCL

Normal Distribution Test	
Shapiro-Wilk Test Statisitic	0.840343
Shapiro-Wilk 5% Critical Value	0.927
Data not normal at 5% significance level	

95% UCL (Assuming Normal Distribution)	
Student's-t UCL	82.14811

Gamma Distribution Test	
A-D Test Statistic	0.266642
A-D 5% Critical Value	0.785084
K-S Test Statistic	0.09693
K-S 5% Critical Value	0.16596
Data follow gamma distribution	
at 5% significance level	

95% UCLs (Assuming Gamma Distribution)	
Approximate Gamma UCL	**91.39304**
Adjusted Gamma UCL	93.49062

Lognormal Distribution Test	
Shapiro-Wilk Test Statisitic	0.939775
Shapiro-Wilk 5% Critical Value	0.927
Data are lognormal at 5% significance level	

95% UCLs (Assuming Lognormal Distribution)	
95% H-UCL	195.2412
95% Chebyshev (MVUE) UCL	196.9272
97.5% Chebyshev (MVUE) UCL	247.3878
99% Chebyshev (MVUE) UCL	346.5078

95% Non-parametric UCLs	
CLT UCL	81.50799
Adj-CLT UCL (Adjusted for skewness)	84.25792
Mod-t UCL (Adjusted for skewness)	82.57704
Jackknife UCL	82.14811
Standard Bootstrap UCL	81.12986
Bootstrap-t UCL	87.38166
Hall's Bootstrap UCL	84.68915
Percentile Bootstrap UCL	81.35933
BCA Bootstrap UCL	85.08367
95% Chebyshev (Mean, Sd) UCL	113.5184
97.5% Chebyshev (Mean, Sd) UCL	135.7637
99% Chebyshev (Mean, Sd) UCL	179.4604

Data File

Variable: Sub As Bkg **4.12**

Raw Statistics	
Number of Valid Samples	30
Number of Unique Samples	15
Minimum	1
Maximum	7.74
Mean	2.846
Median	2
Standard Deviation	1.600523
Variance	2.561673
Coefficient of Variation	0.562376
Skewness	1.535076

Gamma Statistics	
k hat	4.018396
k star (bias corrected)	3.638779
Theta hat	0.708243
Theta star	0.782131
nu hat	241.1038
nu star	218.3267
Approx.Chi Square Value (.05)	185.1228
Adjusted Level of Significance	0.041
Adjusted Chi Square Value	183.3627

Log-transformed Statistics	
Minimum of log data	0
Maximum of log data	2.046402
Mean of log data	0.916357
Standard Deviation of log data	0.507422
Variance of log data	0.257477

RECOMMENDATION

Data are Non-parametric (0.05)

Use 95% Chebyshev (Mean, Sd) UCL

Normal Distribution Test	
Shapiro-Wilk Test Statisitic	0.80725
Shapiro-Wilk 5% Critical Value	0.927
Data not normal at 5% significance level	

95% UCL (Assuming Normal Distribution)	
Student's-t UCL	3.342509

Gamma Distribution Test	
A-D Test Statistic	1.717293
A-D 5% Critical Value	0.749464
K-S Test Statistic	0.256844
K-S 5% Critical Value	0.160673
Data do not follow gamma distribution	
at 5% significance level	

95% UCLs (Assuming Gamma Distribution)	
Approximate Gamma UCL	3.356464
Adjusted Gamma UCL	3.388682

Lognormal Distribution Test	
Shapiro-Wilk Test Statisitic	0.895546
Shapiro-Wilk 5% Critical Value	0.927
Data not lognormal at 5% significance level	

95% UCLs (Assuming Lognormal Distribution)	
95% H-UCL	3.414012
95% Chebyshev (MVUE) UCL	4.024639
97.5% Chebyshev (MVUE) UCL	4.54152
99% Chebyshev (MVUE) UCL	5.556833

95% Non-parametric UCLs	
CLT UCL	3.326649
Adj-CLT UCL (Adjusted for skewness)	3.414158
Mod-t UCL (Adjusted for skewness)	3.356158
Jackknife UCL	3.342509
Standard Bootstrap UCL	3.325556
Bootstrap-t UCL	3.464942
Hall's Bootstrap UCL	3.447762
Percentile Bootstrap UCL	3.346
BCA Bootstrap UCL	3.418667
95% Chebyshev (Mean, Sd) UCL	**4.119732**
97.5% Chebyshev (Mean, Sd) UCL	4.670877
99% Chebyshev (Mean, Sd) UCL	5.753494

Data File

Variable: Sub Ba Bkg **55.2**

Raw Statistics	
Number of Valid Samples	30
Number of Unique Samples	30
Minimum	8.15
Maximum	104
Mean	47.10833
Median	45.05
Standard Deviation	26.08696
Variance	680.5297
Coefficient of Variation	0.553765
Skewness	0.53893

Gamma Statistics	
k hat	2.976663
k star (bias corrected)	2.701219
Theta hat	15.82589
Theta star	17.43966
nu hat	178.5998
nu star	162.0732
Approx.Chi Square Value (.05)	133.6333
Adjusted Level of Significance	0.041
Adjusted Chi Square Value	132.1459

Log-transformed Statistics	
Minimum of log data	2.098018
Maximum of log data	4.644391
Mean of log data	3.675173
Standard Deviation of log data	0.650915
Variance of log data	0.423691

RECOMMENDATION
Data are normal (0.05)

Use Student's-t UCL

Normal Distribution Test	
Shapiro-Wilk Test Statisitic	0.950785
Shapiro-Wilk 5% Critical Value	0.927
Data are normal at 5% significance level	

95% UCL (Assuming Normal Distribution)	
Student's-t UCL	**55.20094**

Gamma Distribution Test	
A-D Test Statistic	0.206692
A-D 5% Critical Value	0.75259
K-S Test Statistic	0.101206
K-S 5% Critical Value	0.161173
Data follow gamma distribution	
at 5% significance level	

95% UCLs (Assuming Gamma Distribution)	
Approximate Gamma UCL	57.13395
Adjusted Gamma UCL	57.777

Lognormal Distribution Test	
Shapiro-Wilk Test Statisitic	0.952099
Shapiro-Wilk 5% Critical Value	0.927
Data are lognormal at 5% significance level	

95% UCLs (Assuming Lognormal Distribution)	
95% H-UCL	62.58178
95% Chebyshev (MVUE) UCL	75.20141
97.5% Chebyshev (MVUE) UCL	86.8167
99% Chebyshev (MVUE) UCL	109.6327

95% Non-parametric UCLs	
CLT UCL	54.94245
Adj-CLT UCL (Adjusted for skewness)	55.4432
Mod-t UCL (Adjusted for skewness)	55.27905
Jackknife UCL	55.20094
Standard Bootstrap UCL	54.75089
Bootstrap-t UCL	55.82868
Hall's Bootstrap UCL	55.31348
Percentile Bootstrap UCL	54.815
BCA Bootstrap UCL	55.60333
95% Chebyshev (Mean, Sd) UCL	67.86892
97.5% Chebyshev (Mean, Sd) UCL	76.85205
99% Chebyshev (Mean, Sd) UCL	94.49766

Data File

Variable: Sub Cr Bkg **7.23**

Raw Statistics	
Number of Valid Samples	30
Number of Unique Samples	28
Minimum	0.5
Maximum	22.3
Mean	5.593
Median	4.83
Standard Deviation	4.419531
Variance	19.53226
Coefficient of Variation	0.79019
Skewness	1.97445

Gamma Statistics	
k hat	1.734941
k star (bias corrected)	1.583669
Theta hat	3.223741
Theta star	3.531672
nu hat	104.0965
nu star	95.02015
Approx.Chi Square Value (.05)	73.53343
Adjusted Level of Significance	0.041
Adjusted Chi Square Value	72.44375

Log-transformed Statistics	
Minimum of log data	-0.693147
Maximum of log data	3.104587
Mean of log data	1.406444
Standard Deviation of log data	0.886464
Variance of log data	0.785818

RECOMMENDATION

Data follow gamma distribution (0.05)

Use Approximate Gamma UCL

Normal Distribution Test	
Shapiro-Wilk Test Statisitic	0.836583
Shapiro-Wilk 5% Critical Value	0.927
Data not normal at 5% significance level	

95% UCL (Assuming Normal Distribution)	
Student's-t UCL	6.964012

Gamma Distribution Test	
A-D Test Statistic	0.347986
A-D 5% Critical Value	0.760887
K-S Test Statistic	0.120882
K-S 5% Critical Value	0.162527
Data follow gamma distribution	
at 5% significance level	

95% UCLs (Assuming Gamma Distribution)	
Approximate Gamma UCL	**7.227293**
Adjusted Gamma UCL	7.336004

Lognormal Distribution Test	
Shapiro-Wilk Test Statisitic	0.942565
Shapiro-Wilk 5% Critical Value	0.927
Data are lognormal at 5% significance level	

95% UCLs (Assuming Lognormal Distribution)	
95% H-UCL	8.83829
95% Chebyshev (MVUE) UCL	10.64406
97.5% Chebyshev (MVUE) UCL	12.67943
99% Chebyshev (MVUE) UCL	16.67753

95% Non-parametric UCLs	
CLT UCL	6.92022
Adj-CLT UCL (Adjusted for skewness)	7.23102
Mod-t UCL (Adjusted for skewness)	7.012491
Jackknife UCL	6.964012
Standard Bootstrap UCL	6.909355
Bootstrap-t UCL	7.509206
Hall's Bootstrap UCL	8.201765
Percentile Bootstrap UCL	7.005
BCA Bootstrap UCL	7.125
95% Chebyshev (Mean, Sd) UCL	9.110162
97.5% Chebyshev (Mean, Sd) UCL	10.63204
99% Chebyshev (Mean, Sd) UCL	13.62148

Data File

Variable: Sub Cu Bkg **6.48**

Raw Statistics	
Number of Valid Samples	30
Number of Unique Samples	30
Minimum	0.692
Maximum	14
Mean	5.1263
Median	4.855
Standard Deviation	3.388531
Variance	11.48214
Coefficient of Variation	0.661009
Skewness	0.933966

Gamma Statistics	
k hat	2.049065
k star (bias corrected)	1.866381
Theta hat	2.501775
Theta star	2.746652
nu hat	122.9439
nu star	111.9829
Approx.Chi Square Value (.05)	88.55057
Adjusted Level of Significance	0.041
Adjusted Chi Square Value	87.34969

Log-transformed Statistics	
Minimum of log data	-0.368169
Maximum of log data	2.639057
Mean of log data	1.370952
Standard Deviation of log data	0.819059
Variance of log data	0.670857

RECOMMENDATION

Data follow gamma distribution (0.05)

Use Approximate Gamma UCL

Normal Distribution Test	
Shapiro-Wilk Test Statisitic	0.923483
Shapiro-Wilk 5% Critical Value	0.927
Data not normal at 5% significance level	

95% UCL (Assuming Normal Distribution)	
Student's-t UCL	6.177479

Gamma Distribution Test	
A-D Test Statistic	0.384361
A-D 5% Critical Value	0.758175
K-S Test Statistic	0.125386
K-S 5% Critical Value	0.162091
Data follow gamma distribution	
at 5% significance level	

95% UCLs (Assuming Gamma Distribution)	
Approximate Gamma UCL	**6.482824**
Adjusted Gamma UCL	6.571949

Lognormal Distribution Test	
Shapiro-Wilk Test Statisitic	0.921368
Shapiro-Wilk 5% Critical Value	0.927
Data not lognormal at 5% significance level	

95% UCLs (Assuming Lognormal Distribution)	
95% H-UCL	7.736709
95% Chebyshev (MVUE) UCL	9.348524
97.5% Chebyshev (MVUE) UCL	11.04418
99% Chebyshev (MVUE) UCL	14.37497

95% Non-parametric UCLs	
CLT UCL	6.143902
Adj-CLT UCL (Adjusted for skewness)	6.256623
Mod-t UCL (Adjusted for skewness)	6.195061
Jackknife UCL	6.177479
Standard Bootstrap UCL	6.11864
Bootstrap-t UCL	6.329254
Hall's Bootstrap UCL	6.383914
Percentile Bootstrap UCL	6.198967
BCA Bootstrap UCL	6.221667
95% Chebyshev (Mean, Sd) UCL	7.822969
97.5% Chebyshev (Mean, Sd) UCL	8.98982
99% Chebyshev (Mean, Sd) UCL	11.28187

Data File

Variable: Sub Pb Bkg **23.25**

Raw Statistics	
Number of Valid Samples	30
Number of Unique Samples	26
Minimum	1
Maximum	24.9
Mean	10.55
Median	11.9
Standard Deviation	6.989943
Variance	48.8593
Coefficient of Variation	0.662554
Skewness	0.165766

Gamma Statistics	
k hat	1.425323
k star (bias corrected)	1.305013
Theta hat	7.401829
Theta star	8.084209
nu hat	85.51941
nu star	78.3008
Approx.Chi Square Value (.05)	58.91138
Adjusted Level of Significance	0.041
Adjusted Chi Square Value	57.94147

Log-transformed Statistics	
Minimum of log data	0
Maximum of log data	3.214868
Mean of log data	1.965996
Standard Deviation of log data	1.076656
Variance of log data	1.159189

RECOMMENDATION
Data are Non-parametric (0.05)

Use 99% Chebyshev (Mean, Sd) UCL

Normal Distribution Test	
Shapiro-Wilk Test Statisitic	0.926576
Shapiro-Wilk 5% Critical Value	0.927
Data not normal at 5% significance level	

95% UCL (Assuming Normal Distribution)	
Student's-t UCL	12.7184

Gamma Distribution Test	
A-D Test Statistic	1.695361
A-D 5% Critical Value	0.764889
K-S Test Statistic	0.198417
K-S 5% Critical Value	0.163157
Data do not follow gamma distribution	
at 5% significance level	

95% UCLs (Assuming Gamma Distribution)	
Approximate Gamma UCL	14.02231
Adjusted Gamma UCL	14.25703

Lognormal Distribution Test	
Shapiro-Wilk Test Statisitic	0.810046
Shapiro-Wilk 5% Critical Value	0.927
Data not lognormal at 5% significance level	

95% UCLs (Assuming Lognormal Distribution)	
95% H-UCL	21.14527
95% Chebyshev (MVUE) UCL	24.77055
97.5% Chebyshev (MVUE) UCL	30.12929
99% Chebyshev (MVUE) UCL	40.65552

95% Non-parametric UCLs	
CLT UCL	12.64913
Adj-CLT UCL (Adjusted for skewness)	12.6904
Mod-t UCL (Adjusted for skewness)	12.72483
Jackknife UCL	12.7184
Standard Bootstrap UCL	12.64474
Bootstrap-t UCL	12.77408
Hall's Bootstrap UCL	12.71809
Percentile Bootstrap UCL	12.75567
BCA Bootstrap UCL	12.72933
95% Chebyshev (Mean, Sd) UCL	16.11275
97.5% Chebyshev (Mean, Sd) UCL	18.51976
99% Chebyshev (Mean, Sd) UCL	23.24786

Data File

Variable: Sub P Bkg **187**

Raw Statistics	
Number of Valid Samples	30
Number of Unique Samples	29
Minimum	29.7
Maximum	380
Mean	157.1167
Median	138.5
Standard Deviation	95.82291
Variance	9182.03
Coefficient of Variation	0.609884
Skewness	0.483186

Gamma Statistics	
k hat	2.336729
k star (bias corrected)	2.125278
Theta hat	67.23787
Theta star	73.92758
nu hat	140.2037
nu star	127.5167
Approx.Chi Square Value (.05)	102.429
Adjusted Level of Significance	0.041
Adjusted Chi Square Value	101.1335

Log-transformed Statistics	
Minimum of log data	3.391147
Maximum of log data	5.940171
Mean of log data	4.828011
Standard Deviation of log data	0.747851
Variance of log data	0.559281

RECOMMENDATION
Data are normal (0.05)

Use Student's-t UCL

Normal Distribution Test	
Shapiro-Wilk Test Statisitic	0.941926
Shapiro-Wilk 5% Critical Value	0.927
Data are normal at 5% significance level	

95% UCL (Assuming Normal Distribution)	
Student's-t UCL	**186.8425**

Gamma Distribution Test	
A-D Test Statistic	0.490535
A-D 5% Critical Value	0.756443
K-S Test Statistic	0.110289
K-S 5% Critical Value	0.161807
Data follow gamma distribution	
at 5% significance level	

95% UCLs (Assuming Gamma Distribution)	
Approximate Gamma UCL	195.5989
Adjusted Gamma UCL	198.1045

Lognormal Distribution Test	
Shapiro-Wilk Test Statisitic	0.918486
Shapiro-Wilk 5% Critical Value	0.927
Data not lognormal at 5% significance level	

95% UCLs (Assuming Lognormal Distribution)	
95% H-UCL	223.0524
95% Chebyshev (MVUE) UCL	269.5134
97.5% Chebyshev (MVUE) UCL	315.4414
99% Chebyshev (MVUE) UCL	405.658

95% Non-parametric UCLs	
CLT UCL	185.893
Adj-CLT UCL (Adjusted for skewness)	187.5421
Mod-t UCL (Adjusted for skewness)	187.0998
Jackknife UCL	186.8425
Standard Bootstrap UCL	185.9385
Bootstrap-t UCL	190.7743
Hall's Bootstrap UCL	187.9889
Percentile Bootstrap UCL	185.85
BCA Bootstrap UCL	186.49
95% Chebyshev (Mean, Sd) UCL	233.3747
97.5% Chebyshev (Mean, Sd) UCL	266.3716
99% Chebyshev (Mean, Sd) UCL	331.1876

Data File

Variable: Sub K Bkg **1869**

Raw Statistics	
Number of Valid Samples	30
Number of Unique Samples	29
Minimum	376
Maximum	3370
Mean	1617.6
Median	1655
Standard Deviation	810.9692
Variance	657671
Coefficient of Variation	0.501341
Skewness	0.176915

Gamma Statistics	
k hat	3.355928
k star (bias corrected)	3.042557
Theta hat	482.0127
Theta star	531.658
nu hat	201.3557
nu star	182.5534
Approx.Chi Square Value (.05)	152.2953
Adjusted Level of Significance	0.041
Adjusted Chi Square Value	150.7039

Log-transformed Statistics	
Minimum of log data	5.929589
Maximum of log data	8.122668
Mean of log data	7.232373
Standard Deviation of log data	0.615538
Variance of log data	0.378887

RECOMMENDATION
Data are normal (0.05)

Use Student's-t UCL

Normal Distribution Test	
Shapiro-Wilk Test Statisitic	0.961587
Shapiro-Wilk 5% Critical Value	0.927
Data are normal at 5% significance level	

95% UCL (Assuming Normal Distribution)	
Student's-t UCL	**1869.176**

Gamma Distribution Test	
A-D Test Statistic	0.619836
A-D 5% Critical Value	0.751407
K-S Test Statistic	0.14474
K-S 5% Critical Value	0.160983
Data follow gamma distribution	
at 5% significance level	

95% UCLs (Assuming Gamma Distribution)	
Approximate Gamma UCL	1938.986
Adjusted Gamma UCL	1959.461

Lognormal Distribution Test	
Shapiro-Wilk Test Statisitic	0.91612
Shapiro-Wilk 5% Critical Value	0.927
Data not lognormal at 5% significance level	

95% UCLs (Assuming Lognormal Distribution)	
95% H-UCL	2109.076
95% Chebyshev (MVUE) UCL	2525.433
97.5% Chebyshev (MVUE) UCL	2900.005
99% Chebyshev (MVUE) UCL	3635.78

95% Non-parametric UCLs	
CLT UCL	1861.14
Adj-CLT UCL (Adjusted for skewness)	1866.25
Mod-t UCL (Adjusted for skewness)	1869.973
Jackknife UCL	1869.176
Standard Bootstrap UCL	1857.085
Bootstrap-t UCL	1865.206
Hall's Bootstrap UCL	1857.656
Percentile Bootstrap UCL	1859.167
BCA Bootstrap UCL	1863.7
95% Chebyshev (Mean, Sd) UCL	2262.987
97.5% Chebyshev (Mean, Sd) UCL	2542.247
99% Chebyshev (Mean, Sd) UCL	3090.799

Data File

Variable: Sub Na Bkg **1908**

Raw Statistics	
Number of Valid Samples	30
Number of Unique Samples	30
Minimum	455
Maximum	3080
Mean	1675.533
Median	1785
Standard Deviation	749.2807
Variance	561421.6
Coefficient of Variation	0.447189
Skewness	0.033161

Gamma Statistics	
k hat	4.253389
k star (bias corrected)	3.850272
Theta hat	393.929
Theta star	435.1727
nu hat	255.2033
nu star	231.0163
Approx.Chi Square Value (.05)	196.8264
Adjusted Level of Significance	0.041
Adjusted Chi Square Value	195.0098

Log-transformed Statistics	
Minimum of log data	6.120297
Maximum of log data	8.032685
Mean of log data	7.301752
Standard Deviation of log data	0.539906
Variance of log data	0.291498

RECOMMENDATION
Data are normal (0.05)

Use Student's-t UCL

Normal Distribution Test	
Shapiro-Wilk Test Statisitic	0.959383
Shapiro-Wilk 5% Critical Value	0.927
Data are normal at 5% significance level	

95% UCL (Assuming Normal Distribution)	
Student's-t UCL	**1907.973**

Gamma Distribution Test	
A-D Test Statistic	0.608398
A-D 5% Critical Value	0.748752
K-S Test Statistic	0.152342
K-S 5% Critical Value	0.160586
Data follow gamma distribution	
at 5% significance level	

95% UCLs (Assuming Gamma Distribution)	
Approximate Gamma UCL	1966.584
Adjusted Gamma UCL	1984.903

Lognormal Distribution Test	
Shapiro-Wilk Test Statisitic	0.915227
Shapiro-Wilk 5% Critical Value	0.927
Data not lognormal at 5% significance level	

95% UCLs (Assuming Lognormal Distribution)	
95% H-UCL	2089.383
95% Chebyshev (MVUE) UCL	2476.513
97.5% Chebyshev (MVUE) UCL	2809.839
99% Chebyshev (MVUE) UCL	3464.593

95% Non-parametric UCLs	
CLT UCL	1900.548
Adj-CLT UCL (Adjusted for skewness)	1901.433
Mod-t UCL (Adjusted for skewness)	1908.111
Jackknife UCL	1907.973
Standard Bootstrap UCL	1892.98
Bootstrap-t UCL	1914.962
Hall's Bootstrap UCL	1912.096
Percentile Bootstrap UCL	1907.367
BCA Bootstrap UCL	1893.1
95% Chebyshev (Mean, Sd) UCL	2271.828
97.5% Chebyshev (Mean, Sd) UCL	2529.845
99% Chebyshev (Mean, Sd) UCL	3036.669

Data File

Variable: Sub Zn Bkg **28.7**

Raw Statistics	
Number of Valid Samples	30
Number of Unique Samples	29
Minimum	2.76
Maximum	50.9
Mean	19.337
Median	18.75
Standard Deviation	11.81047
Variance	139.4873
Coefficient of Variation	0.610771
Skewness	0.9702

Gamma Statistics	
k hat	2.22238
k star (bias corrected)	2.022364
Theta hat	8.701032
Theta star	9.561581
nu hat	133.3428
nu star	121.3419
Approx.Chi Square Value (.05)	96.89937
Adjusted Level of Significance	0.041
Adjusted Chi Square Value	95.64073

Log-transformed Statistics	
Minimum of log data	1.015231
Maximum of log data	3.929863
Mean of log data	2.720478
Standard Deviation of log data	0.806866
Variance of log data	0.651032

RECOMMENDATION

Data are Non-parametric (0.05)

Use 95% Chebyshev (Mean, Sd) UCL

Normal Distribution Test	
Shapiro-Wilk Test Statisitic	0.901952
Shapiro-Wilk 5% Critical Value	0.927
Data not normal at 5% significance level	

95% UCL (Assuming Normal Distribution)	
Student's-t UCL	23.00081

Gamma Distribution Test	
A-D Test Statistic	1.13086
A-D 5% Critical Value	0.757131
K-S Test Statistic	0.180898
K-S 5% Critical Value	0.16192
Data do not follow gamma distribution	
at 5% significance level	

95% UCLs (Assuming Gamma Distribution)	
Approximate Gamma UCL	24.21468
Adjusted Gamma UCL	24.53335

Lognormal Distribution Test	
Shapiro-Wilk Test Statisitic	0.847454
Shapiro-Wilk 5% Critical Value	0.927
Data not lognormal at 5% significance level	

95% UCLs (Assuming Lognormal Distribution)	
95% H-UCL	29.32924
95% Chebyshev (MVUE) UCL	35.44828
97.5% Chebyshev (MVUE) UCL	41.81289
99% Chebyshev (MVUE) UCL	54.31494

95% Non-parametric UCLs	
CLT UCL	22.88378
Adj-CLT UCL (Adjusted for skewness)	23.2919
Mod-t UCL (Adjusted for skewness)	23.06446
Jackknife UCL	23.00081
Standard Bootstrap UCL	22.79718
Bootstrap-t UCL	23.59775
Hall's Bootstrap UCL	24.15563
Percentile Bootstrap UCL	22.865
BCA Bootstrap UCL	23.48467
95% Chebyshev (Mean, Sd) UCL	**28.73604**
97.5% Chebyshev (Mean, Sd) UCL	32.80301
99% Chebyshev (Mean, Sd) UCL	40.79179

APPENDIX E

Laboratory Reports
On CD Only

work_orde	sample	field_code	matrix	received_c	received_t	collect_da	collect_tim	qctype	test	method	units	dilution	surrogate	param	cas	mdl_sign	mdl_result	mql_sign	mql_result	pql_sign	pql_result	rl_sign	rl_result	mdl	mql	pql	rl	spike_amo	recovery	rpd	prep_batc	qcbatch	analyzed_	analysis_d	comment	project_na	project_number
6102404	106713	HLSF-0085	soil	########	17:10:00	########	10:05:00		Chromium	SM 3500-C	mg/Kg	1	no	Hexavalen	7440-47-3	<	2.32	<	5	<	5	<	5	2.32	5	5	5	0			27523	31611	WB	########		HELSTF Ph	7
6102404	106713	HLSF-0085	soil	########	17:10:00	########	10:05:00		Cu, Total	S 6010B	mg/Kg	1	no	Total Copp	7440-50-8		1.79		1.79		1.79		1.79	0.0268	0.5	0.5	0.5	0			27288	31429	RR	########		HELSTF Ph	7
6102404	106713	HLSF-0085	soil	########	17:10:00	########	10:05:00		FOC	ASTM D 2	%	1	no	FOC	N/A		3.8		3.8		3.8		3.8					0			27510	31591	SM	########		HELSTF Ph	7
6102404	106713	HLSF-0085	soil	########	17:10:00	########	10:05:00		K, Total	S 6010B	mg/Kg	1	no	Total Pota	9/7/7440		198		198		198		198	0.291	50	50	50	0			27288	31440	TP	########		HELSTF Ph	7
6102404	106713	HLSF-0085	soil	########	17:10:00	########	10:05:00		Na, Total	S 6010B	mg/Kg	1	no	Total Sodi	7440-23-5		205		205		205		205	0.082	50	50	50	0			27288	31440	TP	########		HELSTF Ph	7
6102404	106713	HLSF-0085	soil	########	17:10:00	########	10:05:00		Nitrate an	E 353.3	mg/Kg	2	no	Nitrate and Nitrite as N			0.578		0.578		0.578		0.578	0.0155	0.1	0.1	0.1	0			27540	31626	WB	########		HELSTF Ph	7
6102404	106713	HLSF-0085	soil	########	17:10:00	########	10:05:00		P, Total	S 6010B	mg/Kg	1	no	Total Phos	7723-14-0		52.3		52.3		52.3		52.3	0.223	2	2	2	0			27288	31429	RR	########		HELSTF Ph	7
6102404	106713	HLSF-0085	soil	########	17:10:00	########	10:05:00		Total 8 Me	S 6010B	mg/Kg	1	no	Total Silver		<	0.00444	<	0.05	<	0.05	<	0.05	0.00444	0.05	0.05	0.05	0			27288	31429	RR	########		HELSTF Ph	7
6102404	106713	HLSF-0085	soil	########	17:10:00	########	10:05:00		Total 8 Me	S 6010B	mg/Kg	1	no	Total Arsenic		<	0.228	<	2	<	2	<	2	0.228	2	2	2	0			27288	31429	RR	########		HELSTF Ph	7
6102404	106713	HLSF-0085	soil	########	17:10:00	########	10:05:00		Total 8 Me	S 6010B	mg/Kg	1	no	Total Barium			9.48		9.48		9.48		9.48	0.0601	1	1	1	0			27288	31429	RR	########		HELSTF Ph	7
6102404	106713	HLSF-0085	soil	########	17:10:00	########	10:05:00		Total 8 Me	S 6010B	mg/Kg	1	no	Total Cadmium		<	0.00794	<	0.1	<	0.1	<	0.1	0.00794	0.1	0.1	0.1	0			27288	31429	RR	########		HELSTF Ph	7
6102404	106713	HLSF-0085	soil	########	17:10:00	########	10:05:00		Total 8 Me	S 6010B	mg/Kg	1	no	Total Chromium			1.19		1.19		1.19		1.19	0.0125	0.5	0.5	0.5	0			27288	31429	RR	########		HELSTF Ph	7
6102404	106713	HLSF-0085	soil	########	17:10:00	########	10:05:00		Total 8 Me	S 7471A	mg/Kg	1	no	Total Mercury			0.013	<	0.04	<	0.04	<	0.04	0.00299	0.04	0.04	0.04	0			27351	31411	TP	########		HELSTF Ph	7
6102404	106713	HLSF-0085	soil	########	17:10:00	########	10:05:00		Total 8 Me	S 6010B	mg/Kg	1	no	Total Lead		<	0.367	<	1	<	1	<	1	0.367	1	1	1	0			27288	31429	RR	########		HELSTF Ph	7
6102404	106713	HLSF-0085	soil	########	17:10:00	########	10:05:00		Total 8 Me	S 6010B	mg/Kg	1	no	Total Selenium		<	0.0767	<	1	<	1	<	1	0.0767	1	1	1	0			27288	31429	RR	########		HELSTF Ph	7
6102404	106713	HLSF-0085	soil	########	17:10:00	########	10:05:00		Zn, Total	S 6010B	mg/Kg	1	no	Total Zinc	7440-66-6		2.64		2.64		2.64		2.64	0.124	2	2	2	0			27288	31429	RR	########		HELSTF Ph	7
6102404	106714	HLSF-0085	soil	########	17:10:00	########	10:30:00		Chromium	SM 3500-C	mg/Kg	1	no	Hexavalen	7440-47-3	<	2.32	<	5	<	5	<	5	2.32	5	5	5	0			27523	31611	WB	########		HELSTF Ph	7
6102404	106714	HLSF-0085	soil	########	17:10:00	########	10:30:00		Cu, Total	S 6010B	mg/Kg	1	no	Total Copp	7440-50-8		0.813		0.813		0.813		0.813	0.0268	0.5	0.5	0.5	0			27288	31429	RR	########		HELSTF Ph	7
6102404	106714	HLSF-0085	soil	########	17:10:00	########	10:30:00		FOC	ASTM D 2	%	1	no	FOC	N/A		1.82		1.82		1.82		1.82					0			27510	31591	SM	########		HELSTF Ph	7
6102404	106714	HLSF-0085	soil	########	17:10:00	########	10:30:00		K, Total	S 6010B	mg/Kg	1	no	Total Pota	9/7/7440		430		430		430		430	0.291	50	50	50	0			27288	31440	TP	########		HELSTF Ph	7
6102404	106714	HLSF-0085	soil	########	17:10:00	########	10:30:00		Na, Total	S 6010B	mg/Kg	1	no	Total Sodi	7440-23-5		998		998		998		998	0.082	50	50	50	0			27288	31440	TP	########		HELSTF Ph	7
6102404	106714	HLSF-0085	soil	########	17:10:00	########	10:30:00		Nitrate an	E 353.3	mg/Kg	500	no	Nitrate and Nitrite as N			157		157		157		157	0.0155	0.1	0.1	0.1	0			27539	31625	WB	########		HELSTF Ph	7
6102404	106714	HLSF-0085	soil	########	17:10:00	########	10:30:00		P, Total	S 6010B	mg/Kg	1	no	Total Phos	7723-14-0		35.7		35.7		35.7		35.7	0.223	2	2	2	0			27288	31429	RR	########		HELSTF Ph	7
6102404	106714	HLSF-0085	soil	########	17:10:00	########	10:30:00		Total 8 Me	S 6010B	mg/Kg	1	no	Total Silver		<	0.00444	<	0.05	<	0.05	<	0.05	0.00444	0.05	0.05	0.05	0			27288	31429	RR	########		HELSTF Ph	7
6102404	106714	HLSF-0085	soil	########	17:10:00	########	10:30:00		Total 8 Me	S 6010B	mg/Kg	1	no	Total Arsenic		<	0.228	<	2	<	2	<	2	0.228	2	2	2	0			27288	31429	RR	########		HELSTF Ph	7
6102404	106714	HLSF-0085	soil	########	17:10:00	########	10:30:00		Total 8 Me	S 6010B	mg/Kg	1	no	Total Barium			18.9		18.9		18.9		18.9	0.0601	1	1	1	0			27288	31429	RR	########		HELSTF Ph	7
6102404	106714	HLSF-0085	soil	########	17:10:00	########	10:30:00		Total 8 Me	S 6010B	mg/Kg	1	no	Total Cadmium		<	0.00794	<	0.1	<	0.1	<	0.1	0.00794	0.1	0.1	0.1	0			27288	31429	RR	########		HELSTF Ph	7
6102404	106714	HLSF-0085	soil	########	17:10:00	########	10:30:00		Total 8 Me	S 6010B	mg/Kg	1	no	Total Chromium			1.48		1.48		1.48		1.48	0.0125	0.5	0.5	0.5	0			27288	31429	RR	########		HELSTF Ph	7
6102404	106714	HLSF-0085	soil	########	17:10:00	########	10:30:00		Total 8 Me	S 7471A	mg/Kg	1	no	Total Mercury		<	0.00299	<	0.04	<	0.04	<	0.04	0.00299	0.04	0.04	0.04	0			27351	31411	TP	########		HELSTF Ph	7
6102404	106714	HLSF-0085	soil	########	17:10:00	########	10:30:00		Total 8 Me	S 6010B	mg/Kg	1	no	Total Lead			1.44		1.44		1.44		1.44	0.367	1	1	1	0			27288	31429	RR	########		HELSTF Ph	7
6102404	106714	HLSF-0085	soil	########	17:10:00	########	10:30:00		Total 8 Me	S 6010B	mg/Kg	1	no	Total Selenium		<	0.0767	<	1	<	1	<	1	0.0767	1	1	1	0			27288	31429	RR	########		HELSTF Ph	7
6102404	106714	HLSF-0085	soil	########	17:10:00	########	10:30:00		Zn, Total	S 6010B	mg/Kg	1	no	Total Zinc	7440-66-6		2.87		2.87		2.87		2.87	0.124	2	2	2	0			27288	31429	RR	########		HELSTF Ph	7
6102404	106715	HLSF-0085	soil	########	17:10:00	########	10:30:00		Chromium	SM 3500-C	mg/Kg	1	no	Hexavalen	7440-47-3	<	2.32	<	5	<	5	<	5	2.32	5	5	5	0			27523	31611	WB	########		HELSTF Ph	7
6102404	106715	HLSF-0085	soil	########	17:10:00	########	10:30:00		Cu, Total	S 6010B	mg/Kg	1	no	Total Copp	7440-50-8		0.793		0.793		0.793		0.793	0.0268	0.5	0.5	0.5	0			27288	31429	RR	########		HELSTF Ph	7
6102404	106715	HLSF-0085	soil	########	17:10:00	########	10:30:00		FOC	ASTM D 2	%	1	no	FOC	N/A		2.77		2.77		2.77		2.77					0			27510	31591	SM	########		HELSTF Ph	7
6102404	106715	HLSF-0085	soil	########	17:10:00	########	10:30:00		K, Total	S 6010B	mg/Kg	1	no	Total Pota	9/7/7440		447		447		447		447	0.291	50	50	50	0			27288	31440	TP	########		HELSTF Ph	7
6102404	106715	HLSF-0085	soil	########	17:10:00	########	10:30:00		Na, Total	S 6010B	mg/Kg	1	no	Total Sodi	7440-23-5		1080		1080		1080		1080	0.082	50	50	50	0			27288	31440	TP	########		HELSTF Ph	7
6102404	106715	HLSF-0085	soil	########	17:10:00	########	10:30:00		Nitrate an	E 353.3	mg/Kg	500	no	Nitrate and Nitrite as N			93.4		93.4		93.4		93.4	0.0155	0.1	0.1	0.1	0			27541	31620	JS	########		HELSTF Ph	7
6102404	106715	HLSF-0085	soil	########	17:10:00	########	10:30:00		P, Total	S 6010B	mg/Kg	1	no	Total Phos	7723-14-0		36		36		36		36	0.223	2	2	2	0			27288	31429	RR	########		HELSTF Ph	7
6102404	106715	HLSF-0085	soil	########	17:10:00	########	10:30:00		Total 8 Me	S 6010B	mg/Kg	1	no	Total Silver		<	0.00444	<	0.05	<	0.05	<	0.05	0.00444	0.05	0.05	0.05	0			27288	31429	RR	########		HELSTF Ph	7
6102404	106715	HLSF-0085	soil	########	17:10:00	########	10:30:00		Total 8 Me	S 6010B	mg/Kg	1	no	Total Arsenic		<	0.228	<	2	<	2	<	2	0.228	2	2	2	0			27288	31429	RR	########		HELSTF Ph	7
6102404	106715	HLSF-0085	soil	########	17:10:00	########	10:30:00		Total 8 Me	S 6010B	mg/Kg	1	no	Total Barium			18.7		18.7		18.7		18.7	0.0601	1	1	1	0			27288	31429	RR	########		HELSTF Ph	7
6102404	106715	HLSF-0085	soil	########	17:10:00	########	10:30:00		Total 8 Me	S 6010B	mg/Kg	1	no	Total Cadmium		<	0.00794	<	0.1	<	0.1	<	0.1	0.00794	0.1	0.1	0.1	0			27288	31429	RR	########		HELSTF Ph	7
6102404	106715	HLSF-0085	soil	########	17:10:00	########	10:30:00		Total 8 Me	S 6010B	mg/Kg	1	no	Total Chromium			1.42		1.42		1.42		1.42	0.0125	0.5	0.5	0.5	0			27288	31429	RR	########		HELSTF Ph	7
6102404	106715	HLSF-0085	soil	########	17:10:00	########	10:30:00		Total 8 Me	S 7471A	mg/Kg	1	no	Total Mercury		<	0.00299	<	0.04	<	0.04	<	0.04	0.00299	0.04	0.04	0.04	0			27351	31411	TP	########		HELSTF Ph	7
6102404	106715	HLSF-0085	soil	########	17:10:00	########	10:30:00		Total 8 Me	S 6010B	mg/Kg	1	no	Total Lead			1.61		1.61		1.61		1.61	0.367	1	1	1	0			27288	31429	RR	########		HELSTF Ph	7
6102404	106715	HLSF-0085	soil	########	17:10:00	########	10:30:00		Total 8 Me	S 6010B	mg/Kg	1	no	Total Selenium		<	0.0767	<	1	<	1	<	1	0.0767	1	1	1	0			27288	31429	RR	########		HELSTF Ph	7
6102404	106715	HLSF-0085	soil	########	17:10:00	########	10:30:00		Zn, Total	S 6010B	mg/Kg	1	no	Total Zinc	7440-66-6		2.79		2.79		2.79		2.79	0.124	2	2	2	0			27288	31429	RR	########		HELSTF Ph	7
6102404	106716	HLSF-0085	soil	########	17:10:00	########	11:00:00		Chromium	SM 3500-C	mg/Kg	1	no	Hexavalen	7440-47-3	<	2.32	<	5	<	5	<	5	2.32	5	5	5	0			27523	31611	WB	########		HELSTF Ph	7
6102404	106716	HLSF-0085	soil	########	17:10:00	########	11:00:00		Cu, Total	S 6010B	mg/Kg	1	no	Total Copp	7440-50-8		4.86		4.86		4.86		4.86	0.0268	0.5	0.5	0.5	0			27288	31429	RR	########		HELSTF Ph	7
6102404	106716	HLSF-0085	soil	########	17:10:00	########	11:00:00		FOC	ASTM D 2	%	1	no	FOC	N/A		3.48		3.48		3.48		3.48					0			27510	31591	SM	########		HELSTF Ph	7
6102404	106716	HLSF-0085	soil	########	17:10:00	########	11:00:00		K, Total	S 6010B	mg/Kg	1	no	Total Pota	9/7/7440		2240		2240		2240		2240	0.291	50	50	50	0			27288	31440	TP	########		HELSTF Ph	7
6102404	106716	HLSF-0085	soil	########	17:10:00	########	11:00:00		Na, Total	S 6010B	mg/Kg	1	no	Total Sodi	7440-23-5		2310		2310		2310		2310	0.082	50	50	50	0			27288	31440	TP	########		HELSTF Ph	7
6102404	106716	HLSF-0085	soil	########	17:10:00	########	11:00:00		Nitrate an	E 353.3	mg/Kg	1000	no	Nitrate and Nitrite as N			207		207		207		207	0.0155	0.1	0.1	0.1	0			27541	31620	JS	########		HELSTF Ph	7
6102404	106716	HLSF-0085	soil	########	17:10:00	########	11:00:00		P, Total	S 6010B	mg/Kg	1	no	Total Phos	7723-14-0		96.7		96.7		96.7		96.7	0.223	2	2	2	0			27288	31429	RR	########		HELSTF Ph	7
6102404	106716	HLSF-0085	soil	########	17:10:00	########	11:00:00		Total 8 Me	S 6010B	mg/Kg	1	no	Total Silver		<	0.00444	<	0.05	<	0.05	<	0.05	0.00444	0.05	0.05	0.05	0			27288	31429	RR	########		HELSTF Ph	7
6102404	106716	HLSF-0085	soil	########	17:10:00	########	11:00:00		Total 8 Me	S 6010B	mg/Kg	1	no	Total Arsenic			5.3		5.3		5.3		5.3	0.228	2	2	2	0			27288	31429	RR	########		HELSTF Ph	7
6102404	106716	HLSF-0085	soil	########	17:10:00	########	11:00:00		Total 8 Me	S 6010B	mg/Kg	1	no	Total Barium			53.7		53.7		53.7		53.7	0.0601	1	1	1	0			27288	31429	RR	########		HELSTF Ph	7
6102404	106716	HLSF-0085	soil	########	17:10:00	########	11:00:00		Total 8 Me	S 6010B	mg/Kg	1	no	Total Cadmium		<	0.00794	<	0.1	<	0.1	<	0.1	0.00794	0.1	0.1	0.1	0			27288	31429	RR	########		HELSTF Ph	7
6102404	106716	HLSF-0085	soil	########	17:10:00	########	11:00:00		Total 8 Me	S 6010B	mg/Kg	1	no	Total Chromium			7.36		7.36		7.36		7.36	0.0125	0.5	0.5	0.5	0			27288	31429	RR	########		HELSTF Ph	7
6102404	106716	HLSF-0085	soil	########	17:10:00	########	11:00:00		Total 8 Me	S 7471A	mg/Kg	1	no	Total Mercury		<	0.00299	<	0.04	<	0.04	<	0.04	0.00299	0.04	0.04	0.04	0			27351	31411	TP	########		HELSTF Ph	7
6102404	106716	HLSF-0085	soil	########	17:10:00	########	11:00:00		Total 8 Me	S 6010B	mg/Kg	1	no	Total Lead			12.9		12.9		12.9		12.9	0.367	1	1	1	0			27288	31429	RR	########		HELSTF Ph	7
6102404	106716	HLSF-0085	soil	########	17:10:00	########	11:00:00		Total 8 Me	S 6010B	mg/Kg	1	no	Total Selenium		<	0.0767	<	1	<	1	<	1	0.0767	1	1	1	0			27288	31429	RR	########		HELSTF Ph	7
6102404	106716	HLSF-0085	soil	########	17:10:00	########	11:00:00		Zn, Total	S 6010B	mg/Kg	1	no	Total Zinc	7440-66-6		15		15		15		15	0.124	2	2	2	0			27288	31429	RR	########		HELSTF Ph	7
6102404	106717	HLSF-0085	soil	########	17:10:00	########	11:25:00		Chromium	SM 3500-C	mg/Kg	1	no	Hexavalen	7440-47-3	<	2.32	<	5	<	5	<	5	2.32	5	5	5	0			27523	31611	WB	########		HELSTF Ph	7
6102404	106717	HLSF-0085	soil	########	17:10:00	########	11:25:00		Cu, Total	S 6010B	mg/Kg	1	no	Total Copp	7440-50-8		7.22		7.22		7.22		7.22	0.0268	0.5	0.5	0.5	0			27288	31429	RR	########		HELSTF Ph	7
6102404	106717	HLSF-0085	soil	########	17:10:00	########	11:25:00		FOC	ASTM D 2	%	1	no	FOC	N/A		2.3		2.3		2.3		2.3					0			27510	31591	SM	########		HELSTF Ph	7
6102404	106717	HLSF-0085	soil	########	17:10:00	########	11:25:00		K, Total	S 6010B	mg/Kg	1	no	Total Pota	9/7/7440		1920		1920		1920		1920	0.291	50	50	50	0			27288	31440	TP	########		HELSTF Ph	7
6102404	106717	HLSF-0085	soil	########	17:10:00	########	11:25:00		Na, Total	S 6010B	mg/Kg	1	no	Total Sodi	7440-23-5		1690		1690		1690		1690	0.082	50	50	50	0			27288	31440	TP	########		HELSTF Ph	7
6102404	106717	HLSF-0085	soil	########	17:10:00	########	11:25:00		Nitrate an	E 353.3	mg/Kg	500	no	Nitrate and Nitrite as N			90.3		90.3		90.3		90.3	0.0155	0.1	0.1	0.1	0			27541	31620	JS	########		HELSTF Ph	7
6102404	106717	HLSF-0085	soil	########	17:10:00	########	11:25:00		P, Total	S 6010B	mg/Kg	1	no	Total Phos	7723-14-0		220		220		220		220	0.223	2	2	2	0			27288	31429	RR	########		HELSTF Ph	7
6102404	106717	HLSF-0085	soil	########	17:10:00	########	11:25:00		Total 8 Me	S 6010B	mg/Kg	1	no	Total Silver		<	0.00444	<	0.05	<	0.05	<	0.05	0.00444	0.05	0.05	0.05	0			27288	31429	RR	########		HELSTF Ph	7
6102404	106717	HLSF-0085	soil	########	17:10:00	########	11:25:00		Total 8 Me	S 6010B	mg/Kg	1	no	Total Arsenic			2.29		2.29		2.29		2.29	0.228	2	2	2	0			27288	31429	RR	########		HELSTF Ph	7
6102404	106717	HLSF-0085	soil	########	17:10:00	########	11:25:00		Total 8 Me	S 6010B	mg/Kg	1	no	Total Barium			12.5		12.5		12.5		12.5	0.0601	1	1	1	0			27288	31429	RR	########		HELSTF Ph	7
6102404	106717	HLSF-0085	soil	########	17:10:00	########	11:25:00		Total 8 Me	S 6010B	mg/Kg	1	no	Total Cadmium		<	0.00794	<	0.1	<	0.1	<	0.1	0.00794	0.1	0.1	0.1	0			27288	31429	RR	########		HELSTF Ph	7
6102404	106717	HLSF-0085	soil	########	17:10:00	########	11:25:00		Total 8 Me	S 6010B	mg/Kg	1	no	Total Chromium			7.47		7.47		7.47		7.47	0.0125	0.5	0.5	0.5	0			27288	31429	RR	########		HELSTF Ph	7
6102404	106717	HLSF-0085	soil	########	17:10:00	########	11:25:00		Total 8 Me	S 7471A	mg/Kg	1	no	Total Mercury			0.00932	<	0.04	<	0.04	<	0.04	0.00299	0.04	0.04	0.04	0			27351	31411	TP	########		HELSTF Ph	7
6102404	106717	HLSF-0085	soil	########	17:10:00	########	11:25:00		Total 8 Me	S 6010B	mg/Kg	1	no	Total Lead			14.9		14.9		14.9		14.9	0.367	1	1	1	0			27288	31429	RR	########		HELSTF Ph	7
6102404	106717	HLSF-0085	soil	########	17:10:00	########	11:25:00		Total 8 Me	S 6010B	mg/Kg	1	no	Total Selenium		<	0.0767	<	1	<	1	<	1	0.0767	1	1	1	0			27288	31429	RR	########		HELSTF Ph	7
6102404	106717	HLSF-0085	soil	########	17:10:00	########	11:25:00		Zn, Total	S 6010B	mg/Kg	1	no	Total Zinc	7440-66-6		23.5		23.5		23.5		23.5	0.124	2	2	2	0			27288	31429	RR	########		HELSTF Ph	7
6102404	106718	HLSF-0085	soil	########	17:10:00	########	11:50:00		Chromium	SM 3500-C	mg/Kg	1	no	Hexavalen	7440-47-3	<	2.32	<	5	<	5	<	5	2.32	5	5	5	0			27523	31611	WB	########		HELSTF Ph	7
6102404	106718	HLSF-0085	soil	########	17:10:00	########	11:50:00		Cu, Total	S 6010B	mg/Kg	1	no	Total Copp	7440-50-8		2.6		2.6		2.6		2.6	0.0268	0.5	0.5	0.5	0			27288	31429	RR	########		HELSTF Ph	7
6102404	106718	HLSF-0085	soil	########	17:10:00	########	11:50:00		FOC	ASTM D 2	%	1	no	FOC	N/A		0.45		0.45		0.45		0.45					0			27510	31591	SM	########		HELSTF Ph	7
6102404	106718	HLSF-0085	soil	########	17:10:00	########	11:50:00		K, Total	S 6010B	mg/Kg	1	no	Total Pota	9/7/7440		799		799		799		799	0.291	50	50	50	0			27288	31440	TP	########		HELSTF Ph	7
6102404	106718	HLSF-0085	soil	########	17:10:00	########	11:50:00		Na, Total	S 6010B	mg/Kg	1	no	Total Sodi	7440-23-5		739		739		739		739	0.082	50	50	50	0			27288	31440	TP	########		HELSTF Ph	7
6102404	106718	HLSF-0085	soil	########	17:10:00	########	11:50:00		Nitrate an	E 353.3	mg/Kg	100	no	Nitrate and Nitrite as N			19.5		19.5		19.5		19.5	0.0155	0.1	0.1	0.1	0			27541	31620	JS	########		HELSTF Ph	7
6102404	106718	HLSF-0085	soil	########	17:10:00	########	11:50:00		P, Total	S 6010B	mg/Kg	1	no	Total Phos	7723-14-0		137		137		137		137	0.223	2	2	2	0			27288	31429	RR	########		HELSTF Ph	7
6102404	106718	HLSF-0085	soil	########	17:10:00	########	11:50:00		Total 8 Me	S 6010B	mg/Kg	1	no	Total Silver		<	0.00444	<	0.05	<	0.05	<	0.05	0.00444	0.05	0.05	0.05	0			27288	31429	RR	########		HELSTF Ph	7
6102404	106718	HLSF-0085	soil	########	17:10:00	########	11:50:00		Total 8 Me	S 6010B	mg/Kg	1	no	Total Arsenic		<	0.228	<	2	<	2	<	2	0.228	2	2	2	0			27288	31429	RR	########		HELSTF Ph	7
6102404	106718	HLSF-0085	soil	########	17:10:00	########	11:50:00		Total 8 Me	S 6010B	mg/Kg	1	no	Total Barium			29		29		29		29	0.0601	1	1	1	0			27288	31429	RR	########		HELSTF Ph	7
6102404	106718	HLSF-0085	soil	########	17:10:00	########	11:50:00		Total 8 Me	S 6010B	mg/Kg	1	no	Total Cadmium		<	0.00794	<	0.1	<	0.1	<	0.1	0.00794	0.1	0.1	0.1	0			27288	31429	RR	########		HELSTF Ph	7
6102404	106718	HLSF-0085	soil	########	17:10:00	########	11:50:00		Total 8 Me	S 6010B	mg/Kg	1	no	Total Chromium			4.41		4.41		4.41		4.41	0.0125	0.5	0.5	0.5	0			27288	31429	RR	########		HELSTF Ph	7
6102404	106718	HLSF-0085	soil	########	17:10:00	########	11:50:00		Total 8 Me	S 7471A	mg/Kg	1	no	Total Mercury		<	0.00299	<	0.04	<	0.04	<	0.04	0.00299	0.04	0.04	0.04	0			27351	31411	TP	########		HELSTF Ph	7
6102404	106718	HLSF-0085	soil	########	17:10:00	########	11:50:00		Total 8 Me	S 6010B	mg/Kg	1	no	Total Lead			7.54		7.54		7.54		7.54	0.367	1	1	1	0			27288	31429	RR	########		HELSTF Ph	7
6102404	106718	HLSF-0085	soil	########	17:10:00	########	11:50:00		Total 8 Me	S 6010B	mg/Kg	1	no	Total Selenium		<	0.0767	<	1	<	1	<	1	0.0767	1	1	1	0			27288	31429	RR	########		HELSTF Ph	7
6102404	106718	HLSF-0085	soil	########	17:10:00	########	11:50:00		Zn, Total	S 6010B	mg/Kg	1	no	Total Zinc	7440-66-6		14.1		14.1		14.1		14.1	0.124	2	2	2	0			27288	31429	RR	########		HELSTF Ph	7
6102404	106719	HLSF-0085	soil	########	17:10:00	########	12:20:00		Chromium	SM 3500-C	mg/Kg	1	no	Hexavalen	7440-47-3	<	2.32	<	5	<	5	<	5	2.32	5	5	5	0			27523	31611	WB	########		HELSTF Ph	7
6102404	106719	HLSF-0085	soil	########	17:10:00	########	12:20:00		Cu, Total	S 6010B	mg/Kg	1	no	Total Copp	7440-50-8		9.06		9.06		9.06		9.06	0.0268	0.5	0.5	0.5	0			27288	31429	RR	########		HELSTF Ph	7
6102404	106719	HLSF-0085	soil	########	17:10:00	########	12:20:00		FOC	ASTM D 2	%	1	no	FOC	N/A		1.02		1.02		1.02		1.02					0			27510	31591	SM	########		HELSTF Ph	7
6102404	106719	HLSF-0085	soil	########	17:10:00	########	12:20:00		K, Total	S 6010B	mg/Kg	1	no	Total Pota	9/7/7440		1340		1340		1340		1340	0.291	50	50	50	0			27288	31440	TP	########		HELSTF Ph	7
6102404	106719	HLSF-0085	soil	########	17:10:00	########	12:20:00		Na, Total	S 6010B	mg/Kg	1	no	Total Sodi	7440-23-5		1330		1330		1330		1330	0.082	50	50	50	0			27288	31440	TP	########		HELSTF Ph	7

6102404	106719	HLSF-0085	soil	########	17:10:00	########	12:20:00	Nitrate an	E 353.3	mg/Kg	25	no	Nitrate and Nitrite as N			6.64		6.64		6.64		6.64	0.0155	0.1	0.1	0.1	0	27541	31620	JS	########	HELSTF Ph	7
6102404	106719	HLSF-0085	soil	########	17:10:00	########	12:20:00	P, Total	S 6010B	mg/Kg	1	no	Total Phos	7723-14-0		245		245		245		245	0.223	2	2	2	0	27288	31429	RR	########	HELSTF Ph	7
6102404	106719	HLSF-0085	soil	########	17:10:00	########	12:20:00	Total 8 Me	S 6010B	mg/Kg	1	no	Total Silver		<	0.00444	<	0.05	<	0.05	<	0.05	0.00444	0.05	0.05	0.05	0	27288	31429	RR	########	HELSTF Ph	7
6102404	106719	HLSF-0085	soil	########	17:10:00	########	12:20:00	Total 8 Me	S 6010B	mg/Kg	1	no	Total Arsenic			3.49		3.49		3.49		3.49	0.228	2	2	2	0	27288	31429	RR	########	HELSTF Ph	7
6102404	106719	HLSF-0085	soil	########	17:10:00	########	12:20:00	Total 8 Me	S 6010B	mg/Kg	1	no	Total Barium			47.8		47.8		47.8		47.8	0.0601	1	1	1	0	27288	31429	RR	########	HELSTF Ph	7
6102404	106719	HLSF-0085	soil	########	17:10:00	########	12:20:00	Total 8 Me	S 6010B	mg/Kg	1	no	Total Cadmium		<	0.00794	<	0.1	<	0.1	<	0.1	0.00794	0.1	0.1	0.1	0	27288	31429	RR	########	HELSTF Ph	7
6102404	106719	HLSF-0085	soil	########	17:10:00	########	12:20:00	Total 8 Me	S 6010B	mg/Kg	1	no	Total Chromium			6.92		6.92		6.92		6.92	0.0125	0.5	0.5	0.5	0	27288	31429	RR	########	HELSTF Ph	7
6102404	106719	HLSF-0085	soil	########	17:10:00	########	12:20:00	Total 8 Me	S 7471A	mg/Kg	1	no	Total Mercury			0.00651	<	0.04	<	0.04	<	0.04	0.00299	0.04	0.04	0.04	0	27351	31411	TP	########	HELSTF Ph	7
6102404	106719	HLSF-0085	soil	########	17:10:00	########	12:20:00	Total 8 Me	S 6010B	mg/Kg	1	no	Total Lead			15.2		15.2		15.2		15.2	0.367	1	1	1	0	27288	31429	RR	########	HELSTF Ph	7
6102404	106719	HLSF-0085	soil	########	17:10:00	########	12:20:00	Total 8 Me	S 6010B	mg/Kg	1	no	Total Selenium		<	0.0767	<	1	<	1	<	1	0.0767	1	1	1	0	27288	31429	RR	########	HELSTF Ph	7
6102404	106719	HLSF-0085	soil	########	17:10:00	########	12:20:00	Zn, Total	S 6010B	mg/Kg	1	no	Total Zinc	7440-66-6		26.4		26.4		26.4		26.4	0.124	2	2	2	0	27288	31429	RR	########	HELSTF Ph	7
6102404	106720	HLSF-0085	soil	########	17:10:00	########	14:00:00	Chromium	SM 3500-C	mg/Kg	1	no	Hexavalen	7440-47-3	<	2.32	<	5	<	5	<	5	2.32	5	5	5	0	27523	31611	WB	########	HELSTF Ph	7
6102404	106720	HLSF-0085	soil	########	17:10:00	########	14:00:00	Cu, Total	S 6010B	mg/Kg	1	no	Total Copp	7440-50-8		2.17		2.17		2.17		2.17	0.0268	0.5	0.5	0.5	0	27288	31429	RR	########	HELSTF Ph	7
6102404	106720	HLSF-0085	soil	########	17:10:00	########	14:00:00	FOC	ASTM D 29	%	1	no	FOC	N/A		5.15		5.15		5.15		5.15					0	27641	31734	SM	########	HELSTF Ph	7
6102404	106720	HLSF-0085	soil	########	17:10:00	########	14:00:00	K, Total	S 6010B	mg/Kg	1	no	Total Pota	9/7/7440		227		227		227		227	0.291	50	50	50	0	27288	31440	TP	########	HELSTF Ph	7
6102404	106720	HLSF-0085	soil	########	17:10:00	########	14:00:00	Na, Total	S 6010B	mg/Kg	1	no	Total Sodi	7440-23-5		381		381		381		381	0.082	50	50	50	0	27288	31440	TP	########	HELSTF Ph	7
6102404	106720	HLSF-0085	soil	########	17:10:00	########	14:00:00	Nitrate an	E 353.3	mg/Kg	10	no	Nitrate and Nitrite as N			1.28		1.28		1.28		1.28	0.0155	0.1	0.1	0.1	0	27541	31620	JS	########	HELSTF Ph	7
6102404	106720	HLSF-0085	soil	########	17:10:00	########	14:00:00	P, Total	S 6010B	mg/Kg	1	no	Total Phos	7723-14-0		54.8		54.8		54.8		54.8	0.223	2	2	2	0	27288	31429	RR	########	HELSTF Ph	7
6102404	106720	HLSF-0085	soil	########	17:10:00	########	14:00:00	Total 8 Me	S 6010B	mg/Kg	1	no	Total Silver		<	0.00444	<	0.05	<	0.05	<	0.05	0.00444	0.05	0.05	0.05	0	27288	31429	RR	########	HELSTF Ph	7
6102404	106720	HLSF-0085	soil	########	17:10:00	########	14:00:00	Total 8 Me	S 6010B	mg/Kg	1	no	Total Arsenic		<	0.228	<	2	<	2	<	2	0.228	2	2	2	0	27288	31429	RR	########	HELSTF Ph	7
6102404	106720	HLSF-0085	soil	########	17:10:00	########	14:00:00	Total 8 Me	S 6010B	mg/Kg	1	no	Total Barium			14.1		14.1		14.1		14.1	0.0601	1	1	1	0	27288	31429	RR	########	HELSTF Ph	7
6102404	106720	HLSF-0085	soil	########	17:10:00	########	14:00:00	Total 8 Me	S 6010B	mg/Kg	1	no	Total Cadmium		<	0.00794	<	0.1	<	0.1	<	0.1	0.00794	0.1	0.1	0.1	0	27288	31429	RR	########	HELSTF Ph	7
6102404	106720	HLSF-0085	soil	########	17:10:00	########	14:00:00	Total 8 Me	S 6010B	mg/Kg	1	no	Total Chromium			0.858		0.858		0.858		0.858	0.0125	0.5	0.5	0.5	0	27288	31429	RR	########	HELSTF Ph	7
6102404	106720	HLSF-0085	soil	########	17:10:00	########	14:00:00	Total 8 Me	S 7471A	mg/Kg	1	no	Total Mercury			0.00984	<	0.04	<	0.04	<	0.04	0.00299	0.04	0.04	0.04	0	27351	31411	TP	########	HELSTF Ph	7
6102404	106720	HLSF-0085	soil	########	17:10:00	########	14:00:00	Total 8 Me	S 6010B	mg/Kg	1	no	Total Lead			0.935	<	1	<	1	<	1	0.367	1	1	1	0	27288	31429	RR	########	HELSTF Ph	7
6102404	106720	HLSF-0085	soil	########	17:10:00	########	14:00:00	Total 8 Me	S 6010B	mg/Kg	1	no	Total Selenium		<	0.0767	<	1	<	1	<	1	0.0767	1	1	1	0	27288	31429	RR	########	HELSTF Ph	7
6102404	106720	HLSF-0085	soil	########	17:10:00	########	14:00:00	Zn, Total	S 6010B	mg/Kg	1	no	Total Zinc	7440-66-6		2.82		2.82		2.82		2.82	0.124	2	2	2	0	27288	31429	RR	########	HELSTF Ph	7
6102404	106721	HLSF-0085	soil	########	17:10:00	########	14:30:00	Chromium	SM 3500-C	mg/Kg	1	no	Hexavalen	7440-47-3	<	2.32	<	5	<	5	<	5	2.32	5	5	5	0	27523	31611	WB	########	HELSTF Ph	7
6102404	106721	HLSF-0085	soil	########	17:10:00	########	14:30:00	Cu, Total	S 6010B	mg/Kg	1	no	Total Copp	7440-50-8		0.697		0.697		0.697		0.697	0.0268	0.5	0.5	0.5	0	27288	31429	RR	########	HELSTF Ph	7
6102404	106721	HLSF-0085	soil	########	17:10:00	########	14:30:00	FOC	ASTM D 29	%	1	no	FOC	N/A		2.24		2.24		2.24		2.24					0	27510	31591	SM	########	HELSTF Ph	7
6102404	106721	HLSF-0085	soil	########	17:10:00	########	14:30:00	K, Total	S 6010B	mg/Kg	1	no	Total Pota	9/7/7440		376		376		376		376	0.291	50	50	50	0	27288	31440	TP	########	HELSTF Ph	7
6102404	106721	HLSF-0085	soil	########	17:10:00	########	14:30:00	Na, Total	S 6010B	mg/Kg	1	no	Total Sodi	7440-23-5		652		652		652		652	0.082	50	50	50	0	27288	31440	TP	########	HELSTF Ph	7
6102404	106721	HLSF-0085	soil	########	17:10:00	########	14:30:00	Nitrate an	E 353.3	mg/Kg	50	no	Nitrate and Nitrite as N			8.09		8.09		8.09		8.09	0.0155	0.1	0.1	0.1	0	27541	31620	JS	########	HELSTF Ph	7
6102404	106721	HLSF-0085	soil	########	17:10:00	########	14:30:00	P, Total	S 6010B	mg/Kg	1	no	Total Phos	7723-14-0		29.7		29.7		29.7		29.7	0.223	2	2	2	0	27288	31429	RR	########	HELSTF Ph	7
6102404	106721	HLSF-0085	soil	########	17:10:00	########	14:30:00	Total 8 Me	S 6010B	mg/Kg	1	no	Total Silver		<	0.00444	<	0.05	<	0.05	<	0.05	0.00444	0.05	0.05	0.05	0	27288	31429	RR	########	HELSTF Ph	7
6102404	106721	HLSF-0085	soil	########	17:10:00	########	14:30:00	Total 8 Me	S 6010B	mg/Kg	1	no	Total Arsenic		<	0.228	<	2	<	2	<	2	0.228	2	2	2	0	27288	31429	RR	########	HELSTF Ph	7
6102404	106721	HLSF-0085	soil	########	17:10:00	########	14:30:00	Total 8 Me	S 6010B	mg/Kg	1	no	Total Barium			18.4		18.4		18.4		18.4	0.0601	1	1	1	0	27288	31429	RR	########	HELSTF Ph	7
6102404	106721	HLSF-0085	soil	########	17:10:00	########	14:30:00	Total 8 Me	S 6010B	mg/Kg	1	no	Total Cadmium		<	0.00794	<	0.1	<	0.1	<	0.1	0.00794	0.1	0.1	0.1	0	27288	31429	RR	########	HELSTF Ph	7
6102404	106721	HLSF-0085	soil	########	17:10:00	########	14:30:00	Total 8 Me	S 6010B	mg/Kg	1	no	Total Chromium			1.31		1.31		1.31		1.31	0.0125	0.5	0.5	0.5	0	27288	31429	RR	########	HELSTF Ph	7
6102404	106721	HLSF-0085	soil	########	17:10:00	########	14:30:00	Total 8 Me	S 7471A	mg/Kg	1	no	Total Mercury			0.00424	<	0.04	<	0.04	<	0.04	0.00299	0.04	0.04	0.04	0	27351	31412	TP	########	HELSTF Ph	7
6102404	106721	HLSF-0085	soil	########	17:10:00	########	14:30:00	Total 8 Me	S 6010B	mg/Kg	1	no	Total Lead		<	0.367	<	1	<	1	<	1	0.367	1	1	1	0	27288	31429	RR	########	HELSTF Ph	7
6102404	106721	HLSF-0085	soil	########	17:10:00	########	14:30:00	Total 8 Me	S 6010B	mg/Kg	1	no	Total Selenium		<	0.0767	<	1	<	1	<	1	0.0767	1	1	1	0	27288	31429	RR	########	HELSTF Ph	7
6102404	106721	HLSF-0085	soil	########	17:10:00	########	14:30:00	Zn, Total	S 6010B	mg/Kg	1	no	Total Zinc	7440-66-6		2.76		2.76		2.76		2.76	0.124	2	2	2	0	27288	31429	RR	########	HELSTF Ph	7
6102404	106722	HLSF-0085	soil	########	17:10:00	########	14:55:00	Chromium	SM 3500-C	mg/Kg	1	no	Hexavalen	7440-47-3	<	2.32	<	5	<	5	<	5	2.32	5	5	5	0	27523	31611	WB	########	HELSTF Ph	7
6102404	106722	HLSF-0085	soil	########	17:10:00	########	14:55:00	Cu, Total	S 6010B	mg/Kg	1	no	Total Copp	7440-50-8		1.2		1.2		1.2		1.2	0.0268	0.5	0.5	0.5	0	27288	31429	RR	########	HELSTF Ph	7
6102404	106722	HLSF-0085	soil	########	17:10:00	########	14:55:00	FOC	ASTM D 29	%	1	no	FOC	N/A		3.12		3.12		3.12		3.12					0	27510	31591	SM	########	HELSTF Ph	7
6102404	106722	HLSF-0085	soil	########	17:10:00	########	14:55:00	K, Total	S 6010B	mg/Kg	1	no	Total Pota	9/7/7440		639		639		639		639	0.291	50	50	50	0	27288	31440	TP	########	HELSTF Ph	7
6102404	106722	HLSF-0085	soil	########	17:10:00	########	14:55:00	Na, Total	S 6010B	mg/Kg	1	no	Total Sodi	7440-23-5		1400		1400		1400		1400	0.082	50	50	50	0	27288	31440	TP	########	HELSTF Ph	7
6102404	106722	HLSF-0085	soil	########	17:10:00	########	14:55:00	Nitrate an	E 353.3	mg/Kg	500	no	Nitrate and Nitrite as N			52.2		52.2		52.2		52.2	0.0155	0.1	0.1	0.1	0	27541	31620	JS	########	HELSTF Ph	7
6102404	106722	HLSF-0085	soil	########	17:10:00	########	14:55:00	P, Total	S 6010B	mg/Kg	1	no	Total Phos	7723-14-0		35.3		35.3		35.3		35.3	0.223	2	2	2	0	27288	31429	RR	########	HELSTF Ph	7
6102404	106722	HLSF-0085	soil	########	17:10:00	########	14:55:00	Total 8 Me	S 6010B	mg/Kg	1	no	Total Silver		<	0.00444	<	0.05	<	0.05	<	0.05	0.00444	0.05	0.05	0.05	0	27288	31429	RR	########	HELSTF Ph	7
6102404	106722	HLSF-0085	soil	########	17:10:00	########	14:55:00	Total 8 Me	S 6010B	mg/Kg	1	no	Total Arsenic		<	0.228	<	2	<	2	<	2	0.228	2	2	2	0	27288	31429	RR	########	HELSTF Ph	7
6102404	106722	HLSF-0085	soil	########	17:10:00	########	14:55:00	Total 8 Me	S 6010B	mg/Kg	1	no	Total Barium			26		26		26		26	0.0601	1	1	1	0	27288	31429	RR	########	HELSTF Ph	7
6102404	106722	HLSF-0085	soil	########	17:10:00	########	14:55:00	Total 8 Me	S 6010B	mg/Kg	1	no	Total Cadmium		<	0.00794	<	0.1	<	0.1	<	0.1	0.00794	0.1	0.1	0.1	0	27288	31429	RR	########	HELSTF Ph	7
6102404	106722	HLSF-0085	soil	########	17:10:00	########	14:55:00	Total 8 Me	S 6010B	mg/Kg	1	no	Total Chromium			1.81		1.81		1.81		1.81	0.0125	0.5	0.5	0.5	0	27288	31429	RR	########	HELSTF Ph	7
6102404	106722	HLSF-0085	soil	########	17:10:00	########	14:55:00	Total 8 Me	S 7471A	mg/Kg	1	no	Total Mercury		<	0.00299	<	0.04	<	0.04	<	0.04	0.00299	0.04	0.04	0.04	0	27351	31411	TP	########	HELSTF Ph	7
6102404	106722	HLSF-0085	soil	########	17:10:00	########	14:55:00	Total 8 Me	S 6010B	mg/Kg	1	no	Total Lead			2.18		2.18		2.18		2.18	0.367	1	1	1	0	27288	31429	RR	########	HELSTF Ph	7
6102404	106722	HLSF-0085	soil	########	17:10:00	########	14:55:00	Total 8 Me	S 6010B	mg/Kg	1	no	Total Selenium		<	0.0767	<	1	<	1	<	1	0.0767	1	1	1	0	27288	31429	RR	########	HELSTF Ph	7
6102404	106722	HLSF-0085	soil	########	17:10:00	########	14:55:00	Zn, Total	S 6010B	mg/Kg	1	no	Total Zinc	7440-66-6		3.77		3.77		3.77		3.77	0.124	2	2	2	0	27288	31429	RR	########	HELSTF Ph	7
6102404	106723	HLSF-0085	soil	########	17:10:00	########	15:20:00	Chromium	SM 3500-C	mg/Kg	1	no	Hexavalen	7440-47-3	<	2.32	<	5	<	5	<	5	2.32	5	5	5	0	27528	31614	WB	########	HELSTF Ph	7
6102404	106723	HLSF-0085	soil	########	17:10:00	########	15:20:00	Cu, Total	S 6010B	mg/Kg	1	no	Total Copp	7440-50-8		1.95		1.95		1.95		1.95	0.0268	0.5	0.5	0.5	0	27345	32009	RR	########	HELSTF Ph	7
6102404	106723	HLSF-0085	soil	########	17:10:00	########	15:20:00	FOC	ASTM D 29	%	1	no	FOC	N/A		2.41		2.41		2.41		2.41					0	27641	31734	SM	########	HELSTF Ph	7
6102404	106723	HLSF-0085	soil	########	17:10:00	########	15:20:00	K, Total	S 6010B	mg/Kg	1	no	Total Pota	9/7/7440		1160		1160		1160		1160	0.291	50	50	50	0	27345	31781	TP	########	HELSTF Ph	7
6102404	106723	HLSF-0085	soil	########	17:10:00	########	15:20:00	Na, Total	S 6010B	mg/Kg	1	no	Total Sodi	7440-23-5		1100		1100		1100		1100	0.082	50	50	50	0	27345	31781	TP	########	HELSTF Ph	7
6102404	106723	HLSF-0085	soil	########	17:10:00	########	15:20:00	Nitrate an	E 353.3	mg/Kg	100	no	Nitrate and Nitrite as N			18.7		18.7		18.7		18.7	0.0155	0.1	0.1	0.1	0	27538	31624	JS	########	HELSTF Ph	7
6102404	106723	HLSF-0085	soil	########	17:10:00	########	15:20:00	P, Total	S 6010B	mg/Kg	1	no	Total Phos	7723-14-0		90		90		90		90	0.223	2	2	2	0	27345	32009	RR	########	HELSTF Ph	7
6102404	106723	HLSF-0085	soil	########	17:10:00	########	15:20:00	Total 8 Me	S 6010B	mg/Kg	1	no	Total Silver		<	0.00444	<	0.05	<	0.05	<	0.05	0.00444	0.05	0.05	0.05	0	27345	32009	RR	########	HELSTF Ph	7
6102404	106723	HLSF-0085	soil	########	17:10:00	########	15:20:00	Total 8 Me	S 6010B	mg/Kg	1	no	Total Arsenic		<	0.228	<	2	<	2	<	2	0.228	2	2	2	0	27345	32009	RR	########	HELSTF Ph	7
6102404	106723	HLSF-0085	soil	########	17:10:00	########	15:20:00	Total 8 Me	S 6010B	mg/Kg	1	no	Total Barium			11.3		11.3		11.3		11.3	0.0601	1	1	1	0	27345	32009	RR	########	HELSTF Ph	7
6102404	106723	HLSF-0085	soil	########	17:10:00	########	15:20:00	Total 8 Me	S 6010B	mg/Kg	1	no	Total Cadmium		<	0.00794	<	0.1	<	0.1	<	0.1	0.00794	0.1	0.1	0.1	0	27345	32009	RR	########	HELSTF Ph	7
6102404	106723	HLSF-0085	soil	########	17:10:00	########	15:20:00	Total 8 Me	S 6010B	mg/Kg	1	no	Total Chromium		<	0.0125	<	0.5	<	0.5	<	0.5	0.0125	0.5	0.5	0.5	0	27345	32009	RR	########	HELSTF Ph	7
6102404	106723	HLSF-0085	soil	########	17:10:00	########	15:20:00	Total 8 Me	S 7471A	mg/Kg	1	no	Total Mercury		<	0.00299	<	0.04	<	0.04	<	0.04	0.00299	0.04	0.04	0.04	0	27351	31411	TP	########	HELSTF Ph	7
6102404	106723	HLSF-0085	soil	########	17:10:00	########	15:20:00	Total 8 Me	S 6010B	mg/Kg	1	no	Total Lead			6.5		6.5		6.5		6.5	0.367	1	1	1	0	27345	32009	RR	########	HELSTF Ph	7
6102404	106723	HLSF-0085	soil	########	17:10:00	########	15:20:00	Total 8 Me	S 6010B	mg/Kg	1	no	Total Selenium		<	0.0767	<	1	<	1	<	1	0.0767	1	1	1	0	27345	32009	RR	########	HELSTF Ph	7
6102404	106723	HLSF-0085	soil	########	17:10:00	########	15:20:00	Zn, Total	S 6010B	mg/Kg	1	no	Total Zinc	7440-66-6		9.61		9.61		9.61		9.61	0.124	2	2	2	0	27345	32009	RR	########	HELSTF Ph	7
6102404	106724	HLSF-0085	soil	########	17:10:00	########	15:55:00	Chromium	SM 3500-C	mg/Kg	1	no	Hexavalen	7440-47-3	<	2.32	<	5	<	5	<	5	2.32	5	5	5	0	27528	31614	WB	########	HELSTF Ph	7
6102404	106724	HLSF-0085	soil	########	17:10:00	########	15:55:00	Cu, Total	S 6010B	mg/Kg	1	no	Total Copp	7440-50-8		5.13		5.13		5.13		5.13	0.0268	0.5	0.5	0.5	0	27345	32009	RR	########	HELSTF Ph	7
6102404	106724	HLSF-0085	soil	########	17:10:00	########	15:55:00	FOC	ASTM D 29	%	1	no	FOC	N/A		1.3		1.3		1.3		1.3					0	27641	31734	SM	########	HELSTF Ph	7
6102404	106724	HLSF-0085	soil	########	17:10:00	########	15:55:00	K, Total	S 6010B	mg/Kg	1	no	Total Pota	9/7/7440		1990		1990		1990		1990	0.291	50	50	50	0	27345	31781	TP	########	HELSTF Ph	7
6102404	106724	HLSF-0085	soil	########	17:10:00	########	15:55:00	Na, Total	S 6010B	mg/Kg	1	no	Total Sodi	7440-23-5		1870		1870		1870		1870	0.082	50	50	50	0	27345	31781	TP	########	HELSTF Ph	7
6102404	106724	HLSF-0085	soil	########	17:10:00	########	15:55:00	Nitrate an	E 353.3	mg/Kg	100	no	Nitrate and Nitrite as N			20.2		20.2		20.2		20.2	0.0155	0.1	0.1	0.1	0	27538	31624	JS	########	HELSTF Ph	7
6102404	106724	HLSF-0085	soil	########	17:10:00	########	15:55:00	P, Total	S 6010B	mg/Kg	1	no	Total Phos	7723-14-0		192		192		192		192	0.223	2	2	2	0	27345	32009	RR	########	HELSTF Ph	7
6102404	106724	HLSF-0085	soil	########	17:10:00	########	15:55:00	Total 8 Me	S 6010B	mg/Kg	1	no	Total Silver		<	0.00444	<	0.05	<	0.05	<	0.05	0.00444	0.05	0.05	0.05	0	27345	32009	RR	########	HELSTF Ph	7
6102404	106724	HLSF-0085	soil	########	17:10:00	########	15:55:00	Total 8 Me	S 6010B	mg/Kg	1	no	Total Arsenic			3.85		3.85		3.85		3.85	0.228	2	2	2	0	27345	32009	RR	########	HELSTF Ph	7
6102404	106724	HLSF-0085	soil	########	17:10:00	########	15:55:00	Total 8 Me	S 6010B	mg/Kg	1	no	Total Barium			38.6		38.6		38.6		38.6	0.0601	1	1	1	0	27345	32009	RR	########	HELSTF Ph	7
6102404	106724	HLSF-0085	soil	########	17:10:00	########	15:55:00	Total 8 Me	S 6010B	mg/Kg	1	no	Total Cadmium		<	0.00794	<	0.1	<	0.1	<	0.1	0.00794	0.1	0.1	0.1	0	27345	32009	RR	########	HELSTF Ph	7
6102404	106724	HLSF-0085	soil	########	17:10:00	########	15:55:00	Total 8 Me	S 6010B	mg/Kg	1	no	Total Chromium			2.85		2.85		2.85		2.85	0.0125	0.5	0.5	0.5	0	27345	32009	RR	########	HELSTF Ph	7
6102404	106724	HLSF-0085	soil	########	17:10:00	########	15:55:00	Total 8 Me	S 7471A	mg/Kg	1	no	Total Mercury			0.00734	<	0.04	<	0.04	<	0.04	0.00299	0.04	0.04	0.04	0	27351	31412	TP	########	HELSTF Ph	7
6102404	106724	HLSF-0085	soil	########	17:10:00	########	15:55:00	Total 8 Me	S 6010B	mg/Kg	1	no	Total Lead			11.9		11.9		11.9		11.9	0.367	1	1	1	0	27345	32009	RR	########	HELSTF Ph	7
6102404	106724	HLSF-0085	soil	########	17:10:00	########	15:55:00	Total 8 Me	S 6010B	mg/Kg	1	no	Total Selenium		<	0.0767	<	1	<	1	<	1	0.0767	1	1	1	0	27345	32009	RR	########	HELSTF Ph	7
6102404	106724	HLSF-0085	soil	########	17:10:00	########	15:55:00	Zn, Total	S 6010B	mg/Kg	1	no	Total Zinc	7440-66-6		21.7		21.7		21.7		21.7	0.124	2	2	2	0	27345	32009	RR	########	HELSTF Ph	7
6102404	106725	HLSF-0085	soil	########	17:10:00	########	16:35:00	Chromium	SM 3500-C	mg/Kg	1	no	Hexavalen	7440-47-3	<	2.32	<	5	<	5	<	5	2.32	5	5	5	0	27528	31614	WB	########	HELSTF Ph	7
6102404	106725	HLSF-0085	soil	########	17:10:00	########	16:35:00	Cu, Total	S 6010B	mg/Kg	1	no	Total Copp	7440-50-8		4.85		4.85		4.85		4.85	0.0268	0.5	0.5	0.5	0	27345	32009	RR	########	HELSTF Ph	7
6102404	106725	HLSF-0085	soil	########	17:10:00	########	16:35:00	FOC	ASTM D 29	%	1	no	FOC	N/A		1.2		1.2		1.2		1.2					0	27510	31591	SM	########	HELSTF Ph	7
6102404	106725	HLSF-0085	soil	########	17:10:00	########	16:35:00	K, Total	S 6010B	mg/Kg	1	no	Total Pota	9/7/7440		1370		1370		1370		1370	0.291	50	50	50	0	27345	31781	TP	########	HELSTF Ph	7
6102404	106725	HLSF-0085	soil	########	17:10:00	########	16:35:00	Na, Total	S 6010B	mg/Kg	1	no	Total Sodi	7440-23-5		1510		1510		1510		1510	0.082	50	50	50	0	27345	31781	TP	########	HELSTF Ph	7
6102404	106725	HLSF-0085	soil	########	17:10:00	########	16:35:00	Nitrate an	E 353.3	mg/Kg	50	no	Nitrate and Nitrite as N			14.3		14.3		14.3		14.3	0.0155	0.1	0.1	0.1	0	27538	31624	JS	########	HELSTF Ph	7
6102404	106725	HLSF-0085	soil	########	17:10:00	########	16:35:00	P, Total	S 6010B	mg/Kg	1	no	Total Phos	7723-14-0		177		177		177		177	0.223	2	2	2	0	27345	32009	RR	########	HELSTF Ph	7
6102404	106725	HLSF-0085	soil	########	17:10:00	########	16:35:00	Total 8 Me	S 6010B	mg/Kg	1	no	Total Silver		<	0.00444	<	0.05	<	0.05	<	0.05	0.00444	0.05	0.05	0.05	0	27345	32009	RR	########	HELSTF Ph	7
6102404	106725	HLSF-0085	soil	########	17:10:00	########	16:35:00	Total 8 Me	S 6010B	mg/Kg	1	no	Total Arsenic		<	0.228	<	2	<	2	<	2	0.228	2	2	2	0	27345	32009	RR	########	HELSTF Ph	7
6102404	106725	HLSF-0085	soil	########	17:10:00	########	16:35:00	Total 8 Me	S 6010B	mg/Kg	1	no	Total Barium			37.5		37.5		37.5		37.5	0.0601	1	1	1	0	27345	32009	RR	########	HELSTF Ph	7
6102404	106725	HLSF-0085	soil	########	17:10:00	########	16:35:00	Total 8 Me	S 6010B	mg/Kg	1	no	Total Cadmium		<	0.00794	<	0.1	<	0.1	<	0.1	0.00794	0.1	0.1	0.1	0	27345	32009	RR	########	HELSTF Ph	7

6102404	106725	HLSF-0085	soil	########	17:10:00	########	16:35:00	Total 8 Me	S 6010B	mg/Kg	1	no	Total Chromium			1.51		1.51		1.51		1.51	0.0125	0.5	0.5	0.5	0	27345	32009	RR	########	HELSTF Ph	7
6102404	106725	HLSF-0085	soil	########	17:10:00	########	16:35:00	Total 8 Me	S 7471A	mg/Kg	1	no	Total Mercury			0.00458	<	0.04	<	0.04	<	0.04	0.00299	0.04	0.04	0.04	0	27351	31412	TP	########	HELSTF Ph	7
6102404	106725	HLSF-0085	soil	########	17:10:00	########	16:35:00	Total 8 Me	S 6010B	mg/Kg	1	no	Total Lead		<	0.367	<	1	<	1	<	1	0.367	1	1	1	0	27345	32009	RR	########	HELSTF Ph	7
6102404	106725	HLSF-0085	soil	########	17:10:00	########	16:35:00	Total 8 Me	S 6010B	mg/Kg	1	no	Total Selenium			12.7		12.7		12.7		12.7	0.0767	1	1	1	0	27345	32009	RR	########	HELSTF Ph	7
6102404	106725	HLSF-0085	soil	########	17:10:00	########	16:35:00	Zn, Total	S 6010B	mg/Kg	1	no	Total Zinc	7440-66-6		19.6		19.6		19.6		19.6	0.124	2	2	2	0	27345	32009	RR	########	HELSTF Ph	7
6102407	106730	HLSF-0085	soil	########	17:10:00	########	9:40:00	Chromium	SM 3500-C	mg/Kg	1	no	Hexavalen	7440-47-3	<	2.32	<	5	<	5	<	5	2.32	5	5	5	0	27528	31614	WB	########	HELSTF Ph	7
6102407	106730	HLSF-0085	soil	########	17:10:00	########	9:40:00	Cu, Total	S 6010B	mg/Kg	1	no	Total Copp	7440-50-8		1.16		1.16		1.16		1.16	0.0268	0.5	0.5	0.5	0	27345	32009	RR	########	HELSTF Ph	7
6102407	106730	HLSF-0085	soil	########	17:10:00	########	9:40:00	FOC	ASTM D 29	%	1	no	FOC	N/A		4.09		4.09		4.09		4.09					0	27641	31734	SM	########	HELSTF Ph	7
6102407	106730	HLSF-0085	soil	########	17:10:00	########	9:40:00	K, Total	S 6010B	mg/Kg	1	no	Total Pota:	9/7/7440		129		129		129		129	0.291	50	50	50	0	27345	31781	TP	########	HELSTF Ph	7
6102407	106730	HLSF-0085	soil	########	17:10:00	########	9:40:00	Na, Total	S 6010B	mg/Kg	1	no	Total Sodi	7440-23-5		219		219		219		219	0.082	50	50	50	0	27345	31781	TP	########	HELSTF Ph	7
6102407	106730	HLSF-0085	soil	########	17:10:00	########	9:40:00	Nitrate and	E 353.3	mg/Kg	25	no	Nitrate and Nitrite as N			3.16		3.16		3.16		3.16	0.0155	0.1	0.1	0.1	0	27538	31624	JS	########	HELSTF Ph	7
6102407	106730	HLSF-0085	soil	########	17:10:00	########	9:40:00	P, Total	S 6010B	mg/Kg	1	no	Total Phos	7723-14-0		28.7		28.7		28.7		28.7	0.223	2	2	2	0	27345	32009	RR	########	HELSTF Ph	7
6102407	106730	HLSF-0085	soil	########	17:10:00	########	9:40:00	Total 8 Me	S 6010B	mg/Kg	1	no	Total Silver		<	0.00444	<	0.05	<	0.05	<	0.05	0.00444	0.05	0.05	0.05	0	27345	32009	RR	########	HELSTF Ph	7
6102407	106730	HLSF-0085	soil	########	17:10:00	########	9:40:00	Total 8 Me	S 6010B	mg/Kg	1	no	Total Arsenic		<	0.228	<	2	<	2	<	2	0.228	2	2	2	0	27345	32009	RR	########	HELSTF Ph	7
6102407	106730	HLSF-0085	soil	########	17:10:00	########	9:40:00	Total 8 Me	S 6010B	mg/Kg	1	no	Total Barium			16.7		16.7		16.7		16.7	0.0601	1	1	1	0	27345	32009	RR	########	HELSTF Ph	7
6102407	106730	HLSF-0085	soil	########	17:10:00	########	9:40:00	Total 8 Me	S 6010B	mg/Kg	1	no	Total Cadmium		<	0.00794	<	0.1	<	0.1	<	0.1	0.00794	0.1	0.1	0.1	0	27345	32009	RR	########	HELSTF Ph	7
6102407	106730	HLSF-0085	soil	########	17:10:00	########	9:40:00	Total 8 Me	S 6010B	mg/Kg	1	no	Total Chromium		<	0.0125	<	0.5	<	0.5	<	0.5	0.0125	0.5	0.5	0.5	0	27345	32009	RR	########	HELSTF Ph	7
6102407	106730	HLSF-0085	soil	########	17:10:00	########	9:40:00	Total 8 Me	S 7471A	mg/Kg	1	no	Total Mercury			0.0141	<	0.04	<	0.04	<	0.04	0.00299	0.04	0.04	0.04	0	27351	31412	TP	########	HELSTF Ph	7
6102407	106730	HLSF-0085	soil	########	17:10:00	########	9:40:00	Total 8 Me	S 6010B	mg/Kg	1	no	Total Lead		<	0.367	<	1	<	1	<	1	0.367	1	1	1	0	27345	32009	RR	########	HELSTF Ph	7
6102407	106730	HLSF-0085	soil	########	17:10:00	########	9:40:00	Total 8 Me	S 6010B	mg/Kg	1	no	Total Selenium		<	0.0767	<	1	<	1	<	1	0.0767	1	1	1	0	27345	32009	RR	########	HELSTF Ph	7
6102407	106730	HLSF-0085	soil	########	17:10:00	########	9:40:00	Zn, Total	S 6010B	mg/Kg	1	no	Total Zinc	7440-66-6		1.86	<	2	<	2	<	2	0.124	2	2	2	0	27345	32009	RR	########	HELSTF Ph	7
6102407	106731	HLSF-0085	soil	########	17:10:00	########	9:15:00	Chromium	SM 3500-C	mg/Kg	1	no	Hexavalen	7440-47-3	<	2.32	<	5	<	5	<	5	2.32	5	5	5	0	27528	31614	WB	########	HELSTF Ph	7
6102407	106731	HLSF-0085	soil	########	17:10:00	########	9:15:00	Cu, Total	S 6010B	mg/Kg	1	no	Total Copp	7440-50-8		0.692		0.692		0.692		0.692	0.0268	0.5	0.5	0.5	0	27345	32009	RR	########	HELSTF Ph	7
6102407	106731	HLSF-0085	soil	########	17:10:00	########	9:15:00	FOC	ASTM D 29	%	1	no	FOC	N/A		4.73		4.73		4.73		4.73					0	27641	31734	SM	########	HELSTF Ph	7
6102407	106731	HLSF-0085	soil	########	17:10:00	########	9:15:00	K, Total	S 6010B	mg/Kg	1	no	Total Pota:	9/7/7440		678		678		678		678	0.291	50	50	50	0	27345	31781	TP	########	HELSTF Ph	7
6102407	106731	HLSF-0085	soil	########	17:10:00	########	9:15:00	Na, Total	S 6010B	mg/Kg	1	no	Total Sodi	7440-23-5		2090		2090		2090		2090	0.082	50	50	50	0	27345	31781	TP	########	HELSTF Ph	7
6102407	106731	HLSF-0085	soil	########	17:10:00	########	9:15:00	Nitrate and	E 353.3	mg/Kg	1000	no	Nitrate and Nitrite as N			232		232		232		232	0.0155	0.1	0.1	0.1	0	27538	31624	JS	########	HELSTF Ph	7
6102407	106731	HLSF-0085	soil	########	17:10:00	########	9:15:00	P, Total	S 6010B	mg/Kg	1	no	Total Phos	7723-14-0		34.7		34.7		34.7		34.7	0.223	2	2	2	0	27345	32009	RR	########	HELSTF Ph	7
6102407	106731	HLSF-0085	soil	########	17:10:00	########	9:15:00	Total 8 Me	S 6010B	mg/Kg	1	no	Total Silver		<	0.00444	<	0.05	<	0.05	<	0.05	0.00444	0.05	0.05	0.05	0	27345	32009	RR	########	HELSTF Ph	7
6102407	106731	HLSF-0085	soil	########	17:10:00	########	9:15:00	Total 8 Me	S 6010B	mg/Kg	1	no	Total Arsenic		<	0.228	<	2	<	2	<	2	0.228	2	2	2	0	27345	32009	RR	########	HELSTF Ph	7
6102407	106731	HLSF-0085	soil	########	17:10:00	########	9:15:00	Total 8 Me	S 6010B	mg/Kg	1	no	Total Barium			24.8		24.8		24.8		24.8	0.0601	1	1	1	0	27345	32009	RR	########	HELSTF Ph	7
6102407	106731	HLSF-0085	soil	########	17:10:00	########	9:15:00	Total 8 Me	S 6010B	mg/Kg	1	no	Total Cadmium		<	0.00794	<	0.1	<	0.1	<	0.1	0.00794	0.1	0.1	0.1	0	27345	32009	RR	########	HELSTF Ph	7
6102407	106731	HLSF-0085	soil	########	17:10:00	########	9:15:00	Total 8 Me	S 6010B	mg/Kg	1	no	Total Chromium		<	0.0125	<	0.5	<	0.5	<	0.5	0.0125	0.5	0.5	0.5	0	27345	32009	RR	########	HELSTF Ph	7
6102407	106731	HLSF-0085	soil	########	17:10:00	########	9:15:00	Total 8 Me	S 7471A	mg/Kg	1	no	Total Mercury		<	0.00299	<	0.04	<	0.04	<	0.04	0.00299	0.04	0.04	0.04	0	27351	31412	TP	########	HELSTF Ph	7
6102407	106731	HLSF-0085	soil	########	17:10:00	########	9:15:00	Total 8 Me	S 6010B	mg/Kg	1	no	Total Lead			2.11		2.11		2.11		2.11	0.367	1	1	1	0	27345	32009	RR	########	HELSTF Ph	7
6102407	106731	HLSF-0085	soil	########	17:10:00	########	9:15:00	Total 8 Me	S 6010B	mg/Kg	1	no	Total Selenium		<	0.0767	<	1	<	1	<	1	0.0767	1	1	1	0	27345	32009	RR	########	HELSTF Ph	7
6102407	106731	HLSF-0085	soil	########	17:10:00	########	9:15:00	Zn, Total	S 6010B	mg/Kg	1	no	Total Zinc	7440-66-6		3.55		3.55		3.55		3.55	0.124	2	2	2	0	27345	32009	RR	########	HELSTF Ph	7
6102407	106732	HLSF-0085	soil	########	17:10:00	########	9:30:00	Chromium	SM 3500-C	mg/Kg	1	no	Hexavalen	7440-47-3	<	2.32	<	5	<	5	<	5	2.32	5	5	5	0	27528	31614	WB	########	HELSTF Ph	7
6102407	106732	HLSF-0085	soil	########	17:10:00	########	9:30:00	Cu, Total	S 6010B	mg/Kg	1	no	Total Copp	7440-50-8		5.36		5.36		5.36		5.36	0.0268	0.5	0.5	0.5	0	27345	32009	RR	########	HELSTF Ph	7
6102407	106732	HLSF-0085	soil	########	17:10:00	########	9:30:00	FOC	ASTM D 29	%	1	no	FOC	N/A		3.74		3.74		3.74		3.74					0	27641	31734	SM	########	HELSTF Ph	7
6102407	106732	HLSF-0085	soil	########	17:10:00	########	9:30:00	K, Total	S 6010B	mg/Kg	1	no	Total Pota:	9/7/7440		2600		2600		2600		2600	0.291	50	50	50	0	27345	31781	TP	########	HELSTF Ph	7
6102407	106732	HLSF-0085	soil	########	17:10:00	########	9:30:00	Na, Total	S 6010B	mg/Kg	1	no	Total Sodi	7440-23-5		2990		2990		2990		2990	0.082	50	50	50	0	27345	31781	TP	########	HELSTF Ph	7
6102407	106732	HLSF-0085	soil	########	17:10:00	########	9:30:00	Nitrate and	E 353.3	mg/Kg	500	no	Nitrate and Nitrite as N			139		139		139		139	0.0155	0.1	0.1	0.1	0	27538	31624	JS	########	HELSTF Ph	7
6102407	106732	HLSF-0085	soil	########	17:10:00	########	9:30:00	P, Total	S 6010B	mg/Kg	1	no	Total Phos	7723-14-0		140		140		140		140	0.223	2	2	2	0	27345	32009	RR	########	HELSTF Ph	7
6102407	106732	HLSF-0085	soil	########	17:10:00	########	9:30:00	Total 8 Me	S 6010B	mg/Kg	1	no	Total Silver		<	0.00444	<	0.05	<	0.05	<	0.05	0.00444	0.05	0.05	0.05	0	27345	32009	RR	########	HELSTF Ph	7
6102407	106732	HLSF-0085	soil	########	17:10:00	########	9:30:00	Total 8 Me	S 6010B	mg/Kg	1	no	Total Arsenic			7.74		7.74		7.74		7.74	0.228	2	2	2	0	27345	32009	RR	########	HELSTF Ph	7
6102407	106732	HLSF-0085	soil	########	17:10:00	########	9:30:00	Total 8 Me	S 6010B	mg/Kg	1	no	Total Barium			25.6		25.6		25.6		25.6	0.0601	1	1	1	0	27345	32009	RR	########	HELSTF Ph	7
6102407	106732	HLSF-0085	soil	########	17:10:00	########	9:30:00	Total 8 Me	S 6010B	mg/Kg	1	no	Total Cadmium		<	0.00794	<	0.1	<	0.1	<	0.1	0.00794	0.1	0.1	0.1	0	27345	32009	RR	########	HELSTF Ph	7
6102407	106732	HLSF-0085	soil	########	17:10:00	########	9:30:00	Total 8 Me	S 6010B	mg/Kg	1	no	Total Chromium			4.63		4.63		4.63		4.63	0.0125	0.5	0.5	0.5	0	27345	32009	RR	########	HELSTF Ph	7
6102407	106732	HLSF-0085	soil	########	17:10:00	########	9:30:00	Total 8 Me	S 7471A	mg/Kg	1	no	Total Mercury			0.00479	<	0.04	<	0.04	<	0.04	0.00299	0.04	0.04	0.04	0	27351	31412	TP	########	HELSTF Ph	7
6102407	106732	HLSF-0085	soil	########	17:10:00	########	9:30:00	Total 8 Me	S 6010B	mg/Kg	1	no	Total Lead			14.7		14.7		14.7		14.7	0.367	1	1	1	0	27345	32009	RR	########	HELSTF Ph	7
6102407	106732	HLSF-0085	soil	########	17:10:00	########	9:30:00	Total 8 Me	S 6010B	mg/Kg	1	no	Total Selenium		<	0.0767	<	1	<	1	<	1	0.0767	1	1	1	0	27345	32009	RR	########	HELSTF Ph	7
6102407	106732	HLSF-0085	soil	########	17:10:00	########	9:30:00	Zn, Total	S 6010B	mg/Kg	1	no	Total Zinc	7440-66-6		22.4		22.4		22.4		22.4	0.124	2	2	2	0	27345	32009	RR	########	HELSTF Ph	7
6102407	106733	HLSF-0085	soil	########	17:10:00	########	10:05:00	Chromium	SM 3500-C	mg/Kg	1	no	Hexavalen	7440-47-3	<	2.32	<	5	<	5	<	5	2.32	5	5	5	0	27528	31614	WB	########	HELSTF Ph	7
6102407	106733	HLSF-0085	soil	########	17:10:00	########	10:05:00	Cu, Total	S 6010B	mg/Kg	1	no	Total Copp	7440-50-8		7.58		7.58		7.58		7.58	0.0268	0.5	0.5	0.5	0	27345	32009	RR	########	HELSTF Ph	7
6102407	106733	HLSF-0085	soil	########	17:10:00	########	10:05:00	FOC	ASTM D 29	%	1	no	FOC	N/A		2.87		2.87		2.87		2.87					0	27641	31734	SM	########	HELSTF Ph	7
6102407	106733	HLSF-0085	soil	########	17:10:00	########	10:05:00	K, Total	S 6010B	mg/Kg	1	no	Total Pota:	9/7/7440		2770		2770		2770		2770	0.291	50	50	50	0	27345	31781	TP	########	HELSTF Ph	7
6102407	106733	HLSF-0085	soil	########	17:10:00	########	10:05:00	Na, Total	S 6010B	mg/Kg	1	no	Total Sodi	7440-23-5		2250		2250		2250		2250	0.082	50	50	50	0	27345	31781	TP	########	HELSTF Ph	7
6102407	106733	HLSF-0085	soil	########	17:10:00	########	10:05:00	Nitrate and	E 353.3	mg/Kg	500	no	Nitrate and Nitrite as N			63.7		63.7		63.7		63.7	0.0155	0.1	0.1	0.1	0	27538	31624	JS	########	HELSTF Ph	7
6102407	106733	HLSF-0085	soil	########	17:10:00	########	10:05:00	P, Total	S 6010B	mg/Kg	1	no	Total Phos	7723-14-0		185		185		185		185	0.223	2	2	2	0	27345	32009	RR	########	HELSTF Ph	7
6102407	106733	HLSF-0085	soil	########	17:10:00	########	10:05:00	Total 8 Me	S 6010B	mg/Kg	1	no	Total Silver		<	0.00444	<	0.05	<	0.05	<	0.05	0.00444	0.05	0.05	0.05	0	27345	32009	RR	########	HELSTF Ph	7
6102407	106733	HLSF-0085	soil	########	17:10:00	########	10:05:00	Total 8 Me	S 6010B	mg/Kg	1	no	Total Arsenic			4.46		4.46		4.46		4.46	0.228	2	2	2	0	27345	32009	RR	########	HELSTF Ph	7
6102407	106733	HLSF-0085	soil	########	17:10:00	########	10:05:00	Total 8 Me	S 6010B	mg/Kg	1	no	Total Barium			45.2		45.2		45.2		45.2	0.0601	1	1	1	0	27345	32009	RR	########	HELSTF Ph	7
6102407	106733	HLSF-0085	soil	########	17:10:00	########	10:05:00	Total 8 Me	S 6010B	mg/Kg	1	no	Total Cadmium		<	0.00794	<	0.1	<	0.1	<	0.1	0.00794	0.1	0.1	0.1	0	27345	32009	RR	########	HELSTF Ph	7
6102407	106733	HLSF-0085	soil	########	17:10:00	########	10:05:00	Total 8 Me	S 6010B	mg/Kg	1	no	Total Chromium			5.03		5.03		5.03		5.03	0.0125	0.5	0.5	0.5	0	27345	32009	RR	########	HELSTF Ph	7
6102407	106733	HLSF-0085	soil	########	17:10:00	########	10:05:00	Total 8 Me	S 7471A	mg/Kg	1	no	Total Mercury			0.0044	<	0.04	<	0.04	<	0.04	0.00299	0.04	0.04	0.04	0	27351	31412	TP	########	HELSTF Ph	7
6102407	106733	HLSF-0085	soil	########	17:10:00	########	10:05:00	Total 8 Me	S 6010B	mg/Kg	1	no	Total Lead			16.1		16.1		16.1		16.1	0.367	1	1	1	0	27345	32009	RR	########	HELSTF Ph	7
6102407	106733	HLSF-0085	soil	########	17:10:00	########	10:05:00	Total 8 Me	S 6010B	mg/Kg	1	no	Total Selenium		<	0.0767	<	1	<	1	<	1	0.0767	1	1	1	0	27345	32009	RR	########	HELSTF Ph	7
6102407	106733	HLSF-0085	soil	########	17:10:00	########	10:05:00	Zn, Total	S 6010B	mg/Kg	1	no	Total Zinc	7440-66-6		24.2		24.2		24.2		24.2	0.124	2	2	2	0	27345	32009	RR	########	HELSTF Ph	7
6102407	106734	HLSF-0085	soil	########	17:10:00	########	10:30:00	Chromium	SM 3500-C	mg/Kg	1	no	Hexavalen	7440-47-3	<	2.32	<	5	<	5	<	5	2.32	5	5	5	0	27528	31614	WB	########	HELSTF Ph	7
6102407	106734	HLSF-0085	soil	########	17:10:00	########	10:30:00	Cu, Total	S 6010B	mg/Kg	1	no	Total Copp	7440-50-8		4.96		4.96		4.96		4.96	0.0268	0.5	0.5	0.5	0	27345	32009	RR	########	HELSTF Ph	7
6102407	106734	HLSF-0085	soil	########	17:10:00	########	10:30:00	FOC	ASTM D 29	%	1	no	FOC	N/A		2.73		2.73		2.73		2.73					0	27641	31734	SM	########	HELSTF Ph	7
6102407	106734	HLSF-0085	soil	########	17:10:00	########	10:30:00	K, Total	S 6010B	mg/Kg	1	no	Total Pota:	9/7/7440		2220		2220		2220		2220	0.291	50	50	50	0	27345	31781	TP	########	HELSTF Ph	7
6102407	106734	HLSF-0085	soil	########	17:10:00	########	10:30:00	Na, Total	S 6010B	mg/Kg	1	no	Total Sodi	7440-23-5		1920		1920		1920		1920	0.082	50	50	50	0	27345	31781	TP	########	HELSTF Ph	7
6102407	106734	HLSF-0085	soil	########	17:10:00	########	10:30:00	Nitrate and	E 353.3	mg/Kg	500	no	Nitrate and Nitrite as N			49	<	50	<	50	<	50	0.0155	0.1	0.1	0.1	0	27538	31624	JS	########	HELSTF Ph	7
6102407	106734	HLSF-0085	soil	########	17:10:00	########	10:30:00	P, Total	S 6010B	mg/Kg	1	no	Total Phos	7723-14-0		132		132		132		132	0.223	2	2	2	0	27345	32009	RR	########	HELSTF Ph	7
6102407	106734	HLSF-0085	soil	########	17:10:00	########	10:30:00	Total 8 Me	S 6010B	mg/Kg	1	no	Total Silver		<	0.00444	<	0.05	<	0.05	<	0.05	0.00444	0.05	0.05	0.05	0	27345	32009	RR	########	HELSTF Ph	7
6102407	106734	HLSF-0085	soil	########	17:10:00	########	10:30:00	Total 8 Me	S 6010B	mg/Kg	1	no	Total Arsenic		<	0.228	<	2	<	2	<	2	0.228	2	2	2	0	27345	32009	RR	########	HELSTF Ph	7
6102407	106734	HLSF-0085	soil	########	17:10:00	########	10:30:00	Total 8 Me	S 6010B	mg/Kg	1	no	Total Barium			8.15		8.15		8.15		8.15	0.0601	1	1	1	0	27345	32009	RR	########	HELSTF Ph	7
6102407	106734	HLSF-0085	soil	########	17:10:00	########	10:30:00	Total 8 Me	S 6010B	mg/Kg	1	no	Total Cadmium		<	0.00794	<	0.1	<	0.1	<	0.1	0.00794	0.1	0.1	0.1	0	27345	32009	RR	########	HELSTF Ph	7
6102407	106734	HLSF-0085	soil	########	17:10:00	########	10:30:00	Total 8 Me	S 6010B	mg/Kg	1	no	Total Chromium			3.82		3.82		3.82		3.82	0.0125	0.5	0.5	0.5	0	27345	32009	RR	########	HELSTF Ph	7
6102407	106734	HLSF-0085	soil	########	17:10:00	########	10:30:00	Total 8 Me	S 7471A	mg/Kg	1	no	Total Mercury			0.0063	<	0.04	<	0.04	<	0.04	0.00299	0.04	0.04	0.04	0	27351	31412	TP	########	HELSTF Ph	7
6102407	106734	HLSF-0085	soil	########	17:10:00	########	10:30:00	Total 8 Me	S 6010B	mg/Kg	1	no	Total Lead			11.9		11.9		11.9		11.9	0.367	1	1	1	0	27345	32009	RR	########	HELSTF Ph	7
6102407	106734	HLSF-0085	soil	########	17:10:00	########	10:30:00	Total 8 Me	S 6010B	mg/Kg	1	no	Total Selenium		<	0.0767	<	1	<	1	<	1	0.0767	1	1	1	0	27345	32009	RR	########	HELSTF Ph	7
6102407	106734	HLSF-0085	soil	########	17:10:00	########	10:30:00	Zn, Total	S 6010B	mg/Kg	1	no	Total Zinc	7440-66-6		19.4		19.4		19.4		19.4	0.124	2	2	2	0	27345	32009	RR	########	HELSTF Ph	7
6102407	106735	HLSF-0085	soil	########	17:10:00	########	11:05:00	Chromium	SM 3500-C	mg/Kg	1	no	Hexavalen	7440-47-3	<	2.32	<	5	<	5	<	5	2.32	5	5	5	0	27528	31614	WB	########	HELSTF Ph	7
6102407	106735	HLSF-0085	soil	########	17:10:00	########	11:05:00	Cu, Total	S 6010B	mg/Kg	1	no	Total Copp	7440-50-8		4.79		4.79		4.79		4.79	0.0268	0.5	0.5	0.5	0	27345	32009	RR	########	HELSTF Ph	7
6102407	106735	HLSF-0085	soil	########	17:10:00	########	11:05:00	FOC	ASTM D 29	%	1	no	FOC	N/A		1.95		1.95		1.95		1.95					0	27641	31734	SM	########	HELSTF Ph	7
6102407	106735	HLSF-0085	soil	########	17:10:00	########	11:05:00	K, Total	S 6010B	mg/Kg	1	no	Total Pota:	9/7/7440		2100		2100		2100		2100	0.291	50	50	50	0	27345	31781	TP	########	HELSTF Ph	7
6102407	106735	HLSF-0085	soil	########	17:10:00	########	11:05:00	Na, Total	S 6010B	mg/Kg	1	no	Total Sodi	7440-23-5		1120		1120		1120		1120	0.082	50	50	50	0	27345	31781	TP	########	HELSTF Ph	7
6102407	106735	HLSF-0085	soil	########	17:10:00	########	11:05:00	Nitrate and	E 353.3	mg/Kg	100	no	Nitrate and Nitrite as N			11.1		11.1		11.1		11.1	0.0155	0.1	0.1	0.1	0	27538	31624	JS	########	HELSTF Ph	7
6102407	106735	HLSF-0085	soil	########	17:10:00	########	11:05:00	P, Total	S 6010B	mg/Kg	1	no	Total Phos	7723-14-0		130		130		130		130	0.223	2	2	2	0	27345	32009	RR	########	HELSTF Ph	7
6102407	106735	HLSF-0085	soil	########	17:10:00	########	11:05:00	Total 8 Me	S 6010B	mg/Kg	1	no	Total Silver		<	0.00444	<	0.05	<	0.05	<	0.05	0.00444	0.05	0.05	0.05	0	27345	32009	RR	########	HELSTF Ph	7
6102407	106735	HLSF-0085	soil	########	17:10:00	########	11:05:00	Total 8 Me	S 6010B	mg/Kg	1	no	Total Arsenic			1.28	<	2	<	2	<	2	0.228	2	2	2	0	27345	32009	RR	########	HELSTF Ph	7
6102407	106735	HLSF-0085	soil	########	17:10:00	########	11:05:00	Total 8 Me	S 6010B	mg/Kg	1	no	Total Barium			78.9		78.9		78.9		78.9	0.0601	1	1	1	0	27345	32009	RR	########	HELSTF Ph	7
6102407	106735	HLSF-0085	soil	########	17:10:00	########	11:05:00	Total 8 Me	S 6010B	mg/Kg	1	no	Total Cadmium		<	0.00794	<	0.1	<	0.1	<	0.1	0.00794	0.1	0.1	0.1	0	27345	32009	RR	########	HELSTF Ph	7
6102407	106735	HLSF-0085	soil	########	17:10:00	########	11:05:00	Total 8 Me	S 6010B	mg/Kg	1	no	Total Chromium			2.38		2.38		2.38		2.38	0.0125	0.5	0.5	0.5	0	27345	32009	RR	########	HELSTF Ph	7
6102407	106735	HLSF-0085	soil	########	17:10:00	########	11:05:00	Total 8 Me	S 7471A	mg/Kg	1	no	Total Mercury			0.00823	<	0.04	<	0.04	<	0.04	0.00299	0.04	0.04	0.04	0	27351	31412	TP	########	HELSTF Ph	7
6102407	106735	HLSF-0085	soil	########	17:10:00	########	11:05:00	Total 8 Me	S 6010B	mg/Kg	1	no	Total Lead			9.34		9.34		9.34		9.34	0.367	1	1	1	0	27345	32009	RR	########	HELSTF Ph	7
6102407	106735	HLSF-0085	soil	########	17:10:00	########	11:05:00	Total 8 Me	S 6010B	mg/Kg	1	no	Total Selenium		<	0.0767	<	1	<	1	<	1	0.0767	1	1	1	0	27345	32009	RR	########	HELSTF Ph	7
6102407	106735	HLSF-0085	soil	########	17:10:00	########	11:05:00	Zn, Total	S 6010B	mg/Kg	1	no	Total Zinc	7440-66-6		15.4		15.4		15.4		15.4	0.124	2	2	2	0	27345	32009	RR	########	HELSTF Ph	7
6102407	106736	HLSF-0085	soil	########	17:10:00	########	13:55:00	Chromium	SM 3500-C	mg/Kg	1	no	Hexavalen	7440-47-3	<	2.32	<	5	<	5	<	5	2.32	5	5	5	0	27528	31614	WB	########	HELSTF Ph	7

6102407	106736	HLSF-0085	soil	########	17:10:00	########	13:55:00	Cu, Total	S 6010B	mg/Kg	1	no	Total Copp	7440-50-8		0.877	0.877	0.877	0.877	0.0268	0.5	0.5	0.5	0	27345	32009	RR	########	HELSTF Ph	7
6102407	106736	HLSF-0085	soil	########	17:10:00	########	13:55:00	FOC	ASTM D 29	%	1	no	FOC	N/A		5.29	5.29	5.29	5.29					0	27641	31734	SM	########	HELSTF Ph	7
6102407	106736	HLSF-0085	soil	########	17:10:00	########	13:55:00	K, Total	S 6010B	mg/Kg	1	no	Total Pota:	9/7/7440		121	121	121	121	0.291	50	50	50	0	27345	31781	TP	########	HELSTF Ph	7
6102407	106736	HLSF-0085	soil	########	17:10:00	########	13:55:00	Na, Total	S 6010B	mg/Kg	1	no	Total Sodiı	7440-23-5		333	333	333	333	0.082	50	50	50	0	27345	31781	TP	########	HELSTF Ph	7
6102407	106736	HLSF-0085	soil	########	17:10:00	########	13:55:00	Nitrate and	E 353.3	mg/Kg	2	no	Nitrate and Nitrite as N			0.454	0.454	0.454	0.454	0.0155	0.1	0.1	0.1	0	27544	31623	WB	########	HELSTF Ph	7
6102407	106736	HLSF-0085	soil	########	17:10:00	########	13:55:00	P, Total	S 6010B	mg/Kg	1	no	Total Phos	7723-14-0		24.1	24.1	24.1	24.1	0.223	2	2	2	0	27345	32009	RR	########	HELSTF Ph	7
6102407	106736	HLSF-0085	soil	########	17:10:00	########	13:55:00	Total 8 Me	S 6010B	mg/Kg	1	no	Total Silver		<	0.00444 <	0.05 <	0.05 <	0.05	0.00444	0.05	0.05	0.05	0	27345	32009	RR	########	HELSTF Ph	7
6102407	106736	HLSF-0085	soil	########	17:10:00	########	13:55:00	Total 8 Me	S 6010B	mg/Kg	1	no	Total Arsenic		<	0.228 <	2 <	2 <	2	0.228	2	2	2	0	27345	32009	RR	########	HELSTF Ph	7
6102407	106736	HLSF-0085	soil	########	17:10:00	########	13:55:00	Total 8 Me	S 6010B	mg/Kg	1	no	Total Barium			9.75	9.75	9.75	9.75	0.0601	1	1	1	0	27345	32009	RR	########	HELSTF Ph	7
6102407	106736	HLSF-0085	soil	########	17:10:00	########	13:55:00	Total 8 Me	S 6010B	mg/Kg	1	no	Total Cadmium		<	0.00794 <	0.1 <	0.1 <	0.1	0.00794	0.1	0.1	0.1	0	27345	32009	RR	########	HELSTF Ph	7
6102407	106736	HLSF-0085	soil	########	17:10:00	########	13:55:00	Total 8 Me	S 6010B	mg/Kg	1	no	Total Chromium		<	0.0125 <	0.5 <	0.5 <	0.5	0.0125	0.5	0.5	0.5	0	27345	32009	RR	########	HELSTF Ph	7
6102407	106736	HLSF-0085	soil	########	17:10:00	########	13:55:00	Total 8 Me	S 7471A	mg/Kg	1	no	Total Mercury			0.00578 <	0.04 <	0.04 <	0.04	0.00299	0.04	0.04	0.04	0	27351	31412	TP	########	HELSTF Ph	7
6102407	106736	HLSF-0085	soil	########	17:10:00	########	13:55:00	Total 8 Me	S 6010B	mg/Kg	1	no	Total Lead		<	0.367 <	1 <	1 <	1	0.367	1	1	1	0	27345	32009	RR	########	HELSTF Ph	7
6102407	106736	HLSF-0085	soil	########	17:10:00	########	13:55:00	Total 8 Me	S 6010B	mg/Kg	1	no	Total Selenium		<	0.0767 <	1 <	1 <	1	0.0767	1	1	1	0	27345	32009	RR	########	HELSTF Ph	7
6102407	106736	HLSF-0085	soil	########	17:10:00	########	13:55:00	Zn, Total	S 6010B	mg/Kg	1	no	Total Zinc	7440-66-6		1.89 <	2 <	2 <	2	0.124	2	2	2	0	27345	32009	RR	########	HELSTF Ph	7
6102407	106737	HLSF-0085	soil	########	17:10:00	########	14:20:00	Chromium	SM 3500-C	mg/Kg	1	no	Hexavalen	7440-47-3	<	2.32 <	5 <	5 <	5	2.32	5	5	5	0	27529	31615	WB	########	HELSTF Ph	7
6102407	106737	HLSF-0085	soil	########	17:10:00	########	14:20:00	Cu, Total	S 6010B	mg/Kg	1	no	Total Copp	7440-50-8		1.29	1.29	1.29	1.29	0.0268	0.5	0.5	0.5	0	27345	32009	RR	########	HELSTF Ph	7
6102407	106737	HLSF-0085	soil	########	17:10:00	########	14:20:00	FOC	ASTM D 29	%	1	no	FOC	N/A		1.65	1.65	1.65	1.65					0	27511	31592	SM	########	HELSTF Ph	7
6102407	106737	HLSF-0085	soil	########	17:10:00	########	14:20:00	K, Total	S 6010B	mg/Kg	1	no	Total Pota:	9/7/7440		419	419	419	419	0.291	50	50	50	0	27345	31784	TP	########	HELSTF Ph	7
6102407	106737	HLSF-0085	soil	########	17:10:00	########	14:20:00	Na, Total	S 6010B	mg/Kg	1	no	Total Sodiı	7440-23-5		1880	1880	1880	1880	0.082	50	50	50	0	27345	31784	TP	########	HELSTF Ph	7
6102407	106737	HLSF-0085	soil	########	17:10:00	########	14:20:00	Nitrate and	E 353.3	mg/Kg	500	no	Nitrate and Nitrite as N			158	158	158	158	0.0155	0.1	0.1	0.1	0	27544	31623	WB	########	HELSTF Ph	7
6102407	106737	HLSF-0085	soil	########	17:10:00	########	14:20:00	P, Total	S 6010B	mg/Kg	1	no	Total Phos	7723-14-0		47.6	47.6	47.6	47.6	0.223	2	2	2	0	27345	32009	RR	########	HELSTF Ph	7
6102407	106737	HLSF-0085	soil	########	17:10:00	########	14:20:00	Total 8 Me	S 6010B	mg/Kg	1	no	Total Silver		<	0.00444 <	0.05 <	0.05 <	0.05	0.00444	0.05	0.05	0.05	0	27345	32009	RR	########	HELSTF Ph	7
6102407	106737	HLSF-0085	soil	########	17:10:00	########	14:20:00	Total 8 Me	S 6010B	mg/Kg	1	no	Total Arsenic		<	0.228 <	2 <	2 <	2	0.228	2	2	2	0	27345	32009	RR	########	HELSTF Ph	7
6102407	106737	HLSF-0085	soil	########	17:10:00	########	14:20:00	Total 8 Me	S 6010B	mg/Kg	1	no	Total Barium			26.8	26.8	26.8	26.8	0.0601	1	1	1	0	27345	32009	RR	########	HELSTF Ph	7
6102407	106737	HLSF-0085	soil	########	17:10:00	########	14:20:00	Total 8 Me	S 6010B	mg/Kg	1	no	Total Cadmium		<	0.00794 <	0.1 <	0.1 <	0.1	0.00794	0.1	0.1	0.1	0	27345	32009	RR	########	HELSTF Ph	7
6102407	106737	HLSF-0085	soil	########	17:10:00	########	14:20:00	Total 8 Me	S 6010B	mg/Kg	1	no	Total Chromium			2.18	2.18	2.18	2.18	0.0125	0.5	0.5	0.5	0	27345	32009	RR	########	HELSTF Ph	7
6102407	106737	HLSF-0085	soil	########	17:10:00	########	14:20:00	Total 8 Me	S 7471A	mg/Kg	1	no	Total Mercury		<	0.00299 <	0.04 <	0.04 <	0.04	0.00299	0.04	0.04	0.04	0	27375	31438	TP	########	HELSTF Ph	7
6102407	106737	HLSF-0085	soil	########	17:10:00	########	14:20:00	Total 8 Me	S 6010B	mg/Kg	1	no	Total Lead			1.62	1.62	1.62	1.62	0.367	1	1	1	0	27345	32009	RR	########	HELSTF Ph	7
6102407	106737	HLSF-0085	soil	########	17:10:00	########	14:20:00	Total 8 Me	S 6010B	mg/Kg	1	no	Total Selenium		<	0.0767 <	1 <	1 <	1	0.0767	1	1	1	0	27345	32009	RR	########	HELSTF Ph	7
6102407	106737	HLSF-0085	soil	########	17:10:00	########	14:20:00	Zn, Total	S 6010B	mg/Kg	1	no	Total Zinc	7440-66-6		2.79	2.79	2.79	2.79	0.124	2	2	2	0	27345	32009	RR	########	HELSTF Ph	7
6102407	106738	HLSF-0085	soil	########	17:10:00	########	14:50:00	Chromium	SM 3500-C	mg/Kg	1	no	Hexavalen	7440-47-3	<	2.32 <	5 <	5 <	5	2.32	5	5	5	0	27529	31615	WB	########	HELSTF Ph	7
6102407	106738	HLSF-0085	soil	########	17:10:00	########	14:50:00	Cu, Total	S 6010B	mg/Kg	1	no	Total Copp	7440-50-8		3.78	3.78	3.78	3.78	0.0268	0.5	0.5	0.5	0	27345	32009	RR	########	HELSTF Ph	7
6102407	106738	HLSF-0085	soil	########	17:10:00	########	14:50:00	FOC	ASTM D 29	%	1	no	FOC	N/A		2.16	2.16	2.16	2.16					0	27511	31592	SM	########	HELSTF Ph	7
6102407	106738	HLSF-0085	soil	########	17:10:00	########	14:50:00	K, Total	S 6010B	mg/Kg	1	no	Total Pota:	9/7/7440		1870	1870	1870	1870	0.291	50	50	50	0	27345	31784	TP	########	HELSTF Ph	7
6102407	106738	HLSF-0085	soil	########	17:10:00	########	14:50:00	Na, Total	S 6010B	mg/Kg	1	no	Total Sodiı	7440-23-5		1700	1700	1700	1700	0.082	50	50	50	0	27345	31784	TP	########	HELSTF Ph	7
6102407	106738	HLSF-0085	soil	########	17:10:00	########	14:50:00	Nitrate and	E 353.3	mg/Kg	500	no	Nitrate and Nitrite as N			158	158	158	158	0.0155	0.1	0.1	0.1	0	27544	31623	WB	########	HELSTF Ph	7
6102407	106738	HLSF-0085	soil	########	17:10:00	########	14:50:00	P, Total	S 6010B	mg/Kg	1	no	Total Phos	7723-14-0		96.6	96.6	96.6	96.6	0.223	2	2	2	0	27345	32009	RR	########	HELSTF Ph	7
6102407	106738	HLSF-0085	soil	########	17:10:00	########	14:50:00	Total 8 Me	S 6010B	mg/Kg	1	no	Total Silver		<	0.00444 <	0.05 <	0.05 <	0.05	0.00444	0.05	0.05	0.05	0	27345	32009	RR	########	HELSTF Ph	7
6102407	106738	HLSF-0085	soil	########	17:10:00	########	14:50:00	Total 8 Me	S 6010B	mg/Kg	1	no	Total Arsenic		<	0.228 <	2 <	2 <	2	0.228	2	2	2	0	27345	32009	RR	########	HELSTF Ph	7
6102407	106738	HLSF-0085	soil	########	17:10:00	########	14:50:00	Total 8 Me	S 6010B	mg/Kg	1	no	Total Barium			45.8	45.8	45.8	45.8	0.0601	1	1	1	0	27345	32009	RR	########	HELSTF Ph	7
6102407	106738	HLSF-0085	soil	########	17:10:00	########	14:50:00	Total 8 Me	S 6010B	mg/Kg	1	no	Total Cadmium		<	0.00794 <	0.1 <	0.1 <	0.1	0.00794	0.1	0.1	0.1	0	27345	32009	RR	########	HELSTF Ph	7
6102407	106738	HLSF-0085	soil	########	17:10:00	########	14:50:00	Total 8 Me	S 6010B	mg/Kg	1	no	Total Chromium			6.66	6.66	6.66	6.66	0.0125	0.5	0.5	0.5	0	27345	32009	RR	########	HELSTF Ph	7
6102407	106738	HLSF-0085	soil	########	17:10:00	########	14:50:00	Total 8 Me	S 7471A	mg/Kg	1	no	Total Mercury		<	0.00299 <	0.04 <	0.04 <	0.04	0.00299	0.04	0.04	0.04	0	27375	31438	TP	########	HELSTF Ph	7
6102407	106738	HLSF-0085	soil	########	17:10:00	########	14:50:00	Total 8 Me	S 6010B	mg/Kg	1	no	Total Lead			13.2	13.2	13.2	13.2	0.367	1	1	1	0	27345	32009	RR	########	HELSTF Ph	7
6102407	106738	HLSF-0085	soil	########	17:10:00	########	14:50:00	Total 8 Me	S 6010B	mg/Kg	1	no	Total Selenium		<	0.0767 <	1 <	1 <	1	0.0767	1	1	1	0	27345	32009	RR	########	HELSTF Ph	7
6102407	106738	HLSF-0085	soil	########	17:10:00	########	14:50:00	Zn, Total	S 6010B	mg/Kg	1	no	Total Zinc	7440-66-6		15.2	15.2	15.2	15.2	0.124	2	2	2	0	27345	32009	RR	########	HELSTF Ph	7
6102407	106739	HLSF-0085	soil	########	17:10:00	########	15:15:00	Chromium	SM 3500-C	mg/Kg	1	no	Hexavalen	7440-47-3	<	2.32 <	5 <	5 <	5	2.32	5	5	5	0	27529	31615	WB	########	HELSTF Ph	7
6102407	106739	HLSF-0085	soil	########	17:10:00	########	15:15:00	Cu, Total	S 6010B	mg/Kg	1	no	Total Copp	7440-50-8		8.92	8.92	8.92	8.92	0.0268	0.5	0.5	0.5	0	27345	32009	RR	########	HELSTF Ph	7
6102407	106739	HLSF-0085	soil	########	17:10:00	########	15:15:00	FOC	ASTM D 29	%	1	no	FOC	N/A		2.06	2.06	2.06	2.06					0	27511	31592	SM	########	HELSTF Ph	7
6102407	106739	HLSF-0085	soil	########	17:10:00	########	15:15:00	K, Total	S 6010B	mg/Kg	1	no	Total Pota:	9/7/7440		2350	2350	2350	2350	0.291	50	50	50	0	27345	31784	TP	########	HELSTF Ph	7
6102407	106739	HLSF-0085	soil	########	17:10:00	########	15:15:00	Na, Total	S 6010B	mg/Kg	1	no	Total Sodiı	7440-23-5		2550	2550	2550	2550	0.082	50	50	50	0	27345	31784	TP	########	HELSTF Ph	7
6102407	106739	HLSF-0085	soil	########	17:10:00	########	15:15:00	Nitrate and	E 353.3	mg/Kg	100	no	Nitrate and Nitrite as N			26.9	26.9	26.9	26.9	0.0155	0.1	0.1	0.1	0	27544	31623	WB	########	HELSTF Ph	7
6102407	106739	HLSF-0085	soil	########	17:10:00	########	15:15:00	P, Total	S 6010B	mg/Kg	1	no	Total Phos	7723-14-0		268	268	268	268	0.223	2	2	2	0	27345	32009	RR	########	HELSTF Ph	7
6102407	106739	HLSF-0085	soil	########	17:10:00	########	15:15:00	Total 8 Me	S 6010B	mg/Kg	1	no	Total Silver		<	0.00444 <	0.05 <	0.05 <	0.05	0.00444	0.05	0.05	0.05	0	27345	32009	RR	########	HELSTF Ph	7
6102407	106739	HLSF-0085	soil	########	17:10:00	########	15:15:00	Total 8 Me	S 6010B	mg/Kg	1	no	Total Arsenic		<	0.228 <	2 <	2 <	2	0.228	2	2	2	0	27345	32009	RR	########	HELSTF Ph	7
6102407	106739	HLSF-0085	soil	########	17:10:00	########	15:15:00	Total 8 Me	S 6010B	mg/Kg	1	no	Total Barium			67.3	67.3	67.3	67.3	0.0601	1	1	1	0	27345	32009	RR	########	HELSTF Ph	7
6102407	106739	HLSF-0085	soil	########	17:10:00	########	15:15:00	Total 8 Me	S 6010B	mg/Kg	1	no	Total Cadmium		<	0.00794 <	0.1 <	0.1 <	0.1	0.00794	0.1	0.1	0.1	0	27345	32009	RR	########	HELSTF Ph	7
6102407	106739	HLSF-0085	soil	########	17:10:00	########	15:15:00	Total 8 Me	S 6010B	mg/Kg	1	no	Total Chromium			8.85	8.85	8.85	8.85	0.0125	0.5	0.5	0.5	0	27345	32009	RR	########	HELSTF Ph	7
6102407	106739	HLSF-0085	soil	########	17:10:00	########	15:15:00	Total 8 Me	S 7471A	mg/Kg	1	no	Total Mercury			0.00314 <	0.04 <	0.04 <	0.04	0.00299	0.04	0.04	0.04	0	27375	31438	TP	########	HELSTF Ph	7
6102407	106739	HLSF-0085	soil	########	17:10:00	########	15:15:00	Total 8 Me	S 6010B	mg/Kg	1	no	Total Lead			15.7	15.7	15.7	15.7	0.367	1	1	1	0	27345	32009	RR	########	HELSTF Ph	7
6102407	106739	HLSF-0085	soil	########	17:10:00	########	15:15:00	Total 8 Me	S 6010B	mg/Kg	1	no	Total Selenium		<	0.0767 <	1 <	1 <	1	0.0767	1	1	1	0	27345	32009	RR	########	HELSTF Ph	7
6102407	106739	HLSF-0085	soil	########	17:10:00	########	15:15:00	Zn, Total	S 6010B	mg/Kg	1	no	Total Zinc	7440-66-6		29.7	29.7	29.7	29.7	0.124	2	2	2	0	27345	32009	RR	########	HELSTF Ph	7
6102407	106740	HLSF-0085	soil	########	17:10:00	########	15:45:00	Chromium	SM 3500-C	mg/Kg	1	no	Hexavalen	7440-47-3	<	2.32 <	5 <	5 <	5	2.32	5	5	5	0	27529	31615	WB	########	HELSTF Ph	7
6102407	106740	HLSF-0085	soil	########	17:10:00	########	15:45:00	Cu, Total	S 6010B	mg/Kg	1	no	Total Copp	7440-50-8		4.04	4.04	4.04	4.04	0.0268	0.5	0.5	0.5	0	27345	32009	RR	########	HELSTF Ph	7
6102407	106740	HLSF-0085	soil	########	17:10:00	########	15:45:00	FOC	ASTM D 29	%	1	no	FOC	N/A		0.91	0.91	0.91	0.91					0	27511	31592	SM	########	HELSTF Ph	7
6102407	106740	HLSF-0085	soil	########	17:10:00	########	15:45:00	K, Total	S 6010B	mg/Kg	1	no	Total Pota:	9/7/7440		1340	1340	1340	1340	0.291	50	50	50	0	27345	31784	TP	########	HELSTF Ph	7
6102407	106740	HLSF-0085	soil	########	17:10:00	########	15:45:00	Na, Total	S 6010B	mg/Kg	1	no	Total Sodiı	7440-23-5		1070	1070	1070	1070	0.082	50	50	50	0	27345	31784	TP	########	HELSTF Ph	7
6102407	106740	HLSF-0085	soil	########	17:10:00	########	15:45:00	Nitrate and	E 353.3	mg/Kg	100	no	Nitrate and Nitrite as N			21.2	21.2	21.2	21.2	0.0155	0.1	0.1	0.1	0	27539	31625	WB	########	HELSTF Ph	7
6102407	106740	HLSF-0085	soil	########	17:10:00	########	15:45:00	P, Total	S 6010B	mg/Kg	1	no	Total Phos	7723-14-0		166	166	166	166	0.223	2	2	2	0	27345	32009	RR	########	HELSTF Ph	7
6102407	106740	HLSF-0085	soil	########	17:10:00	########	15:45:00	Total 8 Me	S 6010B	mg/Kg	1	no	Total Silver		<	0.00444 <	0.05 <	0.05 <	0.05	0.00444	0.05	0.05	0.05	0	27345	32009	RR	########	HELSTF Ph	7
6102407	106740	HLSF-0085	soil	########	17:10:00	########	15:45:00	Total 8 Me	S 6010B	mg/Kg	1	no	Total Arsenic			2.6	2.6	2.6	2.6	0.228	2	2	2	0	27345	32009	RR	########	HELSTF Ph	7
6102407	106740	HLSF-0085	soil	########	17:10:00	########	15:45:00	Total 8 Me	S 6010B	mg/Kg	1	no	Total Barium			66.1	66.1	66.1	66.1	0.0601	1	1	1	0	27345	32009	RR	########	HELSTF Ph	7
6102407	106740	HLSF-0085	soil	########	17:10:00	########	15:45:00	Total 8 Me	S 6010B	mg/Kg	1	no	Total Cadmium			0.228	0.228	0.228	0.228	0.00794	0.1	0.1	0.1	0	27345	32009	RR	########	HELSTF Ph	7
6102407	106740	HLSF-0085	soil	########	17:10:00	########	15:45:00	Total 8 Me	S 6010B	mg/Kg	1	no	Total Chromium			5.11	5.11	5.11	5.11	0.0125	0.5	0.5	0.5	0	27345	32009	RR	########	HELSTF Ph	7
6102407	106740	HLSF-0085	soil	########	17:10:00	########	15:45:00	Total 8 Me	S 7471A	mg/Kg	1	no	Total Mercury		<	0.00299 <	0.04 <	0.04 <	0.04	0.00299	0.04	0.04	0.04	0	27375	31438	TP	########	HELSTF Ph	7
6102407	106740	HLSF-0085	soil	########	17:10:00	########	15:45:00	Total 8 Me	S 6010B	mg/Kg	1	no	Total Lead			10.8	10.8	10.8	10.8	0.367	1	1	1	0	27345	32009	RR	########	HELSTF Ph	7
6102407	106740	HLSF-0085	soil	########	17:10:00	########	15:45:00	Total 8 Me	S 6010B	mg/Kg	1	no	Total Selenium		<	0.0767 <	1 <	1 <	1	0.0767	1	1	1	0	27345	32009	RR	########	HELSTF Ph	7
6102407	106740	HLSF-0085	soil	########	17:10:00	########	15:45:00	Zn, Total	S 6010B	mg/Kg	1	no	Total Zinc	7440-66-6		14.8	14.8	14.8	14.8	0.124	2	2	2	0	27345	32009	RR	########	HELSTF Ph	7
6102407	106741	HLSF-0085	soil	########	17:10:00	########	16:15:00	Chromium	SM 3500-C	mg/Kg	1	no	Hexavalen	7440-47-3	<	2.32 <	5 <	5 <	5	2.32	5	5	5	0	27529	31615	WB	########	HELSTF Ph	7
6102407	106741	HLSF-0085	soil	########	17:10:00	########	16:15:00	Cu, Total	S 6010B	mg/Kg	1	no	Total Copp	7440-50-8		14	14	14	14	0.0268	0.5	0.5	0.5	0	27345	32009	RR	########	HELSTF Ph	7
6102407	106741	HLSF-0085	soil	########	17:10:00	########	16:15:00	FOC	ASTM D 29	%	1	no	FOC	N/A		2.58	2.58	2.58	2.58					0	27511	31592	SM	########	HELSTF Ph	7
6102407	106741	HLSF-0085	soil	########	17:10:00	########	16:15:00	K, Total	S 6010B	mg/Kg	1	no	Total Pota:	9/7/7440		3030	3030	3030	3030	0.291	50	50	50	0	27345	31784	TP	########	HELSTF Ph	7
6102407	106741	HLSF-0085	soil	########	17:10:00	########	16:15:00	Na, Total	S 6010B	mg/Kg	1	no	Total Sodiı	7440-23-5		3080	3080	3080	3080	0.082	50	50	50	0	27345	31784	TP	########	HELSTF Ph	7
6102407	106741	HLSF-0085	soil	########	17:10:00	########	16:15:00	Nitrate and	E 353.3	mg/Kg	100	no	Nitrate and Nitrite as N			30.8	30.8	30.8	30.8	0.0155	0.1	0.1	0.1	0	27544	31623	WB	########	HELSTF Ph	7
6102407	106741	HLSF-0085	soil	########	17:10:00	########	16:15:00	P, Total	S 6010B	mg/Kg	1	no	Total Phos	7723-14-0		380	380	380	380	0.223	2	2	2	0	27345	32009	RR	########	HELSTF Ph	7
6102407	106741	HLSF-0085	soil	########	17:10:00	########	16:15:00	Total 8 Me	S 6010B	mg/Kg	1	no	Total Silver		<	0.00444 <	0.05 <	0.05 <	0.05	0.00444	0.05	0.05	0.05	0	27345	32009	RR	########	HELSTF Ph	7
6102407	106741	HLSF-0085	soil	########	17:10:00	########	16:15:00	Total 8 Me	S 6010B	mg/Kg	1	no	Total Arsenic		<	0.228 <	2 <	2 <	2	0.228	2	2	2	0	27345	32009	RR	########	HELSTF Ph	7
6102407	106741	HLSF-0085	soil	########	17:10:00	########	16:15:00	Total 8 Me	S 6010B	mg/Kg	1	no	Total Barium			51.5	51.5	51.5	51.5	0.0601	1	1	1	0	27345	32009	RR	########	HELSTF Ph	7
6102407	106741	HLSF-0085	soil	########	17:10:00	########	16:15:00	Total 8 Me	S 6010B	mg/Kg	1	no	Total Cadmium		<	0.00794 <	0.1 <	0.1 <	0.1	0.00794	0.1	0.1	0.1	0	27345	32009	RR	########	HELSTF Ph	7
6102407	106741	HLSF-0085	soil	########	17:10:00	########	16:15:00	Total 8 Me	S 6010B	mg/Kg	1	no	Total Chromium			13.2	13.2	13.2	13.2	0.0125	0.5	0.5	0.5	0	27345	32009	RR	########	HELSTF Ph	7
6102407	106741	HLSF-0085	soil	########	17:10:00	########	16:15:00	Total 8 Me	S 7471A	mg/Kg	1	no	Total Mercury			0.00641 <	0.04 <	0.04 <	0.04	0.00299	0.04	0.04	0.04	0	27375	31438	TP	########	HELSTF Ph	7
6102407	106741	HLSF-0085	soil	########	17:10:00	########	16:15:00	Total 8 Me	S 6010B	mg/Kg	1	no	Total Lead			24.1	24.1	24.1	24.1	0.367	1	1	1	0	27345	32009	RR	########	HELSTF Ph	7
6102407	106741	HLSF-0085	soil	########	17:10:00	########	16:15:00	Total 8 Me	S 6010B	mg/Kg	1	no	Total Selenium		<	0.0767 <	1 <	1 <	1	0.0767	1	1	1	0	27345	32009	RR	########	HELSTF Ph	7
6102407	106741	HLSF-0085	soil	########	17:10:00	########	16:15:00	Zn, Total	S 6010B	mg/Kg	1	no	Total Zinc	7440-66-6		50.2	50.2	50.2	50.2	0.124	2	2	2	0	27345	32009	RR	########	HELSTF Ph	7
6110616	107951	HLSF-0085	soil	########	17:00:00	########	7:40:00	Chromium	SM 3500-C	mg/Kg	1	no	Hexavalen	7440-47-3	<	2.32 <	5 <	5 <	5	2.32	5	5	5	0	27864	32185	SM	########	HELSTF Ph	7
6110616	107951	HLSF-0085	soil	########	17:00:00	########	7:40:00	Cu, Total	S 6010B	mg/Kg	1	no	Total Copp	7440-50-8	<	0.0268 <	0.5 <	0.5 <	0.5	0.0268	0.5	0.5	0.5	0	27715	31838	RR	########	HELSTF Ph	7
6110616	107951	HLSF-0085	soil	########	17:00:00	########	7:40:00	FOC	ASTM D 29	%	1	no	FOC	N/A		2.93	2.93	2.93	2.93					0	27555	31720	SM	########	HELSTF Ph	7
6110616	107951	HLSF-0085	soil	########	17:00:00	########	7:40:00	K, Total	S 6010B	mg/Kg	1	no	Total Pota:	9/7/7440		325	325	325	325	0.291	50	50	50	0	27715	31927	TP	########	HELSTF Ph	7
6110616	107951	HLSF-0085	soil	########	17:00:00	########	7:40:00	Na, Total	S 6010B	mg/Kg	1	no	Total Sodiı	7440-23-5		243	243	243	243	0.082	50	50	50	0	27715	31927	TP	########	HELSTF Ph	7
6110616	107951	HLSF-0085	soil	########	17:00:00	########	7:40:00	Nitrate and	E 353.3	mg/Kg	2	no	Nitrate and Nitrite as N			0.42	0.42	0.42	0.42	0.0155	0.1	0.1	0.1	0	27709	31817	JS	########	HELSTF Ph	7
6110616	107951	HLSF-0085	soil	########	17:00:00	########	7:40:00	P, Total	S 6010B	mg/Kg	1	no	Total Phos	7723-14-0		49.7	49.7	49.7	49.7	0.223	2	2	2	0	27715	31838	RR	########	HELSTF Ph	7

6110616	107951	HLSF-0085	soil	########	17:00:00	########	7:40:00	Total 8 Me	S 6010B	mg/Kg	1 no	Total Silver	<	0.00444 <	0.05 <	0.05 <	0.05	0.00444	0.05	0.05	0.05	0	27715	31838 RR	########	HELSTF Ph	7
6110616	107951	HLSF-0085	soil	########	17:00:00	########	7:40:00	Total 8 Me	S 6010B	mg/Kg	1 no	Total Arsenic	<	0.228 <	2 <	2 <	2	0.228	2	2	2	0	27715	31838 RR	########	HELSTF Ph	7
6110616	107951	HLSF-0085	soil	########	17:00:00	########	7:40:00	Total 8 Me	S 6010B	mg/Kg	1 no	Total Barium		21.4	21.4	21.4	21.4	0.0601	1	1	1	0	27715	31838 RR	########	HELSTF Ph	7
6110616	107951	HLSF-0085	soil	########	17:00:00	########	7:40:00	Total 8 Me	S 6010B	mg/Kg	1 no	Total Cadmium	<	0.00794 <	0.1 <	0.1 <	0.1	0.00794	0.1	0.1	0.1	0	27715	31838 RR	########	HELSTF Ph	7
6110616	107951	HLSF-0085	soil	########	17:00:00	########	7:40:00	Total 8 Me	S 6010B	mg/Kg	1 no	Total Chromium	<	0.0125 <	0.5 <	0.5 <	0.5	0.0125	0.5	0.5	0.5	0	27715	31838 RR	########	HELSTF Ph	7
6110616	107951	HLSF-0085	soil	########	17:00:00	########	7:40:00	Total 8 Me	S 7471A	mg/Kg	1 no	Total Mercury		0.00648 <	0.04 <	0.04 <	0.04	0.00299	0.04	0.04	0.04	0	27636	31736 TP	########	HELSTF Ph	7
6110616	107951	HLSF-0085	soil	########	17:00:00	########	7:40:00	Total 8 Me	S 6010B	mg/Kg	1 no	Total Lead	<	0.367 <	1 <	1 <	1	0.367	1	1	1	0	27715	31838 RR	########	HELSTF Ph	7
6110616	107951	HLSF-0085	soil	########	17:00:00	########	7:40:00	Total 8 Me	S 6010B	mg/Kg	1 no	Total Selenium	<	0.0767 <	1 <	1 <	1	0.0767	1	1	1	0	27715	31838 RR	########	HELSTF Ph	7
6110616	107951	HLSF-0085	soil	########	17:00:00	########	7:40:00	Zn, Total	S 6010B	mg/Kg	1 no	Total Zinc	7440-66-6	3.17	3.17	3.17	3.17	0.124	2	2	2	0	27715	31838 RR	########	HELSTF Ph	7
6110616	107952	HLSF-0085	soil	########	17:00:00	########	8:00:00	Chromium	SM 3500-C	mg/Kg	1 no	Hexavalen	7440-47-3 <	2.32 <	5 <	5 <	5	2.32	5	5	5	0	27864	32185 SM	########	HELSTF Ph	7
6110616	107952	HLSF-0085	soil	########	17:00:00	########	8:00:00	Cu, Total	S 6010B	mg/Kg	1 no	Total Copp	7440-50-8	6.41	6.41	6.41	6.41	0.0268	0.5	0.5	0.5	0	27715	31838 RR	########	HELSTF Ph	7
6110616	107952	HLSF-0085	soil	########	17:00:00	########	8:00:00	FOC	ASTM D 29	%	1 no	FOC	N/A	3.27	3.27	3.27	3.27					0	27555	31720 SM	########	HELSTF Ph	7
6110616	107952	HLSF-0085	soil	########	17:00:00	########	8:00:00	K, Total	S 6010B	mg/Kg	1 no	Total Pota:	9/7/7440	2180	2180	2180	2180	0.291	50	50	50	0	27715	31927 TP	########	HELSTF Ph	7
6110616	107952	HLSF-0085	soil	########	17:00:00	########	8:00:00	Na, Total	S 6010B	mg/Kg	1 no	Total Sodi	7440-23-5	2070	2070	2070	2070	0.082	50	50	50	0	27715	31927 TP	########	HELSTF Ph	7
6110616	107952	HLSF-0085	soil	########	17:00:00	########	8:00:00	Nitrate an	E 353.3	mg/Kg	500 no	Nitrate and Nitrite as N		127	127	127	127	0.0155	0.1	0.1	0.1	0	27709	31817 JS	########	HELSTF Ph	7
6110616	107952	HLSF-0085	soil	########	17:00:00	########	8:00:00	P, Total	S 6010B	mg/Kg	1 no	Total Phos	7723-14-0	92.2	92.2	92.2	92.2	0.223	2	2	2	0	27715	31838 RR	########	HELSTF Ph	7
6110616	107952	HLSF-0085	soil	########	17:00:00	########	8:00:00	Total 8 Me	S 6010B	mg/Kg	1 no	Total Silver	<	0.00444 <	0.05 <	0.05 <	0.05	0.00444	0.05	0.05	0.05	0	27715	31838 RR	########	HELSTF Ph	7
6110616	107952	HLSF-0085	soil	########	17:00:00	########	8:00:00	Total 8 Me	S 6010B	mg/Kg	1 no	Total Arsenic		6.58	6.58	6.58	6.58	0.228	2	2	2	0	27715	31838 RR	########	HELSTF Ph	7
6110616	107952	HLSF-0085	soil	########	17:00:00	########	8:00:00	Total 8 Me	S 6010B	mg/Kg	1 no	Total Barium		94.5	94.5	94.5	94.5	0.0601	1	1	1	0	27715	31838 RR	########	HELSTF Ph	7
6110616	107952	HLSF-0085	soil	########	17:00:00	########	8:00:00	Total 8 Me	S 6010B	mg/Kg	1 no	Total Cadmium	<	0.00794 <	0.1 <	0.1 <	0.1	0.00794	0.1	0.1	0.1	0	27715	31838 RR	########	HELSTF Ph	7
6110616	107952	HLSF-0085	soil	########	17:00:00	########	8:00:00	Total 8 Me	S 6010B	mg/Kg	1 no	Total Chromium		7.22	7.22	7.22	7.22	0.0125	0.5	0.5	0.5	0	27715	31838 RR	########	HELSTF Ph	7
6110616	107952	HLSF-0085	soil	########	17:00:00	########	8:00:00	Total 8 Me	S 7471A	mg/Kg	1 no	Total Mercury		0.00651 <	0.04 <	0.04 <	0.04	0.00299	0.04	0.04	0.04	0	27636	31736 TP	########	HELSTF Ph	7
6110616	107952	HLSF-0085	soil	########	17:00:00	########	8:00:00	Total 8 Me	S 6010B	mg/Kg	1 no	Total Lead		12.8	12.8	12.8	12.8	0.367	1	1	1	0	27715	31838 RR	########	HELSTF Ph	7
6110616	107952	HLSF-0085	soil	########	17:00:00	########	8:00:00	Total 8 Me	S 6010B	mg/Kg	1 no	Total Selenium	<	0.0767 <	1 <	1 <	1	0.0767	1	1	1	0	27715	31838 RR	########	HELSTF Ph	7
6110616	107952	HLSF-0085	soil	########	17:00:00	########	8:00:00	Zn, Total	S 6010B	mg/Kg	1 no	Total Zinc	7440-66-6	17.4	17.4	17.4	17.4	0.124	2	2	2	0	27715	31838 RR	########	HELSTF Ph	7
6110616	107953	HLSF-0085	soil	########	17:00:00	########	8:25:00	Chromium	SM 3500-C	mg/Kg	1 no	Hexavalen	7440-47-3 <	2.32 <	5 <	5 <	5	2.32	5	5	5	0	27864	32185 SM	########	HELSTF Ph	7
6110616	107953	HLSF-0085	soil	########	17:00:00	########	8:25:00	Cu, Total	S 6010B	mg/Kg	1 no	Total Copp	7440-50-8	9.33	9.33	9.33	9.33	0.0268	0.5	0.5	0.5	0	27715	31838 RR	########	HELSTF Ph	7
6110616	107953	HLSF-0085	soil	########	17:00:00	########	8:25:00	FOC	ASTM D 29	%	1 no	FOC	N/A	3.91	3.91	3.91	3.91					0	27555	31720 SM	########	HELSTF Ph	7
6110616	107953	HLSF-0085	soil	########	17:00:00	########	8:25:00	K, Total	S 6010B	mg/Kg	1 no	Total Pota:	9/7/7440	2080	2080	2080	2080	0.291	50	50	50	0	27715	31927 TP	########	HELSTF Ph	7
6110616	107953	HLSF-0085	soil	########	17:00:00	########	8:25:00	Na, Total	S 6010B	mg/Kg	1 no	Total Sodi	7440-23-5	2840	2840	2840	2840	0.082	50	50	50	0	27715	31927 TP	########	HELSTF Ph	7
6110616	107953	HLSF-0085	soil	########	17:00:00	########	8:25:00	Nitrate an	E 353.3	mg/Kg	500 no	Nitrate and Nitrite as N		102	102	102	102	0.0155	0.1	0.1	0.1	0	27709	31817 JS	########	HELSTF Ph	7
6110616	107953	HLSF-0085	soil	########	17:00:00	########	8:25:00	P, Total	S 6010B	mg/Kg	1 no	Total Phos	7723-14-0	179	179	179	179	0.223	2	2	2	0	27715	31838 RR	########	HELSTF Ph	7
6110616	107953	HLSF-0085	soil	########	17:00:00	########	8:25:00	Total 8 Me	S 6010B	mg/Kg	1 no	Total Silver	<	0.00444 <	0.05 <	0.05 <	0.05	0.00444	0.05	0.05	0.05	0	27715	31838 RR	########	HELSTF Ph	7
6110616	107953	HLSF-0085	soil	########	17:00:00	########	8:25:00	Total 8 Me	S 6010B	mg/Kg	1 no	Total Arsenic		3.59	3.59	3.59	3.59	0.228	2	2	2	0	27715	31838 RR	########	HELSTF Ph	7
6110616	107953	HLSF-0085	soil	########	17:00:00	########	8:25:00	Total 8 Me	S 6010B	mg/Kg	1 no	Total Barium		31.4	31.4	31.4	31.4	0.0601	1	1	1	0	27715	31838 RR	########	HELSTF Ph	7
6110616	107953	HLSF-0085	soil	########	17:00:00	########	8:25:00	Total 8 Me	S 6010B	mg/Kg	1 no	Total Cadmium	<	0.00794 <	0.1 <	0.1 <	0.1	0.00794	0.1	0.1	0.1	0	27715	31838 RR	########	HELSTF Ph	7
6110616	107953	HLSF-0085	soil	########	17:00:00	########	8:25:00	Total 8 Me	S 6010B	mg/Kg	1 no	Total Chromium		7.2	7.2	7.2	7.2	0.0125	0.5	0.5	0.5	0	27715	31838 RR	########	HELSTF Ph	7
6110616	107953	HLSF-0085	soil	########	17:00:00	########	8:25:00	Total 8 Me	S 7471A	mg/Kg	1 no	Total Mercury	<	0.00299 <	0.04 <	0.04 <	0.04	0.00299	0.04	0.04	0.04	0	27636	31736 TP	########	HELSTF Ph	7
6110616	107953	HLSF-0085	soil	########	17:00:00	########	8:25:00	Total 8 Me	S 6010B	mg/Kg	1 no	Total Lead		24.9	24.9	24.9	24.9	0.367	1	1	1	0	27715	31838 RR	########	HELSTF Ph	7
6110616	107953	HLSF-0085	soil	########	17:00:00	########	8:25:00	Total 8 Me	S 6010B	mg/Kg	1 no	Total Selenium	<	0.0767 <	1 <	1 <	1	0.0767	1	1	1	0	27715	31838 RR	########	HELSTF Ph	7
6110616	107953	HLSF-0085	soil	########	17:00:00	########	8:25:00	Zn, Total	S 6010B	mg/Kg	1 no	Total Zinc	7440-66-6	23.2	23.2	23.2	23.2	0.124	2	2	2	0	27715	31838 RR	########	HELSTF Ph	7
6110616	107954	HLSF-0085	soil	########	17:00:00	########	8:50:00	Chromium	SM 3500-C	mg/Kg	1 no	Hexavalen	7440-47-3 <	2.32 <	5 <	5 <	5	2.32	5	5	5	0	27864	32185 SM	########	HELSTF Ph	7
6110616	107954	HLSF-0085	soil	########	17:00:00	########	8:50:00	Cu, Total	S 6010B	mg/Kg	1 no	Total Copp	7440-50-8	5.93	5.93	5.93	5.93	0.0268	0.5	0.5	0.5	0	27715	31838 RR	########	HELSTF Ph	7
6110616	107954	HLSF-0085	soil	########	17:00:00	########	8:50:00	FOC	ASTM D 29	%	1 no	FOC	N/A	2.02	2.02	2.02	2.02					0	27555	31720 SM	########	HELSTF Ph	7
6110616	107954	HLSF-0085	soil	########	17:00:00	########	8:50:00	K, Total	S 6010B	mg/Kg	1 no	Total Pota:	9/7/7440	1630	1630	1630	1630	0.291	50	50	50	0	27715	31927 TP	########	HELSTF Ph	7
6110616	107954	HLSF-0085	soil	########	17:00:00	########	8:50:00	Na, Total	S 6010B	mg/Kg	1 no	Total Sodi	7440-23-5	2040	2040	2040	2040	0.082	50	50	50	0	27715	31927 TP	########	HELSTF Ph	7
6110616	107954	HLSF-0085	soil	########	17:00:00	########	8:50:00	Nitrate an	E 353.3	mg/Kg	200 no	Nitrate and Nitrite as N		63	63	63	63	0.0155	0.1	0.1	0.1	0	27709	31817 JS	########	HELSTF Ph	7
6110616	107954	HLSF-0085	soil	########	17:00:00	########	8:50:00	P, Total	S 6010B	mg/Kg	1 no	Total Phos	7723-14-0	287	287	287	287	0.223	2	2	2	0	27715	31838 RR	########	HELSTF Ph	7
6110616	107954	HLSF-0085	soil	########	17:00:00	########	8:50:00	Total 8 Me	S 6010B	mg/Kg	1 no	Total Silver	<	0.00444 <	0.05 <	0.05 <	0.05	0.00444	0.05	0.05	0.05	0	27715	31838 RR	########	HELSTF Ph	7
6110616	107954	HLSF-0085	soil	########	17:00:00	########	8:50:00	Total 8 Me	S 6010B	mg/Kg	1 no	Total Arsenic		2.53	2.53	2.53	2.53	0.228	2	2	2	0	27715	31838 RR	########	HELSTF Ph	7
6110616	107954	HLSF-0085	soil	########	17:00:00	########	8:50:00	Total 8 Me	S 6010B	mg/Kg	1 no	Total Barium		91.5	91.5	91.5	91.5	0.0601	1	1	1	0	27715	31838 RR	########	HELSTF Ph	7
6110616	107954	HLSF-0085	soil	########	17:00:00	########	8:50:00	Total 8 Me	S 6010B	mg/Kg	1 no	Total Cadmium	<	0.00794 <	0.1 <	0.1 <	0.1	0.00794	0.1	0.1	0.1	0	27715	31838 RR	########	HELSTF Ph	7
6110616	107954	HLSF-0085	soil	########	17:00:00	########	8:50:00	Total 8 Me	S 6010B	mg/Kg	1 no	Total Chromium		6.72	6.72	6.72	6.72	0.0125	0.5	0.5	0.5	0	27715	31838 RR	########	HELSTF Ph	7
6110616	107954	HLSF-0085	soil	########	17:00:00	########	8:50:00	Total 8 Me	S 7471A	mg/Kg	1 no	Total Mercury		0.00401 <	0.04 <	0.04 <	0.04	0.00299	0.04	0.04	0.04	0	27636	31736 TP	########	HELSTF Ph	7
6110616	107954	HLSF-0085	soil	########	17:00:00	########	8:50:00	Total 8 Me	S 6010B	mg/Kg	1 no	Total Lead		13.5	13.5	13.5	13.5	0.367	1	1	1	0	27715	31838 RR	########	HELSTF Ph	7
6110616	107954	HLSF-0085	soil	########	17:00:00	########	8:50:00	Total 8 Me	S 6010B	mg/Kg	1 no	Total Selenium	<	0.0767 <	1 <	1 <	1	0.0767	1	1	1	0	27715	31838 RR	########	HELSTF Ph	7
6110616	107954	HLSF-0085	soil	########	17:00:00	########	8:50:00	Zn, Total	S 6010B	mg/Kg	1 no	Total Zinc	7440-66-6	22.4	22.4	22.4	22.4	0.124	2	2	2	0	27715	31838 RR	########	HELSTF Ph	7
6110616	107955	HLSF-0085	soil	########	17:00:00	########	8:50:00	Chromium	SM 3500-C	mg/Kg	1 no	Hexavalen	7440-47-3 <	2.32 <	5 <	5 <	5	2.32	5	5	5	0	27864	32185 SM	########	HELSTF Ph	7
6110616	107955	HLSF-0085	soil	########	17:00:00	########	8:50:00	Cu, Total	S 6010B	mg/Kg	1 no	Total Copp	7440-50-8	5.29	5.29	5.29	5.29	0.0268	0.5	0.5	0.5	0	27715	31838 RR	########	HELSTF Ph	7
6110616	107955	HLSF-0085	soil	########	17:00:00	########	8:50:00	FOC	ASTM D 29	%	1 no	FOC	N/A	1.37	1.37	1.37	1.37					0	27555	31720 SM	########	HELSTF Ph	7
6110616	107955	HLSF-0085	soil	########	17:00:00	########	8:50:00	K, Total	S 6010B	mg/Kg	1 no	Total Pota:	9/7/7440	1640	1640	1640	1640	0.291	50	50	50	0	27715	31927 TP	########	HELSTF Ph	7
6110616	107955	HLSF-0085	soil	########	17:00:00	########	8:50:00	Na, Total	S 6010B	mg/Kg	1 no	Total Sodi	7440-23-5	2050	2050	2050	2050	0.082	50	50	50	0	27715	31927 TP	########	HELSTF Ph	7
6110616	107955	HLSF-0085	soil	########	17:00:00	########	8:50:00	Nitrate an	E 353.3	mg/Kg	200 no	Nitrate and Nitrite as N		58.9	58.9	58.9	58.9	0.0155	0.1	0.1	0.1	0	27709	31817 JS	########	HELSTF Ph	7
6110616	107955	HLSF-0085	soil	########	17:00:00	########	8:50:00	P, Total	S 6010B	mg/Kg	1 no	Total Phos	7723-14-0	294	294	294	294	0.223	2	2	2	0	27715	31838 RR	########	HELSTF Ph	7
6110616	107955	HLSF-0085	soil	########	17:00:00	########	8:50:00	Total 8 Me	S 6010B	mg/Kg	1 no	Total Silver	<	0.00444 <	0.05 <	0.05 <	0.05	0.00444	0.05	0.05	0.05	0	27715	31838 RR	########	HELSTF Ph	7
6110616	107955	HLSF-0085	soil	########	17:00:00	########	8:50:00	Total 8 Me	S 6010B	mg/Kg	1 no	Total Arsenic		4.41	4.41	4.41	4.41	0.228	2	2	2	0	27715	31838 RR	########	HELSTF Ph	7
6110616	107955	HLSF-0085	soil	########	17:00:00	########	8:50:00	Total 8 Me	S 6010B	mg/Kg	1 no	Total Barium		87.6	87.6	87.6	87.6	0.0601	1	1	1	0	27715	31838 RR	########	HELSTF Ph	7
6110616	107955	HLSF-0085	soil	########	17:00:00	########	8:50:00	Total 8 Me	S 6010B	mg/Kg	1 no	Total Cadmium	<	0.00794 <	0.1 <	0.1 <	0.1	0.00794	0.1	0.1	0.1	0	27715	31838 RR	########	HELSTF Ph	7
6110616	107955	HLSF-0085	soil	########	17:00:00	########	8:50:00	Total 8 Me	S 6010B	mg/Kg	1 no	Total Chromium		6.88	6.88	6.88	6.88	0.0125	0.5	0.5	0.5	0	27715	31838 RR	########	HELSTF Ph	7
6110616	107955	HLSF-0085	soil	########	17:00:00	########	8:50:00	Total 8 Me	S 7471A	mg/Kg	1 no	Total Mercury		0.00399 <	0.04 <	0.04 <	0.04	0.00299	0.04	0.04	0.04	0	27636	31736 TP	########	HELSTF Ph	7
6110616	107955	HLSF-0085	soil	########	17:00:00	########	8:50:00	Total 8 Me	S 6010B	mg/Kg	1 no	Total Lead		13.1	13.1	13.1	13.1	0.367	1	1	1	0	27715	31838 RR	########	HELSTF Ph	7
6110616	107955	HLSF-0085	soil	########	17:00:00	########	8:50:00	Total 8 Me	S 6010B	mg/Kg	1 no	Total Selenium	<	0.0767 <	1 <	1 <	1	0.0767	1	1	1	0	27715	31838 RR	########	HELSTF Ph	7
6110616	107955	HLSF-0085	soil	########	17:00:00	########	8:50:00	Zn, Total	S 6010B	mg/Kg	1 no	Total Zinc	7440-66-6	21.9	21.9	21.9	21.9	0.124	2	2	2	0	27715	31838 RR	########	HELSTF Ph	7
6110616	107956	HLSF-0085	soil	########	17:00:00	########	9:25:00	Chromium	SM 3500-C	mg/Kg	1 no	Hexavalen	7440-47-3	2.58 <	5 <	5 <	5	2.32	5	5	5	0	27864	32185 SM	########	HELSTF Ph	7
6110616	107956	HLSF-0085	soil	########	17:00:00	########	9:25:00	Cu, Total	S 6010B	mg/Kg	1 no	Total Copp	7440-50-8	2.95	2.95	2.95	2.95	0.0268	0.5	0.5	0.5	0	27715	31838 RR	########	HELSTF Ph	7
6110616	107956	HLSF-0085	soil	########	17:00:00	########	9:25:00	FOC	ASTM D 29	%	1 no	FOC	N/A	4.42	4.42	4.42	4.42					0	27555	31720 SM	########	HELSTF Ph	7
6110616	107956	HLSF-0085	soil	########	17:00:00	########	9:25:00	K, Total	S 6010B	mg/Kg	1 no	Total Pota:	9/7/7440	821	821	821	821	0.291	50	50	50	0	27715	31927 TP	########	HELSTF Ph	7
6110616	107956	HLSF-0085	soil	########	17:00:00	########	9:25:00	Na, Total	S 6010B	mg/Kg	1 no	Total Sodi	7440-23-5	908	908	908	908	0.082	50	50	50	0	27715	31927 TP	########	HELSTF Ph	7
6110616	107956	HLSF-0085	soil	########	17:00:00	########	9:25:00	Nitrate an	E 353.3	mg/Kg	50 no	Nitrate and Nitrite as N		8.64	8.64	8.64	8.64	0.0155	0.1	0.1	0.1	0	27708	31816 JS	########	HELSTF Ph	7
6110616	107956	HLSF-0085	soil	########	17:00:00	########	9:25:00	P, Total	S 6010B	mg/Kg	1 no	Total Phos	7723-14-0	137	137	137	137	0.223	2	2	2	0	27715	31838 RR	########	HELSTF Ph	7
6110616	107956	HLSF-0085	soil	########	17:00:00	########	9:25:00	Total 8 Me	S 6010B	mg/Kg	1 no	Total Silver	<	0.00444 <	0.05 <	0.05 <	0.05	0.00444	0.05	0.05	0.05	0	27715	31838 RR	########	HELSTF Ph	7
6110616	107956	HLSF-0085	soil	########	17:00:00	########	9:25:00	Total 8 Me	S 6010B	mg/Kg	1 no	Total Arsenic		3.09	3.09	3.09	3.09	0.228	2	2	2	0	27715	31838 RR	########	HELSTF Ph	7
6110616	107956	HLSF-0085	soil	########	17:00:00	########	9:25:00	Total 8 Me	S 6010B	mg/Kg	1 no	Total Barium		58	58	58	58	0.0601	1	1	1	0	27715	31838 RR	########	HELSTF Ph	7
6110616	107956	HLSF-0085	soil	########	17:00:00	########	9:25:00	Total 8 Me	S 6010B	mg/Kg	1 no	Total Cadmium	<	0.00794 <	0.1 <	0.1 <	0.1	0.00794	0.1	0.1	0.1	0	27715	31838 RR	########	HELSTF Ph	7
6110616	107956	HLSF-0085	soil	########	17:00:00	########	9:25:00	Total 8 Me	S 6010B	mg/Kg	1 no	Total Chromium		3.46	3.46	3.46	3.46	0.0125	0.5	0.5	0.5	0	27715	31838 RR	########	HELSTF Ph	7
6110616	107956	HLSF-0085	soil	########	17:00:00	########	9:25:00	Total 8 Me	S 7471A	mg/Kg	1 no	Total Mercury	<	0.00299 <	0.04 <	0.04 <	0.04	0.00299	0.04	0.04	0.04	0	27636	31736 TP	########	HELSTF Ph	7
6110616	107956	HLSF-0085	soil	########	17:00:00	########	9:25:00	Total 8 Me	S 6010B	mg/Kg	1 no	Total Lead		8.34	8.34	8.34	8.34	0.367	1	1	1	0	27715	31838 RR	########	HELSTF Ph	7
6110616	107956	HLSF-0085	soil	########	17:00:00	########	9:25:00	Total 8 Me	S 6010B	mg/Kg	1 no	Total Selenium	<	0.0767 <	1 <	1 <	1	0.0767	1	1	1	0	27715	31838 RR	########	HELSTF Ph	7
6110616	107956	HLSF-0085	soil	########	17:00:00	########	9:25:00	Zn, Total	S 6010B	mg/Kg	1 no	Total Zinc	7440-66-6	12.3	12.3	12.3	12.3	0.124	2	2	2	0	27715	31838 RR	########	HELSTF Ph	7
6110616	107957	HLSF-0085	soil	########	17:00:00	########	10:00:00	Chromium	SM 3500-C	mg/Kg	1 no	Hexavalen	7440-47-3 <	2.32 <	5 <	5 <	5	2.32	5	5	5	0	27864	32185 SM	########	HELSTF Ph	7
6110616	107957	HLSF-0085	soil	########	17:00:00	########	10:00:00	Cu, Total	S 6010B	mg/Kg	1 no	Total Copp	7440-50-8	7.03	7.03	7.03	7.03	0.0268	0.5	0.5	0.5	0	27715	31838 RR	########	HELSTF Ph	7
6110616	107957	HLSF-0085	soil	########	17:00:00	########	10:00:00	FOC	ASTM D 29	%	1 no	FOC	N/A	1.56	1.56	1.56	1.56					0	27555	31720 SM	########	HELSTF Ph	7
6110616	107957	HLSF-0085	soil	########	17:00:00	########	10:00:00	K, Total	S 6010B	mg/Kg	1 no	Total Pota:	9/7/7440	1860	1860	1860	1860	0.291	50	50	50	0	27715	31927 TP	########	HELSTF Ph	7
6110616	107957	HLSF-0085	soil	########	17:00:00	########	10:00:00	Na, Total	S 6010B	mg/Kg	1 no	Total Sodi	7440-23-5	2350	2350	2350	2350	0.082	50	50	50	0	27715	31927 TP	########	HELSTF Ph	7
6110616	107957	HLSF-0085	soil	########	17:00:00	########	10:00:00	Nitrate an	E 353.3	mg/Kg	200 no	Nitrate and Nitrite as N		51	51	51	51	0.0155	0.1	0.1	0.1	0	27708	31816 JS	########	HELSTF Ph	7
6110616	107957	HLSF-0085	soil	########	17:00:00	########	10:00:00	P, Total	S 6010B	mg/Kg	1 no	Total Phos	7723-14-0	283	283	283	283	0.223	2	2	2	0	27715	31838 RR	########	HELSTF Ph	7
6110616	107957	HLSF-0085	soil	########	17:00:00	########	10:00:00	Total 8 Me	S 6010B	mg/Kg	1 no	Total Silver	<	0.00444 <	0.05 <	0.05 <	0.05	0.00444	0.05	0.05	0.05	0	27715	31838 RR	########	HELSTF Ph	7
6110616	107957	HLSF-0085	soil	########	17:00:00	########	10:00:00	Total 8 Me	S 6010B	mg/Kg	1 no	Total Arsenic	<	0.228 <	2 <	2 <	2	0.228	2	2	2	0	27715	31838 RR	########	HELSTF Ph	7
6110616	107957	HLSF-0085	soil	########	17:00:00	########	10:00:00	Total 8 Me	S 6010B	mg/Kg	1 no	Total Barium		104	104	104	104	0.0601	1	1	1	0	27715	31838 RR	########	HELSTF Ph	7
6110616	107957	HLSF-0085	soil	########	17:00:00	########	10:00:00	Total 8 Me	S 6010B	mg/Kg	1 no	Total Cadmium	<	0.00794 <	0.1 <	0.1 <	0.1	0.00794	0.1	0.1	0.1	0	27715	31838 RR	########	HELSTF Ph	7
6110616	107957	HLSF-0085	soil	########	17:00:00	########	10:00:00	Total 8 Me	S 6010B	mg/Kg	1 no	Total Chromium		8.94	8.94	8.94	8.94	0.0125	0.5	0.5	0.5	0	27715	31838 RR	########	HELSTF Ph	7
6110616	107957	HLSF-0085	soil	########	17:00:00	########	10:00:00	Total 8 Me	S 7471A	mg/Kg	1 no	Total Mercury	<	0.00299 <	0.04 <	0.04 <	0.04	0.00299	0.04	0.04	0.04	0	27779	31923 TP	########	HELSTF Ph	7

6110616	107957 HLSF-0085 soil	########	17:00:00	########	10:00:00		Total 8 Me	S 6010B	mg/Kg	1	no	Total Lead	17.9	17.9	17.9	17.9	0.367	1	1	1	0			27715	31838 RR	########	HELSTF Ph	7
6110616	107957 HLSF-0085 soil	########	17:00:00	########	10:00:00		Total 8 Me	S 6010B	mg/Kg	1	no	Total Selenium	< 0.0767	< 1	< 1	1	0.0767	1	1	1	0			27715	31838 RR	########	HELSTF Ph	7
6110616	107957 HLSF-0085 soil	########	17:00:00	########	10:00:00		Zn, Total	S 6010B	mg/Kg	1	no	Total Zinc 7440-66-6	27.1	27.1	27.1	27.1	0.124	2	2	2	0			27715	31838 RR	########	HELSTF Ph	7
						LCS (1)	Total 8 Me	S 7471A	mg/Kg	1	no	Total Merc 7439-97-6	0.516	0.516	0.516	0.516	0.00299	0.04	0.04	0.04	0.5	103.2		27351	31411			
						LCSD (1)	Total 8 Me	S 7471A	mg/Kg	1	no	Total Merc 7439-97-6	0.519	0.519	0.519	0.519	0.00299	0.04	0.04	0.04	0.5	103.8	0.6	27351	31411			
						MS (1)	Total 8 Me	S 7471A	mg/Kg	1	no	Total Merc 7439-97-6	0.529	0.529	0.529	0.529	0.00299	0.04	0.04	0.04	0.5	105.8		27351	31411			
						MSD (1)	Total 8 Me	S 7471A	mg/Kg	1	no	Total Merc 7439-97-6	0.528	0.528	0.528	0.528	0.00299	0.04	0.04	0.04	0.5	105.6	0.2	27351	31411			
						Method Bl	Total 8 Me	S 7471A	mg/Kg	1	no	Total Merc 7439-97-6	0.00299 <	0.04 <	0.04 <	0.04	0.00299	0.04	0.04	0.04	0			27351	31411			
						ICV (1)	Total 8 Me	S 7471A	mg/L	1	no	Total Merc 7439-97-6	0.00516 <	0.04 <	0.04 <	0.04	0.00299	0.04	0.04	0.04	0.005	103.2		27351	31411			
						CCV (1)	Total 8 Me	S 7471A	mg/L	1	no	Total Merc 7439-97-6	0.00509 <	0.04 <	0.04 <	0.04	0.00299	0.04	0.04	0.04	0.005	101.8		27351	31411			
						LCS (1)	Total 8 Me	S 7471A	mg/Kg	1	no	Total Merc 7439-97-6	0.516	0.516	0.516	0.516	0.00299	0.04	0.04	0.04	0.5	103.2		27351	31412			
						LCSD (1)	Total 8 Me	S 7471A	mg/Kg	1	no	Total Merc 7439-97-6	0.519	0.519	0.519	0.519	0.00299	0.04	0.04	0.04	0.5	103.8	0.6	27351	31412			
						MS (1)	Total 8 Me	S 7471A	mg/Kg	1	no	Total Merc 7439-97-6	0.511	0.511	0.511	0.511	0.00299	0.04	0.04	0.04	0.5	101.352		27351	31412			
						MSD (1)	Total 8 Me	S 7471A	mg/Kg	1	no	Total Merc 7439-97-6	0.498	0.498	0.498	0.498	0.00299	0.04	0.04	0.04	0.5	98.752	2.6	27351	31412			
						Method Bl	Total 8 Me	S 7471A	mg/Kg	1	no	Total Merc 7439-97-6	0.00299 <	0.04 <	0.04 <	0.04	0.00299	0.04	0.04	0.04	0			27351	31412			
						ICV (1)	Total 8 Me	S 7471A	mg/L	1	no	Total Merc 7439-97-6	0.00516 <	0.04 <	0.04 <	0.04	0.00299	0.04	0.04	0.04	0.005	103.2		27351	31412			
						CCV (1)	Total 8 Me	S 7471A	mg/L	1	no	Total Merc 7439-97-6	0.00509 <	0.04 <	0.04 <	0.04	0.00299	0.04	0.04	0.04	0.005	101.8		27351	31412			
						LCS (1)	Cu, Total	S 6010B	mg/Kg	1	no	Total Copp 7440-50-8	11.3	11.3	11.3	11.3	0.0268	0.5	0.5	0.5	12.5	90.4		27288	31429			
						LCSD (1)	Cu, Total	S 6010B	mg/Kg	1	no	Total Copp 7440-50-8	11.8	11.8	11.8	11.8	0.0268	0.5	0.5	0.5	12.5	94.4	4.3	27288	31429			
						LCS (1)	P, Total	S 6010B	mg/Kg	1	no	Total Phos 7723-14-0	47.3	47.3	47.3	47.3	0.223	2	2	2	50	94.6		27288	31429			
						LCSD (1)	P, Total	S 6010B	mg/Kg	1	no	Total Phos 7723-14-0	48.2	48.2	48.2	48.2	0.223	2	2	2	50	96.4	1.9	27288	31429			
						LCS (1)	Zn, Total	S 6010B	mg/Kg	1	no	Total Zinc 7440-66-6	22.8	22.8	22.8	22.8	0.124	2	2	2	25	91.2		27288	31429			
						LCSD (1)	Zn, Total	S 6010B	mg/Kg	1	no	Total Zinc 7440-66-6	22.7	22.7	22.7	22.7	0.124	2	2	2	25	90.8	0.4	27288	31429			
						LCS (1)	Total 8 Me	S 6010B	mg/Kg	1	no	Total Silve 7440-22-4	11.7	11.7	11.7	11.7	0.00444	0.05	0.05	0.05	12.5	93.6		27288	31429			
						LCS (1)	Total 8 Me	S 6010B	mg/Kg	1	no	Total Arse 7440-38-2	43.2	43.2	43.2	43.2	0.228	2	2	2	50	86.4		27288	31429			
						LCS (1)	Total 8 Me	S 6010B	mg/Kg	1	no	Total Bariu 7440-39-3	87.1	87.1	87.1	87.1	0.0601	1	1	1	100	87.1		27288	31429			
						LCS (1)	Total 8 Me	S 6010B	mg/Kg	1	no	Total Cadn 7440-43-9	22.2	22.2	22.2	22.2	0.00794	0.1	0.1	0.1	25	88.8		27288	31429			
						LCS (1)	Total 8 Me	S 6010B	mg/Kg	1	no	Total Chro 7440-47-3	9.98	9.98	9.98	9.98	0.0125	0.5	0.5	0.5	10	99.8		27288	31429			
						LCS (1)	Total 8 Me	S 6010B	mg/Kg	1	no	Total Lead 7439-92-1	44	44	44	44	0.367	1	1	1	50	88		27288	31429			
						LCS (1)	Total 8 Me	S 6010B	mg/Kg	1	no	Total Seler 7782-49-2	39.4	39.4	39.4	39.4	0.0767	1	1	1	50	78.8		27288	31429			
						LCSD (1)	Total 8 Me	S 6010B	mg/Kg	1	no	Total Silve 7440-22-4	11.3	11.3	11.3	11.3	0.00444	0.05	0.05	0.05	12.5	90.4	3.5	27288	31429			
						LCSD (1)	Total 8 Me	S 6010B	mg/Kg	1	no	Total Arse 7440-38-2	42.9	42.9	42.9	42.9	0.228	2	2	2	50	85.8	0.7	27288	31429			
						LCSD (1)	Total 8 Me	S 6010B	mg/Kg	1	no	Total Bariu 7440-39-3	86.6	86.6	86.6	86.6	0.0601	1	1	1	100	86.6	0.6	27288	31429			
						LCSD (1)	Total 8 Me	S 6010B	mg/Kg	1	no	Total Cadn 7440-43-9	22.4	22.4	22.4	22.4	0.00794	0.1	0.1	0.1	25	89.6	0.9	27288	31429			
						LCSD (1)	Total 8 Me	S 6010B	mg/Kg	1	no	Total Chro 7440-47-3	9.48	9.48	9.48	9.48	0.0125	0.5	0.5	0.5	10	94.8	5.1	27288	31429			
						LCSD (1)	Total 8 Me	S 6010B	mg/Kg	1	no	Total Lead 7439-92-1	42.3	42.3	42.3	42.3	0.367	1	1	1	50	84.6	3.9	27288	31429			
						LCSD (1)	Total 8 Me	S 6010B	mg/Kg	1	no	Total Seler 7782-49-2	39.7	39.7	39.7	39.7	0.0767	1	1	1	50	79.4	0.8	27288	31429			
						MS (1)	Cu, Total	S 6010B	mg/Kg	1	no	Total Copp 7440-50-8	13.7	13.7	13.7	13.7	0.0268	0.5	0.5	0.5	12.5	88.8		27288	31429			
						MSD (1)	Cu, Total	S 6010B	mg/Kg	1	no	Total Copp 7440-50-8	13.5	13.5	13.5	13.5	0.0268	0.5	0.5	0.5	12.5	87.2	1.5	27288	31429			
						MS (1)	P, Total	S 6010B	mg/Kg	1	no	Total Phos 7723-14-0	165	165	165	165	0.223	2	2	2	50	56		27288	31429		Matrix spike recovery out of control limits due to matr	
						MSD (1)	P, Total	S 6010B	mg/Kg	1	no	Total Phos 7723-14-0	160	160	160	160	0.223	2	2	2	50	46	3.1	27288	31429		Matrix spike recovery out of control limits due to matr	
						MS (1)	Zn, Total	S 6010B	mg/Kg	1	no	Total Zinc 7440-66-6	35.4	35.4	35.4	35.4	0.124	2	2	2	25	85.2		27288	31429			
						MSD (1)	Zn, Total	S 6010B	mg/Kg	1	no	Total Zinc 7440-66-6	34.7	34.7	34.7	34.7	0.124	2	2	2	25	82.4	2	27288	31429			
						MS (1)	Total 8 Me	S 6010B	mg/Kg	1	no	Total Silve 7440-22-4	10.3	10.3	10.3	10.3	0.00444	0.05	0.05	0.05	12.5	82.4		27288	31429			
						MS (1)	Total 8 Me	S 6010B	mg/Kg	1	no	Total Arse 7440-38-2	41.1	41.1	41.1	41.1	0.228	2	2	2	50	82.2		27288	31429			
						MS (1)	Total 8 Me	S 6010B	mg/Kg	1	no	Total Bariu 7440-39-3	122	122	122	122	0.0601	1	1	1	100	93		27288	31429			
						MS (1)	Total 8 Me	S 6010B	mg/Kg	1	no	Total Cadn 7440-43-9	20.6	20.6	20.6	20.6	0.00794	0.1	0.1	0.1	25	82.4		27288	31429			
						MS (1)	Total 8 Me	S 6010B	mg/Kg	1	no	Total Chro 7440-47-3	13.7	13.7	13.7	13.7	0.0125	0.5	0.5	0.5	10	92.9		27288	31429			
						MS (1)	Total 8 Me	S 6010B	mg/Kg	1	no	Total Lead 7439-92-1	48.1	48.1	48.1	48.1	0.367	1	1	1	50	81.12		27288	31429			
						MS (1)	Total 8 Me	S 6010B	mg/Kg	1	no	Total Seler 7782-49-2	39.6	39.6	39.6	39.6	0.0767	1	1	1	50	79.2		27288	31429			
						MSD (1)	Total 8 Me	S 6010B	mg/Kg	1	no	Total Silve 7440-22-4	10.3	10.3	10.3	10.3	0.00444	0.05	0.05	0.05	12.5	82.4	0	27288	31429			
						MSD (1)	Total 8 Me	S 6010B	mg/Kg	1	no	Total Arse 7440-38-2	41.4	41.4	41.4	41.4	0.228	2	2	2	50	82.8	0.7	27288	31429			
						MSD (1)	Total 8 Me	S 6010B	mg/Kg	1	no	Total Bariu 7440-39-3	124	124	124	124	0.0601	1	1	1	100	95	1.6	27288	31429			
						MSD (1)	Total 8 Me	S 6010B	mg/Kg	1	no	Total Cadn 7440-43-9	20.3	20.3	20.3	20.3	0.00794	0.1	0.1	0.1	25	81.2	1.5	27288	31429			
						MSD (1)	Total 8 Me	S 6010B	mg/Kg	1	no	Total Chro 7440-47-3	13.3	13.3	13.3	13.3	0.0125	0.5	0.5	0.5	10	88.9	3	27288	31429			
						MSD (1)	Total 8 Me	S 6010B	mg/Kg	1	no	Total Lead 7439-92-1	47	47	47	47	0.367	1	1	1	50	78.92	2.3	27288	31429			
						MSD (1)	Total 8 Me	S 6010B	mg/Kg	1	no	Total Seler 7782-49-2	40.3	40.3	40.3	40.3	0.0767	1	1	1	50	80.6	1.8	27288	31429			
						Method Bl	Cu, Total	S 6010B	mg/Kg	1	no	Total Copp 7440-50-8	< 0.0268 <	0.5 <	0.5 <	0.5	0.0268	0.5	0.5	0.5	0			27288	31429			
						Method Bl	P, Total	S 6010B	mg/Kg	1	no	Total Phos 7723-14-0	< 0.223 <	2 <	2 <	2	0.223	2	2	2	0			27288	31429			
						Method Bl	Zn, Total	S 6010B	mg/Kg	1	no	Total Zinc 7440-66-6	1.95 <	2 <	2 <	2	0.124	2	2	2	0			27288	31429			
						Method Bl	Total 8 Me	S 6010B	mg/Kg	1	no	Total Silve 7440-22-4	0.00444 <	0.05 <	0.05 <	0.05	0.00444	0.05	0.05	0.05	0			27288	31429			
						Method Bl	Total 8 Me	S 6010B	mg/Kg	1	no	Total Arse 7440-38-2	0.228 <	2 <	2 <	2	0.228	2	2	2	0			27288	31429			
						Method Bl	Total 8 Me	S 6010B	mg/Kg	1	no	Total Bariu 7440-39-3	0.0601 <	1 <	1 <	1	0.0601	1	1	1	0			27288	31429			
						Method Bl	Total 8 Me	S 6010B	mg/Kg	1	no	Total Cadn 7440-43-9	0.00794 <	0.1 <	0.1 <	0.1	0.00794	0.1	0.1	0.1	0			27288	31429			
						Method Bl	Total 8 Me	S 6010B	mg/Kg	1	no	Total Chro 7440-47-3	0.0125 <	0.5 <	0.5 <	0.5	0.0125	0.5	0.5	0.5	0			27288	31429			
						Method Bl	Total 8 Me	S 6010B	mg/Kg	1	no	Total Lead 7439-92-1	0.367 <	1 <	1 <	1	0.367	1	1	1	0			27288	31429			
						Method Bl	Total 8 Me	S 6010B	mg/Kg	1	no	Total Seler 7782-49-2	0.0767 <	1 <	1 <	1	0.0767	1	1	1	0			27288	31429			
						ICV (1)	Cu, Total	S 6010B	mg/Kg	1	no	Total Copp 7440-50-8	0.998	0.998	0.998	0.998	0.0268	0.5	0.5	0.5	1	99.8		27288	31429			
						ICV (1)	P, Total	S 6010B	mg/Kg	1	no	Total Phos 7723-14-0	4.95	4.95	4.95	4.95	0.223	2	2	2	5	99		27288	31429			
						ICV (1)	Zn, Total	S 6010B	mg/Kg	1	no	Total Zinc 7440-66-6	0.998 <	2 <	2 <	2	0.124	2	2	2	1	99.8		27288	31429			
						ICV (1)	Total 8 Me	S 6010B	mg/Kg	1	no	Total Silve 7440-22-4	0.126	0.126	0.126	0.126	0.00444	0.05	0.05	0.05	0.125	100.8		27288	31429			
						ICV (1)	Total 8 Me	S 6010B	mg/Kg	1	no	Total Arse 7440-38-2	0.996 <	2 <	2 <	2	0.228	2	2	2	1	99.6		27288	31429			
						ICV (1)	Total 8 Me	S 6010B	mg/Kg	1	no	Total Bariu 7440-39-3	1.01	1.01	1.01	1.01	0.0601	1	1	1	1	101		27288	31429			
						ICV (1)	Total 8 Me	S 6010B	mg/Kg	1	no	Total Cadn 7440-43-9	0.994	0.994	0.994	0.994	0.00794	0.1	0.1	0.1	1	99.4		27288	31429			
						ICV (1)	Total 8 Me	S 6010B	mg/Kg	1	no	Total Chro 7440-47-3	0.991	0.991	0.991	0.991	0.0125	0.5	0.5	0.5	1	99.1		27288	31429			
						ICV (1)	Total 8 Me	S 6010B	mg/Kg	1	no	Total Lead 7439-92-1	0.997 <	1 <	1 <	1	0.367	1	1	1	1	99.7		27288	31429			
						ICV (1)	Total 8 Me	S 6010B	mg/Kg	1	no	Total Seler 7782-49-2	1.01	1.01	1.01	1.01	0.0767	1	1	1	1	101		27288	31429			
						CCV (1)	Cu, Total	S 6010B	mg/Kg	1	no	Total Copp 7440-50-8	0.971	0.971	0.971	0.971	0.0268	0.5	0.5	0.5	1	97.1		27288	31429			
						CCV (1)	P, Total	S 6010B	mg/Kg	1	no	Total Phos 7723-14-0	4.72	4.72	4.72	4.72	0.223	2	2	2	5	94.4		27288	31429			
						CCV (1)	Zn, Total	S 6010B	mg/Kg	1	no	Total Zinc 7440-66-6	0.962 <	2 <	2 <	2	0.124	2	2	2	1	96.2		27288	31429			
						CCV (1)	Total 8 Me	S 6010B	mg/Kg	1	no	Total Silve 7440-22-4	0.123	0.123	0.123	0.123	0.00444	0.05	0.05	0.05	0.125	98.4		27288	31429			
						CCV (1)	Total 8 Me	S 6010B	mg/Kg	1	no	Total Arse 7440-38-2	0.956 <	2 <	2 <	2	0.228	2	2	2	1	95.6		27288	31429			
						CCV (1)	Total 8 Me	S 6010B	mg/Kg	1	no	Total Bariu 7440-39-3	0.983 <	1 <	1 <	1	0.0601	1	1	1	1	98.3		27288	31429			
						CCV (1)	Total 8 Me	S 6010B	mg/Kg	1	no	Total Cadn 7440-43-9	0.952	0.952	0.952	0.952	0.00794	0.1	0.1	0.1	1	95.2		27288	31429			
						CCV (1)	Total 8 Me	S 6010B	mg/Kg	1	no	Total Chro 7440-47-3	0.95	0.95	0.95	0.95	0.0125	0.5	0.5	0.5	1	95		27288	31429			
						CCV (1)	Total 8 Me	S 6010B	mg/Kg	1	no	Total Lead 7439-92-1	1.02	1.02	1.02	1.02	0.367	1	1	1	1	102		27288	31429			
						CCV (1)	Total 8 Me	S 6010B	mg/Kg	1	no	Total Seler 7782-49-2	0.994 <	1 <	1 <	1	0.0767	1	1	1	1	99.4		27288	31429			
						LCS (1)	Total 8 Me	S 7471A	mg/Kg	1	no	Total Merc 7439-97-6	0.499	0.499	0.499	0.499	0.00299	0.04	0.04	0.04	0.5	99.8		27375	31438			
						LCSD (1)	Total 8 Me	S 7471A	mg/Kg	1	no	Total Merc 7439-97-6	0.531	0.531	0.531	0.531	0.00299	0.04	0.04	0.04	0.5	106.2	6.2	27375	31438			
						MS (1)	Total 8 Me	S 7471A	mg/Kg	1	no	Total Merc 7439-97-6	0.504	0.504	0.504	0.504	0.00299	0.04	0.04	0.04	0.5	100.8		27375	31438			
						MSD (1)	Total 8 Me	S 7471A	mg/Kg	1	no	Total Merc 7439-97-6	0.512	0.512	0.512	0.512	0.00299	0.04	0.04	0.04	0.5	102.4	1.6	27375	31438			
						Method Bl	Total 8 Me	S 7471A	mg/Kg	1	no	Total Merc 7439-97-6	0.00299 <	0.04 <	0.04 <	0.04	0.00299	0.04	0.04	0.04	0			27375	31438			
						ICV (1)	Total 8 Me	S 7471A	mg/L	1	no	Total Merc 7439-97-6	0.00488 <	0.04 <	0.04 <	0.04	0.00299	0.04	0.04	0.04	0.005	97.6		27375	31438			
						CCV (1)	Total 8 Me	S 7471A	mg/L	1	no	Total Merc 7439-97-6	0.00527 <	0.04 <	0.04 <	0.04	0.00299	0.04	0.04	0.04	0.005	105.4		27375	31438			
						LCS (1)	K, Total	S 6010B	mg/Kg	100	no	Total Pota 9/7/7440	4660	4660 <	5000 <	5000	0.291	0	50	50	5000	93.2		27288	31440			
						LCSD (1)	K, Total	S 6010B	mg/Kg	100	no	Total Pota 9/7/7440	4640	4640 <	5000 <	5000	0.291	0	50	50	5000	92.8	0.4	27288	31440			
						LCS (1)	Na, Total	S 6010B	mg/Kg	100	no	Total Sodi 7440-23-5	4710	4710 <	5000 <	5000	0.082	0	50	50	5000	94.2		27288	31440			
						LCSD (1)	Na, Total	S 6010B	mg/Kg	100	no	Total Sodi 7440-23-5	4690	4690 <	5000 <	5000	0.082	0	50	50	5000	93.8	0.4	27288	31440			
						MS (1)	K, Total	S 6010B	mg/Kg	100	no	Total Pota 9/7/7440	5130	5130	5130	5130	0.291	0	50	50	5000	86.62		27288	31440			
						MSD (1)	K, Total	S 6010B	mg/Kg	100	no	Total Pota 9/7/7440	5280	5280	5280	5280	0.291	0	50	50	5000	89.62	2.9	27288	31440			
						MS (1)	Na, Total	S 6010B	mg/Kg	100	no	Total Sodi 7440-23-5	5520	5520	5520	5520	0.082	0	50	50	5000	95.62		27288	31440			
						MSD (1)	Na, Total	S 6010B	mg/Kg	100	no	Total Sodi 7440-23-5	5290	5290	5290	5290	0.082	0	50	50	5000	91.02	4.2	27288	31440			

Method Bl	K, Total	S 6010B	mg/Kg	1	no	Total Pota:	9/7/7440	9.38	9.38 <	50 <	50	0.291	0	50	50	0			27288	31440	
Method Bl	Na, Total	S 6010B	mg/Kg	1	no	Total Sodi:	7440-23-5	195	195	195	195	0.082	0	50	50	0			27288	31440	
ICV (1)	K, Total	S 6010B	mg/Kg	1	no	Total Pota:	9/7/7440	49.5	49.5 <	50 <	50	0.291	0	50	50	50	99		27288	31440	
ICV (1)	Na, Total	S 6010B	mg/Kg	1	no	Total Sodi:	7440-23-5	49.5	49.5 <	50 <	50	0.082	0	50	50	50	99		27288	31440	
CCV (1)	K, Total	S 6010B	mg/Kg	1	no	Total Pota:	9/7/7440	51	51	51	51	0.291	0	50	50	50	102		27288	31440	
CCV (1)	Na, Total	S 6010B	mg/Kg	1	no	Total Sodi:	7440-23-5	50.4	50.4	50.4	50.4	0.082	0	50	50	50	100.8		27288	31440	
Duplicate (FOC		ASTM D 2974		1	no	FOC	N/A	1.24	1.24	1.24	1.24	0	0	0	0	0		3.3	27510	31591	
Sample 10 FOC		ASTM D 2974		1	no	FOC	N/A	1.2	1.2	1.2	1.2	0	0	0	0	0	0	0	27510	31591	
Duplicate (FOC		ASTM D 2974		1	no	FOC	N/A	1.75	1.75	1.75	1.75	0	0	0	0	0		5.9	27511	31592	
Sample 10 FOC		ASTM D 2974		1	no	FOC	N/A	1.65	1.65	1.65	1.65	0	0	0	0	0	0	0	27511	31592	
LCS (1)	Chromium	SM 3500-C	mg/Kg	1	no	Hexavalen	7440-47-3	40.3	40.3	40.3	40.3	2.32	5	5	5	40	100.75		27523	31611	
LCSD (1)	Chromium	SM 3500-C	mg/Kg	1	no	Hexavalen	7440-47-3	42.2	42.2	42.2	42.2	2.32	5	5	5	40	105.5	4.6	27523	31611	
MS (1)	Chromium	SM 3500-C	mg/Kg	1	no	Hexavalen	7440-47-3	41.2	41.2	41.2	41.2	2.32	5	5	5	40	103		27523	31611	
MSD (1)	Chromium	SM 3500-C	mg/Kg	1	no	Hexavalen	7440-47-3	42	42	42	42	2.32	5	5	5	40	105	1.9	27523	31611	
Method Bl	Chromium	SM 3500-C	mg/Kg	1	no	Hexavalen	7440-47-3 <	2.32 <	5 <	5 <	5	2.32	5	5	5	0			27523	31611	
ICV (1)	Chromium	SM 3500-C	mg/L	1	no	Hexavalen	7440-47-3	0.494	0.494	0.494	0.494	0.2	0.4	0.4	0.4	0.5	98.8		27523	31611	
CCV (1)	Chromium	SM 3500-C	mg/L	1	no	Hexavalen	7440-47-3	0.515	0.515	0.515	0.515	0.2	0.4	0.4	0.4	0.5	103		27523	31611	
LCS (1)	Chromium	SM 3500-C	mg/Kg	1	no	Hexavalen	7440-47-3	41.7	41.7	41.7	41.7	2.32	5	5	5	40	104.25		27528	31614	
LCSD (1)	Chromium	SM 3500-C	mg/Kg	1	no	Hexavalen	7440-47-3	42.3	42.3	42.3	42.3	2.32	5	5	5	40	105.75	1.4	27528	31614	
MS (1)	Chromium	SM 3500-C	mg/Kg	1	no	Hexavalen	7440-47-3	38	38	38	38	2.32	5	5	5	40	95		27528	31614	
MSD (1)	Chromium	SM 3500-C	mg/Kg	1	no	Hexavalen	7440-47-3	37	37	37	37	2.32	5	5	5	40	92.5	2.7	27528	31614	
Method Bl	Chromium	SM 3500-C	mg/Kg	1	no	Hexavalen	7440-47-3 <	2.32 <	5 <	5 <	5	2.32	5	5	5	0			27528	31614	
ICV (1)	Chromium	SM 3500-C	mg/L	1	no	Hexavalen	7440-47-3	0.507	0.507	0.507	0.507	0.2	0.4	0.4	0.4	0.5	101.4		27528	31614	
CCV (1)	Chromium	SM 3500-C	mg/L	1	no	Hexavalen	7440-47-3	0.489	0.489	0.489	0.489	0.2	0.4	0.4	0.4	0.5	97.8		27528	31614	
LCS (1)	Chromium	SM 3500-C	mg/Kg	1	no	Hexavalen	7440-47-3	40.9	40.9	40.9	40.9	2.32	5	5	5	40	102.25		27529	31615	
LCSD (1)	Chromium	SM 3500-C	mg/Kg	1	no	Hexavalen	7440-47-3	40.2	40.2	40.2	40.2	2.32	5	5	5	40	100.5	1.7	27529	31615	
MS (1)	Chromium	SM 3500-C	mg/Kg	1	no	Hexavalen	7440-47-3	37.6	37.6	37.6	37.6	2.32	5	5	5	0.5	7520		27529	31615	
MSD (1)	Chromium	SM 3500-C	mg/Kg	1	no	Hexavalen	7440-47-3	35.4	35.4	35.4	35.4	2.32	5	5	5	0.5	7080	6	27529	31615	
Method Bl	Chromium	SM 3500-C	mg/Kg	1	no	Hexavalen	7440-47-3 <	2.32 <	5 <	5 <	5	2.32	5	5	5	0			27529	31615	
ICV (1)	Chromium	SM 3500-C	mg/L	1	no	Hexavalen	7440-47-3	0.489	0.489	0.489	0.489	0.2	0.4	0.4	0.4	0.5	97.8		27529	31615	
CCV (1)	Chromium	SM 3500-C	mg/L	1	no	Hexavalen	7440-47-3	0.494	0.494	0.494	0.494	0.2	0.4	0.4	0.4	0.5	98.8		27529	31615	
LCS (1)	Nitrate an	E 353.3	mg/Kg	1	no	Nitrate and	Nitrite as N	0.171	0.171	0.171	0.171	0.0155	0.1	0.1	0.1	0.16	106.875		27541	31620	
LCSD (1)	Nitrate an	E 353.3	mg/Kg	1	no	Nitrate and	Nitrite as N	0.176	0.176	0.176	0.176	0.0155	0.1	0.1	0.1	0.16	110	2.9	27541	31620	
MS (1)	Nitrate an	E 353.3	mg/Kg	50	no	Nitrate and	Nitrite as N	13.8	13.8	13.8	13.8	0.0155	0.1	0.1	0.1	8	91.625		27541	31620	
MSD (1)	Nitrate an	E 353.3	mg/Kg	50	no	Nitrate and	Nitrite as N	13.8	13.8	13.8	13.8	0.0155	0.1	0.1	0.1	8	91.625	0	27541	31620	
Method Bl	Nitrate an	E 353.3	mg/Kg	1	no	Nitrate and	Nitrite as <	0.1 <	0.1 <	0.1 <	0.1	0.0155	0.1	0.1	0.1	0			27541	31620	
ICV (1)	Nitrate an	E 353.3	mg/Kg	1	no	Nitrate and	Nitrite as N	0.139	0.139	0.139	0.139	0.0155	0.1	0.1	0.1	0.16	86.875		27541	31620	
CCV (1)	Nitrate an	E 353.3	mg/Kg	1	no	Nitrate and	Nitrite as N	0.176	0.176	0.176	0.176	0.0155	0.1	0.1	0.1	0.16	110		27541	31620	
LCS (1)	Nitrate an	E 353.3	mg/Kg	1	no	Nitrate and	Nitrite as N	0.178	0.178	0.178	0.178	0.0155	0.1	0.1	0.1	0.16	111.25		27544	31623	
LCSD (1)	Nitrate an	E 353.3	mg/Kg	1	no	Nitrate and	Nitrite as N	0.18	0.18	0.18	0.18	0.0155	0.1	0.1	0.1	0.16	112.5	1.1	27544	31623	
MS (1)	Nitrate an	E 353.3	mg/Kg	100	no	Nitrate and	Nitrite as <	0.1 <	0.1 <	0.1 <	0.1	0.0155	0.1	0.1	0.1	16	-192.5		27544	31623	Matrix spike recovery out of control limits due to matr
MSD (1)	Nitrate an	E 353.3	mg/Kg	100	no	Nitrate and	Nitrite as <	0.1 <	0.1 <	0.1 <	0.1	0.0155	0.1	0.1	0.1	16	-192.5	0	27544	31623	Matrix spike recovery out of control limits due to matr
Method Bl	Nitrate an	E 353.3	mg/Kg	1	no	Nitrate and	Nitrite as <	0.1 <	0.1 <	0.1 <	0.1	0.0155	0.1	0.1	0.1	0			27544	31623	
ICV (1)	Nitrate an	E 353.3	mg/Kg	1	no	Nitrate and	Nitrite as N	0.144	0.144	0.144	0.144	0.0155	0.1	0.1	0.1	0.16	90		27544	31623	
CCV (1)	Nitrate an	E 353.3	mg/Kg	1	no	Nitrate and	Nitrite as N	0.16	0.16	0.16	0.16	0.0155	0.1	0.1	0.1	0.16	100		27544	31623	
LCS (1)	Nitrate an	E 353.3	mg/Kg	1	no	Nitrate and	Nitrite as N	0.156	0.156	0.156	0.156	0.0155	0.1	0.1	0.1	0.16	97.5		27538	31624	
LCSD (1)	Nitrate an	E 353.3	mg/Kg	1	no	Nitrate and	Nitrite as N	0.151	0.151	0.151	0.151	0.0155	0.1	0.1	0.1	0.16	94.375	3.2	27538	31624	
MS (1)	Nitrate an	E 353.3	mg/Kg	25	no	Nitrate and	Nitrite as N	4.17	4.17	4.17	4.17	0.0155	0.1	0.1	0.1	4	-12.25		27538	31624	Matrix spike recovery out of control limits due to matr
MSD (1)	Nitrate an	E 353.3	mg/Kg	25	no	Nitrate and	Nitrite as N	4.19	4.19	4.19	4.19	0.0155	0.1	0.1	0.1	4	-11.75	0.5	27538	31624	Matrix spike recovery out of control limits due to matr
Method Bl	Nitrate an	E 353.3	mg/Kg	1	no	Nitrate and	Nitrite as <	0.1 <	0.1 <	0.1 <	0.1	0.0155	0.1	0.1	0.1	0			27538	31624	
ICV (1)	Nitrate an	E 353.3	mg/Kg	1	no	Nitrate and	Nitrite as N	0.142	0.142	0.142	0.142	0.0155	0.1	0.1	0.1	0.16	88.75		27538	31624	
CCV (1)	Nitrate an	E 353.3	mg/Kg	1	no	Nitrate and	Nitrite as N	0.166	0.166	0.166	0.166	0.0155	0.1	0.1	0.1	0.16	103.75		27538	31624	
LCS (1)	Nitrate an	E 353.3	mg/Kg	1	no	Nitrate and	Nitrite as N	0.177	0.177	0.177	0.177	0.0155	0.1	0.1	0.1	0.16	110.625		27539	31625	
LCSD (1)	Nitrate an	E 353.3	mg/Kg	1	no	Nitrate and	Nitrite as N	0.178	0.178	0.178	0.178	0.0155	0.1	0.1	0.1	0.16	111.25	0.6	27539	31625	
MS (1)	Nitrate an	E 353.3	mg/Kg	500	no	Nitrate and	Nitrite as N	131	131	131	131	0.0155	0.1	0.1	0.1	80	-32.5		27539	31625	Matrix spike recovery out of control limits due to matr
MSD (1)	Nitrate an	E 353.3	mg/Kg	500	no	Nitrate and	Nitrite as N	119	119	119	119	0.0155	0.1	0.1	0.1	80	-47.5	9.6	27539	31625	Matrix spike recovery out of control limits due to matr
Method Bl	Nitrate an	E 353.3	mg/Kg	1	no	Nitrate and	Nitrite as <	0.1 <	0.1 <	0.1 <	0.1	0.0155	0.1	0.1	0.1	0			27539	31625	
ICV (1)	Nitrate an	E 353.3	mg/Kg	1	no	Nitrate and	Nitrite as N	0.178	0.178	0.178	0.178	0.0155	0.1	0.1	0.1	0.16	111.25		27539	31625	
CCV (1)	Nitrate an	E 353.3	mg/Kg	1	no	Nitrate and	Nitrite as N	0.182	0.182	0.182	0.182	0.0155	0.1	0.1	0.1	0.16	113.75		27539	31625	
LCS (1)	Nitrate an	E 353.3	mg/Kg	1	no	Nitrate and	Nitrite as N	0.159	0.159	0.159	0.159	0.0155	0.1	0.1	0.1	0.16	99.375		27540	31626	
LCSD (1)	Nitrate an	E 353.3	mg/Kg	1	no	Nitrate and	Nitrite as N	0.179	0.179	0.179	0.179	0.0155	0.1	0.1	0.1	0.16	111.875	11.8	27540	31626	
MS (1)	Nitrate an	E 353.3	mg/Kg	2	no	Nitrate and	Nitrite as N	0.574	0.574	0.574	0.574	0.0155	0.1	0.1	0.1	0.32	-1.25		27540	31626	Matrix spike recovery out of control limits due to matr
MSD (1)	Nitrate an	E 353.3	mg/Kg	2	no	Nitrate and	Nitrite as N	0.552	0.552	0.552	0.552	0.0155	0.1	0.1	0.1	0.32	-8.12501	3.9	27540	31626	Matrix spike recovery out of control limits due to matr
Method Bl	Nitrate an	E 353.3	mg/Kg	1	no	Nitrate and	Nitrite as <	0.1 <	0.1 <	0.1 <	0.1	0.0155	0.1	0.1	0.1	0			27540	31626	
ICV (1)	Nitrate an	E 353.3	mg/Kg	1	no	Nitrate and	Nitrite as N	0.148	0.148	0.148	0.148	0.0155	0.1	0.1	0.1	0.16	92.5		27540	31626	
CCV (1)	Nitrate an	E 353.3	mg/Kg	1	no	Nitrate and	Nitrite as N	0.144	0.144	0.144	0.144	0.0155	0.1	0.1	0.1	0.16	90		27540	31626	
Duplicate (FOC		ASTM D 2974		1	no	FOC	N/A	3.18	3.18	3.18	3.18	0	0	0	0	0		6.7	27555	31720	
Sample 10 FOC		ASTM D 2974		1	no	FOC	N/A	3.4	3.4	3.4	3.4	0	0	0	0	0	0	0	27555	31720	
Duplicate (FOC		ASTM D 2974		1	no	FOC	N/A	1.36	1.36	1.36	1.36	0	0	0	0	0		4.5	27641	31734	
Sample 10 FOC		ASTM D 2974		1	no	FOC	N/A	1.3	1.3	1.3	1.3	0	0	0	0	0	0	0	27641	31734	
LCS (1)	Total 8 Me	S 7471A	mg/Kg	1	no	Total Merc	7439-97-6	0.554	0.554	0.554	0.554	0.00299	0.04	0.04	0.04	0.5	110.8		27636	31736	
LCSD (1)	Total 8 Me	S 7471A	mg/Kg	1	no	Total Merc	7439-97-6	0.511	0.511	0.511	0.511	0.00299	0.04	0.04	0.04	0.5	102.2	8.1	27636	31736	
MS (1)	Total 8 Me	S 7471A	mg/Kg	1	no	Total Merc	7439-97-6	0.506	0.506	0.506	0.506	0.00299	0.04	0.04	0.04	0.5	99.904		27636	31736	
MSD (1)	Total 8 Me	S 7471A	mg/Kg	1	no	Total Merc	7439-97-6	0.505	0.505	0.505	0.505	0.00299	0.04	0.04	0.04	0.5	99.704	0.2	27636	31736	
Method Bl	Total 8 Me	S 7471A	mg/Kg	1	no	Total Merc	7439-97-6	0.00299 <	0.04 <	0.04 <	0.04	0.00299	0.04	0.04	0.04	0			27636	31736	
ICV (1)	Total 8 Me	S 7471A	mg/L	1	no	Total Merc	7439-97-6	0.00506 <	0.04 <	0.04 <	0.04	0.00299	0.04	0.04	0.04	0.005	101.2		27636	31736	
CCV (1)	Total 8 Me	S 7471A	mg/L	1	no	Total Merc	7439-97-6	0.00498 <	0.04 <	0.04 <	0.04	0.00299	0.04	0.04	0.04	0.005	99.6		27636	31736	
LCS (1)	K, Total	S 6010B	mg/Kg	100	no	Total Pota:	9/7/7440	4780	4780 <	5000 <	5000	0.291	0	50	50	5000	95.6		27345	31781	
LCSD (1)	K, Total	S 6010B	mg/Kg	100	no	Total Pota:	9/7/7440	4580	4580 <	5000 <	5000	0.291	0	50	50	5000	91.6	4.3	27345	31781	
LCS (1)	Na, Total	S 6010B	mg/Kg	100	no	Total Sodi:	7440-23-5	4910	4910 <	5000 <	5000	0.082	0	50	50	5000	98.2		27345	31781	
LCSD (1)	Na, Total	S 6010B	mg/Kg	100	no	Total Sodi:	7440-23-5	4690	4690 <	5000 <	5000	0.082	0	50	50	5000	93.8	4.6	27345	31781	
MS (1)	K, Total	S 6010B	mg/Kg	100	no	Total Pota:	9/7/7440	6530	6530	6530	6530	0.291	0	50	50	5000	90.82		27345	31781	
MSD (1)	K, Total	S 6010B	mg/Kg	100	no	Total Pota:	9/7/7440	6820	6820	6820	6820	0.291	0	50	50	5000	96.62	4.3	27345	31781	
MS (1)	Na, Total	S 6010B	mg/Kg	100	no	Total Sodi:	7440-23-5	6380	6380	6380	6380	0.082	0	50	50	5000	90.2		27345	31781	
MSD (1)	Na, Total	S 6010B	mg/Kg	100	no	Total Sodi:	7440-23-5	6650	6650	6650	6650	0.082	0	50	50	5000	95.6	4.1	27345	31781	
Method Bl	K, Total	S 6010B	mg/Kg	1	no	Total Pota:	9/7/7440	38.9	38.9 <	50 <	50	0.291	0	50	50	0			27345	31781	
Method Bl	Na, Total	S 6010B	mg/Kg	1	no	Total Sodi:	7440-23-5	173	173	173	173	0.082	0	50	50	0			27345	31781	
ICV (1)	K, Total	S 6010B	mg/Kg	1	no	Total Pota:	9/7/7440	49.2	49.2 <	50 <	50	0.291	0	50	50	50	98.4		27345	31781	
ICV (1)	Na, Total	S 6010B	mg/Kg	1	no	Total Sodi:	7440-23-5	49.3	49.3 <	50 <	50	0.082	0	50	50	50	98.6		27345	31781	
CCV (1)	K, Total	S 6010B	mg/Kg	1	no	Total Pota:	9/7/7440	49.7	49.7 <	50 <	50	0.291	0	50	50	50	99.4		27345	31781	
CCV (1)	Na, Total	S 6010B	mg/Kg	1	no	Total Sodi:	7440-23-5	49	49 <	50 <	50	0.082	0	50	50	50	98		27345	31781	
LCS (1)	K, Total	S 6010B	mg/Kg	100	no	Total Pota:	9/7/7440	4780	4780 <	5000 <	5000	0.291	0	50	50	5000	95.6		27345	31784	
LCSD (1)	K, Total	S 6010B	mg/Kg	100	no	Total Pota:	9/7/7440	4580	4580 <	5000 <	5000	0.291	0	50	50	5000	91.6	4.3	27345	31784	
LCS (1)	Na, Total	S 6010B	mg/Kg	100	no	Total Sodi:	7440-23-5	4910	4910 <	5000 <	5000	0.082	0	50	50	5000	98.2		27345	31784	
LCSD (1)	Na, Total	S 6010B	mg/Kg	100	no	Total Sodi:	7440-23-5	4690	4690 <	5000 <	5000	0.082	0	50	50	5000	93.8	4.6	27345	31784	
MS (1)	K, Total	S 6010B	mg/Kg	100	no	Total Pota:	9/7/7440	5830	5830	5830	5830	0.291	0	50	50	5000	89.82		27345	31784	
MSD (1)	K, Total	S 6010B	mg/Kg	100	no	Total Pota:	9/7/7440	5730	5730	5730	5730	0.291	0	50	50	5000	87.82	1.7	27345	31784	
MS (1)	Na, Total	S 6010B	mg/Kg	100	no	Total Sodi:	7440-23-5	5630	5630	5630	5630	0.082	0	50	50	5000	91.24		27345	31784	
MSD (1)	Na, Total	S 6010B	mg/Kg	100	no	Total Sodi:	7440-23-5	5500	5500	5500	5500	0.082	0	50	50	5000	88.64	2.3	27345	31784	
Method Bl	K, Total	S 6010B	mg/Kg	1	no	Total Pota:	9/7/7440	38.9	38.9 <	50 <	50	0.291	0	50	50	0			27345	31784	
Method Bl	Na, Total	S 6010B	mg/Kg	1	no	Total Sodi:	7440-23-5	173	173	173	173	0.082	0	50	50	0			27345	31784	
ICV (1)	K, Total	S 6010B	mg/Kg	1	no	Total Pota:	9/7/7440	49.2	49.2 <	50 <	50	0.291	0	50	50	50	98.4		27345	31784	

ICV (1)	Na, Total	S 6010B	mg/Kg	1	no	Total Sodi	7440-23-5	49.3	49.3 <	50 <	50	0.082	0	50	50	50	98.6		27345	31784	
CCV (1)	K, Total	S 6010B	mg/Kg	1	no	Total Pota	9/7/7440	50.2	50.2	50.2	50.2	0.291	0	50	50	50	100.4		27345	31784	
CCV (1)	Na, Total	S 6010B	mg/Kg	1	no	Total Sodi	7440-23-5	49	49 <	50 <	50	0.082	0	50	50	50	98		27345	31784	
LCS (1)	Nitrate an	E 353.3	mg/Kg	1	no	Nitrate and Nitrite as N		0.173	0.173	0.173	0.173	0.0155	0.1	0.1	0.1	0.16	108.125		27708	31816	
LCSD (1)	Nitrate an	E 353.3	mg/Kg	1	no	Nitrate and Nitrite as N		0.154	0.154	0.154	0.154	0.0155	0.1	0.1	0.1	0.16	96.25	11.6	27708	31816	
MS (1)	Nitrate an	E 353.3	mg/Kg	25	no	Nitrate and Nitrite as N		4.37	4.37	4.37	4.37	0.0155	0.1	0.1	0.1	4	42.25		27708	31816	Matrix spike recovery out of control limits due to matr
MSD (1)	Nitrate an	E 353.3	mg/Kg	25	no	Nitrate and Nitrite as N		2.75	2.75	2.75	2.75	0.0155	0.1	0.1	0.1	4	1.75	45.5	27708	31816	Matrix spike recovery out of control limits due to matr
Method Bl	Nitrate an	E 353.3	mg/Kg	1	no	Nitrate and Nitrite as <		0.1 <	0.1 <	0.1 <	0.1	0.0155	0.1	0.1	0.1	0			27708	31816	
ICV (1)	Nitrate an	E 353.3	mg/Kg	1	no	Nitrate and Nitrite as N		0.164	0.164	0.164	0.164	0.0155	0.1	0.1	0.1	0.16	102.5		27708	31816	
CCV (1)	Nitrate an	E 353.3	mg/Kg	1	no	Nitrate and Nitrite as N		0.166	0.166	0.166	0.166	0.0155	0.1	0.1	0.1	0.16	103.75		27708	31816	
LCS (1)	Nitrate an	E 353.3	mg/Kg	1	no	Nitrate and Nitrite as N		0.16	0.16	0.16	0.16	0.0155	0.1	0.1	0.1	0.16	100		27709	31817	
LCSD (1)	Nitrate an	E 353.3	mg/Kg	1	no	Nitrate and Nitrite as N		0.175	0.175	0.175	0.175	0.0155	0.1	0.1	0.1	0.16	109.375	9	27709	31817	
MS (1)	Nitrate an	E 353.3	mg/Kg	2	no	Nitrate and Nitrite as N		1.18	1.18	1.18	1.18	0.0155	0.1	0.1	0.1	0.32	237.5		27709	31817	Matrix spike recovery out of control limits due to matr
MSD (1)	Nitrate an	E 353.3	mg/Kg	2	no	Nitrate and Nitrite as N		1.14	1.14	1.14	1.14	0.0155	0.1	0.1	0.1	0.32	225	3.4	27709	31817	Matrix spike recovery out of control limits due to matr
Method Bl	Nitrate an	E 353.3	mg/Kg	1	no	Nitrate and Nitrite as <		0.1 <	0.1 <	0.1 <	0.1	0.0155	0.1	0.1	0.1	0			27709	31817	
ICV (1)	Nitrate an	E 353.3	mg/Kg	1	no	Nitrate and Nitrite as N		0.179	0.179	0.179	0.179	0.0155	0.1	0.1	0.1	0.16	111.875		27709	31817	
CCV (1)	Nitrate an	E 353.3	mg/Kg	1	no	Nitrate and Nitrite as N		0.17	0.17	0.17	0.17	0.0155	0.1	0.1	0.1	0.16	106.25		27709	31817	
LCS (1)	Cu, Total	S 6010B	mg/Kg	1	no	Total Copp	7440-50-8	12.2	12.2	12.2	12.2	0.0268	0.5	0.5	0.5	12.5	97.6		27715	31838 RR	########
LCSD (1)	Cu, Total	S 6010B	mg/Kg	1	no	Total Copp	7440-50-8	12.2	12.2	12.2	12.2	0.0268	0.5	0.5	0.5	12.5	97.6	0	27715	31838 RR	########
LCS (1)	P, Total	S 6010B	mg/Kg	1	no	Total Phos	7723-14-0	45.5	45.5	45.5	45.5	0.223	2	2	2	50	86.66		27715	31838 RR	########
LCSD (1)	P, Total	S 6010B	mg/Kg	1	no	Total Phos	7723-14-0	45.2	45.2	45.2	45.2	0.223	2	2	2	50	86.06	0.7	27715	31838 RR	########
LCS (1)	Zn, Total	S 6010B	mg/Kg	1	no	Total Zinc	7440-66-6	26.6	26.6	26.6	26.6	0.124	2	2	2	25	106.4		27715	31838 RR	########
LCSD (1)	Zn, Total	S 6010B	mg/Kg	1	no	Total Zinc	7440-66-6	27.1	27.1	27.1	27.1	0.124	2	2	2	25	108.4	1.9	27715	31838 RR	########
LCS (1)	Total 8 Me	S 6010B	mg/Kg	1	no	Total Silve	7440-22-4	11.5	11.5	11.5	11.5	0.00444	0.05	0.05	0.05	12.5	92		27715	31838 RR	########
LCS (1)	Total 8 Me	S 6010B	mg/Kg	1	no	Total Arse	7440-38-2	45.4	45.4	45.4	45.4	0.228	2	2	2	50	90.8		27715	31838 RR	########
LCS (1)	Total 8 Me	S 6010B	mg/Kg	1	no	Total Bariu	7440-39-3	95.9	95.9	95.9	95.9	0.0601	1	1	1	100	95.9		27715	31838 RR	########
LCS (1)	Total 8 Me	S 6010B	mg/Kg	1	no	Total Cadn	7440-43-9	22.6	22.6	22.6	22.6	0.00794	0.1	0.1	0.1	25	90.4		27715	31838 RR	########
LCS (1)	Total 8 Me	S 6010B	mg/Kg	1	no	Total Chro	7440-47-3	10.3	10.3	10.3	10.3	0.0125	0.5	0.5	0.5	10	103		27715	31838 RR	########
LCS (1)	Total 8 Me	S 6010B	mg/Kg	1	no	Total Lead	7439-92-1	44.4	44.4	44.4	44.4	0.367	1	1	1	50	88.8		27715	31838 RR	########
LCS (1)	Total 8 Me	S 6010B	mg/Kg	1	no	Total Seler	7782-49-2	42.7	42.7	42.7	42.7	0.0767	1	1	1	50	85.4		27715	31838 RR	########
LCSD (1)	Total 8 Me	S 6010B	mg/Kg	1	no	Total Silve	7440-22-4	11.5	11.5	11.5	11.5	0.00444	0.05	0.05	0.05	12.5	92	0	27715	31838 RR	########
LCSD (1)	Total 8 Me	S 6010B	mg/Kg	1	no	Total Arse	7440-38-2	45.9	45.9	45.9	45.9	0.228	2	2	2	50	91.8	1.1	27715	31838 RR	########
LCSD (1)	Total 8 Me	S 6010B	mg/Kg	1	no	Total Bariu	7440-39-3	94.5	94.5	94.5	94.5	0.0601	1	1	1	100	94.5	1.5	27715	31838 RR	########
LCSD (1)	Total 8 Me	S 6010B	mg/Kg	1	no	Total Cadn	7440-43-9	22.3	22.3	22.3	22.3	0.00794	0.1	0.1	0.1	25	89.2	1.3	27715	31838 RR	########
LCSD (1)	Total 8 Me	S 6010B	mg/Kg	1	no	Total Chro	7440-47-3	10.3	10.3	10.3	10.3	0.0125	0.5	0.5	0.5	10	103	0	27715	31838 RR	########
LCSD (1)	Total 8 Me	S 6010B	mg/Kg	1	no	Total Lead	7439-92-1	44	44	44	44	0.367	1	1	1	50	88	0.9	27715	31838 RR	########
LCSD (1)	Total 8 Me	S 6010B	mg/Kg	1	no	Total Seler	7782-49-2	43.3	43.3	43.3	43.3	0.0767	1	1	1	50	86.6	1.4	27715	31838 RR	########
MS (1)	Cu, Total	S 6010B	mg/Kg	1	no	Total Copp	7440-50-8	21.9	21.9	21.9	21.9	0.0268	0.5	0.5	0.5	12.5	118.96		27715	31838 RR	########
MSD (1)	Cu, Total	S 6010B	mg/Kg	1	no	Total Copp	7440-50-8	18.5	18.5	18.5	18.5	0.0268	0.5	0.5	0.5	12.5	91.76	16.8	27715	31838 RR	########
MS (1)	P, Total	S 6010B	mg/Kg	1	no	Total Phos	7723-14-0	335	335	335	335	0.223	2	2	2	50	104		27715	31838 RR	########
MSD (1)	P, Total	S 6010B	mg/Kg	1	no	Total Phos	7723-14-0	331	331	331	331	0.223	2	2	2	50	96	1.2	27715	31838 RR	########
MS (1)	Zn, Total	S 6010B	mg/Kg	1	no	Total Zinc	7440-66-6	53.5	53.5	53.5	53.5	0.124	2	2	2	25	105.6		27715	31838 RR	########
MSD (1)	Zn, Total	S 6010B	mg/Kg	1	no	Total Zinc	7440-66-6	50.7	50.7	50.7	50.7	0.124	2	2	2	25	94.4	5.4	27715	31838 RR	########
MS (1)	Total 8 Me	S 6010B	mg/Kg	1	no	Total Silve	7440-22-4	10.6	10.6	10.6	10.6	0.00444	0.05	0.05	0.05	12.5	84.8		27715	31838 RR	########
MS (1)	Total 8 Me	S 6010B	mg/Kg	1	no	Total Arse	7440-38-2	44	44	44	44	0.228	2	2	2	50	88		27715	31838 RR	########
MS (1)	Total 8 Me	S 6010B	mg/Kg	1	no	Total Bariu	7440-39-3	195	195	195	195	0.0601	1	1	1	100	91		27715	31838 RR	########
MS (1)	Total 8 Me	S 6010B	mg/Kg	1	no	Total Cadn	7440-43-9	21.8	21.8	21.8	21.8	0.00794	0.1	0.1	0.1	25	87.2		27715	31838 RR	########
MS (1)	Total 8 Me	S 6010B	mg/Kg	1	no	Total Chro	7440-47-3	20.9	20.9	20.9	20.9	0.0125	0.5	0.5	0.5	10	119.6		27715	31838 RR	########
MS (1)	Total 8 Me	S 6010B	mg/Kg	1	no	Total Lead	7439-92-1	70.4	70.4	70.4	70.4	0.367	1	1	1	50	105		27715	31838 RR	########
MS (1)	Total 8 Me	S 6010B	mg/Kg	1	no	Total Seler	7782-49-2	39.9	39.9	39.9	39.9	0.0767	1	1	1	50	79.8		27715	31838 RR	########
MSD (1)	Total 8 Me	S 6010B	mg/Kg	1	no	Total Silve	7440-22-4	10.8	10.8	10.8	10.8	0.00444	0.05	0.05	0.05	12.5	86.4	1.9	27715	31838 RR	########
MSD (1)	Total 8 Me	S 6010B	mg/Kg	1	no	Total Arse	7440-38-2	42.6	42.6	42.6	42.6	0.228	2	2	2	50	85.2	3.2	27715	31838 RR	########
MSD (1)	Total 8 Me	S 6010B	mg/Kg	1	no	Total Bariu	7440-39-3	184	184	184	184	0.0601	1	1	1	100	80	5.8	27715	31838 RR	########
MSD (1)	Total 8 Me	S 6010B	mg/Kg	1	no	Total Cadn	7440-43-9	22.3	22.3	22.3	22.3	0.00794	0.1	0.1	0.1	25	89.2	2.3	27715	31838 RR	########
MSD (1)	Total 8 Me	S 6010B	mg/Kg	1	no	Total Chro	7440-47-3	20.3	20.3	20.3	20.3	0.0125	0.5	0.5	0.5	10	113.6	2.9	27715	31838 RR	########
MSD (1)	Total 8 Me	S 6010B	mg/Kg	1	no	Total Lead	7439-92-1	60.2	60.2	60.2	60.2	0.367	1	1	1	50	84.6	15.6	27715	31838 RR	########
MSD (1)	Total 8 Me	S 6010B	mg/Kg	1	no	Total Seler	7782-49-2	40.1	40.1	40.1	40.1	0.0767	1	1	1	50	80.2	0.5	27715	31838 RR	########
Method Bl	Cu, Total	S 6010B	mg/Kg	1	no	Total Copp	7440-50-8 <	0.0268 <	0.5 <	0.5 <	0.5	0.0268	0.5	0.5	0.5	0			27715	31838 RR	########
Method Bl	P, Total	S 6010B	mg/Kg	1	no	Total Phos	7723-14-0	2.17	2.17	2.17	2.17	0.223	2	2	2	0			27715	31838 RR	########
Method Bl	Zn, Total	S 6010B	mg/Kg	1	no	Total Zinc	7440-66-6	1.48 <	2 <	2 <	2	0.124	2	2	2	0			27715	31838 RR	########
Method Bl	Total 8 Me	S 6010B	mg/Kg	1	no	Total Silve	7440-22-4	0.00444 <	0.05 <	0.05 <	0.05	0.00444	0.05	0.05	0.05	0			27715	31838 RR	########
Method Bl	Total 8 Me	S 6010B	mg/Kg	1	no	Total Arse	7440-38-2	0.228 <	2 <	2 <	2	0.228	2	2	2	0			27715	31838 RR	########
Method Bl	Total 8 Me	S 6010B	mg/Kg	1	no	Total Bariu	7440-39-3	0.0601 <	1 <	1 <	1	0.0601	1	1	1	0			27715	31838 RR	########
Method Bl	Total 8 Me	S 6010B	mg/Kg	1	no	Total Cadn	7440-43-9	0.00794 <	0.1 <	0.1 <	0.1	0.00794	0.1	0.1	0.1	0			27715	31838 RR	########
Method Bl	Total 8 Me	S 6010B	mg/Kg	1	no	Total Chro	7440-47-3	0.0125 <	0.5 <	0.5 <	0.5	0.0125	0.5	0.5	0.5	0			27715	31838 RR	########
Method Bl	Total 8 Me	S 6010B	mg/Kg	1	no	Total Lead	7439-92-1	0.367 <	1 <	1 <	1	0.367	1	1	1	0			27715	31838 RR	########
Method Bl	Total 8 Me	S 6010B	mg/Kg	1	no	Total Seler	7782-49-2	0.0767 <	1 <	1 <	1	0.0767	1	1	1	0			27715	31838 RR	########
ICV (1)	Cu, Total	S 6010B	mg/Kg	1	no	Total Copp	7440-50-8	0.995	0.995	0.995	0.995	0.0268	0.5	0.5	0.5	1	99.5		27715	31838 RR	########
ICV (1)	P, Total	S 6010B	mg/Kg	1	no	Total Phos	7723-14-0	4.94	4.94	4.94	4.94	0.223	2	2	2	5	98.8		27715	31838 RR	########
ICV (1)	Zn, Total	S 6010B	mg/Kg	1	no	Total Zinc	7440-66-6	1.01 <	2 <	2 <	2	0.124	2	2	2	1	101		27715	31838 RR	########
ICV (1)	Total 8 Me	S 6010B	mg/Kg	1	no	Total Silve	7440-22-4	0.127	0.127	0.127	0.127	0.00444	0.05	0.05	0.05	0.125	101.6		27715	31838 RR	########
ICV (1)	Total 8 Me	S 6010B	mg/Kg	1	no	Total Arse	7440-38-2	1.01 <	2 <	2 <	2	0.228	2	2	2	1	101		27715	31838 RR	########
ICV (1)	Total 8 Me	S 6010B	mg/Kg	1	no	Total Bariu	7440-39-3	1.02	1.02	1.02	1.02	0.0601	1	1	1	1	102		27715	31838 RR	########
ICV (1)	Total 8 Me	S 6010B	mg/Kg	1	no	Total Cadn	7440-43-9	1	1	1	1	0.00794	0.1	0.1	0.1	1	100		27715	31838 RR	########
ICV (1)	Total 8 Me	S 6010B	mg/Kg	1	no	Total Chro	7440-47-3	0.999	0.999	0.999	0.999	0.0125	0.5	0.5	0.5	1	99.9		27715	31838 RR	########
ICV (1)	Total 8 Me	S 6010B	mg/Kg	1	no	Total Lead	7439-92-1	0.991 <	1 <	1 <	1	0.367	1	1	1	1	99.1		27715	31838 RR	########
ICV (1)	Total 8 Me	S 6010B	mg/Kg	1	no	Total Seler	7782-49-2	1.02	1.02	1.02	1.02	0.0767	1	1	1	1	102		27715	31838 RR	########
CCV (1)	Cu, Total	S 6010B	mg/Kg	1	no	Total Copp	7440-50-8	0.926	0.926	0.926	0.926	0.0268	0.5	0.5	0.5	1	92.6		27715	31838 RR	########
CCV (1)	P, Total	S 6010B	mg/Kg	1	no	Total Phos	7723-14-0	4.5	4.5	4.5	4.5	0.223	2	2	2	5	90		27715	31838 RR	########
CCV (1)	Zn, Total	S 6010B	mg/Kg	1	no	Total Zinc	7440-66-6	0.92 <	2 <	2 <	2	0.124	2	2	2	1	92		27715	31838 RR	########
CCV (1)	Total 8 Me	S 6010B	mg/Kg	1	no	Total Silve	7440-22-4	0.118	0.118	0.118	0.118	0.00444	0.05	0.05	0.05	0.125	94.4		27715	31838 RR	########
CCV (1)	Total 8 Me	S 6010B	mg/Kg	1	no	Total Arse	7440-38-2	0.926 <	2 <	2 <	2	0.228	2	2	2	1	92.6		27715	31838 RR	########
CCV (1)	Total 8 Me	S 6010B	mg/Kg	1	no	Total Bariu	7440-39-3	0.957 <	1 <	1 <	1	0.0601	1	1	1	1	95.7		27715	31838 RR	########
CCV (1)	Total 8 Me	S 6010B	mg/Kg	1	no	Total Cadn	7440-43-9	0.917	0.917	0.917	0.917	0.00794	0.1	0.1	0.1	1	91.7		27715	31838 RR	########
CCV (1)	Total 8 Me	S 6010B	mg/Kg	1	no	Total Chro	7440-47-3	0.921	0.921	0.921	0.921	0.0125	0.5	0.5	0.5	1	92.1		27715	31838 RR	########
CCV (1)	Total 8 Me	S 6010B	mg/Kg	1	no	Total Lead	7439-92-1	0.949 <	1 <	1 <	1	0.367	1	1	1	1	94.9		27715	31838 RR	########
CCV (1)	Total 8 Me	S 6010B	mg/Kg	1	no	Total Seler	7782-49-2	0.958 <	1 <	1 <	1	0.0767	1	1	1	1	95.8		27715	31838 RR	########
LCS (1)	Total 8 Me	S 7471A	mg/Kg	1	no	Total Merc	7439-97-6	0.489	0.489	0.489	0.489	0.00299	0.04	0.04	0.04	0.5	97.8		27779	31923	
LCSD (1)	Total 8 Me	S 7471A	mg/Kg	1	no	Total Merc	7439-97-6	0.501	0.501	0.501	0.501	0.00299	0.04	0.04	0.04	0.5	100.2	2.4	27779	31923	
MS (1)	Total 8 Me	S 7471A	mg/Kg	1	no	Total Merc	7439-97-6	0.452	0.452	0.452	0.452	0.00299	0.04	0.04	0.04	0.5	90.4		27779	31923	
MSD (1)	Total 8 Me	S 7471A	mg/Kg	1	no	Total Merc	7439-97-6	0.462	0.462	0.462	0.462	0.00299	0.04	0.04	0.04	0.5	92.4	2.2	27779	31923	
Method Bl	Total 8 Me	S 7471A	mg/Kg	1	no	Total Merc	7439-97-6	0.00299 <	0.04 <	0.04 <	0.04	0.00299	0.04	0.04	0.04	0			27779	31923	
ICV (1)	Total 8 Me	S 7471A	mg/L	1	no	Total Merc	7439-97-6	0.00487 <	0.04 <	0.04 <	0.04	0.00299	0.04	0.04	0.04	0.005	97.4		27779	31923	
CCV (1)	Total 8 Me	S 7471A	mg/L	1	no	Total Merc	7439-97-6	0.00454 <	0.04 <	0.04 <	0.04	0.00299	0.04	0.04	0.04	0.005	90.8		27779	31923	
LCS (1)	K, Total	S 6010B	mg/Kg	100	no	Total Pota	9/7/7440	4880	4880 <	5000 <	5000	0.291	0	50	50	5000	97.6		27715	31927	
LCSD (1)	K, Total	S 6010B	mg/Kg	100	no	Total Pota	9/7/7440	4620	4620 <	5000 <	5000	0.291	0	50	50	5000	92.4	5.5	27715	31927	
LCS (1)	Na, Total	S 6010B	mg/Kg	100	no	Total Sodi	7440-23-5	4790	4790 <	5000 <	5000	0.082	0	50	50	5000	95.8		27715	31927	
LCSD (1)	Na, Total	S 6010B	mg/Kg	100	no	Total Sodi	7440-23-5	4650	4650 <	5000 <	5000	0.082	0	50	50	5000	93	3	27715	31927	
MS (1)	K, Total	S 6010B	mg/Kg	100	no	Total Pota	9/7/7440	6770	6770	6770	6770	0.291	0	50	50	5000	98.1		27715	31927	
MSD (1)	K, Total	S 6010B	mg/Kg	100	no	Total Pota	9/7/7440	7300	7300	7300	7300	0.291	0	50	50	5000	108.7	7.5	27715	31927	
MS (1)	Na, Total	S 6010B	mg/Kg	100	no	Total Sodi	7440-23-5	7090	7090	7090	7090	0.082	0	50	50	5000	94.72		27715	31927	
MSD (1)	Na, Total	S 6010B	mg/Kg	100	no	Total Sodi	7440-23-5	7570	7570	7570	7570	0.082	0	50	50	5000	104.32	6.5	27715	31927	

Method Bl	K, Total	S 6010B	mg/Kg	1	no	Total Pota	9/7/7440	< 0.291	0	< 50	< 50	0.291	0	50	50	0			27715	31927	
Method Bl	Na, Total	S 6010B	mg/Kg	1	no	Total Sodi	7440-23-5	247	247	247	247	0.082	0	50	50	0			27715	31927	
ICV (1)	K, Total	S 6010B	mg/Kg	1	no	Total Pota	9/7/7440	50.2	50.2	50.2	50.2	0.291	0	50	50	50	100.4		27715	31927	
ICV (1)	Na, Total	S 6010B	mg/Kg	1	no	Total Sodi	7440-23-5	48.6	48.6	< 50	< 50	0.082	0	50	50	50	97.2		27715	31927	
CCV (1)	K, Total	S 6010B	mg/Kg	1	no	Total Pota	9/7/7440	50	50	50	50	0.291	0	50	50	50	100		27715	31927	
CCV (1)	Na, Total	S 6010B	mg/Kg	1	no	Total Sodi	7440-23-5	48.9	48.9	< 50	< 50	0.082	0	50	50	50	97.8		27715	31927	
LCS (1)	Cu, Total	S 6010B	mg/Kg	1	no	Total Copp	7440-50-8	11.2	11.2	11.2	11.2	0.0268	0.5	0.5	0.5	12.5	89.6		27345	32009	
LCSD (1)	Cu, Total	S 6010B	mg/Kg	1	no	Total Copp	7440-50-8	11.6	11.6	11.6	11.6	0.0268	0.5	0.5	0.5	12.5	92.8	3.5	27345	32009	
LCS (1)	P, Total	S 6010B	mg/Kg	1	no	Total Phos	7723-14-0	54.2	54.2	54.2	54.2	0.223	2	2	2	50	104.08		27345	32009	
LCSD (1)	P, Total	S 6010B	mg/Kg	1	no	Total Phos	7723-14-0	56.8	56.8	56.8	56.8	0.223	2	2	2	50	109.28	4.7	27345	32009	
LCS (1)	Zn, Total	S 6010B	mg/Kg	1	no	Total Zinc	7440-66-6	26.3	26.3	26.3	26.3	0.124	2	2	2	25	97.92		27345	32009	
LCSD (1)	Zn, Total	S 6010B	mg/Kg	1	no	Total Zinc	7440-66-6	26.7	26.7	26.7	26.7	0.124	2	2	2	25	99.52	1.5	27345	32009	
LCS (1)	Total 8 Me	S 6010B	mg/Kg	1	no	Total Silve	7440-22-4	11.2	11.2	11.2	11.2	0.00444	0.05	0.05	0.05	12.5	89.6		27345	32009	
LCS (1)	Total 8 Me	S 6010B	mg/Kg	1	no	Total Arse	7440-38-2	43.4	43.4	43.4	43.4	0.228	2	2	2	50	86.8		27345	32009	
LCS (1)	Total 8 Me	S 6010B	mg/Kg	1	no	Total Bariu	7440-39-3	87.3	87.3	87.3	87.3	0.0601	1	1	1	100	87.3		27345	32009	
LCS (1)	Total 8 Me	S 6010B	mg/Kg	1	no	Total Cadn	7440-43-9	22.2	22.2	22.2	22.2	0.00794	0.1	0.1	0.1	25	88.8		27345	32009	
LCS (1)	Total 8 Me	S 6010B	mg/Kg	1	no	Total Chro	7440-47-3	8.72	8.72	8.72	8.72	0.0125	0.5	0.5	0.5	10	87.2		27345	32009	
LCS (1)	Total 8 Me	S 6010B	mg/Kg	1	no	Total Lead	7439-92-1	45.3	45.3	45.3	45.3	0.367	1	1	1	50	90.6		27345	32009	
LCS (1)	Total 8 Me	S 6010B	mg/Kg	1	no	Total Seler	7782-49-2	40.6	40.6	40.6	40.6	0.0767	1	1	1	50	81.2		27345	32009	
LCSD (1)	Total 8 Me	S 6010B	mg/Kg	1	no	Total Silve	7440-22-4	11.1	11.1	11.1	11.1	0.00444	0.05	0.05	0.05	12.5	88.8	0.9	27345	32009	
LCSD (1)	Total 8 Me	S 6010B	mg/Kg	1	no	Total Arse	7440-38-2	42.5	42.5	42.5	42.5	0.228	2	2	2	50	85	2.1	27345	32009	
LCSD (1)	Total 8 Me	S 6010B	mg/Kg	1	no	Total Bariu	7440-39-3	86.2	86.2	86.2	86.2	0.0601	1	1	1	100	86.2	1.3	27345	32009	
LCSD (1)	Total 8 Me	S 6010B	mg/Kg	1	no	Total Cadn	7440-43-9	22.6	22.6	22.6	22.6	0.00794	0.1	0.1	0.1	25	90.4	1.8	27345	32009	
LCSD (1)	Total 8 Me	S 6010B	mg/Kg	1	no	Total Chro	7440-47-3	9.12	9.12	9.12	9.12	0.0125	0.5	0.5	0.5	10	91.2	4.5	27345	32009	
LCSD (1)	Total 8 Me	S 6010B	mg/Kg	1	no	Total Lead	7439-92-1	44.7	44.7	44.7	44.7	0.367	1	1	1	50	89.4	1.3	27345	32009	
LCSD (1)	Total 8 Me	S 6010B	mg/Kg	1	no	Total Seler	7782-49-2	40.3	40.3	40.3	40.3	0.0767	1	1	1	50	80.6	0.7	27345	32009	
MS (1)	Cu, Total	S 6010B	mg/Kg	1	no	Total Copp	7440-50-8	15.8	15.8	15.8	15.8	0.0268	0.5	0.5	0.5	12.5	85.36		27345	32009	
MSD (1)	Cu, Total	S 6010B	mg/Kg	1	no	Total Copp	7440-50-8	16.7	16.7	16.7	16.7	0.0268	0.5	0.5	0.5	12.5	92.56	5.5	27345	32009	
MS (1)	P, Total	S 6010B	mg/Kg	1	no	Total Phos	7723-14-0	243	243	243	243	0.223	2	2	2	50	102		27345	32009	
MSD (1)	P, Total	S 6010B	mg/Kg	1	no	Total Phos	7723-14-0	242	242	242	242	0.223	2	2	2	50	100	0.4	27345	32009	
MS (1)	Zn, Total	S 6010B	mg/Kg	1	no	Total Zinc	7440-66-6	42.7	42.7	42.7	42.7	0.124	2	2	2	25	84		27345	32009	
MSD (1)	Zn, Total	S 6010B	mg/Kg	1	no	Total Zinc	7440-66-6	42.1	42.1	42.1	42.1	0.124	2	2	2	25	81.6	1.4	27345	32009	
MS (1)	Total 8 Me	S 6010B	mg/Kg	1	no	Total Silve	7440-22-4	10.4	10.4	10.4	10.4	0.00444	0.05	0.05	0.05	12.5	83.2		27345	32009	
MS (1)	Total 8 Me	S 6010B	mg/Kg	1	no	Total Arse	7440-38-2	47.5	47.5	47.5	47.5	0.228	2	2	2	50	87.3		27345	32009	
MS (1)	Total 8 Me	S 6010B	mg/Kg	1	no	Total Bariu	7440-39-3	140	140	140	140	0.0601	1	1	1	100	101.4		27345	32009	
MS (1)	Total 8 Me	S 6010B	mg/Kg	1	no	Total Cadn	7440-43-9	19.7	19.7	19.7	19.7	0.00794	0.1	0.1	0.1	25	78.8		27345	32009	
MS (1)	Total 8 Me	S 6010B	mg/Kg	1	no	Total Chro	7440-47-3	12.5	12.5	12.5	12.5	0.0125	0.5	0.5	0.5	10	96.5		27345	32009	
MS (1)	Total 8 Me	S 6010B	mg/Kg	1	no	Total Lead	7439-92-1	58.5	58.5	58.5	58.5	0.367	1	1	1	50	93.2		27345	32009	
MS (1)	Total 8 Me	S 6010B	mg/Kg	1	no	Total Seler	7782-49-2	41.5	41.5	41.5	41.5	0.0767	1	1	1	50	83		27345	32009	
MSD (1)	Total 8 Me	S 6010B	mg/Kg	1	no	Total Silve	7440-22-4	10.7	10.7	10.7	10.7	0.00444	0.05	0.05	0.05	12.5	85.6	2.8	27345	32009	
MSD (1)	Total 8 Me	S 6010B	mg/Kg	1	no	Total Arse	7440-38-2	46.6	46.6	46.6	46.6	0.228	2	2	2	50	85.5	1.9	27345	32009	
MSD (1)	Total 8 Me	S 6010B	mg/Kg	1	no	Total Bariu	7440-39-3	150	150	150	150	0.0601	1	1	1	100	111.4	6.9	27345	32009	
MSD (1)	Total 8 Me	S 6010B	mg/Kg	1	no	Total Cadn	7440-43-9	19.3	19.3	19.3	19.3	0.00794	0.1	0.1	0.1	25	77.2	2	27345	32009	
MSD (1)	Total 8 Me	S 6010B	mg/Kg	1	no	Total Chro	7440-47-3	12.4	12.4	12.4	12.4	0.0125	0.5	0.5	0.5	10	95.5	0.8	27345	32009	
MSD (1)	Total 8 Me	S 6010B	mg/Kg	1	no	Total Lead	7439-92-1	57.1	57.1	57.1	57.1	0.367	1	1	1	50	90.4	2.4	27345	32009	
MSD (1)	Total 8 Me	S 6010B	mg/Kg	1	no	Total Seler	7782-49-2	42.5	42.5	42.5	42.5	0.0767	1	1	1	50	85	2.4	27345	32009	
Method Bl	Cu, Total	S 6010B	mg/Kg	1	no	Total Copp	7440-50-8	< 0.0268	< 0.5	< 0.5	< 0.5	0.0268	0.5	0.5	0.5	0			27345	32009	
Method Bl	P, Total	S 6010B	mg/Kg	1	no	Total Phos	7723-14-0	2.16	2.16	2.16	2.16	0.223	2	2	2	0			27345	32009	
Method Bl	Zn, Total	S 6010B	mg/Kg	1	no	Total Zinc	7440-66-6	1.82	< 2	< 2	< 2	0.124	2	2	2	0			27345	32009	
Method Bl	Total 8 Me	S 6010B	mg/Kg	1	no	Total Silve	7440-22-4	0.00444	< 0.05	< 0.05	< 0.05	0.00444	0.05	0.05	0.05	0			27345	32009	
Method Bl	Total 8 Me	S 6010B	mg/Kg	1	no	Total Arse	7440-38-2	0.228	< 2	< 2	< 2	0.228	2	2	2	0			27345	32009	
Method Bl	Total 8 Me	S 6010B	mg/Kg	1	no	Total Bariu	7440-39-3	0.0601	< 1	< 1	< 1	0.0601	1	1	1	0			27345	32009	
Method Bl	Total 8 Me	S 6010B	mg/Kg	1	no	Total Cadn	7440-43-9	0.00794	< 0.1	< 0.1	< 0.1	0.00794	0.1	0.1	0.1	0			27345	32009	
Method Bl	Total 8 Me	S 6010B	mg/Kg	1	no	Total Chro	7440-47-3	0.0125	< 0.5	< 0.5	< 0.5	0.0125	0.5	0.5	0.5	0			27345	32009	
Method Bl	Total 8 Me	S 6010B	mg/Kg	1	no	Total Lead	7439-92-1	0.367	< 1	< 1	< 1	0.367	1	1	1	0			27345	32009	
Method Bl	Total 8 Me	S 6010B	mg/Kg	1	no	Total Seler	7782-49-2	0.0767	< 1	< 1	< 1	0.0767	1	1	1	0			27345	32009	
ICV (1)	Cu, Total	S 6010B	mg/Kg	1	no	Total Copp	7440-50-8	0.961	0.961	0.961	0.961	0.0268	0.5	0.5	0.5	1	96.1		27345	32009	
ICV (1)	P, Total	S 6010B	mg/Kg	1	no	Total Phos	7723-14-0	4.61	4.61	4.61	4.61	0.223	2	2	2	5	92.2		27345	32009	
ICV (1)	Zn, Total	S 6010B	mg/Kg	1	no	Total Zinc	7440-66-6	0.945	< 2	< 2	< 2	0.124	2	2	2	1	94.5		27345	32009	
ICV (1)	Total 8 Me	S 6010B	mg/Kg	1	no	Total Silve	7440-22-4	0.121	0.121	0.121	0.121	0.00444	0.05	0.05	0.05	0.125	96.8		27345	32009	
ICV (1)	Total 8 Me	S 6010B	mg/Kg	1	no	Total Arse	7440-38-2	0.962	< 2	< 2	< 2	0.228	2	2	2	1	96.2		27345	32009	
ICV (1)	Total 8 Me	S 6010B	mg/Kg	1	no	Total Bariu	7440-39-3	0.976	< 1	< 1	< 1	0.0601	1	1	1	1	97.6		27345	32009	
ICV (1)	Total 8 Me	S 6010B	mg/Kg	1	no	Total Cadn	7440-43-9	0.952	0.952	0.952	0.952	0.00794	0.1	0.1	0.1	1	95.2		27345	32009	
ICV (1)	Total 8 Me	S 6010B	mg/Kg	1	no	Total Chro	7440-47-3	0.926	0.926	0.926	0.926	0.0125	0.5	0.5	0.5	1	92.6		27345	32009	
ICV (1)	Total 8 Me	S 6010B	mg/Kg	1	no	Total Lead	7439-92-1	0.926	< 1	< 1	< 1	0.367	1	1	1	1	92.6		27345	32009	
ICV (1)	Total 8 Me	S 6010B	mg/Kg	1	no	Total Seler	7782-49-2	0.973	< 1	< 1	< 1	0.0767	1	1	1	1	97.3		27345	32009	
CCV (1)	Cu, Total	S 6010B	mg/Kg	1	no	Total Copp	7440-50-8	0.965	0.965	0.965	0.965	0.0268	0.5	0.5	0.5	1	96.5		27345	32009	
CCV (1)	P, Total	S 6010B	mg/Kg	1	no	Total Phos	7723-14-0	4.73	4.73	4.73	4.73	0.223	2	2	2	5	94.6		27345	32009	
CCV (1)	Zn, Total	S 6010B	mg/Kg	1	no	Total Zinc	7440-66-6	1.01	< 2	< 2	< 2	0.124	2	2	2	1	101		27345	32009	
CCV (1)	Total 8 Me	S 6010B	mg/Kg	1	no	Total Silve	7440-22-4	0.122	0.122	0.122	0.122	0.00444	0.05	0.05	0.05	0.125	97.6		27345	32009	
CCV (1)	Total 8 Me	S 6010B	mg/Kg	1	no	Total Arse	7440-38-2	0.969	< 2	< 2	< 2	0.228	2	2	2	1	96.9		27345	32009	
CCV (1)	Total 8 Me	S 6010B	mg/Kg	1	no	Total Bariu	7440-39-3	0.971	< 1	< 1	< 1	0.0601	1	1	1	1	97.1		27345	32009	
CCV (1)	Total 8 Me	S 6010B	mg/Kg	1	no	Total Cadn	7440-43-9	0.954	0.954	0.954	0.954	0.00794	0.1	0.1	0.1	1	95.4		27345	32009	
CCV (1)	Total 8 Me	S 6010B	mg/Kg	1	no	Total Chro	7440-47-3	0.963	0.963	0.963	0.963	0.0125	0.5	0.5	0.5	1	96.3		27345	32009	
CCV (1)	Total 8 Me	S 6010B	mg/Kg	1	no	Total Lead	7439-92-1	0.954	< 1	< 1	< 1	0.367	1	1	1	1	95.4		27345	32009	
CCV (1)	Total 8 Me	S 6010B	mg/Kg	1	no	Total Seler	7782-49-2	1.01	1.01	1.01	1.01	0.0767	1	1	1	1	101		27345	32009	
LCS (1)	Chromium	SM 3500-C	mg/Kg	1	no	Hexavalen	7440-47-3	31.5	31.5	31.5	31.5	2.32	5	5	5	40	78.75		27864	32185	
LCSD (1)	Chromium	SM 3500-C	mg/Kg	1	no	Hexavalen	7440-47-3	32.5	32.5	32.5	32.5	2.32	5	5	5	40	81.25	3.1	27864	32185	
MS (1)	Chromium	SM 3500-C	mg/Kg	1	no	Hexavalen	7440-47-3	32.9	32.9	32.9	32.9	2.32	5	5	5	40	82.25		27864	32185	Matrix spike recoveries out of control limits due to ma
MSD (1)	Chromium	SM 3500-C	mg/Kg	1	no	Hexavalen	7440-47-3	40.7	40.7	40.7	40.7	2.32	5	5	5	40	101.75	21.2	27864	32185	Matrix spike recoveries out of control limits due to ma
Method Bl	Chromium	SM 3500-C	mg/Kg	1	no	Hexavalen	7440-47-3	< 2.32	< 5	< 5	< 5	2.32	5	5	5	0			27864	32185	
ICV (1)	Chromium	SM 3500-C	mg/L	1	no	Hexavalen	7440-47-3	0.494	0.494	0.494	0.494	0.2	0.4	0.4	0.4	0.5	98.8		27864	32185	
CCV (1)	Chromium	SM 3500-C	mg/L	1	no	Hexavalen	7440-47-3	0.532	0.532	0.532	0.532	0.2	0.4	0.4	0.4	0.5	106.4		27864	32185	

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Analytical and Quality Control Report

William Little
WTS
P.O. Box 363
Building 126 3RD Floor
WSMR, NM, 88002

Report Date: November 29, 2006

Work Order: 6102404

Project Name: HELSTF Phase III Soil Sampling
Project Number: 7

Enclosed are the Analytical Report and Quality Control Report for the following sample(s) submitted to TraceAnalysis, Inc.

Sample	Description	Matrix	Date Taken	Time Taken	Date Received
106713	HLSF-0085-SB-004 (0.5-1.0)	soil	2006-10-20	10:05	2006-10-23
106714	HLSF-0085-SB-004 (10.0-10.5)	soil	2006-10-20	10:30	2006-10-23
106715	HLSF-0085-SB-104 (10.0-10.5)	soil	2006-10-20	10:30	2006-10-23
106716	HLSF-0085-SB-004 (20.0-20.5)	soil	2006-10-20	11:00	2006-10-23
106717	HLSF-0085-SB-004 (30.0-30.5)	soil	2006-10-20	11:25	2006-10-23
106718	HLSF-0085-SB-004 (40.0-40.5)	soil	2006-10-20	11:50	2006-10-23
106719	HLSF-0085-SB-004 (49.5-50.0)	soil	2006-10-20	12:20	2006-10-23
106720	HLSF-0085-SB-003 (0.5-1.0)	soil	2006-10-20	14:00	2006-10-23
106721	HLSF-0085-SB-003 (10.0-10.5)	soil	2006-10-20	14:30	2006-10-23
106722	HLSF-0085-SB-003 (20.0-20.5)	soil	2006-10-20	14:55	2006-10-23
106723	HLSF-0085-SB-003 (30.0-30.5)	soil	2006-10-20	15:20	2006-10-23
106724	HLSF-0085-SB-003 (40.0-40.5)	soil	2006-10-20	15:55	2006-10-23
106725	HLSF-0085-SB-003 (49.5-50.0)	soil	2006-10-20	16:35	2006-10-23
106730	HLSF-0085-SB-006 (0.5-1.0)	soil	2006-10-19	09:40	2006-10-23
106731	HLSF-0085-SB-006 (10.0-10.5)	soil	2006-10-19	09:15	2006-10-23
106732	HLSF-0085-SB-006 (20.0-20.5)	soil	2006-10-19	09:30	2006-10-23
106733	HLSF-0085-SB-006 (30.0-30.5)	soil	2006-10-19	10:05	2006-10-23
106734	HLSF-0085-SB-006 (40.0-40.5)	soil	2006-10-19	10:30	2006-10-23
106735	HLSF-0085-SB-006 (49.5-50.0)	soil	2006-10-19	11:05	2006-10-23
106736	HLSF-0085-SB-005 (0.5-1.0)	soil	2006-10-19	13:55	2006-10-23
106737	HLSF-0085-SB-005 (10.0-10.5)	soil	2006-10-19	14:20	2006-10-23
106738	HLSF-0085-SB-005 (20.0-20.5)	soil	2006-10-19	14:50	2006-10-23
106739	HLSF-0085-SB-005 (30.0-30.5)	soil	2006-10-19	15:15	2006-10-23
106740	HLSF-0085-SB-005 (40.0-40.5)	soil	2006-10-19	15:45	2006-10-23
106741	HLSF-0085-SB-005 (49.5-50.0)	soil	2006-10-19	16:15	2006-10-23
107951	HLSF-0085-SB-001 (0.5’-1.0)	soil	2006-11-01	07:40	2006-11-02
107952	HLSF-0085-SB-001 (10.0-10.5’)	soil	2006-11-01	08:00	2006-11-02
107953	HLSF-0085-SB-001 (20.0-20.5’)	soil	2006-11-01	08:25	2006-11-02
107954	HLSF-0085-SB-001 (30.0-30.5’)	soil	2006-11-01	08:50	2006-11-02
107955	HLSF-0085-SB-001 (30.0’-30.5’)	soil	2006-11-01	08:50	2006-11-02
107956	HLSF-0085-SB-001 (40.0’-40.5’)	soil	2006-11-01	09:25	2006-11-02
107957	HLSF-0085-SB-001 (49.5-50.0’)	soil	2006-11-01	10:00	2006-11-02

These results represent only the samples received in the laboratory. The Quality Control Report is generated on a batch basis. All information contained in this report is for the analytical batch(es) in which your sample(s) were analyzed.

This report consists of a total of 14 pages and shall not be reproduced except in its entirety, without written approval of TraceAnalysis, Inc.

Dr. Blair Leftwich, Director

Standard Flags

B - The sample contains less than ten times the concentration found in the method blank.

Analytical Report

Sample: 106713 - HLSF-0085-SB-004 (0.5-1.0)

Analysis:	Chromium, Hexavalent	Analytical Method:	SM 3500-Cr B	Prep Method:	N/A
QC Batch:	31611	Date Analyzed:	2006-11-01	Analyzed By:	WB
Prep Batch:	27523	Sample Preparation:	2006-10-31	Prepared By:	WB

Parameter	Flag	RL Result	Units	Dilution	RL
Hexavalent Chromium		<5.00	mg/Kg	1	5.00

Sample: 106714 - HLSF-0085-SB-004 (10.0-10.5)

Analysis:	Chromium, Hexavalent	Analytical Method:	SM 3500-Cr B	Prep Method:	N/A
QC Batch:	31611	Date Analyzed:	2006-11-01	Analyzed By:	WB
Prep Batch:	27523	Sample Preparation:	2006-10-31	Prepared By:	WB

Parameter	Flag	RL Result	Units	Dilution	RL
Hexavalent Chromium		<5.00	mg/Kg	1	5.00

Sample: 106715 - HLSF-0085-SB-104 (10.0-10.5)

Analysis:	Chromium, Hexavalent	Analytical Method:	SM 3500-Cr B	Prep Method:	N/A
QC Batch:	31611	Date Analyzed:	2006-11-01	Analyzed By:	WB
Prep Batch:	27523	Sample Preparation:	2006-10-31	Prepared By:	WB

Parameter	Flag	RL Result	Units	Dilution	RL
Hexavalent Chromium		<5.00	mg/Kg	1	5.00

Sample: 106716 - HLSF-0085-SB-004 (20.0-20.5)

Analysis:	Chromium, Hexavalent	Analytical Method:	SM 3500-Cr B	Prep Method:	N/A
QC Batch:	31611	Date Analyzed:	2006-11-01	Analyzed By:	WB
Prep Batch:	27523	Sample Preparation:	2006-10-31	Prepared By:	WB

Parameter	Flag	RL Result	Units	Dilution	RL
Hexavalent Chromium		<5.00	mg/Kg	1	5.00

Sample: 106717 - HLSF-0085-SB-004 (30.0-30.5)

Analysis:	Chromium, Hexavalent	Analytical Method:	SM 3500-Cr B	Prep Method:	N/A
QC Batch:	31611	Date Analyzed:	2006-11-01	Analyzed By:	WB
Prep Batch:	27523	Sample Preparation:	2006-10-31	Prepared By:	WB

Parameter	Flag	RL Result	Units	Dilution	RL
Hexavalent Chromium		<5.00	mg/Kg	1	5.00

Sample: 106718 - HLSF-0085-SB-004 (40.0-40.5)

Analysis:	Chromium, Hexavalent	Analytical Method:	SM 3500-Cr B	Prep Method:	N/A
QC Batch:	31611	Date Analyzed:	2006-11-01	Analyzed By:	WB
Prep Batch:	27523	Sample Preparation:	2006-10-31	Prepared By:	WB

Parameter	Flag	RL Result	Units	Dilution	RL
Hexavalent Chromium		<5.00	mg/Kg	1	5.00

Sample: 106719 - HLSF-0085-SB-004 (49.5-50.0)

Analysis:	Chromium, Hexavalent	Analytical Method:	SM 3500-Cr B	Prep Method:	N/A
QC Batch:	31611	Date Analyzed:	2006-11-01	Analyzed By:	WB
Prep Batch:	27523	Sample Preparation:	2006-10-31	Prepared By:	WB

Parameter	Flag	RL Result	Units	Dilution	RL
Hexavalent Chromium		<5.00	mg/Kg	1	5.00

Sample: 106720 - HLSF-0085-SB-003 (0.5-1.0)

Analysis:	Chromium, Hexavalent	Analytical Method:	SM 3500-Cr B	Prep Method:	N/A
QC Batch:	31611	Date Analyzed:	2006-11-01	Analyzed By:	WB
Prep Batch:	27523	Sample Preparation:	2006-10-31	Prepared By:	WB

Parameter	Flag	RL Result	Units	Dilution	RL
Hexavalent Chromium		<5.00	mg/Kg	1	5.00

Sample: 106721 - HLSF-0085-SB-003 (10.0-10.5)

Analysis:	Chromium, Hexavalent	Analytical Method:	SM 3500-Cr B	Prep Method:	N/A
QC Batch:	31611	Date Analyzed:	2006-11-01	Analyzed By:	WB
Prep Batch:	27523	Sample Preparation:	2006-10-31	Prepared By:	WB

Parameter	Flag	RL Result	Units	Dilution	RL
Hexavalent Chromium		<5.00	mg/Kg	1	5.00

Sample: 106722 - HLSF-0085-SB-003 (20.0-20.5)

Analysis:	Chromium, Hexavalent	Analytical Method:	SM 3500-Cr B	Prep Method:	N/A
QC Batch:	31611	Date Analyzed:	2006-11-01	Analyzed By:	WB
Prep Batch:	27523	Sample Preparation:	2006-10-31	Prepared By:	WB

Parameter	Flag	RL Result	Units	Dilution	RL
Hexavalent Chromium		<5.00	mg/Kg	1	5.00

Sample: 106723 - HLSF-0085-SB-003 (30.0-30.5)

Analysis:	Chromium, Hexavalent	Analytical Method:	SM 3500-Cr B	Prep Method:	N/A
QC Batch:	31614	Date Analyzed:	2006-11-01	Analyzed By:	WB
Prep Batch:	27528	Sample Preparation:	2006-11-01	Prepared By:	WB

Parameter	Flag	RL Result	Units	Dilution	RL
Hexavalent Chromium		<5.00	mg/Kg	1	5.00

Sample: 106724 - HLSF-0085-SB-003 (40.0-40.5)

Analysis:	Chromium, Hexavalent	Analytical Method:	SM 3500-Cr B	Prep Method:	N/A
QC Batch:	31614	Date Analyzed:	2006-11-01	Analyzed By:	WB
Prep Batch:	27528	Sample Preparation:	2006-11-01	Prepared By:	WB

Parameter	Flag	RL Result	Units	Dilution	RL
Hexavalent Chromium		<5.00	mg/Kg	1	5.00

Sample: 106725 - HLSF-0085-SB-003 (49.5-50.0)

Analysis:	Chromium, Hexavalent	Analytical Method:	SM 3500-Cr B	Prep Method:	N/A
QC Batch:	31614	Date Analyzed:	2006-11-01	Analyzed By:	WB
Prep Batch:	27528	Sample Preparation:	2006-11-01	Prepared By:	WB

Parameter	Flag	RL Result	Units	Dilution	RL
Hexavalent Chromium		<5.00	mg/Kg	1	5.00

Sample: 106730 - HLSF-0085-SB-006 (0.5-1.0)

Analysis:	Chromium, Hexavalent	Analytical Method:	SM 3500-Cr B	Prep Method:	N/A
QC Batch:	31614	Date Analyzed:	2006-11-01	Analyzed By:	WB
Prep Batch:	27528	Sample Preparation:	2006-11-01	Prepared By:	WB

Parameter	Flag	RL Result	Units	Dilution	RL
Hexavalent Chromium		<5.00	mg/Kg	1	5.00

Sample: 106731 - HLSF-0085-SB-006 (10.0-10.5)

Analysis:	Chromium, Hexavalent	Analytical Method:	SM 3500-Cr B	Prep Method:	N/A
QC Batch:	31614	Date Analyzed:	2006-11-01	Analyzed By:	WB
Prep Batch:	27528	Sample Preparation:	2006-11-01	Prepared By:	WB

Parameter	Flag	RL Result	Units	Dilution	RL
Hexavalent Chromium		<5.00	mg/Kg	1	5.00

Sample: 106732 - HLSF-0085-SB-006 (20.0-20.5)

Analysis:	Chromium, Hexavalent	Analytical Method:	SM 3500-Cr B	Prep Method:	N/A
QC Batch:	31614	Date Analyzed:	2006-11-01	Analyzed By:	WB
Prep Batch:	27528	Sample Preparation:	2006-11-01	Prepared By:	WB

Parameter	Flag	RL Result	Units	Dilution	RL
Hexavalent Chromium		<5.00	mg/Kg	1	5.00

Sample: 106733 - HLSF-0085-SB-006 (30.0-30.5)

Analysis:	Chromium, Hexavalent	Analytical Method:	SM 3500-Cr B	Prep Method:	N/A
QC Batch:	31614	Date Analyzed:	2006-11-01	Analyzed By:	WB
Prep Batch:	27528	Sample Preparation:	2006-11-01	Prepared By:	WB

Parameter	Flag	RL Result	Units	Dilution	RL
Hexavalent Chromium		<5.00	mg/Kg	1	5.00

Sample: 106734 - HLSF-0085-SB-006 (40.0-40.5)

Analysis:	Chromium, Hexavalent	Analytical Method:	SM 3500-Cr B	Prep Method:	N/A
QC Batch:	31614	Date Analyzed:	2006-11-01	Analyzed By:	WB
Prep Batch:	27528	Sample Preparation:	2006-11-01	Prepared By:	WB

Parameter	Flag	RL Result	Units	Dilution	RL
Hexavalent Chromium		<5.00	mg/Kg	1	5.00

Sample: 106735 - HLSF-0085-SB-006 (49.5-50.0)

Analysis:	Chromium, Hexavalent	Analytical Method:	SM 3500-Cr B	Prep Method:	N/A
QC Batch:	31614	Date Analyzed:	2006-11-01	Analyzed By:	WB
Prep Batch:	27528	Sample Preparation:	2006-11-01	Prepared By:	WB

Parameter	Flag	RL Result	Units	Dilution	RL
Hexavalent Chromium		<5.00	mg/Kg	1	5.00

Sample: 106736 - HLSF-0085-SB-005 (0.5-1.0)

Analysis:	Chromium, Hexavalent	Analytical Method:	SM 3500-Cr B	Prep Method:	N/A
QC Batch:	31614	Date Analyzed:	2006-11-01	Analyzed By:	WB
Prep Batch:	27528	Sample Preparation:	2006-11-01	Prepared By:	WB

Parameter	Flag	RL Result	Units	Dilution	RL
Hexavalent Chromium		<5.00	mg/Kg	1	5.00

Sample: 106737 - HLSF-0085-SB-005 (10.0-10.5)

Analysis:	Chromium, Hexavalent	Analytical Method:	SM 3500-Cr B	Prep Method:	N/A
QC Batch:	31615	Date Analyzed:	2006-11-01	Analyzed By:	WB
Prep Batch:	27529	Sample Preparation:	2006-11-01	Prepared By:	WB

Parameter	Flag	RL Result	Units	Dilution	RL
Hexavalent Chromium		<5.00	mg/Kg	1	5.00

Sample: 106738 - HLSF-0085-SB-005 (20.0-20.5)

Analysis:	Chromium, Hexavalent	Analytical Method:	SM 3500-Cr B	Prep Method:	N/A
QC Batch:	31615	Date Analyzed:	2006-11-01	Analyzed By:	WB
Prep Batch:	27529	Sample Preparation:	2006-11-01	Prepared By:	WB

Parameter	Flag	RL Result	Units	Dilution	RL
Hexavalent Chromium		<5.00	mg/Kg	1	5.00

Sample: 106739 - HLSF-0085-SB-005 (30.0-30.5)

Analysis:	Chromium, Hexavalent	Analytical Method:	SM 3500-Cr B	Prep Method:	N/A
QC Batch:	31615	Date Analyzed:	2006-11-01	Analyzed By:	WB
Prep Batch:	27529	Sample Preparation:	2006-11-01	Prepared By:	WB

Parameter	Flag	RL Result	Units	Dilution	RL
Hexavalent Chromium		<5.00	mg/Kg	1	5.00

Sample: 106740 - HLSF-0085-SB-005 (40.0-40.5)

Analysis:	Chromium, Hexavalent	Analytical Method:	SM 3500-Cr B	Prep Method:	N/A
QC Batch:	31615	Date Analyzed:	2006-11-01	Analyzed By:	WB
Prep Batch:	27529	Sample Preparation:	2006-11-01	Prepared By:	WB

Parameter	Flag	RL Result	Units	Dilution	RL
Hexavalent Chromium		<5.00	mg/Kg	1	5.00

Sample: 106741 - HLSF-0085-SB-005 (49.5-50.0)

Analysis:	Chromium, Hexavalent	Analytical Method:	SM 3500-Cr B	Prep Method:	N/A
QC Batch:	31615	Date Analyzed:	2006-11-01	Analyzed By:	WB
Prep Batch:	27529	Sample Preparation:	2006-11-01	Prepared By:	WB

Parameter	Flag	RL Result	Units	Dilution	RL
Hexavalent Chromium		<5.00	mg/Kg	1	5.00

Sample: 107951 - HLSF-0085-SB-001 (0.5'-1.0)

Analysis:	Chromium, Hexavalent	Analytical Method:	SM 3500-Cr B	Prep Method:	N/A
QC Batch:	32185	Date Analyzed:	2006-11-17	Analyzed By:	SM
Prep Batch:	27864	Sample Preparation:	2006-11-16	Prepared By:	SM

Parameter	Flag	RL Result	Units	Dilution	RL
Hexavalent Chromium		<5.00	mg/Kg	1	5.00

Sample: 107952 - HLSF-0085-SB-001 (10.0-10.5')

Analysis:	Chromium, Hexavalent	Analytical Method:	SM 3500-Cr B	Prep Method:	N/A
QC Batch:	32185	Date Analyzed:	2006-11-17	Analyzed By:	SM
Prep Batch:	27864	Sample Preparation:	2006-11-16	Prepared By:	SM

Parameter	Flag	RL Result	Units	Dilution	RL
Hexavalent Chromium		<5.00	mg/Kg	1	5.00

Sample: 107953 - HLSF-0085-SB-001 (20.0-20.5')

Analysis:	Chromium, Hexavalent	Analytical Method:	SM 3500-Cr B	Prep Method:	N/A
QC Batch:	32185	Date Analyzed:	2006-11-17	Analyzed By:	SM
Prep Batch:	27864	Sample Preparation:	2006-11-16	Prepared By:	SM

Parameter	Flag	RL Result	Units	Dilution	RL
Hexavalent Chromium		<5.00	mg/Kg	1	5.00

Sample: 107954 - HLSF-0085-SB-001 (30.0-30.5')

Analysis:	Chromium, Hexavalent	Analytical Method:	SM 3500-Cr B	Prep Method:	N/A
QC Batch:	32185	Date Analyzed:	2006-11-17	Analyzed By:	SM
Prep Batch:	27864	Sample Preparation:	2006-11-16	Prepared By:	SM

Parameter	Flag	RL Result	Units	Dilution	RL
Hexavalent Chromium		<5.00	mg/Kg	1	5.00

Sample: 107955 - HLSF-0085-SB-001 (30.0'-30.5')

Analysis:	Chromium, Hexavalent	Analytical Method:	SM 3500-Cr B	Prep Method:	N/A
QC Batch:	32185	Date Analyzed:	2006-11-17	Analyzed By:	SM
Prep Batch:	27864	Sample Preparation:	2006-11-16	Prepared By:	SM

Parameter	Flag	RL Result	Units	Dilution	RL
Hexavalent Chromium		<5.00	mg/Kg	1	5.00

Sample: 107956 - HLSF-0085-SB-001 (40.0'-40.5')

Analysis:	Chromium, Hexavalent	Analytical Method:	SM 3500-Cr B	Prep Method:	N/A
QC Batch:	32185	Date Analyzed:	2006-11-17	Analyzed By:	SM
Prep Batch:	27864	Sample Preparation:	2006-11-16	Prepared By:	SM

Parameter	Flag	RL Result	Units	Dilution	RL
Hexavalent Chromium		<5.00	mg/Kg	1	5.00

Sample: 107957 - HLSF-0085-SB-001 (49.5-50.0')

Analysis:	Chromium, Hexavalent	Analytical Method:	SM 3500-Cr B	Prep Method:	N/A
QC Batch:	32185	Date Analyzed:	2006-11-17	Analyzed By:	SM
Prep Batch:	27864	Sample Preparation:	2006-11-16	Prepared By:	SM

Parameter	Flag	RL Result	Units	Dilution	RL
Hexavalent Chromium		<5.00	mg/Kg	1	5.00

Method Blank (1) QC Batch: 31611

QC Batch:	31611	Date Analyzed:	2006-11-01	Analyzed By:	WB
Prep Batch:	27523	QC Preparation:	2006-10-31	Prepared By:	WB

Parameter	Flag	MDL Result	Units	RL
Hexavalent Chromium		<2.32	mg/Kg	5

Method Blank (1) QC Batch: 31614

QC Batch:	31614	Date Analyzed:	2006-11-01	Analyzed By:	WB
Prep Batch:	27528	QC Preparation:	2006-11-01	Prepared By:	WB

Parameter	Flag	MDL Result	Units	RL
Hexavalent Chromium		<2.32	mg/Kg	5

Method Blank (1) QC Batch: 31615

QC Batch:	31615	Date Analyzed:	2006-11-01	Analyzed By:	WB
Prep Batch:	27529	QC Preparation:	2006-11-01	Prepared By:	WB

Parameter	Flag	MDL Result	Units	RL
Hexavalent Chromium		<2.32	mg/Kg	5

Method Blank (1) QC Batch: 32185

QC Batch:	32185	Date Analyzed:	2006-11-17	Analyzed By:	SM
Prep Batch:	27864	QC Preparation:	2006-11-16	Prepared By:	WB

Parameter	Flag	MDL Result	Units	RL
Hexavalent Chromium		<2.32	mg/Kg	5

Laboratory Control Spike (LCS-1)

QC Batch:	31611	Date Analyzed:	2006-11-01	Analyzed By:	WB
Prep Batch:	27523	QC Preparation:	2006-10-31	Prepared By:	WB

Param	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Hexavalent Chromium	40.3	mg/Kg	1	40.0	<2.32	101	77.3 - 119

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Param	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Hexavalent Chromium	42.2	mg/Kg	1	40.0	<2.32	106	77.3 - 119	5	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Laboratory Control Spike (LCS-1)

QC Batch:	31614	Date Analyzed:	2006-11-01	Analyzed By:	WB
Prep Batch:	27528	QC Preparation:	2006-11-01	Prepared By:	WB

Param	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Hexavalent Chromium	41.7	mg/Kg	1	40.0	<2.32	104	77.3 - 119

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Param	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Hexavalent Chromium	42.3	mg/Kg	1	40.0	<2.32	106	77.3 - 119	1	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Laboratory Control Spike (LCS-1)

QC Batch: 31615 Date Analyzed: 2006-11-01 Analyzed By: WB
Prep Batch: 27529 QC Preparation: 2006-11-01 Prepared By: WB

Param	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Hexavalent Chromium	40.9	mg/Kg	1	40.0	<2.32	102	77.3 - 119

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Param	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Hexavalent Chromium	40.2	mg/Kg	1	40.0	<2.32	100	77.3 - 119	2	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Laboratory Control Spike (LCS-1)

QC Batch: 32185 Date Analyzed: 2006-11-17 Analyzed By: SM
Prep Batch: 27864 QC Preparation: 2006-11-16 Prepared By: WB

Param	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Hexavalent Chromium	31.5	mg/Kg	1	40.0	<2.32	79	77.3 - 119

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Param	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Hexavalent Chromium	32.5	mg/Kg	1	40.0	<2.32	81	77.3 - 119	3	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Matrix Spike (MS-1) Spiked Sample: 106722

QC Batch: 31611 Date Analyzed: 2006-11-01 Analyzed By: WB
Prep Batch: 27523 QC Preparation: 2006-10-31 Prepared By: WB

Param	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Hexavalent Chromium	41.2	mg/Kg	1	40.0	<2.32	103	85 - 115

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Param	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Hexavalent Chromium	42.0	mg/Kg	1	40.0	<2.32	105	85 - 115	2	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Matrix Spike (MS-1) Spiked Sample: 106736

QC Batch: 31614 Date Analyzed: 2006-11-01 Analyzed By: WB
Prep Batch: 27528 QC Preparation: 2006-11-01 Prepared By: WB

Param	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Hexavalent Chromium	38.0	mg/Kg	1	40.0	<2.32	95	85 - 115

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Param	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Hexavalent Chromium	37.0	mg/Kg	1	40.0	<2.32	92	85 - 115	3	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Matrix Spike (MS-1) Spiked Sample: 106934

QC Batch: 31615 Date Analyzed: 2006-11-01 Analyzed By: WB
Prep Batch: 27529 QC Preparation: 2006-11-01 Prepared By: WB

Param	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Hexavalent Chromium	37.6	mg/Kg	1	0.500	<2.32	7520	85 - 115

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Param	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Hexavalent Chromium	35.4	mg/Kg	1	0.500	<2.32	7080	85 - 115	6	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Matrix Spike (MS-1) Spiked Sample: 107961

QC Batch: 32185 Date Analyzed: 2006-11-17 Analyzed By: SM
Prep Batch: 27864 QC Preparation: 2006-11-16 Prepared By: WB

Param	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Hexavalent Chromium [1]	32.9	mg/Kg	1	40.0	<2.32	82	85 - 115

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Param	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Hexavalent Chromium	40.7	mg/Kg	1	40.0	<2.32	102	85 - 115	21	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Standard (ICV-1)

QC Batch: 31611 Date Analyzed: 2006-11-01 Analyzed By: WB

Param	Flag	Units	ICVs True Conc.	ICVs Found Conc.	ICVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Hexavalent Chromium		mg/L	0.500	0.494	99	85 - 115	2006-11-01

[1]Matrix spike recoveries out of control limits due to matrix spike being diluted out. Use LCS/LCSD to demonstrate analysis is under control.

Standard (CCV-1)

QC Batch: 31611 Date Analyzed: 2006-11-01 Analyzed By: WB

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Hexavalent Chromium		mg/L	0.500	0.515	103	85 - 115	2006-11-01

Standard (ICV-1)

QC Batch: 31614 Date Analyzed: 2006-11-01 Analyzed By: WB

Param	Flag	Units	ICVs True Conc.	ICVs Found Conc.	ICVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Hexavalent Chromium		mg/L	0.500	0.507	101	85 - 115	2006-11-01

Standard (CCV-1)

QC Batch: 31614 Date Analyzed: 2006-11-01 Analyzed By: WB

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Hexavalent Chromium		mg/L	0.500	0.489	98	85 - 115	2006-11-01

Standard (ICV-1)

QC Batch: 31615 Date Analyzed: 2006-11-01 Analyzed By: WB

Param	Flag	Units	ICVs True Conc.	ICVs Found Conc.	ICVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Hexavalent Chromium		mg/L	0.500	0.489	98	85 - 115	2006-11-01

Standard (CCV-1)

QC Batch: 31615 Date Analyzed: 2006-11-01 Analyzed By: WB

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Hexavalent Chromium		mg/L	0.500	0.494	99	85 - 115	2006-11-01

Standard (ICV-1)

QC Batch: 32185 Date Analyzed: 2006-11-17 Analyzed By: SM

Param	Flag	Units	ICVs True Conc.	ICVs Found Conc.	ICVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Hexavalent Chromium		mg/L	0.500	0.494	99	85 - 115	2006-11-17

Standard (CCV-1)

QC Batch: 32185 Date Analyzed: 2006-11-17 Analyzed By: SM

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Hexavalent Chromium		mg/L	0.500	0.532	106	85 - 115	2006-11-17

Analytical and Quality Control Report

William Little
WTS
P.O. Box 363
Building 126 3RD Floor
WSMR, NM, 88002

Report Date: November 27, 2006

Work Order: 6102404

Project Name: HELSTF Phase III Soil Sampling
Project Number: 7

Enclosed are the Analytical Report and Quality Control Report for the following sample(s) submitted to TraceAnalysis, Inc.

Sample	Description	Matrix	Date Taken	Time Taken	Date Received
106713	HLSF-0085-SB-004 (0.5-1.0)	soil	2006-10-20	10:05	2006-10-23
106714	HLSF-0085-SB-004 (10.0-10.5)	soil	2006-10-20	10:30	2006-10-23
106715	HLSF-0085-SB-104 (10.0-10.5)	soil	2006-10-20	10:30	2006-10-23
106716	HLSF-0085-SB-004 (20.0-20.5)	soil	2006-10-20	11:00	2006-10-23
106717	HLSF-0085-SB-004 (30.0-30.5)	soil	2006-10-20	11:25	2006-10-23
106718	HLSF-0085-SB-004 (40.0-40.5)	soil	2006-10-20	11:50	2006-10-23
106719	HLSF-0085-SB-004 (49.5-50.0)	soil	2006-10-20	12:20	2006-10-23
106720	HLSF-0085-SB-003 (0.5-1.0)	soil	2006-10-20	14:00	2006-10-23
106721	HLSF-0085-SB-003 (10.0-10.5)	soil	2006-10-20	14:30	2006-10-23
106722	HLSF-0085-SB-003 (20.0-20.5)	soil	2006-10-20	14:55	2006-10-23
106723	HLSF-0085-SB-003 (30.0-30.5)	soil	2006-10-20	15:20	2006-10-23
106724	HLSF-0085-SB-003 (40.0-40.5)	soil	2006-10-20	15:55	2006-10-23
106725	HLSF-0085-SB-003 (49.5-50.0)	soil	2006-10-20	16:35	2006-10-23
106730	HLSF-0085-SB-006 (0.5-1.0)	soil	2006-10-19	09:40	2006-10-23
106731	HLSF-0085-SB-006 (10.0-10.5)	soil	2006-10-19	09:15	2006-10-23
106732	HLSF-0085-SB-006 (20.0-20.5)	soil	2006-10-19	09:30	2006-10-23
106733	HLSF-0085-SB-006 (30.0-30.5)	soil	2006-10-19	10:05	2006-10-23
106734	HLSF-0085-SB-006 (40.0-40.5)	soil	2006-10-19	10:30	2006-10-23
106735	HLSF-0085-SB-006 (49.5-50.0)	soil	2006-10-19	11:05	2006-10-23
106736	HLSF-0085-SB-005 (0.5-1.0)	soil	2006-10-19	13:55	2006-10-23
106737	HLSF-0085-SB-005 (10.0-10.5)	soil	2006-10-19	14:20	2006-10-23
106738	HLSF-0085-SB-005 (20.0-20.5)	soil	2006-10-19	14:50	2006-10-23
106739	HLSF-0085-SB-005 (30.0-30.5)	soil	2006-10-19	15:15	2006-10-23
106740	HLSF-0085-SB-005 (40.0-40.5)	soil	2006-10-19	15:45	2006-10-23
106741	HLSF-0085-SB-005 (49.5-50.0)	soil	2006-10-19	16:15	2006-10-23
107951	HLSF-0085-SB-001 (0.5’-1.0)	soil	2006-11-01	07:40	2006-11-02
107952	HLSF-0085-SB-001 (10.0-10.5’)	soil	2006-11-01	08:00	2006-11-02
107953	HLSF-0085-SB-001 (20.0-20.5’)	soil	2006-11-01	08:25	2006-11-02
107954	HLSF-0085-SB-001 (30.0-30.5’)	soil	2006-11-01	08:50	2006-11-02
107955	HLSF-0085-SB-001 (30.0’-30.5’)	soil	2006-11-01	08:50	2006-11-02
107956	HLSF-0085-SB-001 (40.0’-40.5’)	soil	2006-11-01	09:25	2006-11-02
107957	HLSF-0085-SB-001 (49.5-50.0’)	soil	2006-11-01	10:00	2006-11-02

These results represent only the samples received in the laboratory. The Quality Control Report is generated on a batch basis. All information contained in this report is for the analytical batch(es) in which your sample(s) were analyzed.

This report consists of a total of 10 pages and shall not be reproduced except in its entirety, without written approval of TraceAnalysis, Inc.

Dr. Blair Leftwich, Director

Standard Flags

B - The sample contains less than ten times the concentration found in the method blank.

Analytical Report

Sample: 106713 - HLSF-0085-SB-004 (0.5-1.0)

Analysis:	FOC	Analytical Method:	ASTM D 2974-87	Prep Method:	N/A
QC Batch:	31591	Date Analyzed:	2006-11-06	Analyzed By:	SM
Prep Batch:	27510	Sample Preparation:	2006-11-04	Prepared By:	SM

Parameter	Flag	RL Result	Units	Dilution	RL
FOC		**3.80**	%	1	0.00

Sample: 106714 - HLSF-0085-SB-004 (10.0-10.5)

Analysis:	FOC	Analytical Method:	ASTM D 2974-87	Prep Method:	N/A
QC Batch:	31591	Date Analyzed:	2006-11-06	Analyzed By:	SM
Prep Batch:	27510	Sample Preparation:	2006-11-04	Prepared By:	SM

Parameter	Flag	RL Result	Units	Dilution	RL
FOC		**1.82**	%	1	0.00

Sample: 106715 - HLSF-0085-SB-104 (10.0-10.5)

Analysis:	FOC	Analytical Method:	ASTM D 2974-87	Prep Method:	N/A
QC Batch:	31591	Date Analyzed:	2006-11-06	Analyzed By:	SM
Prep Batch:	27510	Sample Preparation:	2006-11-04	Prepared By:	SM

Parameter	Flag	RL Result	Units	Dilution	RL
FOC		**2.77**	%	1	0.00

Sample: 106716 - HLSF-0085-SB-004 (20.0-20.5)

Analysis:	FOC	Analytical Method:	ASTM D 2974-87	Prep Method:	N/A
QC Batch:	31591	Date Analyzed:	2006-11-06	Analyzed By:	SM
Prep Batch:	27510	Sample Preparation:	2006-11-04	Prepared By:	SM

Parameter	Flag	RL Result	Units	Dilution	RL
FOC		**3.48**	%	1	0.00

Sample: 106717 - HLSF-0085-SB-004 (30.0-30.5)

Analysis:	FOC	Analytical Method:	ASTM D 2974-87	Prep Method:	N/A
QC Batch:	31591	Date Analyzed:	2006-11-06	Analyzed By:	SM
Prep Batch:	27510	Sample Preparation:	2006-11-04	Prepared By:	SM

Parameter	Flag	RL Result	Units	Dilution	RL
FOC		**2.30**	%	1	0.00

Sample: 106718 - HLSF-0085-SB-004 (40.0-40.5)

Analysis:	FOC	Analytical Method:	ASTM D 2974-87	Prep Method:	N/A
QC Batch:	31591	Date Analyzed:	2006-11-06	Analyzed By:	SM
Prep Batch:	27510	Sample Preparation:	2006-11-04	Prepared By:	SM

Parameter	Flag	RL Result	Units	Dilution	RL
FOC		**0.450**	%	1	0.00

Sample: 106719 - HLSF-0085-SB-004 (49.5-50.0)

Analysis:	FOC	Analytical Method:	ASTM D 2974-87	Prep Method:	N/A
QC Batch:	31591	Date Analyzed:	2006-11-06	Analyzed By:	SM
Prep Batch:	27510	Sample Preparation:	2006-11-04	Prepared By:	SM

Parameter	Flag	RL Result	Units	Dilution	RL
FOC		**1.02**	%	1	0.00

Sample: 106720 - HLSF-0085-SB-003 (0.5-1.0)

Analysis:	FOC	Analytical Method:	ASTM D 2974-87	Prep Method:	N/A
QC Batch:	31734	Date Analyzed:	2006-10-31	Analyzed By:	SM
Prep Batch:	27641	Sample Preparation:	2006-10-29	Prepared By:	SM

Parameter	Flag	RL Result	Units	Dilution	RL
FOC		**5.15**	%	1	0.00

Sample: 106721 - HLSF-0085-SB-003 (10.0-10.5)

Analysis:	FOC	Analytical Method:	ASTM D 2974-87	Prep Method:	N/A
QC Batch:	31591	Date Analyzed:	2006-11-06	Analyzed By:	SM
Prep Batch:	27510	Sample Preparation:	2006-11-04	Prepared By:	SM

Parameter	Flag	RL Result	Units	Dilution	RL
FOC		**2.24**	%	1	0.00

Sample: 106722 - HLSF-0085-SB-003 (20.0-20.5)

Analysis:	FOC	Analytical Method:	ASTM D 2974-87	Prep Method:	N/A
QC Batch:	31591	Date Analyzed:	2006-11-06	Analyzed By:	SM
Prep Batch:	27510	Sample Preparation:	2006-11-04	Prepared By:	SM

Parameter	Flag	RL Result	Units	Dilution	RL
FOC		**3.12**	%	1	0.00

Sample: 106723 - HLSF-0085-SB-003 (30.0-30.5)

Analysis:	FOC	Analytical Method:	ASTM D 2974-87	Prep Method:	N/A
QC Batch:	31734	Date Analyzed:	2006-10-31	Analyzed By:	SM
Prep Batch:	27641	Sample Preparation:	2006-10-29	Prepared By:	SM

Parameter	Flag	RL Result	Units	Dilution	RL
FOC		**2.41**	%	1	0.00

Sample: 106724 - HLSF-0085-SB-003 (40.0-40.5)

Analysis:	FOC	Analytical Method:	ASTM D 2974-87	Prep Method:	N/A
QC Batch:	31734	Date Analyzed:	2006-10-31	Analyzed By:	SM
Prep Batch:	27641	Sample Preparation:	2006-10-29	Prepared By:	SM

Parameter	Flag	RL Result	Units	Dilution	RL
FOC		**1.30**	%	1	0.00

Sample: 106725 - HLSF-0085-SB-003 (49.5-50.0)

Analysis:	FOC	Analytical Method:	ASTM D 2974-87	Prep Method:	N/A
QC Batch:	31591	Date Analyzed:	2006-11-06	Analyzed By:	SM
Prep Batch:	27510	Sample Preparation:	2006-11-04	Prepared By:	SM

Parameter	Flag	RL Result	Units	Dilution	RL
FOC		**1.20**	%	1	0.00

Sample: 106730 - HLSF-0085-SB-006 (0.5-1.0)

Analysis:	FOC	Analytical Method:	ASTM D 2974-87	Prep Method:	N/A
QC Batch:	31734	Date Analyzed:	2006-10-31	Analyzed By:	SM
Prep Batch:	27641	Sample Preparation:	2006-10-29	Prepared By:	SM

Parameter	Flag	RL Result	Units	Dilution	RL
FOC		**4.09**	%	1	0.00

Sample: 106731 - HLSF-0085-SB-006 (10.0-10.5)

Analysis:	FOC	Analytical Method:	ASTM D 2974-87	Prep Method:	N/A
QC Batch:	31734	Date Analyzed:	2006-10-31	Analyzed By:	SM
Prep Batch:	27641	Sample Preparation:	2006-10-29	Prepared By:	SM

Parameter	Flag	RL Result	Units	Dilution	RL
FOC		**4.73**	%	1	0.00

Sample: 106732 - HLSF-0085-SB-006 (20.0-20.5)

Analysis:	FOC	Analytical Method:	ASTM D 2974-87	Prep Method:	N/A
QC Batch:	31734	Date Analyzed:	2006-10-31	Analyzed By:	SM
Prep Batch:	27641	Sample Preparation:	2006-10-29	Prepared By:	SM

Parameter	Flag	RL Result	Units	Dilution	RL
FOC		**3.74**	%	1	0.00

Sample: 106733 - HLSF-0085-SB-006 (30.0-30.5)

Analysis:	FOC	Analytical Method:	ASTM D 2974-87	Prep Method:	N/A
QC Batch:	31734	Date Analyzed:	2006-10-31	Analyzed By:	SM
Prep Batch:	27641	Sample Preparation:	2006-10-29	Prepared By:	SM

Parameter	Flag	RL Result	Units	Dilution	RL
FOC		**2.87**	%	1	0.00

Sample: 106734 - HLSF-0085-SB-006 (40.0-40.5)

Analysis:	FOC	Analytical Method:	ASTM D 2974-87	Prep Method:	N/A
QC Batch:	31734	Date Analyzed:	2006-10-31	Analyzed By:	SM
Prep Batch:	27641	Sample Preparation:	2006-10-29	Prepared By:	SM

Parameter	Flag	RL Result	Units	Dilution	RL
FOC		**2.73**	%	1	0.00

Sample: 106735 - HLSF-0085-SB-006 (49.5-50.0)

Analysis:	FOC	Analytical Method:	ASTM D 2974-87	Prep Method:	N/A
QC Batch:	31734	Date Analyzed:	2006-10-31	Analyzed By:	SM
Prep Batch:	27641	Sample Preparation:	2006-10-29	Prepared By:	SM

Parameter	Flag	RL Result	Units	Dilution	RL
FOC		**1.95**	%	1	0.00

Sample: 106736 - HLSF-0085-SB-005 (0.5-1.0)

Analysis:	FOC	Analytical Method:	ASTM D 2974-87	Prep Method:	N/A
QC Batch:	31734	Date Analyzed:	2006-10-31	Analyzed By:	SM
Prep Batch:	27641	Sample Preparation:	2006-10-29	Prepared By:	SM

Parameter	Flag	RL Result	Units	Dilution	RL
FOC		**5.29**	%	1	0.00

Sample: 106737 - HLSF-0085-SB-005 (10.0-10.5)

Analysis:	FOC	Analytical Method:	ASTM D 2974-87	Prep Method:	N/A
QC Batch:	31592	Date Analyzed:	2006-11-06	Analyzed By:	SM
Prep Batch:	27511	Sample Preparation:	2006-11-04	Prepared By:	SM

Parameter	Flag	RL Result	Units	Dilution	RL
FOC		**1.65**	%	1	0.00

Sample: 106738 - HLSF-0085-SB-005 (20.0-20.5)

Analysis:	FOC	Analytical Method:	ASTM D 2974-87	Prep Method:	N/A
QC Batch:	31592	Date Analyzed:	2006-11-06	Analyzed By:	SM
Prep Batch:	27511	Sample Preparation:	2006-11-04	Prepared By:	SM

Parameter	Flag	RL Result	Units	Dilution	RL
FOC		**2.16**	%	1	0.00

Sample: 106739 - HLSF-0085-SB-005 (30.0-30.5)

Analysis:	FOC	Analytical Method:	ASTM D 2974-87	Prep Method:	N/A
QC Batch:	31592	Date Analyzed:	2006-11-06	Analyzed By:	SM
Prep Batch:	27511	Sample Preparation:	2006-11-04	Prepared By:	SM

Parameter	Flag	RL Result	Units	Dilution	RL
FOC		**2.06**	%	1	0.00

Sample: 106740 - HLSF-0085-SB-005 (40.0-40.5)

Analysis:	FOC	Analytical Method:	ASTM D 2974-87	Prep Method:	N/A
QC Batch:	31592	Date Analyzed:	2006-11-06	Analyzed By:	SM
Prep Batch:	27511	Sample Preparation:	2006-11-04	Prepared By:	SM

Parameter	Flag	RL Result	Units	Dilution	RL
FOC		**0.910**	%	1	0.00

Sample: 106741 - HLSF-0085-SB-005 (49.5-50.0)

Analysis:	FOC	Analytical Method:	ASTM D 2974-87	Prep Method:	N/A
QC Batch:	31592	Date Analyzed:	2006-11-06	Analyzed By:	SM
Prep Batch:	27511	Sample Preparation:	2006-11-04	Prepared By:	SM

Parameter	Flag	RL Result	Units	Dilution	RL
FOC		**2.58**	%	1	0.00

Sample: 107951 - HLSF-0085-SB-001 (0.5'-1.0)

Analysis:	FOC	Analytical Method:	ASTM D 2974-87	Prep Method:	N/A
QC Batch:	31720	Date Analyzed:	2006-11-09	Analyzed By:	SM
Prep Batch:	27555	Sample Preparation:	2006-11-07	Prepared By:	SM

Parameter	Flag	RL Result	Units	Dilution	RL
FOC		**2.93**	%	1	0.00

Sample: 107952 - HLSF-0085-SB-001 (10.0-10.5')

Analysis:	FOC	Analytical Method:	ASTM D 2974-87	Prep Method:	N/A
QC Batch:	31720	Date Analyzed:	2006-11-09	Analyzed By:	SM
Prep Batch:	27555	Sample Preparation:	2006-11-07	Prepared By:	SM

Parameter	Flag	RL Result	Units	Dilution	RL
FOC		**3.27**	%	1	0.00

Sample: 107953 - HLSF-0085-SB-001 (20.0-20.5')

Analysis:	FOC	Analytical Method:	ASTM D 2974-87	Prep Method:	N/A
QC Batch:	31720	Date Analyzed:	2006-11-09	Analyzed By:	SM
Prep Batch:	27555	Sample Preparation:	2006-11-07	Prepared By:	SM

Parameter	Flag	RL Result	Units	Dilution	RL
FOC		**3.91**	%	1	0.00

Sample: 107954 - HLSF-0085-SB-001 (30.0-30.5')

Analysis:	FOC	Analytical Method:	ASTM D 2974-87	Prep Method:	N/A
QC Batch:	31720	Date Analyzed:	2006-11-09	Analyzed By:	SM
Prep Batch:	27555	Sample Preparation:	2006-11-07	Prepared By:	SM

Parameter	Flag	RL Result	Units	Dilution	RL
FOC		**2.02**	%	1	0.00

Sample: 107955 - HLSF-0085-SB-001 (30.0'-30.5')

Analysis:	FOC	Analytical Method:	ASTM D 2974-87	Prep Method:	N/A
QC Batch:	31720	Date Analyzed:	2006-11-09	Analyzed By:	SM
Prep Batch:	27555	Sample Preparation:	2006-11-07	Prepared By:	SM

Parameter	Flag	RL Result	Units	Dilution	RL
FOC		**1.37**	%	1	0.00

Sample: 107956 - HLSF-0085-SB-001 (40.0'-40.5')

Analysis:	FOC	Analytical Method:	ASTM D 2974-87	Prep Method:	N/A
QC Batch:	31720	Date Analyzed:	2006-11-09	Analyzed By:	SM
Prep Batch:	27555	Sample Preparation:	2006-11-07	Prepared By:	SM

Parameter	Flag	RL Result	Units	Dilution	RL
FOC		**4.42**	%	1	0.00

Sample: 107957 - HLSF-0085-SB-001 (49.5-50.0')

Analysis:	FOC	Analytical Method:	ASTM D 2974-87	Prep Method:	N/A
QC Batch:	31720	Date Analyzed:	2006-11-09	Analyzed By:	SM
Prep Batch:	27555	Sample Preparation:	2006-11-07	Prepared By:	SM

Parameter	Flag	RL Result	Units	Dilution	RL
FOC		**1.56**	%	1	0.00

Duplicates (1)

QC Batch:	31591	Date Analyzed:	2006-11-06	Analyzed By:	SM
Prep Batch:	27510	QC Preparation:	2006-11-04	Prepared By:	WB

Param	Duplicate Result	Sample Result	Units	Dilution	RPD	RPD Limit
FOC	1.24	1.20	%	1	3	34

Duplicates (1)

QC Batch:	31592	Date Analyzed:	2006-11-06	Analyzed By:	SM
Prep Batch:	27511	QC Preparation:	2006-11-04	Prepared By:	SM

Param	Duplicate Result	Sample Result	Units	Dilution	RPD	RPD Limit
FOC	1.75	1.65	%	1	6	34

Duplicates (1)

QC Batch: 31720 Date Analyzed: 2006-11-09 Analyzed By: SM
Prep Batch: 27555 QC Preparation: 2006-11-07 Prepared By: WB

Param	Duplicate Result	Sample Result	Units	Dilution	RPD	RPD Limit
FOC	3.18	3.40	%	1	7	34

Duplicates (1)

QC Batch: 31734 Date Analyzed: 2006-10-31 Analyzed By: SM
Prep Batch: 27641 QC Preparation: 2006-10-29 Prepared By: SM

Param	Duplicate Result	Sample Result	Units	Dilution	RPD	RPD Limit
FOC	1.36	1.30	%	1	4	34

Analytical and Quality Control Report

William Little
WTS
P.O. Box 363
Building 126 3RD Floor
WSMR, NM, 88002

Report Date: November 27, 2006

Work Order: 6102404

Project Name: HELSTF Phase III Soil Sampling
Project Number: 7

Enclosed are the Analytical Report and Quality Control Report for the following sample(s) submitted to TraceAnalysis, Inc.

Sample	Description	Matrix	Date Taken	Time Taken	Date Received
106713	HLSF-0085-SB-004 (0.5-1.0)	soil	2006-10-20	10:05	2006-10-23
106714	HLSF-0085-SB-004 (10.0-10.5)	soil	2006-10-20	10:30	2006-10-23
106715	HLSF-0085-SB-104 (10.0-10.5)	soil	2006-10-20	10:30	2006-10-23
106716	HLSF-0085-SB-004 (20.0-20.5)	soil	2006-10-20	11:00	2006-10-23
106717	HLSF-0085-SB-004 (30.0-30.5)	soil	2006-10-20	11:25	2006-10-23
106718	HLSF-0085-SB-004 (40.0-40.5)	soil	2006-10-20	11:50	2006-10-23
106719	HLSF-0085-SB-004 (49.5-50.0)	soil	2006-10-20	12:20	2006-10-23
106720	HLSF-0085-SB-003 (0.5-1.0)	soil	2006-10-20	14:00	2006-10-23
106721	HLSF-0085-SB-003 (10.0-10.5)	soil	2006-10-20	14:30	2006-10-23
106722	HLSF-0085-SB-003 (20.0-20.5)	soil	2006-10-20	14:55	2006-10-23
106723	HLSF-0085-SB-003 (30.0-30.5)	soil	2006-10-20	15:20	2006-10-23
106724	HLSF-0085-SB-003 (40.0-40.5)	soil	2006-10-20	15:55	2006-10-23
106725	HLSF-0085-SB-003 (49.5-50.0)	soil	2006-10-20	16:35	2006-10-23
106730	HLSF-0085-SB-006 (0.5-1.0)	soil	2006-10-19	09:40	2006-10-23
106731	HLSF-0085-SB-006 (10.0-10.5)	soil	2006-10-19	09:15	2006-10-23
106732	HLSF-0085-SB-006 (20.0-20.5)	soil	2006-10-19	09:30	2006-10-23
106733	HLSF-0085-SB-006 (30.0-30.5)	soil	2006-10-19	10:05	2006-10-23
106734	HLSF-0085-SB-006 (40.0-40.5)	soil	2006-10-19	10:30	2006-10-23
106735	HLSF-0085-SB-006 (49.5-50.0)	soil	2006-10-19	11:05	2006-10-23
106736	HLSF-0085-SB-005 (0.5-1.0)	soil	2006-10-19	13:55	2006-10-23
106737	HLSF-0085-SB-005 (10.0-10.5)	soil	2006-10-19	14:20	2006-10-23
106738	HLSF-0085-SB-005 (20.0-20.5)	soil	2006-10-19	14:50	2006-10-23
106739	HLSF-0085-SB-005 (30.0-30.5)	soil	2006-10-19	15:15	2006-10-23
106740	HLSF-0085-SB-005 (40.0-40.5)	soil	2006-10-19	15:45	2006-10-23
106741	HLSF-0085-SB-005 (49.5-50.0)	soil	2006-10-19	16:15	2006-10-23
107951	HLSF-0085-SB-001 (0.5’-1.0)	soil	2006-11-01	07:40	2006-11-02
107952	HLSF-0085-SB-001 (10.0-10.5’)	soil	2006-11-01	08:00	2006-11-02
107953	HLSF-0085-SB-001 (20.0-20.5’)	soil	2006-11-01	08:25	2006-11-02
107954	HLSF-0085-SB-001 (30.0-30.5’)	soil	2006-11-01	08:50	2006-11-02
107955	HLSF-0085-SB-001 (30.0’-30.5’)	soil	2006-11-01	08:50	2006-11-02
107956	HLSF-0085-SB-001 (40.0’-40.5’)	soil	2006-11-01	09:25	2006-11-02
107957	HLSF-0085-SB-001 (49.5-50.0’)	soil	2006-11-01	10:00	2006-11-02

These results represent only the samples received in the laboratory. The Quality Control Report is generated on a batch basis. All information contained in this report is for the analytical batch(es) in which your sample(s) were analyzed.

This report consists of a total of 17 pages and shall not be reproduced except in its entirety, without written approval of TraceAnalysis, Inc.

Dr. Blair Leftwich, Director

Standard Flags

B - The sample contains less than ten times the concentration found in the method blank.

Analytical Report

Sample: 106713 - HLSF-0085-SB-004 (0.5-1.0)

Analysis:	Nitrate and Nitrite as N	Analytical Method:	E 353.3	Prep Method:	N/A
QC Batch:	31626	Date Analyzed:	2006-11-01	Analyzed By:	WB
Prep Batch:	27540	Sample Preparation:	2006-11-01	Prepared By:	JS

Parameter	Flag	RL Result	Units	Dilution	RL
Nitrate and Nitrite as N		**0.578**	mg/Kg	2	0.100

Sample: 106714 - HLSF-0085-SB-004 (10.0-10.5)

Analysis:	Nitrate and Nitrite as N	Analytical Method:	E 353.3	Prep Method:	N/A
QC Batch:	31625	Date Analyzed:	2006-11-01	Analyzed By:	WB
Prep Batch:	27539	Sample Preparation:	2006-11-01	Prepared By:	JS

Parameter	Flag	RL Result	Units	Dilution	RL
Nitrate and Nitrite as N		**157**	mg/Kg	500	0.100

Sample: 106715 - HLSF-0085-SB-104 (10.0-10.5)

Analysis:	Nitrate and Nitrite as N	Analytical Method:	E 353.3	Prep Method:	N/A
QC Batch:	31620	Date Analyzed:	2006-11-01	Analyzed By:	JS
Prep Batch:	27541	Sample Preparation:	2006-11-01	Prepared By:	JS

Parameter	Flag	RL Result	Units	Dilution	RL
Nitrate and Nitrite as N		**93.4**	mg/Kg	500	0.100

Sample: 106716 - HLSF-0085-SB-004 (20.0-20.5)

Analysis:	Nitrate and Nitrite as N	Analytical Method:	E 353.3	Prep Method:	N/A
QC Batch:	31620	Date Analyzed:	2006-11-01	Analyzed By:	JS
Prep Batch:	27541	Sample Preparation:	2006-11-01	Prepared By:	JS

Parameter	Flag	RL Result	Units	Dilution	RL
Nitrate and Nitrite as N		**207**	mg/Kg	1000	0.100

Sample: 106717 - HLSF-0085-SB-004 (30.0-30.5)

Analysis:	Nitrate and Nitrite as N	Analytical Method:	E 353.3	Prep Method:	N/A
QC Batch:	31620	Date Analyzed:	2006-11-01	Analyzed By:	JS
Prep Batch:	27541	Sample Preparation:	2006-11-01	Prepared By:	JS

Parameter	Flag	RL Result	Units	Dilution	RL
Nitrate and Nitrite as N		**90.3**	mg/Kg	500	0.100

Sample: 106718 - HLSF-0085-SB-004 (40.0-40.5)

Analysis:	Nitrate and Nitrite as N	Analytical Method:	E 353.3	Prep Method:	N/A
QC Batch:	31620	Date Analyzed:	2006-11-01	Analyzed By:	JS
Prep Batch:	27541	Sample Preparation:	2006-11-01	Prepared By:	JS

Parameter	Flag	RL Result	Units	Dilution	RL
Nitrate and Nitrite as N		**19.5**	mg/Kg	100	0.100

Sample: 106719 - HLSF-0085-SB-004 (49.5-50.0)

Analysis:	Nitrate and Nitrite as N	Analytical Method:	E 353.3	Prep Method:	N/A
QC Batch:	31620	Date Analyzed:	2006-11-01	Analyzed By:	JS
Prep Batch:	27541	Sample Preparation:	2006-11-01	Prepared By:	JS

Parameter	Flag	RL Result	Units	Dilution	RL
Nitrate and Nitrite as N		**6.64**	mg/Kg	25	0.100

Sample: 106720 - HLSF-0085-SB-003 (0.5-1.0)

Analysis:	Nitrate and Nitrite as N	Analytical Method:	E 353.3	Prep Method:	N/A
QC Batch:	31620	Date Analyzed:	2006-11-01	Analyzed By:	JS
Prep Batch:	27541	Sample Preparation:	2006-11-01	Prepared By:	JS

Parameter	Flag	RL Result	Units	Dilution	RL
Nitrate and Nitrite as N		**1.28**	mg/Kg	10	0.100

Sample: 106721 - HLSF-0085-SB-003 (10.0-10.5)

Analysis:	Nitrate and Nitrite as N	Analytical Method:	E 353.3	Prep Method:	N/A
QC Batch:	31620	Date Analyzed:	2006-11-01	Analyzed By:	JS
Prep Batch:	27541	Sample Preparation:	2006-11-01	Prepared By:	JS

Parameter	Flag	RL Result	Units	Dilution	RL
Nitrate and Nitrite as N		**8.09**	mg/Kg	50	0.100

Sample: 106722 - HLSF-0085-SB-003 (20.0-20.5)

Analysis:	Nitrate and Nitrite as N	Analytical Method:	E 353.3	Prep Method:	N/A
QC Batch:	31620	Date Analyzed:	2006-11-01	Analyzed By:	JS
Prep Batch:	27541	Sample Preparation:	2006-11-01	Prepared By:	JS

Parameter	Flag	RL Result	Units	Dilution	RL
Nitrate and Nitrite as N		**52.2**	mg/Kg	500	0.100

Sample: 106723 - HLSF-0085-SB-003 (30.0-30.5)

Analysis:	Nitrate and Nitrite as N	Analytical Method:	E 353.3	Prep Method:	N/A
QC Batch:	31624	Date Analyzed:	2006-11-01	Analyzed By:	JS
Prep Batch:	27538	Sample Preparation:	2006-11-01	Prepared By:	JS

Parameter	Flag	RL Result	Units	Dilution	RL
Nitrate and Nitrite as N		**18.7**	mg/Kg	100	0.100

Sample: 106724 - HLSF-0085-SB-003 (40.0-40.5)

Analysis:	Nitrate and Nitrite as N	Analytical Method:	E 353.3	Prep Method:	N/A
QC Batch:	31624	Date Analyzed:	2006-11-01	Analyzed By:	JS
Prep Batch:	27538	Sample Preparation:	2006-11-01	Prepared By:	JS

Parameter	Flag	RL Result	Units	Dilution	RL
Nitrate and Nitrite as N		**20.2**	mg/Kg	100	0.100

Sample: 106725 - HLSF-0085-SB-003 (49.5-50.0)

Analysis:	Nitrate and Nitrite as N	Analytical Method:	E 353.3	Prep Method:	N/A
QC Batch:	31624	Date Analyzed:	2006-11-01	Analyzed By:	JS
Prep Batch:	27538	Sample Preparation:	2006-11-01	Prepared By:	JS

Parameter	Flag	RL Result	Units	Dilution	RL
Nitrate and Nitrite as N		**14.3**	mg/Kg	50	0.100

Sample: 106730 - HLSF-0085-SB-006 (0.5-1.0)

Analysis:	Nitrate and Nitrite as N	Analytical Method:	E 353.3	Prep Method:	N/A
QC Batch:	31624	Date Analyzed:	2006-11-01	Analyzed By:	JS
Prep Batch:	27538	Sample Preparation:	2006-11-01	Prepared By:	JS

Parameter	Flag	RL Result	Units	Dilution	RL
Nitrate and Nitrite as N		**3.16**	mg/Kg	25	0.100

Sample: 106731 - HLSF-0085-SB-006 (10.0-10.5)

Analysis:	Nitrate and Nitrite as N	Analytical Method:	E 353.3	Prep Method:	N/A
QC Batch:	31624	Date Analyzed:	2006-11-01	Analyzed By:	JS
Prep Batch:	27538	Sample Preparation:	2006-11-01	Prepared By:	JS

Parameter	Flag	RL Result	Units	Dilution	RL
Nitrate and Nitrite as N		**232**	mg/Kg	1000	0.100

Sample: 106732 - HLSF-0085-SB-006 (20.0-20.5)

Analysis:	Nitrate and Nitrite as N	Analytical Method:	E 353.3	Prep Method:	N/A
QC Batch:	31624	Date Analyzed:	2006-11-01	Analyzed By:	JS
Prep Batch:	27538	Sample Preparation:	2006-11-01	Prepared By:	JS

Parameter	Flag	RL Result	Units	Dilution	RL
Nitrate and Nitrite as N		**139**	mg/Kg	500	0.100

Sample: 106733 - HLSF-0085-SB-006 (30.0-30.5)

Analysis:	Nitrate and Nitrite as N	Analytical Method:	E 353.3	Prep Method:	N/A
QC Batch:	31624	Date Analyzed:	2006-11-01	Analyzed By:	JS
Prep Batch:	27538	Sample Preparation:	2006-11-01	Prepared By:	JS

Parameter	Flag	RL Result	Units	Dilution	RL
Nitrate and Nitrite as N		**63.7**	mg/Kg	500	0.100

Sample: 106734 - HLSF-0085-SB-006 (40.0-40.5)

Analysis:	Nitrate and Nitrite as N	Analytical Method:	E 353.3	Prep Method:	N/A
QC Batch:	31624	Date Analyzed:	2006-11-01	Analyzed By:	JS
Prep Batch:	27538	Sample Preparation:	2006-11-01	Prepared By:	JS

Parameter	Flag	RL Result	Units	Dilution	RL
Nitrate and Nitrite as N		<50.0	mg/Kg	500	0.100

Sample: 106735 - HLSF-0085-SB-006 (49.5-50.0)

Analysis:	Nitrate and Nitrite as N	Analytical Method:	E 353.3	Prep Method:	N/A
QC Batch:	31624	Date Analyzed:	2006-11-01	Analyzed By:	JS
Prep Batch:	27538	Sample Preparation:	2006-11-01	Prepared By:	JS

Parameter	Flag	RL Result	Units	Dilution	RL
Nitrate and Nitrite as N		**11.1**	mg/Kg	100	0.100

Sample: 106736 - HLSF-0085-SB-005 (0.5-1.0)

Analysis:	Nitrate and Nitrite as N	Analytical Method:	E 353.3	Prep Method:	N/A
QC Batch:	31623	Date Analyzed:	2006-11-01	Analyzed By:	WB
Prep Batch:	27544	Sample Preparation:	2006-11-01	Prepared By:	JS

Parameter	Flag	RL Result	Units	Dilution	RL
Nitrate and Nitrite as N		**0.454**	mg/Kg	2	0.100

Sample: 106737 - HLSF-0085-SB-005 (10.0-10.5)

Analysis:	Nitrate and Nitrite as N	Analytical Method:	E 353.3	Prep Method:	N/A
QC Batch:	31623	Date Analyzed:	2006-11-01	Analyzed By:	WB
Prep Batch:	27544	Sample Preparation:	2006-11-01	Prepared By:	JS

Parameter	Flag	RL Result	Units	Dilution	RL
Nitrate and Nitrite as N		**158**	mg/Kg	500	0.100

Sample: 106738 - HLSF-0085-SB-005 (20.0-20.5)

Analysis:	Nitrate and Nitrite as N	Analytical Method:	E 353.3	Prep Method:	N/A
QC Batch:	31623	Date Analyzed:	2006-11-01	Analyzed By:	WB
Prep Batch:	27544	Sample Preparation:	2006-11-01	Prepared By:	JS

Parameter	Flag	RL Result	Units	Dilution	RL
Nitrate and Nitrite as N		**158**	mg/Kg	500	0.100

Sample: 106739 - HLSF-0085-SB-005 (30.0-30.5)

Analysis:	Nitrate and Nitrite as N	Analytical Method:	E 353.3	Prep Method:	N/A
QC Batch:	31623	Date Analyzed:	2006-11-01	Analyzed By:	WB
Prep Batch:	27544	Sample Preparation:	2006-11-01	Prepared By:	JS

Parameter	Flag	RL Result	Units	Dilution	RL
Nitrate and Nitrite as N		**26.9**	mg/Kg	100	0.100

Sample: 106740 - HLSF-0085-SB-005 (40.0-40.5)

Analysis:	Nitrate and Nitrite as N	Analytical Method:	E 353.3	Prep Method:	N/A
QC Batch:	31625	Date Analyzed:	2006-11-01	Analyzed By:	WB
Prep Batch:	27539	Sample Preparation:	2006-11-01	Prepared By:	JS

Parameter	Flag	RL Result	Units	Dilution	RL
Nitrate and Nitrite as N		**21.2**	mg/Kg	100	0.100

Sample: 106741 - HLSF-0085-SB-005 (49.5-50.0)

Analysis:	Nitrate and Nitrite as N	Analytical Method:	E 353.3	Prep Method:	N/A
QC Batch:	31623	Date Analyzed:	2006-11-01	Analyzed By:	WB
Prep Batch:	27544	Sample Preparation:	2006-11-01	Prepared By:	JS

Parameter	Flag	RL Result	Units	Dilution	RL
Nitrate and Nitrite as N		**30.8**	mg/Kg	100	0.100

Sample: 107951 - HLSF-0085-SB-001 (0.5'-1.0)

Analysis:	Nitrate and Nitrite as N	Analytical Method:	E 353.3	Prep Method:	N/A
QC Batch:	31817	Date Analyzed:	2006-11-09	Analyzed By:	JS
Prep Batch:	27709	Sample Preparation:	2006-11-08	Prepared By:	JS

Parameter	Flag	RL Result	Units	Dilution	RL
Nitrate and Nitrite as N		**0.420**	mg/Kg	2	0.100

Sample: 107952 - HLSF-0085-SB-001 (10.0-10.5')

Analysis:	Nitrate and Nitrite as N	Analytical Method:	E 353.3	Prep Method:	N/A
QC Batch:	31817	Date Analyzed:	2006-11-09	Analyzed By:	JS
Prep Batch:	27709	Sample Preparation:	2006-11-08	Prepared By:	JS

Parameter	Flag	RL Result	Units	Dilution	RL
Nitrate and Nitrite as N		**127**	mg/Kg	500	0.100

Sample: 107953 - HLSF-0085-SB-001 (20.0-20.5')

Analysis:	Nitrate and Nitrite as N	Analytical Method:	E 353.3	Prep Method:	N/A
QC Batch:	31817	Date Analyzed:	2006-11-09	Analyzed By:	JS
Prep Batch:	27709	Sample Preparation:	2006-11-08	Prepared By:	JS

Parameter	Flag	RL Result	Units	Dilution	RL
Nitrate and Nitrite as N		**102**	mg/Kg	500	0.100

Sample: 107954 - HLSF-0085-SB-001 (30.0-30.5')

Analysis:	Nitrate and Nitrite as N	Analytical Method:	E 353.3	Prep Method:	N/A
QC Batch:	31817	Date Analyzed:	2006-11-09	Analyzed By:	JS
Prep Batch:	27709	Sample Preparation:	2006-11-08	Prepared By:	JS

Parameter	Flag	RL Result	Units	Dilution	RL
Nitrate and Nitrite as N		**63.0**	mg/Kg	200	0.100

Sample: 107955 - HLSF-0085-SB-001 (30.0'-30.5')

Analysis:	Nitrate and Nitrite as N	Analytical Method:	E 353.3	Prep Method:	N/A
QC Batch:	31817	Date Analyzed:	2006-11-09	Analyzed By:	JS
Prep Batch:	27709	Sample Preparation:	2006-11-08	Prepared By:	JS

Parameter	Flag	RL Result	Units	Dilution	RL
Nitrate and Nitrite as N		**58.9**	mg/Kg	200	0.100

Sample: 107956 - HLSF-0085-SB-001 (40.0'-40.5')

Analysis:	Nitrate and Nitrite as N	Analytical Method:	E 353.3	Prep Method:	N/A
QC Batch:	31816	Date Analyzed:	2006-11-09	Analyzed By:	JS
Prep Batch:	27708	Sample Preparation:	2006-11-08	Prepared By:	JS

Parameter	Flag	RL Result	Units	Dilution	RL
Nitrate and Nitrite as N		**8.64**	mg/Kg	50	0.100

Sample: 107957 - HLSF-0085-SB-001 (49.5-50.0')

Analysis:	Nitrate and Nitrite as N	Analytical Method:	E 353.3	Prep Method:	N/A
QC Batch:	31816	Date Analyzed:	2006-11-09	Analyzed By:	JS
Prep Batch:	27708	Sample Preparation:	2006-11-08	Prepared By:	JS

Parameter	Flag	RL Result	Units	Dilution	RL
Nitrate and Nitrite as N		**51.0**	mg/Kg	200	0.100

Method Blank (1) QC Batch: 31620

QC Batch:	31620	Date Analyzed:	2006-11-01	Analyzed By:	JS
Prep Batch:	27541	QC Preparation:	2006-10-31	Prepared By:	JS

Parameter	Flag	MDL Result	Units	RL
Nitrate and Nitrite as N		< 0.1	mg/Kg	0.1

Method Blank (1) QC Batch: 31623

QC Batch:	31623	Date Analyzed:	2006-11-01	Analyzed By:	WB
Prep Batch:	27544	QC Preparation:	2006-10-31	Prepared By:	JS

Parameter	Flag	MDL Result	Units	RL
Nitrate and Nitrite as N		< 0.1	mg/Kg	0.1

Method Blank (1) QC Batch: 31624

QC Batch:	31624	Date Analyzed:	2006-11-01	Analyzed By:	JS
Prep Batch:	27538	QC Preparation:	2006-10-31	Prepared By:	JS

Parameter	Flag	MDL Result	Units	RL
Nitrate and Nitrite as N		< 0.1	mg/Kg	0.1

Method Blank (1) QC Batch: 31625

QC Batch:	31625	Date Analyzed:	2006-11-01	Analyzed By:	WB
Prep Batch:	27539	QC Preparation:	2006-10-31	Prepared By:	JS

Parameter	Flag	MDL Result	Units	RL
Nitrate and Nitrite as N		< 0.1	mg/Kg	0.1

Method Blank (1) QC Batch: 31626

QC Batch:	31626	Date Analyzed:	2006-11-01	Analyzed By:	WB
Prep Batch:	27540	QC Preparation:	2006-10-31	Prepared By:	JS

Parameter	Flag	MDL Result	Units	RL
Nitrate and Nitrite as N		< 0.1	mg/Kg	0.1

Method Blank (1) QC Batch: 31816

QC Batch:	31816	Date Analyzed:	2006-11-09	Analyzed By:	JS
Prep Batch:	27708	QC Preparation:	2006-11-08	Prepared By:	JS

Parameter	Flag	MDL Result	Units	RL
Nitrate and Nitrite as N		< 0.1	mg/Kg	0.1

Method Blank (1) QC Batch: 31817

QC Batch:	31817	Date Analyzed:	2006-11-09	Analyzed By:	JS
Prep Batch:	27709	QC Preparation:	2006-11-08	Prepared By:	JS

Parameter	Flag	MDL Result	Units	RL
Nitrate and Nitrite as N		< 0.10	mg/Kg	0.1

Laboratory Control Spike (LCS-1)

QC Batch: 31620 Date Analyzed: 2006-11-01 Analyzed By: JS
Prep Batch: 27541 QC Preparation: 2006-10-31 Prepared By: JS

Param	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Nitrate and Nitrite as N	0.171	mg/Kg	1	0.160	<0.0155	107	85 - 115

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Param	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Nitrate and Nitrite as N	0.176	mg/Kg	1	0.160	<0.0155	110	85 - 115	3	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Laboratory Control Spike (LCS-1)

QC Batch: 31623 Date Analyzed: 2006-11-01 Analyzed By: WB
Prep Batch: 27544 QC Preparation: 2006-10-31 Prepared By: JS

Param	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Nitrate and Nitrite as N	0.178	mg/Kg	1	0.160	<0.0155	111	85 - 115

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Param	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Nitrate and Nitrite as N	0.180	mg/Kg	1	0.160	<0.0155	112	85 - 115	1	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Laboratory Control Spike (LCS-1)

QC Batch: 31624 Date Analyzed: 2006-11-01 Analyzed By: JS
Prep Batch: 27538 QC Preparation: 2006-10-31 Prepared By: JS

Param	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Nitrate and Nitrite as N	0.156	mg/Kg	1	0.160	<0.0155	98	85 - 115

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Param	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Nitrate and Nitrite as N	0.151	mg/Kg	1	0.160	<0.0155	94	85 - 115	3	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Laboratory Control Spike (LCS-1)

QC Batch: 31625 Date Analyzed: 2006-11-01 Analyzed By: WB
Prep Batch: 27539 QC Preparation: 2006-10-31 Prepared By: JS

Param	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Nitrate and Nitrite as N	0.177	mg/Kg	1	0.160	<0.0155	111	85 - 115

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Param	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Nitrate and Nitrite as N	0.178	mg/Kg	1	0.160	<0.0155	111	85 - 115	1	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Laboratory Control Spike (LCS-1)

QC Batch: 31626 Date Analyzed: 2006-11-01 Analyzed By: WB
Prep Batch: 27540 QC Preparation: 2006-10-31 Prepared By: JS

Param	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Nitrate and Nitrite as N	0.159	mg/Kg	1	0.160	<0.0155	99	85 - 115

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Param	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Nitrate and Nitrite as N	0.179	mg/Kg	1	0.160	<0.0155	112	85 - 115	12	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Laboratory Control Spike (LCS-1)

QC Batch: 31816 Date Analyzed: 2006-11-09 Analyzed By: JS
Prep Batch: 27708 QC Preparation: 2006-11-08 Prepared By: JS

Param	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Nitrate and Nitrite as N	0.173	mg/Kg	1	0.160	<0.0155	108	85 - 115

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Param	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Nitrate and Nitrite as N	0.154	mg/Kg	1	0.160	<0.0155	96	85 - 115	12	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Laboratory Control Spike (LCS-1)

QC Batch: 31817 Date Analyzed: 2006-11-09 Analyzed By: JS
Prep Batch: 27709 QC Preparation: 2006-11-08 Prepared By: JS

Param	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Nitrate and Nitrite as N	0.160	mg/Kg	1	0.160	<0.0155	100	85 - 115

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Param	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Nitrate and Nitrite as N	0.175	mg/Kg	1	0.160	<0.0155	109	85 - 115	9	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Matrix Spike (MS-1) Spiked Sample: 106632

QC Batch: 31620 Date Analyzed: 2006-11-01 Analyzed By: JS
Prep Batch: 27541 QC Preparation: 2006-10-31 Prepared By: JS

Param	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Nitrate and Nitrite as N	13.8	mg/Kg	50	8.00	6.47	92	85 - 115

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Param	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Nitrate and Nitrite as N	13.8	mg/Kg	50	8.00	6.47	92	85 - 115	0	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Matrix Spike (MS-1) Spiked Sample: 106741

QC Batch: 31623 Date Analyzed: 2006-11-01 Analyzed By: WB
Prep Batch: 27544 QC Preparation: 2006-10-31 Prepared By: JS

Param	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Nitrate and Nitrite as N [1]	< 0.1	mg/Kg	100	16.0	30.8	-192	85 - 115

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Param	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Nitrate and Nitrite as N [2]	< 0.1	mg/Kg	100	16.0	30.8	-192	85 - 115	0	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Matrix Spike (MS-1) Spiked Sample: 106633

QC Batch: 31624 Date Analyzed: 2006-11-01 Analyzed By: JS
Prep Batch: 27538 QC Preparation: 2006-10-31 Prepared By: JS

Param	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Nitrate and Nitrite as N [3]	4.17	mg/Kg	25	4.00	4.66	-12	85 - 115

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

[1]Matrix spike recovery out of control limits due to matrix interference. Use LCS/LCSD to demonstrate analysis is under control.
[2]Matrix spike recovery out of control limits due to matrix interference. Use LCS/LCSD to demonstrate analysis is under control.
[3]Matrix spike recovery out of control limits due to matrix interference. Use LCS/LCSD to demonstrate analysis is under control.

Param		MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Nitrate and Nitrite as N	[4]	4.19	mg/Kg	25	4.00	4.66	-10	85 - 115	0	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Matrix Spike (MS-1) Spiked Sample: 106714

QC Batch: 31625 Date Analyzed: 2006-11-01 Analyzed By: WB
Prep Batch: 27539 QC Preparation: 2006-10-31 Prepared By: JS

Param		MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Nitrate and Nitrite as N	[5]	131	mg/Kg	500	80.0	157	-32	85 - 115

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Param		MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Nitrate and Nitrite as N	[6]	119	mg/Kg	500	80.0	157	-46	85 - 115	10	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Matrix Spike (MS-1) Spiked Sample: 106713

QC Batch: 31626 Date Analyzed: 2006-11-01 Analyzed By: WB
Prep Batch: 27540 QC Preparation: 2006-10-31 Prepared By: JS

Param		MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Nitrate and Nitrite as N	[7]	0.574	mg/Kg	2	0.320	0.578	-1	85 - 115

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Param		MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Nitrate and Nitrite as N	[8]	0.552	mg/Kg	2	0.320	0.578	-8	85 - 115	4	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Matrix Spike (MS-1) Spiked Sample: 108032

QC Batch: 31816 Date Analyzed: 2006-11-09 Analyzed By: JS
Prep Batch: 27708 QC Preparation: 2006-11-08 Prepared By: JS

Param		MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Nitrate and Nitrite as N	[9]	4.37	mg/Kg	25	4.00	2.68	42	85 - 115

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

[4]Matrix spike recovery out of control limits due to matrix interference. Use LCS/LCSD to demonstrate analysis is under control.
[5]Matrix spike recovery out of control limits due to matrix interference. Use LCS/LCSD to demonstrate analysis is under control.
[6]Matrix spike recovery out of control limits due to matrix interference. Use LCS/LCSD to demonstrate analysis is under control.
[7]Matrix spike recovery out of control limits due to matrix interference. Use LCS/LCSD to demonstrate analysis is under control.
[8]Matrix spike recovery out of control limits due to matrix interference. Use LCS/LCSD to demonstrate analysis is under control.
[9]Matrix spike recovery out of control limits due to matrix interference. Use LCS/LCSD to demonstrate analysis is under control.

Param		MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Nitrate and Nitrite as N	[10]	2.75	mg/Kg	25	4.00	2.68	2	85 - 115	46	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Matrix Spike (MS-1) Spiked Sample: 107951

QC Batch: 31817 Date Analyzed: 2006-11-09 Analyzed By: JS
Prep Batch: 27709 QC Preparation: 2006-11-08 Prepared By: JS

Param		MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Nitrate and Nitrite as N	[11]	1.18	mg/Kg	2	0.320	0.42	238	85 - 115

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Param		MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Nitrate and Nitrite as N	[12]	1.14	mg/Kg	2	0.00	0.42	225	85 - 115	3	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Standard (ICV-1)

QC Batch: 31620 Date Analyzed: 2006-11-01 Analyzed By: JS

Param	Flag	Units	ICVs True Conc.	ICVs Found Conc.	ICVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Nitrate and Nitrite as N		mg/Kg	0.160	0.139	87	85 - 115	2006-11-01

Standard (CCV-1)

QC Batch: 31620 Date Analyzed: 2006-11-01 Analyzed By: JS

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Nitrate and Nitrite as N		mg/Kg	0.160	0.176	110	85 - 115	2006-11-01

Standard (ICV-1)

QC Batch: 31623 Date Analyzed: 2006-11-01 Analyzed By: WB

Param	Flag	Units	ICVs True Conc.	ICVs Found Conc.	ICVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Nitrate and Nitrite as N		mg/Kg	0.160	0.144	90	85 - 115	2006-11-01

[10]Matrix spike recovery out of control limits due to matrix interference. Use LCS/LCSD to demonstrate analysis is under control.
[11]Matrix spike recovery out of control limits due to matrix interference. Use LCS/LCSD to demonstrate analysis is under control.
[12]Matrix spike recovery out of control limits due to matrix interference. Use LCS/LCSD to demonstrate analysis is under control.

Standard (CCV-1)

QC Batch: 31623 Date Analyzed: 2006-11-01 Analyzed By: WB

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Nitrate and Nitrite as N		mg/Kg	0.160	0.160	100	85 - 115	2006-11-01

Standard (ICV-1)

QC Batch: 31624 Date Analyzed: 2006-11-01 Analyzed By: JS

Param	Flag	Units	ICVs True Conc.	ICVs Found Conc.	ICVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Nitrate and Nitrite as N		mg/Kg	0.160	0.142	89	85 - 115	2006-11-01

Standard (CCV-1)

QC Batch: 31624 Date Analyzed: 2006-11-01 Analyzed By: JS

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Nitrate and Nitrite as N		mg/Kg	0.160	0.166	104	85 - 115	2006-11-01

Standard (ICV-1)

QC Batch: 31625 Date Analyzed: 2006-11-01 Analyzed By: WB

Param	Flag	Units	ICVs True Conc.	ICVs Found Conc.	ICVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Nitrate and Nitrite as N		mg/Kg	0.160	0.178	111	85 - 115	2006-11-01

Standard (CCV-1)

QC Batch: 31625 Date Analyzed: 2006-11-01 Analyzed By: WB

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Nitrate and Nitrite as N		mg/Kg	0.160	0.182	114	85 - 115	2006-11-01

Standard (ICV-1)

QC Batch: 31626 Date Analyzed: 2006-11-01 Analyzed By: WB

Param	Flag	Units	ICVs True Conc.	ICVs Found Conc.	ICVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Nitrate and Nitrite as N		mg/Kg	0.160	0.148	92	85 - 115	2006-11-01

Standard (CCV-1)

QC Batch: 31626 Date Analyzed: 2006-11-01 Analyzed By: WB

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Nitrate and Nitrite as N		mg/Kg	0.160	0.144	90	85 - 115	2006-11-01

Standard (ICV-1)

QC Batch: 31816 Date Analyzed: 2006-11-09 Analyzed By: JS

Param	Flag	Units	ICVs True Conc.	ICVs Found Conc.	ICVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Nitrate and Nitrite as N		mg/Kg	0.160	0.164	102	85 - 115	2006-11-09

Standard (CCV-1)

QC Batch: 31816 Date Analyzed: 2006-11-09 Analyzed By: JS

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Nitrate and Nitrite as N		mg/Kg	0.160	0.166	104	85 - 115	2006-11-09

Standard (ICV-1)

QC Batch: 31817 Date Analyzed: 2006-11-09 Analyzed By: JS

Param	Flag	Units	ICVs True Conc.	ICVs Found Conc.	ICVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Nitrate and Nitrite as N		mg/Kg	0.160	0.179	112	85 - 115	2006-11-09

Standard (CCV-1)

QC Batch: 31817 Date Analyzed: 2006-11-09 Analyzed By: JS

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Nitrate and Nitrite as N		mg/Kg	0.160	0.170	106	85 - 115	2006-11-09

Analytical and Quality Control Report

William Little
WTS
P.O. Box 363
Building 126 3RD Floor
WSMR, NM, 88002

Report Date: November 27, 2006

Work Order: 6102404

Project Name: HELSTF Phase III Soil Sampling
Project Number: 7

Enclosed are the Analytical Report and Quality Control Report for the following sample(s) submitted to TraceAnalysis, Inc.

Sample	Description	Matrix	Date Taken	Time Taken	Date Received
106713	HLSF-0085-SB-004 (0.5-1.0)	soil	2006-10-20	10:05	2006-10-23
106714	HLSF-0085-SB-004 (10.0-10.5)	soil	2006-10-20	10:30	2006-10-23
106715	HLSF-0085-SB-104 (10.0-10.5)	soil	2006-10-20	10:30	2006-10-23
106716	HLSF-0085-SB-004 (20.0-20.5)	soil	2006-10-20	11:00	2006-10-23
106717	HLSF-0085-SB-004 (30.0-30.5)	soil	2006-10-20	11:25	2006-10-23
106718	HLSF-0085-SB-004 (40.0-40.5)	soil	2006-10-20	11:50	2006-10-23
106719	HLSF-0085-SB-004 (49.5-50.0)	soil	2006-10-20	12:20	2006-10-23
106720	HLSF-0085-SB-003 (0.5-1.0)	soil	2006-10-20	14:00	2006-10-23
106721	HLSF-0085-SB-003 (10.0-10.5)	soil	2006-10-20	14:30	2006-10-23
106722	HLSF-0085-SB-003 (20.0-20.5)	soil	2006-10-20	14:55	2006-10-23
106723	HLSF-0085-SB-003 (30.0-30.5)	soil	2006-10-20	15:20	2006-10-23
106724	HLSF-0085-SB-003 (40.0-40.5)	soil	2006-10-20	15:55	2006-10-23
106725	HLSF-0085-SB-003 (49.5-50.0)	soil	2006-10-20	16:35	2006-10-23
106730	HLSF-0085-SB-006 (0.5-1.0)	soil	2006-10-19	09:40	2006-10-23
106731	HLSF-0085-SB-006 (10.0-10.5)	soil	2006-10-19	09:15	2006-10-23
106732	HLSF-0085-SB-006 (20.0-20.5)	soil	2006-10-19	09:30	2006-10-23
106733	HLSF-0085-SB-006 (30.0-30.5)	soil	2006-10-19	10:05	2006-10-23
106734	HLSF-0085-SB-006 (40.0-40.5)	soil	2006-10-19	10:30	2006-10-23
106735	HLSF-0085-SB-006 (49.5-50.0)	soil	2006-10-19	11:05	2006-10-23
106736	HLSF-0085-SB-005 (0.5-1.0)	soil	2006-10-19	13:55	2006-10-23
106737	HLSF-0085-SB-005 (10.0-10.5)	soil	2006-10-19	14:20	2006-10-23
106738	HLSF-0085-SB-005 (20.0-20.5)	soil	2006-10-19	14:50	2006-10-23
106739	HLSF-0085-SB-005 (30.0-30.5)	soil	2006-10-19	15:15	2006-10-23
106740	HLSF-0085-SB-005 (40.0-40.5)	soil	2006-10-19	15:45	2006-10-23
106741	HLSF-0085-SB-005 (49.5-50.0)	soil	2006-10-19	16:15	2006-10-23
107951	HLSF-0085-SB-001 (0.5’-1.0)	soil	2006-11-01	07:40	2006-11-02
107952	HLSF-0085-SB-001 (10.0-10.5’)	soil	2006-11-01	08:00	2006-11-02
107953	HLSF-0085-SB-001 (20.0-20.5’)	soil	2006-11-01	08:25	2006-11-02
107954	HLSF-0085-SB-001 (30.0-30.5’)	soil	2006-11-01	08:50	2006-11-02
107955	HLSF-0085-SB-001 (30.0’-30.5’)	soil	2006-11-01	08:50	2006-11-02
107956	HLSF-0085-SB-001 (40.0’-40.5’)	soil	2006-11-01	09:25	2006-11-02
107957	HLSF-0085-SB-001 (49.5-50.0’)	soil	2006-11-01	10:00	2006-11-02

These results represent only the samples received in the laboratory. The Quality Control Report is generated on a batch basis. All information contained in this report is for the analytical batch(es) in which your sample(s) were analyzed.

This report consists of a total of 83 pages and shall not be reproduced except in its entirety, without written approval of TraceAnalysis, Inc.

Dr. Blair Leftwich, Director

Standard Flags

B - The sample contains less than ten times the concentration found in the method blank.

Analytical Report

Sample: 106713 - HLSF-0085-SB-004 (0.5-1.0)

Analysis:	Cu, Total	Analytical Method:	S 6010B	Prep Method:	S 3050B
QC Batch:	31429	Date Analyzed:	2006-11-01	Analyzed By:	RR
Prep Batch:	27288	Sample Preparation:	2006-10-27	Prepared By:	TS

Parameter	Flag	RL Result	Units	Dilution	RL
Total Copper		**1.79**	mg/Kg	1	0.500

Sample: 106713 - HLSF-0085-SB-004 (0.5-1.0)

Analysis:	K, Total	Analytical Method:	S 6010B	Prep Method:	S 3050B
QC Batch:	31440	Date Analyzed:	2006-11-01	Analyzed By:	TP
Prep Batch:	27288	Sample Preparation:	2006-10-27	Prepared By:	TS

Parameter	Flag	RL Result	Units	Dilution	RL
Total Potassium		**198**	mg/Kg	1	50.0

Sample: 106713 - HLSF-0085-SB-004 (0.5-1.0)

Analysis:	Na, Total	Analytical Method:	S 6010B	Prep Method:	S 3050B
QC Batch:	31440	Date Analyzed:	2006-11-01	Analyzed By:	TP
Prep Batch:	27288	Sample Preparation:	2006-10-27	Prepared By:	TS

Parameter	Flag	RL Result	Units	Dilution	RL
Total Sodium		**205**	mg/Kg	1	50.0

Sample: 106713 - HLSF-0085-SB-004 (0.5-1.0)

Analysis:	P, Total	Analytical Method:	S 6010B	Prep Method:	S 3050B
QC Batch:	31429	Date Analyzed:	2006-11-01	Analyzed By:	RR
Prep Batch:	27288	Sample Preparation:	2006-10-27	Prepared By:	TS

Parameter	Flag	RL Result	Units	Dilution	RL
Total Phosphorous		**52.3**	mg/Kg	1	2.00

Sample: 106713 - HLSF-0085-SB-004 (0.5-1.0)

Analysis:	Total 8 Metals	Analytical Method:	S 7471A	Prep Method:	N/A
QC Batch:	31411	Date Analyzed:	2006-10-31	Analyzed By:	TP
Prep Batch:	27351	Sample Preparation:	2006-10-31	Prepared By:	TP
Analysis:	Total 8 Metals	Analytical Method:	S 6010B	Prep Method:	S 3050B
QC Batch:	31429	Date Analyzed:	2006-11-01	Analyzed By:	RR
Prep Batch:	27288	Sample Preparation:	2006-10-27	Prepared By:	TS

Parameter	Flag	RL Result	Units	Dilution	RL
Total Silver		<0.0500	mg/Kg	1	0.0500
Total Arsenic		<2.00	mg/Kg	1	2.00
Total Barium		**9.48**	mg/Kg	1	1.00
Total Cadmium		<0.100	mg/Kg	1	0.100
Total Chromium		**1.19**	mg/Kg	1	0.500
Total Mercury		<0.0400	mg/Kg	1	0.0400
Total Lead		<1.00	mg/Kg	1	1.00
Total Selenium		<1.00	mg/Kg	1	1.00

Sample: 106713 - HLSF-0085-SB-004 (0.5-1.0)

Analysis:	Zn, Total	Analytical Method:	S 6010B	Prep Method:	S 3050B
QC Batch:	31429	Date Analyzed:	2006-11-01	Analyzed By:	RR
Prep Batch:	27288	Sample Preparation:	2006-10-27	Prepared By:	TS

Parameter	Flag	RL Result	Units	Dilution	RL
Total Zinc	*B*	**2.64**	mg/Kg	1	2.00

Sample: 106714 - HLSF-0085-SB-004 (10.0-10.5)

Analysis:	Cu, Total	Analytical Method:	S 6010B	Prep Method:	S 3050B
QC Batch:	31429	Date Analyzed:	2006-11-01	Analyzed By:	RR
Prep Batch:	27288	Sample Preparation:	2006-10-27	Prepared By:	TS

Parameter	Flag	RL Result	Units	Dilution	RL
Total Copper		**0.813**	mg/Kg	1	0.500

Sample: 106714 - HLSF-0085-SB-004 (10.0-10.5)

Analysis:	K, Total	Analytical Method:	S 6010B	Prep Method:	S 3050B
QC Batch:	31440	Date Analyzed:	2006-11-01	Analyzed By:	TP
Prep Batch:	27288	Sample Preparation:	2006-10-27	Prepared By:	TS

Parameter	Flag	RL Result	Units	Dilution	RL
Total Potassium		**430**	mg/Kg	1	50.0

Sample: 106714 - HLSF-0085-SB-004 (10.0-10.5)

Analysis:	Na, Total	Analytical Method:	S 6010B	Prep Method:	S 3050B
QC Batch:	31440	Date Analyzed:	2006-11-01	Analyzed By:	TP
Prep Batch:	27288	Sample Preparation:	2006-10-27	Prepared By:	TS

Parameter	Flag	RL Result	Units	Dilution	RL
Total Sodium		**998**	mg/Kg	1	50.0

Sample: 106714 - HLSF-0085-SB-004 (10.0-10.5)

Analysis:	P, Total	Analytical Method:	S 6010B	Prep Method:	S 3050B
QC Batch:	31429	Date Analyzed:	2006-11-01	Analyzed By:	RR
Prep Batch:	27288	Sample Preparation:	2006-10-27	Prepared By:	TS

Parameter	Flag	RL Result	Units	Dilution	RL
Total Phosphorous		**35.7**	mg/Kg	1	2.00

Sample: 106714 - HLSF-0085-SB-004 (10.0-10.5)

Analysis:	Total 8 Metals	Analytical Method:	S 7471A	Prep Method:	N/A
QC Batch:	31411	Date Analyzed:	2006-10-31	Analyzed By:	TP
Prep Batch:	27351	Sample Preparation:	2006-10-31	Prepared By:	TP
Analysis:	Total 8 Metals	Analytical Method:	S 6010B	Prep Method:	S 3050B
QC Batch:	31429	Date Analyzed:	2006-11-01	Analyzed By:	RR
Prep Batch:	27288	Sample Preparation:	2006-10-27	Prepared By:	TS

Parameter	Flag	RL Result	Units	Dilution	RL
Total Silver		<0.0500	mg/Kg	1	0.0500
Total Arsenic		<2.00	mg/Kg	1	2.00
Total Barium		**18.9**	mg/Kg	1	1.00
Total Cadmium		<0.100	mg/Kg	1	0.100
Total Chromium		**1.48**	mg/Kg	1	0.500
Total Mercury		<0.0400	mg/Kg	1	0.0400
Total Lead		**1.44**	mg/Kg	1	1.00
Total Selenium		<1.00	mg/Kg	1	1.00

Sample: 106714 - HLSF-0085-SB-004 (10.0-10.5)

Analysis:	Zn, Total	Analytical Method:	S 6010B	Prep Method:	S 3050B
QC Batch:	31429	Date Analyzed:	2006-11-01	Analyzed By:	RR
Prep Batch:	27288	Sample Preparation:	2006-10-27	Prepared By:	TS

Parameter	Flag	RL Result	Units	Dilution	RL
Total Zinc	*B*	**2.87**	mg/Kg	1	2.00

Sample: 106715 - HLSF-0085-SB-104 (10.0-10.5)

Analysis:	Cu, Total	Analytical Method:	S 6010B	Prep Method:	S 3050B
QC Batch:	31429	Date Analyzed:	2006-11-01	Analyzed By:	RR
Prep Batch:	27288	Sample Preparation:	2006-10-27	Prepared By:	TS

Parameter	Flag	RL Result	Units	Dilution	RL
Total Copper		**0.793**	mg/Kg	1	0.500

Sample: 106715 - HLSF-0085-SB-104 (10.0-10.5)

Analysis:	K, Total	Analytical Method:	S 6010B	Prep Method:	S 3050B
QC Batch:	31440	Date Analyzed:	2006-11-01	Analyzed By:	TP
Prep Batch:	27288	Sample Preparation:	2006-10-27	Prepared By:	TS

Parameter	Flag	RL Result	Units	Dilution	RL
Total Potassium		**447**	mg/Kg	1	50.0

Sample: 106715 - HLSF-0085-SB-104 (10.0-10.5)

Analysis:	Na, Total	Analytical Method:	S 6010B	Prep Method:	S 3050B
QC Batch:	31440	Date Analyzed:	2006-11-01	Analyzed By:	TP
Prep Batch:	27288	Sample Preparation:	2006-10-27	Prepared By:	TS

Parameter	Flag	RL Result	Units	Dilution	RL
Total Sodium		**1080**	mg/Kg	1	50.0

Sample: 106715 - HLSF-0085-SB-104 (10.0-10.5)

Analysis:	P, Total	Analytical Method:	S 6010B	Prep Method:	S 3050B
QC Batch:	31429	Date Analyzed:	2006-11-01	Analyzed By:	RR
Prep Batch:	27288	Sample Preparation:	2006-10-27	Prepared By:	TS

Parameter	Flag	RL Result	Units	Dilution	RL
Total Phosphorous		**36.0**	mg/Kg	1	2.00

Sample: 106715 - HLSF-0085-SB-104 (10.0-10.5)

Analysis:	Total 8 Metals	Analytical Method:	S 7471A	Prep Method:	N/A
QC Batch:	31411	Date Analyzed:	2006-10-31	Analyzed By:	TP
Prep Batch:	27351	Sample Preparation:	2006-10-31	Prepared By:	TP
Analysis:	Total 8 Metals	Analytical Method:	S 6010B	Prep Method:	S 3050B
QC Batch:	31429	Date Analyzed:	2006-11-01	Analyzed By:	RR
Prep Batch:	27288	Sample Preparation:	2006-10-27	Prepared By:	TS

Parameter	Flag	RL Result	Units	Dilution	RL
Total Silver		<0.0500	mg/Kg	1	0.0500
Total Arsenic		<2.00	mg/Kg	1	2.00
Total Barium		**18.7**	mg/Kg	1	1.00
Total Cadmium		<0.100	mg/Kg	1	0.100
Total Chromium		**1.42**	mg/Kg	1	0.500
Total Mercury		<0.0400	mg/Kg	1	0.0400
Total Lead		**1.61**	mg/Kg	1	1.00
Total Selenium		<1.00	mg/Kg	1	1.00

Sample: 106715 - HLSF-0085-SB-104 (10.0-10.5)

Analysis:	Zn, Total	Analytical Method:	S 6010B	Prep Method:	S 3050B
QC Batch:	31429	Date Analyzed:	2006-11-01	Analyzed By:	RR
Prep Batch:	27288	Sample Preparation:	2006-10-27	Prepared By:	TS

Parameter	Flag	RL Result	Units	Dilution	RL
Total Zinc	*B*	**2.79**	mg/Kg	1	2.00

Sample: 106716 - HLSF-0085-SB-004 (20.0-20.5)

Analysis:	Cu, Total	Analytical Method:	S 6010B	Prep Method:	S 3050B
QC Batch:	31429	Date Analyzed:	2006-11-01	Analyzed By:	RR
Prep Batch:	27288	Sample Preparation:	2006-10-27	Prepared By:	TS

Parameter	Flag	RL Result	Units	Dilution	RL
Total Copper		**4.86**	mg/Kg	1	0.500

Sample: 106716 - HLSF-0085-SB-004 (20.0-20.5)

Analysis:	K, Total	Analytical Method:	S 6010B	Prep Method:	S 3050B
QC Batch:	31440	Date Analyzed:	2006-11-01	Analyzed By:	TP
Prep Batch:	27288	Sample Preparation:	2006-10-27	Prepared By:	TS

Parameter	Flag	RL Result	Units	Dilution	RL
Total Potassium		**2240**	mg/Kg	1	50.0

Sample: 106716 - HLSF-0085-SB-004 (20.0-20.5)

Analysis:	Na, Total	Analytical Method:	S 6010B	Prep Method:	S 3050B
QC Batch:	31440	Date Analyzed:	2006-11-01	Analyzed By:	TP
Prep Batch:	27288	Sample Preparation:	2006-10-27	Prepared By:	TS

Parameter	Flag	RL Result	Units	Dilution	RL
Total Sodium		**2310**	mg/Kg	1	50.0

Sample: 106716 - HLSF-0085-SB-004 (20.0-20.5)

Analysis:	P, Total	Analytical Method:	S 6010B	Prep Method:	S 3050B
QC Batch:	31429	Date Analyzed:	2006-11-01	Analyzed By:	RR
Prep Batch:	27288	Sample Preparation:	2006-10-27	Prepared By:	TS

Parameter	Flag	RL Result	Units	Dilution	RL
Total Phosphorous		**96.7**	mg/Kg	1	2.00

Sample: 106716 - HLSF-0085-SB-004 (20.0-20.5)

Analysis:	Total 8 Metals	Analytical Method:	S 7471A	Prep Method:	N/A
QC Batch:	31411	Date Analyzed:	2006-10-31	Analyzed By:	TP
Prep Batch:	27351	Sample Preparation:	2006-10-31	Prepared By:	TP
Analysis:	Total 8 Metals	Analytical Method:	S 6010B	Prep Method:	S 3050B
QC Batch:	31429	Date Analyzed:	2006-11-01	Analyzed By:	RR
Prep Batch:	27288	Sample Preparation:	2006-10-27	Prepared By:	TS

Parameter	Flag	RL Result	Units	Dilution	RL
Total Silver		<0.0500	mg/Kg	1	0.0500
Total Arsenic		**5.30**	mg/Kg	1	2.00
Total Barium		**53.7**	mg/Kg	1	1.00
Total Cadmium		<0.100	mg/Kg	1	0.100
Total Chromium		**7.36**	mg/Kg	1	0.500
Total Mercury		<0.0400	mg/Kg	1	0.0400
Total Lead		**12.9**	mg/Kg	1	1.00
Total Selenium		<1.00	mg/Kg	1	1.00

Sample: 106716 - HLSF-0085-SB-004 (20.0-20.5)

Analysis:	Zn, Total	Analytical Method:	S 6010B	Prep Method:	S 3050B
QC Batch:	31429	Date Analyzed:	2006-11-01	Analyzed By:	RR
Prep Batch:	27288	Sample Preparation:	2006-10-27	Prepared By:	TS

Parameter	Flag	RL Result	Units	Dilution	RL
Total Zinc	*B*	**15.0**	mg/Kg	1	2.00

Sample: 106717 - HLSF-0085-SB-004 (30.0-30.5)

Analysis:	Cu, Total	Analytical Method:	S 6010B	Prep Method:	S 3050B
QC Batch:	31429	Date Analyzed:	2006-11-01	Analyzed By:	RR
Prep Batch:	27288	Sample Preparation:	2006-10-27	Prepared By:	TS

Parameter	Flag	RL Result	Units	Dilution	RL
Total Copper		**7.22**	mg/Kg	1	0.500

Sample: 106717 - HLSF-0085-SB-004 (30.0-30.5)

Analysis:	K, Total	Analytical Method:	S 6010B	Prep Method:	S 3050B
QC Batch:	31440	Date Analyzed:	2006-11-01	Analyzed By:	TP
Prep Batch:	27288	Sample Preparation:	2006-10-27	Prepared By:	TS

Parameter	Flag	RL Result	Units	Dilution	RL
Total Potassium		**1920**	mg/Kg	1	50.0

Sample: 106717 - HLSF-0085-SB-004 (30.0-30.5)

Analysis:	Na, Total	Analytical Method:	S 6010B	Prep Method:	S 3050B
QC Batch:	31440	Date Analyzed:	2006-11-01	Analyzed By:	TP
Prep Batch:	27288	Sample Preparation:	2006-10-27	Prepared By:	TS

Parameter	Flag	RL Result	Units	Dilution	RL
Total Sodium		**1690**	mg/Kg	1	50.0

Sample: 106717 - HLSF-0085-SB-004 (30.0-30.5)

Analysis:	P, Total	Analytical Method:	S 6010B	Prep Method:	S 3050B
QC Batch:	31429	Date Analyzed:	2006-11-01	Analyzed By:	RR
Prep Batch:	27288	Sample Preparation:	2006-10-27	Prepared By:	TS

Parameter	Flag	RL Result	Units	Dilution	RL
Total Phosphorous		**220**	mg/Kg	1	2.00

Sample: 106717 - HLSF-0085-SB-004 (30.0-30.5)

Analysis:	Total 8 Metals	Analytical Method:	S 7471A	Prep Method:	N/A
QC Batch:	31411	Date Analyzed:	2006-10-31	Analyzed By:	TP
Prep Batch:	27351	Sample Preparation:	2006-10-31	Prepared By:	TP
Analysis:	Total 8 Metals	Analytical Method:	S 6010B	Prep Method:	S 3050B
QC Batch:	31429	Date Analyzed:	2006-11-01	Analyzed By:	RR
Prep Batch:	27288	Sample Preparation:	2006-10-27	Prepared By:	TS

Parameter	Flag	RL Result	Units	Dilution	RL
Total Silver		<0.0500	mg/Kg	1	0.0500
Total Arsenic		**2.29**	mg/Kg	1	2.00
Total Barium		**12.5**	mg/Kg	1	1.00

continued . . .

sample 106717 continued . . .

Parameter	Flag	RL Result	Units	Dilution	RL
Total Cadmium		<0.100	mg/Kg	1	0.100
Total Chromium		**7.47**	mg/Kg	1	0.500
Total Mercury		<0.0400	mg/Kg	1	0.0400
Total Lead		**14.9**	mg/Kg	1	1.00
Total Selenium		<1.00	mg/Kg	1	1.00

Sample: 106717 - HLSF-0085-SB-004 (30.0-30.5)

Analysis:	Zn, Total	Analytical Method:	S 6010B	Prep Method:	S 3050B
QC Batch:	31429	Date Analyzed:	2006-11-01	Analyzed By:	RR
Prep Batch:	27288	Sample Preparation:	2006-10-27	Prepared By:	TS

Parameter	Flag	RL Result	Units	Dilution	RL
Total Zinc		**23.5**	mg/Kg	1	2.00

Sample: 106718 - HLSF-0085-SB-004 (40.0-40.5)

Analysis:	Cu, Total	Analytical Method:	S 6010B	Prep Method:	S 3050B
QC Batch:	31429	Date Analyzed:	2006-11-01	Analyzed By:	RR
Prep Batch:	27288	Sample Preparation:	2006-10-27	Prepared By:	TS

Parameter	Flag	RL Result	Units	Dilution	RL
Total Copper		**2.60**	mg/Kg	1	0.500

Sample: 106718 - HLSF-0085-SB-004 (40.0-40.5)

Analysis:	K, Total	Analytical Method:	S 6010B	Prep Method:	S 3050B
QC Batch:	31440	Date Analyzed:	2006-11-01	Analyzed By:	TP
Prep Batch:	27288	Sample Preparation:	2006-10-27	Prepared By:	TS

Parameter	Flag	RL Result	Units	Dilution	RL
Total Potassium		**799**	mg/Kg	1	50.0

Sample: 106718 - HLSF-0085-SB-004 (40.0-40.5)

Analysis:	Na, Total	Analytical Method:	S 6010B	Prep Method:	S 3050B
QC Batch:	31440	Date Analyzed:	2006-11-01	Analyzed By:	TP
Prep Batch:	27288	Sample Preparation:	2006-10-27	Prepared By:	TS

continued . . .

sample 106718 continued . . .

Parameter	Flag	RL Result	Units	Dilution	RL

Parameter	Flag	RL Result	Units	Dilution	RL
Total Sodium		**739**	mg/Kg	1	50.0

Sample: 106718 - HLSF-0085-SB-004 (40.0-40.5)

Analysis:	P, Total	Analytical Method:	S 6010B	Prep Method:	S 3050B
QC Batch:	31429	Date Analyzed:	2006-11-01	Analyzed By:	RR
Prep Batch:	27288	Sample Preparation:	2006-10-27	Prepared By:	TS

Parameter	Flag	RL Result	Units	Dilution	RL
Total Phosphorous		**137**	mg/Kg	1	2.00

Sample: 106718 - HLSF-0085-SB-004 (40.0-40.5)

Analysis:	Total 8 Metals	Analytical Method:	S 7471A	Prep Method:	N/A
QC Batch:	31411	Date Analyzed:	2006-10-31	Analyzed By:	TP
Prep Batch:	27351	Sample Preparation:	2006-10-31	Prepared By:	TP
Analysis:	Total 8 Metals	Analytical Method:	S 6010B	Prep Method:	S 3050B
QC Batch:	31429	Date Analyzed:	2006-11-01	Analyzed By:	RR
Prep Batch:	27288	Sample Preparation:	2006-10-27	Prepared By:	TS

Parameter	Flag	RL Result	Units	Dilution	RL
Total Silver		<0.0500	mg/Kg	1	0.0500
Total Arsenic		<2.00	mg/Kg	1	2.00
Total Barium		**29.0**	mg/Kg	1	1.00
Total Cadmium		<0.100	mg/Kg	1	0.100
Total Chromium		**4.41**	mg/Kg	1	0.500
Total Mercury		<0.0400	mg/Kg	1	0.0400
Total Lead		**7.54**	mg/Kg	1	1.00
Total Selenium		<1.00	mg/Kg	1	1.00

Sample: 106718 - HLSF-0085-SB-004 (40.0-40.5)

Analysis:	Zn, Total	Analytical Method:	S 6010B	Prep Method:	S 3050B
QC Batch:	31429	Date Analyzed:	2006-11-01	Analyzed By:	RR
Prep Batch:	27288	Sample Preparation:	2006-10-27	Prepared By:	TS

Parameter	Flag	RL Result	Units	Dilution	RL
Total Zinc	*B*	**14.1**	mg/Kg	1	2.00

Sample: 106719 - HLSF-0085-SB-004 (49.5-50.0)

Analysis:	Cu, Total	Analytical Method:	S 6010B	Prep Method:	S 3050B
QC Batch:	31429	Date Analyzed:	2006-11-01	Analyzed By:	RR
Prep Batch:	27288	Sample Preparation:	2006-10-27	Prepared By:	TS

Parameter	Flag	RL Result	Units	Dilution	RL
Total Copper		**9.06**	mg/Kg	1	0.500

Sample: 106719 - HLSF-0085-SB-004 (49.5-50.0)

Analysis:	K, Total	Analytical Method:	S 6010B	Prep Method:	S 3050B
QC Batch:	31440	Date Analyzed:	2006-11-01	Analyzed By:	TP
Prep Batch:	27288	Sample Preparation:	2006-10-27	Prepared By:	TS

Parameter	Flag	RL Result	Units	Dilution	RL
Total Potassium		**1340**	mg/Kg	1	50.0

Sample: 106719 - HLSF-0085-SB-004 (49.5-50.0)

Analysis:	Na, Total	Analytical Method:	S 6010B	Prep Method:	S 3050B
QC Batch:	31440	Date Analyzed:	2006-11-01	Analyzed By:	TP
Prep Batch:	27288	Sample Preparation:	2006-10-27	Prepared By:	TS

Parameter	Flag	RL Result	Units	Dilution	RL
Total Sodium		**1330**	mg/Kg	1	50.0

Sample: 106719 - HLSF-0085-SB-004 (49.5-50.0)

Analysis:	P, Total	Analytical Method:	S 6010B	Prep Method:	S 3050B
QC Batch:	31429	Date Analyzed:	2006-11-01	Analyzed By:	RR
Prep Batch:	27288	Sample Preparation:	2006-10-27	Prepared By:	TS

Parameter	Flag	RL Result	Units	Dilution	RL
Total Phosphorous		**245**	mg/Kg	1	2.00

Sample: 106719 - HLSF-0085-SB-004 (49.5-50.0)

Analysis:	Total 8 Metals	Analytical Method:	S 7471A	Prep Method:	N/A
QC Batch:	31411	Date Analyzed:	2006-10-31	Analyzed By:	TP
Prep Batch:	27351	Sample Preparation:	2006-10-31	Prepared By:	TP
Analysis:	Total 8 Metals	Analytical Method:	S 6010B	Prep Method:	S 3050B
QC Batch:	31429	Date Analyzed:	2006-11-01	Analyzed By:	RR
Prep Batch:	27288	Sample Preparation:	2006-10-27	Prepared By:	TS

Parameter	Flag	RL Result	Units	Dilution	RL
Total Silver		<0.0500	mg/Kg	1	0.0500
Total Arsenic		**3.49**	mg/Kg	1	2.00
Total Barium		**47.8**	mg/Kg	1	1.00
Total Cadmium		<0.100	mg/Kg	1	0.100
Total Chromium		**6.92**	mg/Kg	1	0.500
Total Mercury		<0.0400	mg/Kg	1	0.0400
Total Lead		**15.2**	mg/Kg	1	1.00
Total Selenium		<1.00	mg/Kg	1	1.00

Sample: 106719 - HLSF-0085-SB-004 (49.5-50.0)

Analysis:	Zn, Total	Analytical Method:	S 6010B	Prep Method:	S 3050B
QC Batch:	31429	Date Analyzed:	2006-11-01	Analyzed By:	RR
Prep Batch:	27288	Sample Preparation:	2006-10-27	Prepared By:	TS

Parameter	Flag	RL Result	Units	Dilution	RL
Total Zinc		**26.4**	mg/Kg	1	2.00

Sample: 106720 - HLSF-0085-SB-003 (0.5-1.0)

Analysis:	Cu, Total	Analytical Method:	S 6010B	Prep Method:	S 3050B
QC Batch:	31429	Date Analyzed:	2006-11-01	Analyzed By:	RR
Prep Batch:	27288	Sample Preparation:	2006-10-27	Prepared By:	TS

Parameter	Flag	RL Result	Units	Dilution	RL
Total Copper		**2.17**	mg/Kg	1	0.500

Sample: 106720 - HLSF-0085-SB-003 (0.5-1.0)

Analysis:	K, Total	Analytical Method:	S 6010B	Prep Method:	S 3050B
QC Batch:	31440	Date Analyzed:	2006-11-01	Analyzed By:	TP
Prep Batch:	27288	Sample Preparation:	2006-10-27	Prepared By:	TS

Parameter	Flag	RL Result	Units	Dilution	RL
Total Potassium		**227**	mg/Kg	1	50.0

Sample: 106720 - HLSF-0085-SB-003 (0.5-1.0)

Analysis:	Na, Total	Analytical Method:	S 6010B	Prep Method:	S 3050B
QC Batch:	31440	Date Analyzed:	2006-11-01	Analyzed By:	TP
Prep Batch:	27288	Sample Preparation:	2006-10-27	Prepared By:	TS

Parameter	Flag	RL Result	Units	Dilution	RL
Total Sodium		**381**	mg/Kg	1	50.0

Sample: 106720 - HLSF-0085-SB-003 (0.5-1.0)

Analysis:	P, Total	Analytical Method:	S 6010B	Prep Method:	S 3050B
QC Batch:	31429	Date Analyzed:	2006-11-01	Analyzed By:	RR
Prep Batch:	27288	Sample Preparation:	2006-10-27	Prepared By:	TS

Parameter	Flag	RL Result	Units	Dilution	RL
Total Phosphorous		**54.8**	mg/Kg	1	2.00

Sample: 106720 - HLSF-0085-SB-003 (0.5-1.0)

Analysis:	Total 8 Metals	Analytical Method:	S 7471A	Prep Method:	N/A
QC Batch:	31411	Date Analyzed:	2006-10-31	Analyzed By:	TP
Prep Batch:	27351	Sample Preparation:	2006-10-31	Prepared By:	TP
Analysis:	Total 8 Metals	Analytical Method:	S 6010B	Prep Method:	S 3050B
QC Batch:	31429	Date Analyzed:	2006-11-01	Analyzed By:	RR
Prep Batch:	27288	Sample Preparation:	2006-10-27	Prepared By:	TS

Parameter	Flag	RL Result	Units	Dilution	RL
Total Silver		<0.0500	mg/Kg	1	0.0500
Total Arsenic		<2.00	mg/Kg	1	2.00
Total Barium		**14.1**	mg/Kg	1	1.00
Total Cadmium		<0.100	mg/Kg	1	0.100
Total Chromium		**0.858**	mg/Kg	1	0.500
Total Mercury		<0.0400	mg/Kg	1	0.0400
Total Lead		<1.00	mg/Kg	1	1.00
Total Selenium		<1.00	mg/Kg	1	1.00

Sample: 106720 - HLSF-0085-SB-003 (0.5-1.0)

Analysis:	Zn, Total	Analytical Method:	S 6010B	Prep Method:	S 3050B
QC Batch:	31429	Date Analyzed:	2006-11-01	Analyzed By:	RR
Prep Batch:	27288	Sample Preparation:	2006-10-27	Prepared By:	TS

Parameter	Flag	RL Result	Units	Dilution	RL
Total Zinc	*B*	**2.82**	mg/Kg	1	2.00

Sample: 106721 - HLSF-0085-SB-003 (10.0-10.5)

Analysis:	Cu, Total	Analytical Method:	S 6010B	Prep Method:	S 3050B
QC Batch:	31429	Date Analyzed:	2006-11-01	Analyzed By:	RR
Prep Batch:	27288	Sample Preparation:	2006-10-27	Prepared By:	TS

Parameter	Flag	RL Result	Units	Dilution	RL
Total Copper		**0.697**	mg/Kg	1	0.500

Sample: 106721 - HLSF-0085-SB-003 (10.0-10.5)

Analysis:	K, Total	Analytical Method:	S 6010B	Prep Method:	S 3050B
QC Batch:	31440	Date Analyzed:	2006-11-01	Analyzed By:	TP
Prep Batch:	27288	Sample Preparation:	2006-10-27	Prepared By:	TS

Parameter	Flag	RL Result	Units	Dilution	RL
Total Potassium		**376**	mg/Kg	1	50.0

Sample: 106721 - HLSF-0085-SB-003 (10.0-10.5)

Analysis:	Na, Total	Analytical Method:	S 6010B	Prep Method:	S 3050B
QC Batch:	31440	Date Analyzed:	2006-11-01	Analyzed By:	TP
Prep Batch:	27288	Sample Preparation:	2006-10-27	Prepared By:	TS

Parameter	Flag	RL Result	Units	Dilution	RL
Total Sodium		**652**	mg/Kg	1	50.0

Sample: 106721 - HLSF-0085-SB-003 (10.0-10.5)

Analysis:	P, Total	Analytical Method:	S 6010B	Prep Method:	S 3050B
QC Batch:	31429	Date Analyzed:	2006-11-01	Analyzed By:	RR
Prep Batch:	27288	Sample Preparation:	2006-10-27	Prepared By:	TS

Parameter	Flag	RL Result	Units	Dilution	RL
Total Phosphorous		**29.7**	mg/Kg	1	2.00

Sample: 106721 - HLSF-0085-SB-003 (10.0-10.5)

Analysis:	Total 8 Metals	Analytical Method:	S 7471A	Prep Method:	N/A
QC Batch:	31412	Date Analyzed:	2006-10-31	Analyzed By:	TP
Prep Batch:	27351	Sample Preparation:	2006-10-31	Prepared By:	TP
Analysis:	Total 8 Metals	Analytical Method:	S 6010B	Prep Method:	S 3050B
QC Batch:	31429	Date Analyzed:	2006-11-01	Analyzed By:	RR
Prep Batch:	27288	Sample Preparation:	2006-10-27	Prepared By:	TS

Parameter	Flag	RL Result	Units	Dilution	RL
Total Silver		<0.0500	mg/Kg	1	0.0500
Total Arsenic		<2.00	mg/Kg	1	2.00
Total Barium		**18.4**	mg/Kg	1	1.00

continued . . .

sample 106721 continued . . .

Parameter	Flag	RL Result	Units	Dilution	RL
Total Cadmium		<0.100	mg/Kg	1	0.100
Total Chromium		**1.31**	mg/Kg	1	0.500
Total Mercury		<0.0400	mg/Kg	1	0.0400
Total Lead		<1.00	mg/Kg	1	1.00
Total Selenium		<1.00	mg/Kg	1	1.00

Sample: 106721 - HLSF-0085-SB-003 (10.0-10.5)

Analysis:	Zn, Total	Analytical Method:	S 6010B	Prep Method:	S 3050B
QC Batch:	31429	Date Analyzed:	2006-11-01	Analyzed By:	RR
Prep Batch:	27288	Sample Preparation:	2006-10-27	Prepared By:	TS

Parameter	Flag	RL Result	Units	Dilution	RL
Total Zinc	*B*	**2.76**	mg/Kg	1	2.00

Sample: 106722 - HLSF-0085-SB-003 (20.0-20.5)

Analysis:	Cu, Total	Analytical Method:	S 6010B	Prep Method:	S 3050B
QC Batch:	31429	Date Analyzed:	2006-11-01	Analyzed By:	RR
Prep Batch:	27288	Sample Preparation:	2006-10-27	Prepared By:	TS

Parameter	Flag	RL Result	Units	Dilution	RL
Total Copper		**1.20**	mg/Kg	1	0.500

Sample: 106722 - HLSF-0085-SB-003 (20.0-20.5)

Analysis:	K, Total	Analytical Method:	S 6010B	Prep Method:	S 3050B
QC Batch:	31440	Date Analyzed:	2006-11-01	Analyzed By:	TP
Prep Batch:	27288	Sample Preparation:	2006-10-27	Prepared By:	TS

Parameter	Flag	RL Result	Units	Dilution	RL
Total Potassium		**639**	mg/Kg	1	50.0

Sample: 106722 - HLSF-0085-SB-003 (20.0-20.5)

Analysis:	Na, Total	Analytical Method:	S 6010B	Prep Method:	S 3050B
QC Batch:	31440	Date Analyzed:	2006-11-01	Analyzed By:	TP
Prep Batch:	27288	Sample Preparation:	2006-10-27	Prepared By:	TS

continued . . .

sample 106722 continued . . .

Parameter	Flag	RL Result	Units	Dilution	RL

Parameter	Flag	RL Result	Units	Dilution	RL
Total Sodium		**1400**	mg/Kg	1	50.0

Sample: 106722 - HLSF-0085-SB-003 (20.0-20.5)

Analysis:	P, Total	Analytical Method:	S 6010B	Prep Method:	S 3050B
QC Batch:	31429	Date Analyzed:	2006-11-01	Analyzed By:	RR
Prep Batch:	27288	Sample Preparation:	2006-10-27	Prepared By:	TS

Parameter	Flag	RL Result	Units	Dilution	RL
Total Phosphorous		**35.3**	mg/Kg	1	2.00

Sample: 106722 - HLSF-0085-SB-003 (20.0-20.5)

Analysis:	Total 8 Metals	Analytical Method:	S 7471A	Prep Method:	N/A
QC Batch:	31411	Date Analyzed:	2006-10-31	Analyzed By:	TP
Prep Batch:	27351	Sample Preparation:	2006-10-31	Prepared By:	TP
Analysis:	Total 8 Metals	Analytical Method:	S 6010B	Prep Method:	S 3050B
QC Batch:	31429	Date Analyzed:	2006-11-01	Analyzed By:	RR
Prep Batch:	27288	Sample Preparation:	2006-10-27	Prepared By:	TS

Parameter	Flag	RL Result	Units	Dilution	RL
Total Silver		<0.0500	mg/Kg	1	0.0500
Total Arsenic		<2.00	mg/Kg	1	2.00
Total Barium		**26.0**	mg/Kg	1	1.00
Total Cadmium		<0.100	mg/Kg	1	0.100
Total Chromium		**1.81**	mg/Kg	1	0.500
Total Mercury		<0.0400	mg/Kg	1	0.0400
Total Lead		**2.18**	mg/Kg	1	1.00
Total Selenium		<1.00	mg/Kg	1	1.00

Sample: 106722 - HLSF-0085-SB-003 (20.0-20.5)

Analysis:	Zn, Total	Analytical Method:	S 6010B	Prep Method:	S 3050B
QC Batch:	31429	Date Analyzed:	2006-11-01	Analyzed By:	RR
Prep Batch:	27288	Sample Preparation:	2006-10-27	Prepared By:	TS

Parameter	Flag	RL Result	Units	Dilution	RL
Total Zinc	*B*	**3.77**	mg/Kg	1	2.00

Sample: 106723 - HLSF-0085-SB-003 (30.0-30.5)

Analysis:	Cu, Total	Analytical Method:	S 6010B	Prep Method:	S 3050B
QC Batch:	32009	Date Analyzed:	2006-11-17	Analyzed By:	RR
Prep Batch:	27345	Sample Preparation:	2006-10-31	Prepared By:	TS

Parameter	Flag	RL Result	Units	Dilution	RL
Total Copper		**1.95**	mg/Kg	1	0.500

Sample: 106723 - HLSF-0085-SB-003 (30.0-30.5)

Analysis:	K, Total	Analytical Method:	S 6010B	Prep Method:	S 3050B
QC Batch:	31781	Date Analyzed:	2006-11-10	Analyzed By:	TP
Prep Batch:	27345	Sample Preparation:	2006-10-31	Prepared By:	TS

Parameter	Flag	RL Result	Units	Dilution	RL
Total Potassium		**1160**	mg/Kg	1	50.0

Sample: 106723 - HLSF-0085-SB-003 (30.0-30.5)

Analysis:	Na, Total	Analytical Method:	S 6010B	Prep Method:	S 3050B
QC Batch:	31781	Date Analyzed:	2006-11-10	Analyzed By:	TP
Prep Batch:	27345	Sample Preparation:	2006-10-31	Prepared By:	TS

Parameter	Flag	RL Result	Units	Dilution	RL
Total Sodium		**1100**	mg/Kg	1	50.0

Sample: 106723 - HLSF-0085-SB-003 (30.0-30.5)

Analysis:	P, Total	Analytical Method:	S 6010B	Prep Method:	S 3050B
QC Batch:	32009	Date Analyzed:	2006-11-17	Analyzed By:	RR
Prep Batch:	27345	Sample Preparation:	2006-10-31	Prepared By:	TS

Parameter	Flag	RL Result	Units	Dilution	RL
Total Phosphorous		**90.0**	mg/Kg	1	2.00

Sample: 106723 - HLSF-0085-SB-003 (30.0-30.5)

Analysis:	Total 8 Metals	Analytical Method:	S 7471A	Prep Method:	N/A
QC Batch:	31411	Date Analyzed:	2006-10-31	Analyzed By:	TP
Prep Batch:	27351	Sample Preparation:	2006-10-31	Prepared By:	TP
Analysis:	Total 8 Metals	Analytical Method:	S 6010B	Prep Method:	S 3050B
QC Batch:	32009	Date Analyzed:	2006-11-17	Analyzed By:	RR
Prep Batch:	27345	Sample Preparation:	2006-10-31	Prepared By:	TS

Parameter	Flag	RL Result	Units	Dilution	RL
Total Silver		<0.0500	mg/Kg	1	0.0500
Total Arsenic		<2.00	mg/Kg	1	2.00
Total Barium		**11.3**	mg/Kg	1	1.00
Total Cadmium		<0.100	mg/Kg	1	0.100
Total Chromium		<0.500	mg/Kg	1	0.500
Total Mercury		<0.0400	mg/Kg	1	0.0400
Total Lead		**6.50**	mg/Kg	1	1.00
Total Selenium		<1.00	mg/Kg	1	1.00

Sample: 106723 - HLSF-0085-SB-003 (30.0-30.5)

Analysis:	Zn, Total	Analytical Method:	S 6010B	Prep Method:	S 3050B
QC Batch:	32009	Date Analyzed:	2006-11-17	Analyzed By:	RR
Prep Batch:	27345	Sample Preparation:	2006-10-31	Prepared By:	TS

Parameter	Flag	RL Result	Units	Dilution	RL
Total Zinc	*B*	**9.61**	mg/Kg	1	2.00

Sample: 106724 - HLSF-0085-SB-003 (40.0-40.5)

Analysis:	Cu, Total	Analytical Method:	S 6010B	Prep Method:	S 3050B
QC Batch:	32009	Date Analyzed:	2006-11-17	Analyzed By:	RR
Prep Batch:	27345	Sample Preparation:	2006-10-31	Prepared By:	TS

Parameter	Flag	RL Result	Units	Dilution	RL
Total Copper		**5.13**	mg/Kg	1	0.500

Sample: 106724 - HLSF-0085-SB-003 (40.0-40.5)

Analysis:	K, Total	Analytical Method:	S 6010B	Prep Method:	S 3050B
QC Batch:	31781	Date Analyzed:	2006-11-10	Analyzed By:	TP
Prep Batch:	27345	Sample Preparation:	2006-10-31	Prepared By:	TS

Parameter	Flag	RL Result	Units	Dilution	RL
Total Potassium		**1990**	mg/Kg	1	50.0

Sample: 106724 - HLSF-0085-SB-003 (40.0-40.5)

Analysis:	Na, Total	Analytical Method:	S 6010B	Prep Method:	S 3050B
QC Batch:	31781	Date Analyzed:	2006-11-10	Analyzed By:	TP
Prep Batch:	27345	Sample Preparation:	2006-10-31	Prepared By:	TS

Parameter	Flag	RL Result	Units	Dilution	RL
Total Sodium		**1870**	mg/Kg	1	50.0

Sample: 106724 - HLSF-0085-SB-003 (40.0-40.5)

Analysis:	P, Total	Analytical Method:	S 6010B	Prep Method:	S 3050B
QC Batch:	32009	Date Analyzed:	2006-11-17	Analyzed By:	RR
Prep Batch:	27345	Sample Preparation:	2006-10-31	Prepared By:	TS

Parameter	Flag	RL Result	Units	Dilution	RL
Total Phosphorous		**192**	mg/Kg	1	2.00

Sample: 106724 - HLSF-0085-SB-003 (40.0-40.5)

Analysis:	Total 8 Metals	Analytical Method:	S 7471A	Prep Method:	N/A
QC Batch:	31412	Date Analyzed:	2006-10-31	Analyzed By:	TP
Prep Batch:	27351	Sample Preparation:	2006-10-31	Prepared By:	TP
Analysis:	Total 8 Metals	Analytical Method:	S 6010B	Prep Method:	S 3050B
QC Batch:	32009	Date Analyzed:	2006-11-17	Analyzed By:	RR
Prep Batch:	27345	Sample Preparation:	2006-10-31	Prepared By:	TS

Parameter	Flag	RL Result	Units	Dilution	RL
Total Silver		<0.0500	mg/Kg	1	0.0500
Total Arsenic		**3.85**	mg/Kg	1	2.00
Total Barium		**38.6**	mg/Kg	1	1.00
Total Cadmium		<0.100	mg/Kg	1	0.100
Total Chromium		**2.85**	mg/Kg	1	0.500
Total Mercury		<0.0400	mg/Kg	1	0.0400
Total Lead		**11.9**	mg/Kg	1	1.00
Total Selenium		<1.00	mg/Kg	1	1.00

Sample: 106724 - HLSF-0085-SB-003 (40.0-40.5)

Analysis:	Zn, Total	Analytical Method:	S 6010B	Prep Method:	S 3050B
QC Batch:	32009	Date Analyzed:	2006-11-17	Analyzed By:	RR
Prep Batch:	27345	Sample Preparation:	2006-10-31	Prepared By:	TS

Parameter	Flag	RL Result	Units	Dilution	RL
Total Zinc		**21.7**	mg/Kg	1	2.00

Sample: 106725 - HLSF-0085-SB-003 (49.5-50.0)

Analysis:	Cu, Total	Analytical Method:	S 6010B	Prep Method:	S 3050B
QC Batch:	32009	Date Analyzed:	2006-11-17	Analyzed By:	RR
Prep Batch:	27345	Sample Preparation:	2006-10-31	Prepared By:	TS

Parameter	Flag	RL Result	Units	Dilution	RL
Total Copper		**4.85**	mg/Kg	1	0.500

Sample: 106725 - HLSF-0085-SB-003 (49.5-50.0)

Analysis:	K, Total	Analytical Method:	S 6010B	Prep Method:	S 3050B
QC Batch:	31781	Date Analyzed:	2006-11-10	Analyzed By:	TP
Prep Batch:	27345	Sample Preparation:	2006-10-31	Prepared By:	TS

Parameter	Flag	RL Result	Units	Dilution	RL
Total Potassium		**1370**	mg/Kg	1	50.0

Sample: 106725 - HLSF-0085-SB-003 (49.5-50.0)

Analysis:	Na, Total	Analytical Method:	S 6010B	Prep Method:	S 3050B
QC Batch:	31781	Date Analyzed:	2006-11-10	Analyzed By:	TP
Prep Batch:	27345	Sample Preparation:	2006-10-31	Prepared By:	TS

Parameter	Flag	RL Result	Units	Dilution	RL
Total Sodium		**1510**	mg/Kg	1	50.0

Sample: 106725 - HLSF-0085-SB-003 (49.5-50.0)

Analysis:	P, Total	Analytical Method:	S 6010B	Prep Method:	S 3050B
QC Batch:	32009	Date Analyzed:	2006-11-17	Analyzed By:	RR
Prep Batch:	27345	Sample Preparation:	2006-10-31	Prepared By:	TS

Parameter	Flag	RL Result	Units	Dilution	RL
Total Phosphorous		**177**	mg/Kg	1	2.00

Sample: 106725 - HLSF-0085-SB-003 (49.5-50.0)

Analysis:	Total 8 Metals	Analytical Method:	S 7471A	Prep Method:	N/A
QC Batch:	31412	Date Analyzed:	2006-10-31	Analyzed By:	TP
Prep Batch:	27351	Sample Preparation:	2006-10-31	Prepared By:	TP
Analysis:	Total 8 Metals	Analytical Method:	S 6010B	Prep Method:	S 3050B
QC Batch:	32009	Date Analyzed:	2006-11-17	Analyzed By:	RR
Prep Batch:	27345	Sample Preparation:	2006-10-31	Prepared By:	TS

Parameter	Flag	RL Result	Units	Dilution	RL
Total Silver		<0.0500	mg/Kg	1	0.0500
Total Arsenic		<2.00	mg/Kg	1	2.00
Total Barium		**37.5**	mg/Kg	1	1.00

continued . . .

sample 106725 continued . . .

Parameter	Flag	RL Result	Units	Dilution	RL
Total Cadmium		<0.100	mg/Kg	1	0.100
Total Chromium		**1.51**	mg/Kg	1	0.500
Total Mercury		<0.0400	mg/Kg	1	0.0400
Total Lead		<1.00	mg/Kg	1	1.00
Total Selenium		**12.7**	mg/Kg	1	1.00

Sample: 106725 - HLSF-0085-SB-003 (49.5-50.0)

Analysis:	Zn, Total	Analytical Method:	S 6010B	Prep Method:	S 3050B
QC Batch:	32009	Date Analyzed:	2006-11-17	Analyzed By:	RR
Prep Batch:	27345	Sample Preparation:	2006-10-31	Prepared By:	TS

Parameter	Flag	RL Result	Units	Dilution	RL
Total Zinc		**19.6**	mg/Kg	1	2.00

Sample: 106730 - HLSF-0085-SB-006 (0.5-1.0)

Analysis:	Cu, Total	Analytical Method:	S 6010B	Prep Method:	S 3050B
QC Batch:	32009	Date Analyzed:	2006-11-17	Analyzed By:	RR
Prep Batch:	27345	Sample Preparation:	2006-10-31	Prepared By:	TS

Parameter	Flag	RL Result	Units	Dilution	RL
Total Copper		**1.16**	mg/Kg	1	0.500

Sample: 106730 - HLSF-0085-SB-006 (0.5-1.0)

Analysis:	K, Total	Analytical Method:	S 6010B	Prep Method:	S 3050B
QC Batch:	31781	Date Analyzed:	2006-11-10	Analyzed By:	TP
Prep Batch:	27345	Sample Preparation:	2006-10-31	Prepared By:	TS

Parameter	Flag	RL Result	Units	Dilution	RL
Total Potassium		**129**	mg/Kg	1	50.0

Sample: 106730 - HLSF-0085-SB-006 (0.5-1.0)

Analysis:	Na, Total	Analytical Method:	S 6010B	Prep Method:	S 3050B
QC Batch:	31781	Date Analyzed:	2006-11-10	Analyzed By:	TP
Prep Batch:	27345	Sample Preparation:	2006-10-31	Prepared By:	TS

continued . . .

sample 106730 continued . . .

Parameter	Flag	RL Result	Units	Dilution	RL

Parameter	Flag	RL Result	Units	Dilution	RL
Total Sodium		**219**	mg/Kg	1	50.0

Sample: 106730 - HLSF-0085-SB-006 (0.5-1.0)

Analysis:	P, Total	Analytical Method:	S 6010B	Prep Method:	S 3050B
QC Batch:	32009	Date Analyzed:	2006-11-17	Analyzed By:	RR
Prep Batch:	27345	Sample Preparation:	2006-10-31	Prepared By:	TS

Parameter	Flag	RL Result	Units	Dilution	RL
Total Phosphorous		**28.7**	mg/Kg	1	2.00

Sample: 106730 - HLSF-0085-SB-006 (0.5-1.0)

Analysis:	Total 8 Metals	Analytical Method:	S 7471A	Prep Method:	N/A
QC Batch:	31412	Date Analyzed:	2006-10-31	Analyzed By:	TP
Prep Batch:	27351	Sample Preparation:	2006-10-31	Prepared By:	TP
Analysis:	Total 8 Metals	Analytical Method:	S 6010B	Prep Method:	S 3050B
QC Batch:	32009	Date Analyzed:	2006-11-17	Analyzed By:	RR
Prep Batch:	27345	Sample Preparation:	2006-10-31	Prepared By:	TS

Parameter	Flag	RL Result	Units	Dilution	RL
Total Silver		<0.0500	mg/Kg	1	0.0500
Total Arsenic		<2.00	mg/Kg	1	2.00
Total Barium		**16.7**	mg/Kg	1	1.00
Total Cadmium		<0.100	mg/Kg	1	0.100
Total Chromium		<0.500	mg/Kg	1	0.500
Total Mercury		<0.0400	mg/Kg	1	0.0400
Total Lead		<1.00	mg/Kg	1	1.00
Total Selenium		<1.00	mg/Kg	1	1.00

Sample: 106730 - HLSF-0085-SB-006 (0.5-1.0)

Analysis:	Zn, Total	Analytical Method:	S 6010B	Prep Method:	S 3050B
QC Batch:	32009	Date Analyzed:	2006-11-17	Analyzed By:	RR
Prep Batch:	27345	Sample Preparation:	2006-10-31	Prepared By:	TS

Parameter	Flag	RL Result	Units	Dilution	RL
Total Zinc	*B*	<2.00	mg/Kg	1	2.00

Sample: 106731 - HLSF-0085-SB-006 (10.0-10.5)

Analysis:	Cu, Total	Analytical Method:	S 6010B	Prep Method:	S 3050B
QC Batch:	32009	Date Analyzed:	2006-11-17	Analyzed By:	RR
Prep Batch:	27345	Sample Preparation:	2006-10-31	Prepared By:	TS

Parameter	Flag	RL Result	Units	Dilution	RL
Total Copper		**0.692**	mg/Kg	1	0.500

Sample: 106731 - HLSF-0085-SB-006 (10.0-10.5)

Analysis:	K, Total	Analytical Method:	S 6010B	Prep Method:	S 3050B
QC Batch:	31781	Date Analyzed:	2006-11-10	Analyzed By:	TP
Prep Batch:	27345	Sample Preparation:	2006-10-31	Prepared By:	TS

Parameter	Flag	RL Result	Units	Dilution	RL
Total Potassium		**678**	mg/Kg	1	50.0

Sample: 106731 - HLSF-0085-SB-006 (10.0-10.5)

Analysis:	Na, Total	Analytical Method:	S 6010B	Prep Method:	S 3050B
QC Batch:	31781	Date Analyzed:	2006-11-10	Analyzed By:	TP
Prep Batch:	27345	Sample Preparation:	2006-10-31	Prepared By:	TS

Parameter	Flag	RL Result	Units	Dilution	RL
Total Sodium		**2090**	mg/Kg	1	50.0

Sample: 106731 - HLSF-0085-SB-006 (10.0-10.5)

Analysis:	P, Total	Analytical Method:	S 6010B	Prep Method:	S 3050B
QC Batch:	32009	Date Analyzed:	2006-11-17	Analyzed By:	RR
Prep Batch:	27345	Sample Preparation:	2006-10-31	Prepared By:	TS

Parameter	Flag	RL Result	Units	Dilution	RL
Total Phosphorous		**34.7**	mg/Kg	1	2.00

Sample: 106731 - HLSF-0085-SB-006 (10.0-10.5)

Analysis:	Total 8 Metals	Analytical Method:	S 7471A	Prep Method:	N/A
QC Batch:	31412	Date Analyzed:	2006-10-31	Analyzed By:	TP
Prep Batch:	27351	Sample Preparation:	2006-10-31	Prepared By:	TP
Analysis:	Total 8 Metals	Analytical Method:	S 6010B	Prep Method:	S 3050B
QC Batch:	32009	Date Analyzed:	2006-11-17	Analyzed By:	RR
Prep Batch:	27345	Sample Preparation:	2006-10-31	Prepared By:	TS

Parameter	Flag	RL Result	Units	Dilution	RL
Total Silver		<0.0500	mg/Kg	1	0.0500
Total Arsenic		<2.00	mg/Kg	1	2.00
Total Barium		**24.8**	mg/Kg	1	1.00
Total Cadmium		<0.100	mg/Kg	1	0.100
Total Chromium		<0.500	mg/Kg	1	0.500
Total Mercury		<0.0400	mg/Kg	1	0.0400
Total Lead		**2.11**	mg/Kg	1	1.00
Total Selenium		<1.00	mg/Kg	1	1.00

Sample: 106731 - HLSF-0085-SB-006 (10.0-10.5)

Analysis:	Zn, Total	Analytical Method:	S 6010B	Prep Method:	S 3050B
QC Batch:	32009	Date Analyzed:	2006-11-17	Analyzed By:	RR
Prep Batch:	27345	Sample Preparation:	2006-10-31	Prepared By:	TS

Parameter	Flag	RL Result	Units	Dilution	RL
Total Zinc	*B*	**3.55**	mg/Kg	1	2.00

Sample: 106732 - HLSF-0085-SB-006 (20.0-20.5)

Analysis:	Cu, Total	Analytical Method:	S 6010B	Prep Method:	S 3050B
QC Batch:	32009	Date Analyzed:	2006-11-17	Analyzed By:	RR
Prep Batch:	27345	Sample Preparation:	2006-10-31	Prepared By:	TS

Parameter	Flag	RL Result	Units	Dilution	RL
Total Copper		**5.36**	mg/Kg	1	0.500

Sample: 106732 - HLSF-0085-SB-006 (20.0-20.5)

Analysis:	K, Total	Analytical Method:	S 6010B	Prep Method:	S 3050B
QC Batch:	31781	Date Analyzed:	2006-11-10	Analyzed By:	TP
Prep Batch:	27345	Sample Preparation:	2006-10-31	Prepared By:	TS

Parameter	Flag	RL Result	Units	Dilution	RL
Total Potassium		**2600**	mg/Kg	1	50.0

Sample: 106732 - HLSF-0085-SB-006 (20.0-20.5)

Analysis:	Na, Total	Analytical Method:	S 6010B	Prep Method:	S 3050B
QC Batch:	31781	Date Analyzed:	2006-11-10	Analyzed By:	TP
Prep Batch:	27345	Sample Preparation:	2006-10-31	Prepared By:	TS

Parameter	Flag	RL Result	Units	Dilution	RL
Total Sodium		**2990**	mg/Kg	1	50.0

Sample: 106732 - HLSF-0085-SB-006 (20.0-20.5)

Analysis:	P, Total	Analytical Method:	S 6010B	Prep Method:	S 3050B
QC Batch:	32009	Date Analyzed:	2006-11-17	Analyzed By:	RR
Prep Batch:	27345	Sample Preparation:	2006-10-31	Prepared By:	TS

Parameter	Flag	RL Result	Units	Dilution	RL
Total Phosphorous		**140**	mg/Kg	1	2.00

Sample: 106732 - HLSF-0085-SB-006 (20.0-20.5)

Analysis:	Total 8 Metals	Analytical Method:	S 7471A	Prep Method:	N/A
QC Batch:	31412	Date Analyzed:	2006-10-31	Analyzed By:	TP
Prep Batch:	27351	Sample Preparation:	2006-10-31	Prepared By:	TP
Analysis:	Total 8 Metals	Analytical Method:	S 6010B	Prep Method:	S 3050B
QC Batch:	32009	Date Analyzed:	2006-11-17	Analyzed By:	RR
Prep Batch:	27345	Sample Preparation:	2006-10-31	Prepared By:	TS

Parameter	Flag	RL Result	Units	Dilution	RL
Total Silver		<0.0500	mg/Kg	1	0.0500
Total Arsenic		**7.74**	mg/Kg	1	2.00
Total Barium		**25.6**	mg/Kg	1	1.00
Total Cadmium		<0.100	mg/Kg	1	0.100
Total Chromium		**4.63**	mg/Kg	1	0.500
Total Mercury		<0.0400	mg/Kg	1	0.0400
Total Lead		**14.7**	mg/Kg	1	1.00
Total Selenium		<1.00	mg/Kg	1	1.00

Sample: 106732 - HLSF-0085-SB-006 (20.0-20.5)

Analysis:	Zn, Total	Analytical Method:	S 6010B	Prep Method:	S 3050B
QC Batch:	32009	Date Analyzed:	2006-11-17	Analyzed By:	RR
Prep Batch:	27345	Sample Preparation:	2006-10-31	Prepared By:	TS

Parameter	Flag	RL Result	Units	Dilution	RL
Total Zinc		**22.4**	mg/Kg	1	2.00

Sample: 106733 - HLSF-0085-SB-006 (30.0-30.5)

Analysis:	Cu, Total	Analytical Method:	S 6010B	Prep Method:	S 3050B
QC Batch:	32009	Date Analyzed:	2006-11-17	Analyzed By:	RR
Prep Batch:	27345	Sample Preparation:	2006-10-31	Prepared By:	TS

Parameter	Flag	RL Result	Units	Dilution	RL
Total Copper		**7.58**	mg/Kg	1	0.500

Sample: 106733 - HLSF-0085-SB-006 (30.0-30.5)

Analysis:	K, Total	Analytical Method:	S 6010B	Prep Method:	S 3050B
QC Batch:	31781	Date Analyzed:	2006-11-10	Analyzed By:	TP
Prep Batch:	27345	Sample Preparation:	2006-10-31	Prepared By:	TS

Parameter	Flag	RL Result	Units	Dilution	RL
Total Potassium		**2770**	mg/Kg	1	50.0

Sample: 106733 - HLSF-0085-SB-006 (30.0-30.5)

Analysis:	Na, Total	Analytical Method:	S 6010B	Prep Method:	S 3050B
QC Batch:	31781	Date Analyzed:	2006-11-10	Analyzed By:	TP
Prep Batch:	27345	Sample Preparation:	2006-10-31	Prepared By:	TS

Parameter	Flag	RL Result	Units	Dilution	RL
Total Sodium		**2250**	mg/Kg	1	50.0

Sample: 106733 - HLSF-0085-SB-006 (30.0-30.5)

Analysis:	P, Total	Analytical Method:	S 6010B	Prep Method:	S 3050B
QC Batch:	32009	Date Analyzed:	2006-11-17	Analyzed By:	RR
Prep Batch:	27345	Sample Preparation:	2006-10-31	Prepared By:	TS

Parameter	Flag	RL Result	Units	Dilution	RL
Total Phosphorous		**185**	mg/Kg	1	2.00

Sample: 106733 - HLSF-0085-SB-006 (30.0-30.5)

Analysis:	Total 8 Metals	Analytical Method:	S 7471A	Prep Method:	N/A
QC Batch:	31412	Date Analyzed:	2006-10-31	Analyzed By:	TP
Prep Batch:	27351	Sample Preparation:	2006-10-31	Prepared By:	TP
Analysis:	Total 8 Metals	Analytical Method:	S 6010B	Prep Method:	S 3050B
QC Batch:	32009	Date Analyzed:	2006-11-17	Analyzed By:	RR
Prep Batch:	27345	Sample Preparation:	2006-10-31	Prepared By:	TS

Parameter	Flag	RL Result	Units	Dilution	RL
Total Silver		<0.0500	mg/Kg	1	0.0500
Total Arsenic		**4.46**	mg/Kg	1	2.00
Total Barium		**45.2**	mg/Kg	1	1.00

continued . . .

sample 106733 continued . . .

Parameter	Flag	RL Result	Units	Dilution	RL
Total Cadmium		<0.100	mg/Kg	1	0.100
Total Chromium		**5.03**	mg/Kg	1	0.500
Total Mercury		<0.0400	mg/Kg	1	0.0400
Total Lead		**16.1**	mg/Kg	1	1.00
Total Selenium		<1.00	mg/Kg	1	1.00

Sample: 106733 - HLSF-0085-SB-006 (30.0-30.5)

Analysis:	Zn, Total	Analytical Method:	S 6010B	Prep Method:	S 3050B
QC Batch:	32009	Date Analyzed:	2006-11-17	Analyzed By:	RR
Prep Batch:	27345	Sample Preparation:	2006-10-31	Prepared By:	TS

Parameter	Flag	RL Result	Units	Dilution	RL
Total Zinc		**24.2**	mg/Kg	1	2.00

Sample: 106734 - HLSF-0085-SB-006 (40.0-40.5)

Analysis:	Cu, Total	Analytical Method:	S 6010B	Prep Method:	S 3050B
QC Batch:	32009	Date Analyzed:	2006-11-17	Analyzed By:	RR
Prep Batch:	27345	Sample Preparation:	2006-10-31	Prepared By:	TS

Parameter	Flag	RL Result	Units	Dilution	RL
Total Copper		**4.96**	mg/Kg	1	0.500

Sample: 106734 - HLSF-0085-SB-006 (40.0-40.5)

Analysis:	K, Total	Analytical Method:	S 6010B	Prep Method:	S 3050B
QC Batch:	31781	Date Analyzed:	2006-11-10	Analyzed By:	TP
Prep Batch:	27345	Sample Preparation:	2006-10-31	Prepared By:	TS

Parameter	Flag	RL Result	Units	Dilution	RL
Total Potassium		**2220**	mg/Kg	1	50.0

Sample: 106734 - HLSF-0085-SB-006 (40.0-40.5)

Analysis:	Na, Total	Analytical Method:	S 6010B	Prep Method:	S 3050B
QC Batch:	31781	Date Analyzed:	2006-11-10	Analyzed By:	TP
Prep Batch:	27345	Sample Preparation:	2006-10-31	Prepared By:	TS

continued . . .

sample 106734 continued . . .

Parameter	Flag	RL Result	Units	Dilution	RL

Parameter	Flag	RL Result	Units	Dilution	RL
Total Sodium		**1920**	mg/Kg	1	50.0

Sample: 106734 - HLSF-0085-SB-006 (40.0-40.5)

Analysis:	P, Total	Analytical Method:	S 6010B	Prep Method:	S 3050B
QC Batch:	32009	Date Analyzed:	2006-11-17	Analyzed By:	RR
Prep Batch:	27345	Sample Preparation:	2006-10-31	Prepared By:	TS

Parameter	Flag	RL Result	Units	Dilution	RL
Total Phosphorous		**132**	mg/Kg	1	2.00

Sample: 106734 - HLSF-0085-SB-006 (40.0-40.5)

Analysis:	Total 8 Metals	Analytical Method:	S 7471A	Prep Method:	N/A
QC Batch:	31412	Date Analyzed:	2006-10-31	Analyzed By:	TP
Prep Batch:	27351	Sample Preparation:	2006-10-31	Prepared By:	TP
Analysis:	Total 8 Metals	Analytical Method:	S 6010B	Prep Method:	S 3050B
QC Batch:	32009	Date Analyzed:	2006-11-17	Analyzed By:	RR
Prep Batch:	27345	Sample Preparation:	2006-10-31	Prepared By:	TS

Parameter	Flag	RL Result	Units	Dilution	RL
Total Silver		<0.0500	mg/Kg	1	0.0500
Total Arsenic		<2.00	mg/Kg	1	2.00
Total Barium		**8.15**	mg/Kg	1	1.00
Total Cadmium		<0.100	mg/Kg	1	0.100
Total Chromium		**3.82**	mg/Kg	1	0.500
Total Mercury		<0.0400	mg/Kg	1	0.0400
Total Lead		**11.9**	mg/Kg	1	1.00
Total Selenium		<1.00	mg/Kg	1	1.00

Sample: 106734 - HLSF-0085-SB-006 (40.0-40.5)

Analysis:	Zn, Total	Analytical Method:	S 6010B	Prep Method:	S 3050B
QC Batch:	32009	Date Analyzed:	2006-11-17	Analyzed By:	RR
Prep Batch:	27345	Sample Preparation:	2006-10-31	Prepared By:	TS

Parameter	Flag	RL Result	Units	Dilution	RL
Total Zinc		**19.4**	mg/Kg	1	2.00

Sample: 106735 - HLSF-0085-SB-006 (49.5-50.0)

Analysis:	Cu, Total	Analytical Method:	S 6010B	Prep Method:	S 3050B
QC Batch:	32009	Date Analyzed:	2006-11-17	Analyzed By:	RR
Prep Batch:	27345	Sample Preparation:	2006-10-31	Prepared By:	TS

Parameter	Flag	RL Result	Units	Dilution	RL
Total Copper		**4.79**	mg/Kg	1	0.500

Sample: 106735 - HLSF-0085-SB-006 (49.5-50.0)

Analysis:	K, Total	Analytical Method:	S 6010B	Prep Method:	S 3050B
QC Batch:	31781	Date Analyzed:	2006-11-10	Analyzed By:	TP
Prep Batch:	27345	Sample Preparation:	2006-10-31	Prepared By:	TS

Parameter	Flag	RL Result	Units	Dilution	RL
Total Potassium		**2100**	mg/Kg	1	50.0

Sample: 106735 - HLSF-0085-SB-006 (49.5-50.0)

Analysis:	Na, Total	Analytical Method:	S 6010B	Prep Method:	S 3050B
QC Batch:	31781	Date Analyzed:	2006-11-10	Analyzed By:	TP
Prep Batch:	27345	Sample Preparation:	2006-10-31	Prepared By:	TS

Parameter	Flag	RL Result	Units	Dilution	RL
Total Sodium		**1120**	mg/Kg	1	50.0

Sample: 106735 - HLSF-0085-SB-006 (49.5-50.0)

Analysis:	P, Total	Analytical Method:	S 6010B	Prep Method:	S 3050B
QC Batch:	32009	Date Analyzed:	2006-11-17	Analyzed By:	RR
Prep Batch:	27345	Sample Preparation:	2006-10-31	Prepared By:	TS

Parameter	Flag	RL Result	Units	Dilution	RL
Total Phosphorous		**130**	mg/Kg	1	2.00

Sample: 106735 - HLSF-0085-SB-006 (49.5-50.0)

Analysis:	Total 8 Metals	Analytical Method:	S 7471A	Prep Method:	N/A
QC Batch:	31412	Date Analyzed:	2006-10-31	Analyzed By:	TP
Prep Batch:	27351	Sample Preparation:	2006-10-31	Prepared By:	TP
Analysis:	Total 8 Metals	Analytical Method:	S 6010B	Prep Method:	S 3050B
QC Batch:	32009	Date Analyzed:	2006-11-17	Analyzed By:	RR
Prep Batch:	27345	Sample Preparation:	2006-10-31	Prepared By:	TS

Parameter	Flag	RL Result	Units	Dilution	RL
Total Silver		<0.0500	mg/Kg	1	0.0500
Total Arsenic		<2.00	mg/Kg	1	2.00
Total Barium		**78.9**	mg/Kg	1	1.00
Total Cadmium		<0.100	mg/Kg	1	0.100
Total Chromium		**2.38**	mg/Kg	1	0.500
Total Mercury		<0.0400	mg/Kg	1	0.0400
Total Lead		**9.34**	mg/Kg	1	1.00
Total Selenium		<1.00	mg/Kg	1	1.00

Sample: 106735 - HLSF-0085-SB-006 (49.5-50.0)

Analysis:	Zn, Total	Analytical Method:	S 6010B	Prep Method:	S 3050B
QC Batch:	32009	Date Analyzed:	2006-11-17	Analyzed By:	RR
Prep Batch:	27345	Sample Preparation:	2006-10-31	Prepared By:	TS

Parameter	Flag	RL Result	Units	Dilution	RL
Total Zinc	*B*	**15.4**	mg/Kg	1	2.00

Sample: 106736 - HLSF-0085-SB-005 (0.5-1.0)

Analysis:	Cu, Total	Analytical Method:	S 6010B	Prep Method:	S 3050B
QC Batch:	32009	Date Analyzed:	2006-11-17	Analyzed By:	RR
Prep Batch:	27345	Sample Preparation:	2006-10-31	Prepared By:	TS

Parameter	Flag	RL Result	Units	Dilution	RL
Total Copper		**0.877**	mg/Kg	1	0.500

Sample: 106736 - HLSF-0085-SB-005 (0.5-1.0)

Analysis:	K, Total	Analytical Method:	S 6010B	Prep Method:	S 3050B
QC Batch:	31781	Date Analyzed:	2006-11-10	Analyzed By:	TP
Prep Batch:	27345	Sample Preparation:	2006-10-31	Prepared By:	TS

Parameter	Flag	RL Result	Units	Dilution	RL
Total Potassium		**121**	mg/Kg	1	50.0

Sample: 106736 - HLSF-0085-SB-005 (0.5-1.0)

Analysis:	Na, Total	Analytical Method:	S 6010B	Prep Method:	S 3050B
QC Batch:	31781	Date Analyzed:	2006-11-10	Analyzed By:	TP
Prep Batch:	27345	Sample Preparation:	2006-10-31	Prepared By:	TS

Parameter	Flag	RL Result	Units	Dilution	RL
Total Sodium		**333**	mg/Kg	1	50.0

Sample: 106736 - HLSF-0085-SB-005 (0.5-1.0)

Analysis:	P, Total	Analytical Method:	S 6010B	Prep Method:	S 3050B
QC Batch:	32009	Date Analyzed:	2006-11-17	Analyzed By:	RR
Prep Batch:	27345	Sample Preparation:	2006-10-31	Prepared By:	TS

Parameter	Flag	RL Result	Units	Dilution	RL
Total Phosphorous		**24.1**	mg/Kg	1	2.00

Sample: 106736 - HLSF-0085-SB-005 (0.5-1.0)

Analysis:	Total 8 Metals	Analytical Method:	S 7471A	Prep Method:	N/A
QC Batch:	31412	Date Analyzed:	2006-10-31	Analyzed By:	TP
Prep Batch:	27351	Sample Preparation:	2006-10-31	Prepared By:	TP
Analysis:	Total 8 Metals	Analytical Method:	S 6010B	Prep Method:	S 3050B
QC Batch:	32009	Date Analyzed:	2006-11-17	Analyzed By:	RR
Prep Batch:	27345	Sample Preparation:	2006-10-31	Prepared By:	TS

Parameter	Flag	RL Result	Units	Dilution	RL
Total Silver		<0.0500	mg/Kg	1	0.0500
Total Arsenic		<2.00	mg/Kg	1	2.00
Total Barium		**9.75**	mg/Kg	1	1.00
Total Cadmium		<0.100	mg/Kg	1	0.100
Total Chromium		<0.500	mg/Kg	1	0.500
Total Mercury		<0.0400	mg/Kg	1	0.0400
Total Lead		<1.00	mg/Kg	1	1.00
Total Selenium		<1.00	mg/Kg	1	1.00

Sample: 106736 - HLSF-0085-SB-005 (0.5-1.0)

Analysis:	Zn, Total	Analytical Method:	S 6010B	Prep Method:	S 3050B
QC Batch:	32009	Date Analyzed:	2006-11-17	Analyzed By:	RR
Prep Batch:	27345	Sample Preparation:	2006-10-31	Prepared By:	TS

Parameter	Flag	RL Result	Units	Dilution	RL
Total Zinc	*B*	<2.00	mg/Kg	1	2.00

Sample: 106737 - HLSF-0085-SB-005 (10.0-10.5)

Analysis:	Cu, Total	Analytical Method:	S 6010B	Prep Method:	S 3050B
QC Batch:	32009	Date Analyzed:	2006-11-17	Analyzed By:	RR
Prep Batch:	27345	Sample Preparation:	2006-10-31	Prepared By:	TS

Parameter	Flag	RL Result	Units	Dilution	RL
Total Copper		**1.29**	mg/Kg	1	0.500

Sample: 106737 - HLSF-0085-SB-005 (10.0-10.5)

Analysis:	K, Total	Analytical Method:	S 6010B	Prep Method:	S 3050B
QC Batch:	31784	Date Analyzed:	2006-11-10	Analyzed By:	TP
Prep Batch:	27345	Sample Preparation:	2006-10-31	Prepared By:	TS

Parameter	Flag	RL Result	Units	Dilution	RL
Total Potassium		**419**	mg/Kg	1	50.0

Sample: 106737 - HLSF-0085-SB-005 (10.0-10.5)

Analysis:	Na, Total	Analytical Method:	S 6010B	Prep Method:	S 3050B
QC Batch:	31784	Date Analyzed:	2006-11-10	Analyzed By:	TP
Prep Batch:	27345	Sample Preparation:	2006-10-31	Prepared By:	TS

Parameter	Flag	RL Result	Units	Dilution	RL
Total Sodium		**1880**	mg/Kg	1	50.0

Sample: 106737 - HLSF-0085-SB-005 (10.0-10.5)

Analysis:	P, Total	Analytical Method:	S 6010B	Prep Method:	S 3050B
QC Batch:	32009	Date Analyzed:	2006-11-17	Analyzed By:	RR
Prep Batch:	27345	Sample Preparation:	2006-10-31	Prepared By:	TS

Parameter	Flag	RL Result	Units	Dilution	RL
Total Phosphorous		**47.6**	mg/Kg	1	2.00

Sample: 106737 - HLSF-0085-SB-005 (10.0-10.5)

Analysis:	Total 8 Metals	Analytical Method:	S 7471A	Prep Method:	N/A
QC Batch:	31438	Date Analyzed:	2006-11-01	Analyzed By:	TP
Prep Batch:	27375	Sample Preparation:	2006-11-01	Prepared By:	TP
Analysis:	Total 8 Metals	Analytical Method:	S 6010B	Prep Method:	S 3050B
QC Batch:	32009	Date Analyzed:	2006-11-17	Analyzed By:	RR
Prep Batch:	27345	Sample Preparation:	2006-10-31	Prepared By:	TS

Parameter	Flag	RL Result	Units	Dilution	RL
Total Silver		<0.0500	mg/Kg	1	0.0500
Total Arsenic		<2.00	mg/Kg	1	2.00
Total Barium		**26.8**	mg/Kg	1	1.00

continued . . .

sample 106737 continued . . .

Parameter	Flag	RL Result	Units	Dilution	RL
Total Cadmium		<0.100	mg/Kg	1	0.100
Total Chromium		**2.18**	mg/Kg	1	0.500
Total Mercury		<0.0400	mg/Kg	1	0.0400
Total Lead		**1.62**	mg/Kg	1	1.00
Total Selenium		<1.00	mg/Kg	1	1.00

Sample: 106737 - HLSF-0085-SB-005 (10.0-10.5)

Analysis:	Zn, Total	Analytical Method:	S 6010B	Prep Method:	S 3050B
QC Batch:	32009	Date Analyzed:	2006-11-17	Analyzed By:	RR
Prep Batch:	27345	Sample Preparation:	2006-10-31	Prepared By:	TS

Parameter	Flag	RL Result	Units	Dilution	RL
Total Zinc	*B*	**2.79**	mg/Kg	1	2.00

Sample: 106738 - HLSF-0085-SB-005 (20.0-20.5)

Analysis:	Cu, Total	Analytical Method:	S 6010B	Prep Method:	S 3050B
QC Batch:	32009	Date Analyzed:	2006-11-17	Analyzed By:	RR
Prep Batch:	27345	Sample Preparation:	2006-10-31	Prepared By:	TS

Parameter	Flag	RL Result	Units	Dilution	RL
Total Copper		**3.78**	mg/Kg	1	0.500

Sample: 106738 - HLSF-0085-SB-005 (20.0-20.5)

Analysis:	K, Total	Analytical Method:	S 6010B	Prep Method:	S 3050B
QC Batch:	31784	Date Analyzed:	2006-11-10	Analyzed By:	TP
Prep Batch:	27345	Sample Preparation:	2006-10-31	Prepared By:	TS

Parameter	Flag	RL Result	Units	Dilution	RL
Total Potassium		**1870**	mg/Kg	1	50.0

Sample: 106738 - HLSF-0085-SB-005 (20.0-20.5)

Analysis:	Na, Total	Analytical Method:	S 6010B	Prep Method:	S 3050B
QC Batch:	31784	Date Analyzed:	2006-11-10	Analyzed By:	TP
Prep Batch:	27345	Sample Preparation:	2006-10-31	Prepared By:	TS

continued . . .

sample 106738 continued . . .

Parameter	Flag	RL Result	Units	Dilution	RL

Parameter	Flag	RL Result	Units	Dilution	RL
Total Sodium		**1700**	mg/Kg	1	50.0

Sample: 106738 - HLSF-0085-SB-005 (20.0-20.5)

Analysis:	P, Total	Analytical Method:	S 6010B	Prep Method:	S 3050B
QC Batch:	32009	Date Analyzed:	2006-11-17	Analyzed By:	RR
Prep Batch:	27345	Sample Preparation:	2006-10-31	Prepared By:	TS

Parameter	Flag	RL Result	Units	Dilution	RL
Total Phosphorous		**96.6**	mg/Kg	1	2.00

Sample: 106738 - HLSF-0085-SB-005 (20.0-20.5)

Analysis:	Total 8 Metals	Analytical Method:	S 7471A	Prep Method:	N/A
QC Batch:	31438	Date Analyzed:	2006-11-01	Analyzed By:	TP
Prep Batch:	27375	Sample Preparation:	2006-11-01	Prepared By:	TP
Analysis:	Total 8 Metals	Analytical Method:	S 6010B	Prep Method:	S 3050B
QC Batch:	32009	Date Analyzed:	2006-11-17	Analyzed By:	RR
Prep Batch:	27345	Sample Preparation:	2006-10-31	Prepared By:	TS

Parameter	Flag	RL Result	Units	Dilution	RL
Total Silver		<0.0500	mg/Kg	1	0.0500
Total Arsenic		<2.00	mg/Kg	1	2.00
Total Barium		**45.8**	mg/Kg	1	1.00
Total Cadmium		<0.100	mg/Kg	1	0.100
Total Chromium		**6.66**	mg/Kg	1	0.500
Total Mercury		<0.0400	mg/Kg	1	0.0400
Total Lead		**13.2**	mg/Kg	1	1.00
Total Selenium		<1.00	mg/Kg	1	1.00

Sample: 106738 - HLSF-0085-SB-005 (20.0-20.5)

Analysis:	Zn, Total	Analytical Method:	S 6010B	Prep Method:	S 3050B
QC Batch:	32009	Date Analyzed:	2006-11-17	Analyzed By:	RR
Prep Batch:	27345	Sample Preparation:	2006-10-31	Prepared By:	TS

Parameter	Flag	RL Result	Units	Dilution	RL
Total Zinc	*B*	**15.2**	mg/Kg	1	2.00

Sample: 106739 - HLSF-0085-SB-005 (30.0-30.5)

Analysis:	Cu, Total	Analytical Method:	S 6010B	Prep Method:	S 3050B
QC Batch:	32009	Date Analyzed:	2006-11-17	Analyzed By:	RR
Prep Batch:	27345	Sample Preparation:	2006-10-31	Prepared By:	TS

Parameter	Flag	RL Result	Units	Dilution	RL
Total Copper		**8.92**	mg/Kg	1	0.500

Sample: 106739 - HLSF-0085-SB-005 (30.0-30.5)

Analysis:	K, Total	Analytical Method:	S 6010B	Prep Method:	S 3050B
QC Batch:	31784	Date Analyzed:	2006-11-10	Analyzed By:	TP
Prep Batch:	27345	Sample Preparation:	2006-10-31	Prepared By:	TS

Parameter	Flag	RL Result	Units	Dilution	RL
Total Potassium		**2350**	mg/Kg	1	50.0

Sample: 106739 - HLSF-0085-SB-005 (30.0-30.5)

Analysis:	Na, Total	Analytical Method:	S 6010B	Prep Method:	S 3050B
QC Batch:	31784	Date Analyzed:	2006-11-10	Analyzed By:	TP
Prep Batch:	27345	Sample Preparation:	2006-10-31	Prepared By:	TS

Parameter	Flag	RL Result	Units	Dilution	RL
Total Sodium		**2550**	mg/Kg	1	50.0

Sample: 106739 - HLSF-0085-SB-005 (30.0-30.5)

Analysis:	P, Total	Analytical Method:	S 6010B	Prep Method:	S 3050B
QC Batch:	32009	Date Analyzed:	2006-11-17	Analyzed By:	RR
Prep Batch:	27345	Sample Preparation:	2006-10-31	Prepared By:	TS

Parameter	Flag	RL Result	Units	Dilution	RL
Total Phosphorous		**268**	mg/Kg	1	2.00

Sample: 106739 - HLSF-0085-SB-005 (30.0-30.5)

Analysis:	Total 8 Metals	Analytical Method:	S 7471A	Prep Method:	N/A
QC Batch:	31438	Date Analyzed:	2006-11-01	Analyzed By:	TP
Prep Batch:	27375	Sample Preparation:	2006-11-01	Prepared By:	TP
Analysis:	Total 8 Metals	Analytical Method:	S 6010B	Prep Method:	S 3050B
QC Batch:	32009	Date Analyzed:	2006-11-17	Analyzed By:	RR
Prep Batch:	27345	Sample Preparation:	2006-10-31	Prepared By:	TS

Parameter	Flag	RL Result	Units	Dilution	RL
Total Silver		<0.0500	mg/Kg	1	0.0500
Total Arsenic		<2.00	mg/Kg	1	2.00
Total Barium		**67.3**	mg/Kg	1	1.00
Total Cadmium		<0.100	mg/Kg	1	0.100
Total Chromium		**8.85**	mg/Kg	1	0.500
Total Mercury		<0.0400	mg/Kg	1	0.0400
Total Lead		**15.7**	mg/Kg	1	1.00
Total Selenium		<1.00	mg/Kg	1	1.00

Sample: 106739 - HLSF-0085-SB-005 (30.0-30.5)

Analysis:	Zn, Total	Analytical Method:	S 6010B	Prep Method:	S 3050B
QC Batch:	32009	Date Analyzed:	2006-11-17	Analyzed By:	RR
Prep Batch:	27345	Sample Preparation:	2006-10-31	Prepared By:	TS

Parameter	Flag	RL Result	Units	Dilution	RL
Total Zinc		**29.7**	mg/Kg	1	2.00

Sample: 106740 - HLSF-0085-SB-005 (40.0-40.5)

Analysis:	Cu, Total	Analytical Method:	S 6010B	Prep Method:	S 3050B
QC Batch:	32009	Date Analyzed:	2006-11-17	Analyzed By:	RR
Prep Batch:	27345	Sample Preparation:	2006-10-31	Prepared By:	TS

Parameter	Flag	RL Result	Units	Dilution	RL
Total Copper		**4.04**	mg/Kg	1	0.500

Sample: 106740 - HLSF-0085-SB-005 (40.0-40.5)

Analysis:	K, Total	Analytical Method:	S 6010B	Prep Method:	S 3050B
QC Batch:	31784	Date Analyzed:	2006-11-10	Analyzed By:	TP
Prep Batch:	27345	Sample Preparation:	2006-10-31	Prepared By:	TS

Parameter	Flag	RL Result	Units	Dilution	RL
Total Potassium		**1340**	mg/Kg	1	50.0

Sample: 106740 - HLSF-0085-SB-005 (40.0-40.5)

Analysis:	Na, Total	Analytical Method:	S 6010B	Prep Method:	S 3050B
QC Batch:	31784	Date Analyzed:	2006-11-10	Analyzed By:	TP
Prep Batch:	27345	Sample Preparation:	2006-10-31	Prepared By:	TS

Parameter	Flag	RL Result	Units	Dilution	RL
Total Sodium		**1070**	mg/Kg	1	50.0

Sample: 106740 - HLSF-0085-SB-005 (40.0-40.5)

Analysis:	P, Total	Analytical Method:	S 6010B	Prep Method:	S 3050B
QC Batch:	32009	Date Analyzed:	2006-11-17	Analyzed By:	RR
Prep Batch:	27345	Sample Preparation:	2006-10-31	Prepared By:	TS

Parameter	Flag	RL Result	Units	Dilution	RL
Total Phosphorous		**166**	mg/Kg	1	2.00

Sample: 106740 - HLSF-0085-SB-005 (40.0-40.5)

Analysis:	Total 8 Metals	Analytical Method:	S 7471A	Prep Method:	N/A
QC Batch:	31438	Date Analyzed:	2006-11-01	Analyzed By:	TP
Prep Batch:	27375	Sample Preparation:	2006-11-01	Prepared By:	TP
Analysis:	Total 8 Metals	Analytical Method:	S 6010B	Prep Method:	S 3050B
QC Batch:	32009	Date Analyzed:	2006-11-17	Analyzed By:	RR
Prep Batch:	27345	Sample Preparation:	2006-10-31	Prepared By:	TS

Parameter	Flag	RL Result	Units	Dilution	RL
Total Silver		<0.0500	mg/Kg	1	0.0500
Total Arsenic		**2.60**	mg/Kg	1	2.00
Total Barium		**66.1**	mg/Kg	1	1.00
Total Cadmium		**0.228**	mg/Kg	1	0.100
Total Chromium		**5.11**	mg/Kg	1	0.500
Total Mercury		<0.0400	mg/Kg	1	0.0400
Total Lead		**10.8**	mg/Kg	1	1.00
Total Selenium		<1.00	mg/Kg	1	1.00

Sample: 106740 - HLSF-0085-SB-005 (40.0-40.5)

Analysis:	Zn, Total	Analytical Method:	S 6010B	Prep Method:	S 3050B
QC Batch:	32009	Date Analyzed:	2006-11-17	Analyzed By:	RR
Prep Batch:	27345	Sample Preparation:	2006-10-31	Prepared By:	TS

Parameter	Flag	RL Result	Units	Dilution	RL
Total Zinc	*B*	**14.8**	mg/Kg	1	2.00

Sample: 106741 - HLSF-0085-SB-005 (49.5-50.0)

Analysis:	Cu, Total	Analytical Method:	S 6010B	Prep Method:	S 3050B
QC Batch:	32009	Date Analyzed:	2006-11-17	Analyzed By:	RR
Prep Batch:	27345	Sample Preparation:	2006-10-31	Prepared By:	TS

Parameter	Flag	RL Result	Units	Dilution	RL
Total Copper		**14.0**	mg/Kg	1	0.500

Sample: 106741 - HLSF-0085-SB-005 (49.5-50.0)

Analysis:	K, Total	Analytical Method:	S 6010B	Prep Method:	S 3050B
QC Batch:	31784	Date Analyzed:	2006-11-10	Analyzed By:	TP
Prep Batch:	27345	Sample Preparation:	2006-10-31	Prepared By:	TS

Parameter	Flag	RL Result	Units	Dilution	RL
Total Potassium		**3030**	mg/Kg	1	50.0

Sample: 106741 - HLSF-0085-SB-005 (49.5-50.0)

Analysis:	Na, Total	Analytical Method:	S 6010B	Prep Method:	S 3050B
QC Batch:	31784	Date Analyzed:	2006-11-10	Analyzed By:	TP
Prep Batch:	27345	Sample Preparation:	2006-10-31	Prepared By:	TS

Parameter	Flag	RL Result	Units	Dilution	RL
Total Sodium		**3080**	mg/Kg	1	50.0

Sample: 106741 - HLSF-0085-SB-005 (49.5-50.0)

Analysis:	P, Total	Analytical Method:	S 6010B	Prep Method:	S 3050B
QC Batch:	32009	Date Analyzed:	2006-11-17	Analyzed By:	RR
Prep Batch:	27345	Sample Preparation:	2006-10-31	Prepared By:	TS

Parameter	Flag	RL Result	Units	Dilution	RL
Total Phosphorous		**380**	mg/Kg	1	2.00

Sample: 106741 - HLSF-0085-SB-005 (49.5-50.0)

Analysis:	Total 8 Metals	Analytical Method:	S 7471A	Prep Method:	N/A
QC Batch:	31438	Date Analyzed:	2006-11-01	Analyzed By:	TP
Prep Batch:	27375	Sample Preparation:	2006-11-01	Prepared By:	TP
Analysis:	Total 8 Metals	Analytical Method:	S 6010B	Prep Method:	S 3050B
QC Batch:	32009	Date Analyzed:	2006-11-17	Analyzed By:	RR
Prep Batch:	27345	Sample Preparation:	2006-10-31	Prepared By:	TS

Parameter	Flag	RL Result	Units	Dilution	RL
Total Silver		<0.0500	mg/Kg	1	0.0500
Total Arsenic		<2.00	mg/Kg	1	2.00
Total Barium		**51.5**	mg/Kg	1	1.00

continued . . .

sample 106741 continued . . .

Parameter	Flag	RL Result	Units	Dilution	RL
Total Cadmium		<0.100	mg/Kg	1	0.100
Total Chromium		**13.2**	mg/Kg	1	0.500
Total Mercury		<0.0400	mg/Kg	1	0.0400
Total Lead		**24.1**	mg/Kg	1	1.00
Total Selenium		<1.00	mg/Kg	1	1.00

Sample: 106741 - HLSF-0085-SB-005 (49.5-50.0)

Analysis:	Zn, Total	Analytical Method:	S 6010B	Prep Method:	S 3050B
QC Batch:	32009	Date Analyzed:	2006-11-17	Analyzed By:	RR
Prep Batch:	27345	Sample Preparation:	2006-10-31	Prepared By:	TS

Parameter	Flag	RL Result	Units	Dilution	RL
Total Zinc		**50.2**	mg/Kg	1	2.00

Sample: 107951 - HLSF-0085-SB-001 (0.5’-1.0)

Analysis:	Cu, Total	Analytical Method:	S 6010B	Prep Method:	S 3050B
QC Batch:	31838	Date Analyzed:	2006-11-13	Analyzed By:	RR
Prep Batch:	27715	Sample Preparation:	2006-11-13	Prepared By:	TS

Parameter	Flag	RL Result	Units	Dilution	RL
Total Copper		<0.500	mg/Kg	1	0.500

Sample: 107951 - HLSF-0085-SB-001 (0.5’-1.0)

Analysis:	K, Total	Analytical Method:	S 6010B	Prep Method:	S 3050B
QC Batch:	31927	Date Analyzed:	2006-11-14	Analyzed By:	TP
Prep Batch:	27715	Sample Preparation:	2006-11-13	Prepared By:	TS

Parameter	Flag	RL Result	Units	Dilution	RL
Total Potassium		**325**	mg/Kg	1	50.0

Sample: 107951 - HLSF-0085-SB-001 (0.5’-1.0)

Analysis:	Na, Total	Analytical Method:	S 6010B	Prep Method:	S 3050B
QC Batch:	31927	Date Analyzed:	2006-11-14	Analyzed By:	TP
Prep Batch:	27715	Sample Preparation:	2006-11-13	Prepared By:	TS

continued . . .

sample 107951 continued . . .

Parameter	Flag	RL Result	Units	Dilution	RL

Parameter	Flag	RL Result	Units	Dilution	RL
Total Sodium		**243**	mg/Kg	1	50.0

Sample: 107951 - HLSF-0085-SB-001 (0.5'-1.0)

Analysis:	P, Total	Analytical Method:	S 6010B	Prep Method:	S 3050B
QC Batch:	31838	Date Analyzed:	2006-11-13	Analyzed By:	RR
Prep Batch:	27715	Sample Preparation:	2006-11-13	Prepared By:	TS

Parameter	Flag	RL Result	Units	Dilution	RL
Total Phosphorous		**49.7**	mg/Kg	1	2.00

Sample: 107951 - HLSF-0085-SB-001 (0.5'-1.0)

Analysis:	Total 8 Metals	Analytical Method:	S 7471A	Prep Method:	N/A
QC Batch:	31736	Date Analyzed:	2006-11-09	Analyzed By:	TP
Prep Batch:	27636	Sample Preparation:	2006-11-09	Prepared By:	TP
Analysis:	Total 8 Metals	Analytical Method:	S 6010B	Prep Method:	S 3050B
QC Batch:	31838	Date Analyzed:	2006-11-13	Analyzed By:	RR
Prep Batch:	27715	Sample Preparation:	2006-11-13	Prepared By:	TS

Parameter	Flag	RL Result	Units	Dilution	RL
Total Silver		<0.0500	mg/Kg	1	0.0500
Total Arsenic		<2.00	mg/Kg	1	2.00
Total Barium		**21.4**	mg/Kg	1	1.00
Total Cadmium		<0.100	mg/Kg	1	0.100
Total Chromium		<0.500	mg/Kg	1	0.500
Total Mercury		<0.0400	mg/Kg	1	0.0400
Total Lead		<1.00	mg/Kg	1	1.00
Total Selenium		<1.00	mg/Kg	1	1.00

Sample: 107951 - HLSF-0085-SB-001 (0.5'-1.0)

Analysis:	Zn, Total	Analytical Method:	S 6010B	Prep Method:	S 3050B
QC Batch:	31838	Date Analyzed:	2006-11-13	Analyzed By:	RR
Prep Batch:	27715	Sample Preparation:	2006-11-13	Prepared By:	TS

Parameter	Flag	RL Result	Units	Dilution	RL
Total Zinc	*B*	**3.17**	mg/Kg	1	2.00

Sample: 107952 - HLSF-0085-SB-001 (10.0-10.5')

Analysis:	Cu, Total	Analytical Method:	S 6010B	Prep Method:	S 3050B
QC Batch:	31838	Date Analyzed:	2006-11-13	Analyzed By:	RR
Prep Batch:	27715	Sample Preparation:	2006-11-13	Prepared By:	TS

Parameter	Flag	RL Result	Units	Dilution	RL
Total Copper		**6.41**	mg/Kg	1	0.500

Sample: 107952 - HLSF-0085-SB-001 (10.0-10.5')

Analysis:	K, Total	Analytical Method:	S 6010B	Prep Method:	S 3050B
QC Batch:	31927	Date Analyzed:	2006-11-14	Analyzed By:	TP
Prep Batch:	27715	Sample Preparation:	2006-11-13	Prepared By:	TS

Parameter	Flag	RL Result	Units	Dilution	RL
Total Potassium		**2180**	mg/Kg	1	50.0

Sample: 107952 - HLSF-0085-SB-001 (10.0-10.5')

Analysis:	Na, Total	Analytical Method:	S 6010B	Prep Method:	S 3050B
QC Batch:	31927	Date Analyzed:	2006-11-14	Analyzed By:	TP
Prep Batch:	27715	Sample Preparation:	2006-11-13	Prepared By:	TS

Parameter	Flag	RL Result	Units	Dilution	RL
Total Sodium		**2070**	mg/Kg	1	50.0

Sample: 107952 - HLSF-0085-SB-001 (10.0-10.5')

Analysis:	P, Total	Analytical Method:	S 6010B	Prep Method:	S 3050B
QC Batch:	31838	Date Analyzed:	2006-11-13	Analyzed By:	RR
Prep Batch:	27715	Sample Preparation:	2006-11-13	Prepared By:	TS

Parameter	Flag	RL Result	Units	Dilution	RL
Total Phosphorous		**92.2**	mg/Kg	1	2.00

Sample: 107952 - HLSF-0085-SB-001 (10.0-10.5')

Analysis:	Total 8 Metals	Analytical Method:	S 7471A	Prep Method:	N/A
QC Batch:	31736	Date Analyzed:	2006-11-09	Analyzed By:	TP
Prep Batch:	27636	Sample Preparation:	2006-11-09	Prepared By:	TP
Analysis:	Total 8 Metals	Analytical Method:	S 6010B	Prep Method:	S 3050B
QC Batch:	31838	Date Analyzed:	2006-11-13	Analyzed By:	RR
Prep Batch:	27715	Sample Preparation:	2006-11-13	Prepared By:	TS

Parameter	Flag	RL Result	Units	Dilution	RL
Total Silver		<0.0500	mg/Kg	1	0.0500
Total Arsenic		**6.58**	mg/Kg	1	2.00
Total Barium		**94.5**	mg/Kg	1	1.00
Total Cadmium		<0.100	mg/Kg	1	0.100
Total Chromium		**7.22**	mg/Kg	1	0.500
Total Mercury		<0.0400	mg/Kg	1	0.0400
Total Lead		**12.8**	mg/Kg	1	1.00
Total Selenium		<1.00	mg/Kg	1	1.00

Sample: 107952 - HLSF-0085-SB-001 (10.0-10.5')

Analysis:	Zn, Total	Analytical Method:	S 6010B	Prep Method:	S 3050B
QC Batch:	31838	Date Analyzed:	2006-11-13	Analyzed By:	RR
Prep Batch:	27715	Sample Preparation:	2006-11-13	Prepared By:	TS

Parameter	Flag	RL Result	Units	Dilution	RL
Total Zinc		**17.4**	mg/Kg	1	2.00

Sample: 107953 - HLSF-0085-SB-001 (20.0-20.5')

Analysis:	Cu, Total	Analytical Method:	S 6010B	Prep Method:	S 3050B
QC Batch:	31838	Date Analyzed:	2006-11-13	Analyzed By:	RR
Prep Batch:	27715	Sample Preparation:	2006-11-13	Prepared By:	TS

Parameter	Flag	RL Result	Units	Dilution	RL
Total Copper		**9.33**	mg/Kg	1	0.500

Sample: 107953 - HLSF-0085-SB-001 (20.0-20.5')

Analysis:	K, Total	Analytical Method:	S 6010B	Prep Method:	S 3050B
QC Batch:	31927	Date Analyzed:	2006-11-14	Analyzed By:	TP
Prep Batch:	27715	Sample Preparation:	2006-11-13	Prepared By:	TS

Parameter	Flag	RL Result	Units	Dilution	RL
Total Potassium		**2080**	mg/Kg	1	50.0

Sample: 107953 - HLSF-0085-SB-001 (20.0-20.5')

Analysis:	Na, Total	Analytical Method:	S 6010B	Prep Method:	S 3050B
QC Batch:	31927	Date Analyzed:	2006-11-14	Analyzed By:	TP
Prep Batch:	27715	Sample Preparation:	2006-11-13	Prepared By:	TS

Parameter	Flag	RL Result	Units	Dilution	RL
Total Sodium		**2840**	mg/Kg	1	50.0

Sample: 107953 - HLSF-0085-SB-001 (20.0-20.5')

Analysis:	P, Total	Analytical Method:	S 6010B	Prep Method:	S 3050B
QC Batch:	31838	Date Analyzed:	2006-11-13	Analyzed By:	RR
Prep Batch:	27715	Sample Preparation:	2006-11-13	Prepared By:	TS

Parameter	Flag	RL Result	Units	Dilution	RL
Total Phosphorous		**179**	mg/Kg	1	2.00

Sample: 107953 - HLSF-0085-SB-001 (20.0-20.5')

Analysis:	Total 8 Metals	Analytical Method:	S 7471A	Prep Method:	N/A
QC Batch:	31736	Date Analyzed:	2006-11-09	Analyzed By:	TP
Prep Batch:	27636	Sample Preparation:	2006-11-09	Prepared By:	TP
Analysis:	Total 8 Metals	Analytical Method:	S 6010B	Prep Method:	S 3050B
QC Batch:	31838	Date Analyzed:	2006-11-13	Analyzed By:	RR
Prep Batch:	27715	Sample Preparation:	2006-11-13	Prepared By:	TS

Parameter	Flag	RL Result	Units	Dilution	RL
Total Silver		<0.0500	mg/Kg	1	0.0500
Total Arsenic		**3.59**	mg/Kg	1	2.00
Total Barium		**31.4**	mg/Kg	1	1.00
Total Cadmium		<0.100	mg/Kg	1	0.100
Total Chromium		**7.20**	mg/Kg	1	0.500
Total Mercury		<0.0400	mg/Kg	1	0.0400
Total Lead		**24.9**	mg/Kg	1	1.00
Total Selenium		<1.00	mg/Kg	1	1.00

Sample: 107953 - HLSF-0085-SB-001 (20.0-20.5')

Analysis:	Zn, Total	Analytical Method:	S 6010B	Prep Method:	S 3050B
QC Batch:	31838	Date Analyzed:	2006-11-13	Analyzed By:	RR
Prep Batch:	27715	Sample Preparation:	2006-11-13	Prepared By:	TS

Parameter	Flag	RL Result	Units	Dilution	RL
Total Zinc		**23.2**	mg/Kg	1	2.00

Sample: 107954 - HLSF-0085-SB-001 (30.0-30.5')

Analysis:	Cu, Total	Analytical Method:	S 6010B	Prep Method:	S 3050B
QC Batch:	31838	Date Analyzed:	2006-11-13	Analyzed By:	RR
Prep Batch:	27715	Sample Preparation:	2006-11-13	Prepared By:	TS

Parameter	Flag	RL Result	Units	Dilution	RL
Total Copper		**5.93**	mg/Kg	1	0.500

Sample: 107954 - HLSF-0085-SB-001 (30.0-30.5')

Analysis:	K, Total	Analytical Method:	S 6010B	Prep Method:	S 3050B
QC Batch:	31927	Date Analyzed:	2006-11-14	Analyzed By:	TP
Prep Batch:	27715	Sample Preparation:	2006-11-13	Prepared By:	TS

Parameter	Flag	RL Result	Units	Dilution	RL
Total Potassium		**1630**	mg/Kg	1	50.0

Sample: 107954 - HLSF-0085-SB-001 (30.0-30.5')

Analysis:	Na, Total	Analytical Method:	S 6010B	Prep Method:	S 3050B
QC Batch:	31927	Date Analyzed:	2006-11-14	Analyzed By:	TP
Prep Batch:	27715	Sample Preparation:	2006-11-13	Prepared By:	TS

Parameter	Flag	RL Result	Units	Dilution	RL
Total Sodium		**2040**	mg/Kg	1	50.0

Sample: 107954 - HLSF-0085-SB-001 (30.0-30.5')

Analysis:	P, Total	Analytical Method:	S 6010B	Prep Method:	S 3050B
QC Batch:	31838	Date Analyzed:	2006-11-13	Analyzed By:	RR
Prep Batch:	27715	Sample Preparation:	2006-11-13	Prepared By:	TS

Parameter	Flag	RL Result	Units	Dilution	RL
Total Phosphorous		**287**	mg/Kg	1	2.00

Sample: 107954 - HLSF-0085-SB-001 (30.0-30.5')

Analysis:	Total 8 Metals	Analytical Method:	S 7471A	Prep Method:	N/A
QC Batch:	31736	Date Analyzed:	2006-11-09	Analyzed By:	TP
Prep Batch:	27636	Sample Preparation:	2006-11-09	Prepared By:	TP
Analysis:	Total 8 Metals	Analytical Method:	S 6010B	Prep Method:	S 3050B
QC Batch:	31838	Date Analyzed:	2006-11-13	Analyzed By:	RR
Prep Batch:	27715	Sample Preparation:	2006-11-13	Prepared By:	TS

Parameter	Flag	RL Result	Units	Dilution	RL
Total Silver		<0.0500	mg/Kg	1	0.0500
Total Arsenic		**2.53**	mg/Kg	1	2.00
Total Barium		**91.5**	mg/Kg	1	1.00

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sample 107954 continued . . .

Parameter	Flag	RL Result	Units	Dilution	RL
Total Cadmium		<0.100	mg/Kg	1	0.100
Total Chromium		**6.72**	mg/Kg	1	0.500
Total Mercury		<0.0400	mg/Kg	1	0.0400
Total Lead		**13.5**	mg/Kg	1	1.00
Total Selenium		<1.00	mg/Kg	1	1.00

Sample: 107954 - HLSF-0085-SB-001 (30.0-30.5')

Analysis:	Zn, Total	Analytical Method:	S 6010B	Prep Method:	S 3050B
QC Batch:	31838	Date Analyzed:	2006-11-13	Analyzed By:	RR
Prep Batch:	27715	Sample Preparation:	2006-11-13	Prepared By:	TS

Parameter	Flag	RL Result	Units	Dilution	RL
Total Zinc		**22.4**	mg/Kg	1	2.00

Sample: 107955 - HLSF-0085-SB-001 (30.0'-30.5')

Analysis:	Cu, Total	Analytical Method:	S 6010B	Prep Method:	S 3050B
QC Batch:	31838	Date Analyzed:	2006-11-13	Analyzed By:	RR
Prep Batch:	27715	Sample Preparation:	2006-11-13	Prepared By:	TS

Parameter	Flag	RL Result	Units	Dilution	RL
Total Copper		**5.29**	mg/Kg	1	0.500

Sample: 107955 - HLSF-0085-SB-001 (30.0'-30.5')

Analysis:	K, Total	Analytical Method:	S 6010B	Prep Method:	S 3050B
QC Batch:	31927	Date Analyzed:	2006-11-14	Analyzed By:	TP
Prep Batch:	27715	Sample Preparation:	2006-11-13	Prepared By:	TS

Parameter	Flag	RL Result	Units	Dilution	RL
Total Potassium		**1640**	mg/Kg	1	50.0

Sample: 107955 - HLSF-0085-SB-001 (30.0'-30.5')

Analysis:	Na, Total	Analytical Method:	S 6010B	Prep Method:	S 3050B
QC Batch:	31927	Date Analyzed:	2006-11-14	Analyzed By:	TP
Prep Batch:	27715	Sample Preparation:	2006-11-13	Prepared By:	TS

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sample 107955 continued . . .

Parameter	Flag	RL Result	Units	Dilution	RL

Parameter	Flag	RL Result	Units	Dilution	RL
Total Sodium		**2050**	mg/Kg	1	50.0

Sample: 107955 - HLSF-0085-SB-001 (30.0'-30.5')

Analysis:	P, Total	Analytical Method:	S 6010B	Prep Method:	S 3050B
QC Batch:	31838	Date Analyzed:	2006-11-13	Analyzed By:	RR
Prep Batch:	27715	Sample Preparation:	2006-11-13	Prepared By:	TS

Parameter	Flag	RL Result	Units	Dilution	RL
Total Phosphorous		**294**	mg/Kg	1	2.00

Sample: 107955 - HLSF-0085-SB-001 (30.0'-30.5')

Analysis:	Total 8 Metals	Analytical Method:	S 7471A	Prep Method:	N/A
QC Batch:	31736	Date Analyzed:	2006-11-09	Analyzed By:	TP
Prep Batch:	27636	Sample Preparation:	2006-11-09	Prepared By:	TP
Analysis:	Total 8 Metals	Analytical Method:	S 6010B	Prep Method:	S 3050B
QC Batch:	31838	Date Analyzed:	2006-11-13	Analyzed By:	RR
Prep Batch:	27715	Sample Preparation:	2006-11-13	Prepared By:	TS

Parameter	Flag	RL Result	Units	Dilution	RL
Total Silver		<0.0500	mg/Kg	1	0.0500
Total Arsenic		**4.41**	mg/Kg	1	2.00
Total Barium		**87.6**	mg/Kg	1	1.00
Total Cadmium		<0.100	mg/Kg	1	0.100
Total Chromium		**6.88**	mg/Kg	1	0.500
Total Mercury		<0.0400	mg/Kg	1	0.0400
Total Lead		**13.1**	mg/Kg	1	1.00
Total Selenium		<1.00	mg/Kg	1	1.00

Sample: 107955 - HLSF-0085-SB-001 (30.0'-30.5')

Analysis:	Zn, Total	Analytical Method:	S 6010B	Prep Method:	S 3050B
QC Batch:	31838	Date Analyzed:	2006-11-13	Analyzed By:	RR
Prep Batch:	27715	Sample Preparation:	2006-11-13	Prepared By:	TS

Parameter	Flag	RL Result	Units	Dilution	RL
Total Zinc		**21.9**	mg/Kg	1	2.00

Sample: 107956 - HLSF-0085-SB-001 (40.0'-40.5')

Analysis:	Cu, Total	Analytical Method:	S 6010B	Prep Method:	S 3050B
QC Batch:	31838	Date Analyzed:	2006-11-13	Analyzed By:	RR
Prep Batch:	27715	Sample Preparation:	2006-11-13	Prepared By:	TS

Parameter	Flag	RL Result	Units	Dilution	RL
Total Copper		**2.95**	mg/Kg	1	0.500

Sample: 107956 - HLSF-0085-SB-001 (40.0'-40.5')

Analysis:	K, Total	Analytical Method:	S 6010B	Prep Method:	S 3050B
QC Batch:	31927	Date Analyzed:	2006-11-14	Analyzed By:	TP
Prep Batch:	27715	Sample Preparation:	2006-11-13	Prepared By:	TS

Parameter	Flag	RL Result	Units	Dilution	RL
Total Potassium		**821**	mg/Kg	1	50.0

Sample: 107956 - HLSF-0085-SB-001 (40.0'-40.5')

Analysis:	Na, Total	Analytical Method:	S 6010B	Prep Method:	S 3050B
QC Batch:	31927	Date Analyzed:	2006-11-14	Analyzed By:	TP
Prep Batch:	27715	Sample Preparation:	2006-11-13	Prepared By:	TS

Parameter	Flag	RL Result	Units	Dilution	RL
Total Sodium		**908**	mg/Kg	1	50.0

Sample: 107956 - HLSF-0085-SB-001 (40.0'-40.5')

Analysis:	P, Total	Analytical Method:	S 6010B	Prep Method:	S 3050B
QC Batch:	31838	Date Analyzed:	2006-11-13	Analyzed By:	RR
Prep Batch:	27715	Sample Preparation:	2006-11-13	Prepared By:	TS

Parameter	Flag	RL Result	Units	Dilution	RL
Total Phosphorous		**137**	mg/Kg	1	2.00

Sample: 107956 - HLSF-0085-SB-001 (40.0'-40.5')

Analysis:	Total 8 Metals	Analytical Method:	S 7471A	Prep Method:	N/A
QC Batch:	31736	Date Analyzed:	2006-11-09	Analyzed By:	TP
Prep Batch:	27636	Sample Preparation:	2006-11-09	Prepared By:	TP
Analysis:	Total 8 Metals	Analytical Method:	S 6010B	Prep Method:	S 3050B
QC Batch:	31838	Date Analyzed:	2006-11-13	Analyzed By:	RR
Prep Batch:	27715	Sample Preparation:	2006-11-13	Prepared By:	TS

Parameter	Flag	RL Result	Units	Dilution	RL
Total Silver		<0.0500	mg/Kg	1	0.0500
Total Arsenic		**3.09**	mg/Kg	1	2.00
Total Barium		**58.0**	mg/Kg	1	1.00
Total Cadmium		<0.100	mg/Kg	1	0.100
Total Chromium		**3.46**	mg/Kg	1	0.500
Total Mercury		<0.0400	mg/Kg	1	0.0400
Total Lead		**8.34**	mg/Kg	1	1.00
Total Selenium		<1.00	mg/Kg	1	1.00

Sample: 107956 - HLSF-0085-SB-001 (40.0'-40.5')

Analysis:	Zn, Total	Analytical Method:	S 6010B	Prep Method:	S 3050B
QC Batch:	31838	Date Analyzed:	2006-11-13	Analyzed By:	RR
Prep Batch:	27715	Sample Preparation:	2006-11-13	Prepared By:	TS

Parameter	Flag	RL Result	Units	Dilution	RL
Total Zinc	*B*	**12.3**	mg/Kg	1	2.00

Sample: 107957 - HLSF-0085-SB-001 (49.5-50.0')

Analysis:	Cu, Total	Analytical Method:	S 6010B	Prep Method:	S 3050B
QC Batch:	31838	Date Analyzed:	2006-11-13	Analyzed By:	RR
Prep Batch:	27715	Sample Preparation:	2006-11-13	Prepared By:	TS

Parameter	Flag	RL Result	Units	Dilution	RL
Total Copper		**7.03**	mg/Kg	1	0.500

Sample: 107957 - HLSF-0085-SB-001 (49.5-50.0')

Analysis:	K, Total	Analytical Method:	S 6010B	Prep Method:	S 3050B
QC Batch:	31927	Date Analyzed:	2006-11-14	Analyzed By:	TP
Prep Batch:	27715	Sample Preparation:	2006-11-13	Prepared By:	TS

Parameter	Flag	RL Result	Units	Dilution	RL
Total Potassium		**1860**	mg/Kg	1	50.0

Sample: 107957 - HLSF-0085-SB-001 (49.5-50.0')

Analysis:	Na, Total	Analytical Method:	S 6010B	Prep Method:	S 3050B
QC Batch:	31927	Date Analyzed:	2006-11-14	Analyzed By:	TP
Prep Batch:	27715	Sample Preparation:	2006-11-13	Prepared By:	TS

Parameter	Flag	RL Result	Units	Dilution	RL
Total Sodium		**2350**	mg/Kg	1	50.0

Sample: 107957 - HLSF-0085-SB-001 (49.5-50.0')

Analysis:	P, Total	Analytical Method:	S 6010B	Prep Method:	S 3050B
QC Batch:	31838	Date Analyzed:	2006-11-13	Analyzed By:	RR
Prep Batch:	27715	Sample Preparation:	2006-11-13	Prepared By:	TS

Parameter	Flag	RL Result	Units	Dilution	RL
Total Phosphorous		**283**	mg/Kg	1	2.00

Sample: 107957 - HLSF-0085-SB-001 (49.5-50.0')

Analysis:	Total 8 Metals	Analytical Method:	S 6010B	Prep Method:	S 3050B
QC Batch:	31838	Date Analyzed:	2006-11-13	Analyzed By:	RR
Prep Batch:	27715	Sample Preparation:	2006-11-13	Prepared By:	TS
Analysis:	Total 8 Metals	Analytical Method:	S 7471A	Prep Method:	N/A
QC Batch:	31923	Date Analyzed:	2006-11-15	Analyzed By:	TP
Prep Batch:	27779	Sample Preparation:	2006-11-14	Prepared By:	TP

Parameter	Flag	RL Result	Units	Dilution	RL
Total Silver		<0.0500	mg/Kg	1	0.0500
Total Arsenic		<2.00	mg/Kg	1	2.00
Total Barium		**104**	mg/Kg	1	1.00
Total Cadmium		<0.100	mg/Kg	1	0.100
Total Chromium		**8.94**	mg/Kg	1	0.500
Total Mercury		<0.0400	mg/Kg	1	0.0400
Total Lead		**17.9**	mg/Kg	1	1.00
Total Selenium		<1.00	mg/Kg	1	1.00

Sample: 107957 - HLSF-0085-SB-001 (49.5-50.0')

Analysis:	Zn, Total	Analytical Method:	S 6010B	Prep Method:	S 3050B
QC Batch:	31838	Date Analyzed:	2006-11-13	Analyzed By:	RR
Prep Batch:	27715	Sample Preparation:	2006-11-13	Prepared By:	TS

Parameter	Flag	RL Result	Units	Dilution	RL
Total Zinc		**27.1**	mg/Kg	1	2.00

Method Blank (1) QC Batch: 31411

QC Batch:	31411	Date Analyzed:	2006-10-31	Analyzed By:	TP
Prep Batch:	27351	QC Preparation:	2006-10-31	Prepared By:	TP

Parameter	Flag	MDL Result	Units	RL
Total Mercury		<0.00299	mg/Kg	0.04

Method Blank (1) QC Batch: 31412

QC Batch:	31412	Date Analyzed:	2006-10-31	Analyzed By:	TP
Prep Batch:	27351	QC Preparation:	2006-10-31	Prepared By:	TP

Parameter	Flag	MDL Result	Units	RL
Total Mercury		<0.00299	mg/Kg	0.04

Method Blank (1) QC Batch: 31429

QC Batch:	31429	Date Analyzed:	2006-11-01	Analyzed By:	RR
Prep Batch:	27288	QC Preparation:	2006-10-30	Prepared By:	TS

Parameter	Flag	MDL Result	Units	RL
Total Copper		<0.0268	mg/Kg	0.5

Method Blank (1) QC Batch: 31429

QC Batch:	31429	Date Analyzed:	2006-11-01	Analyzed By:	RR
Prep Batch:	27288	QC Preparation:	2006-10-30	Prepared By:	TS

Parameter	Flag	MDL Result	Units	RL
Total Phosphorous		<0.223	mg/Kg	2

Method Blank (1) QC Batch: 31429

QC Batch:	31429	Date Analyzed:	2006-11-01	Analyzed By:	RR
Prep Batch:	27288	QC Preparation:	2006-10-30	Prepared By:	TS

Parameter	Flag	MDL Result	Units	RL
Total Zinc		1.95	mg/Kg	2

Method Blank (1) QC Batch: 31429

QC Batch:	31429	Date Analyzed:	2006-11-01	Analyzed By:	RR
Prep Batch:	27288	QC Preparation:	2006-10-30	Prepared By:	TS

Parameter	Flag	MDL Result	Units	RL
Total Silver		<0.00444	mg/Kg	0.05
Total Arsenic		<0.228	mg/Kg	2
Total Barium		<0.0601	mg/Kg	1
Total Cadmium		<0.00794	mg/Kg	0.1
Total Chromium		<0.0125	mg/Kg	0.5
Total Lead		<0.367	mg/Kg	1
Total Selenium		<0.0767	mg/Kg	1

Method Blank (1) QC Batch: 31438

QC Batch:	31438	Date Analyzed:	2006-11-01	Analyzed By:	TP
Prep Batch:	27375	QC Preparation:	2006-11-01	Prepared By:	TP

Parameter	Flag	MDL Result	Units	RL
Total Mercury		<0.00299	mg/Kg	0.04

Method Blank (1) QC Batch: 31440

QC Batch:	31440	Date Analyzed:	2006-11-01	Analyzed By:	TP
Prep Batch:	27288	QC Preparation:	2006-10-30	Prepared By:	TS

Parameter	Flag	MDL Result	Units	RL
Total Potassium		9.38	mg/Kg	50

Method Blank (1) QC Batch: 31440

QC Batch:	31440	Date Analyzed:	2006-11-01	Analyzed By:	TP
Prep Batch:	27288	QC Preparation:	2006-10-30	Prepared By:	TS

Parameter	Flag	MDL Result	Units	RL
Total Sodium		195	mg/Kg	50

Method Blank (1) QC Batch: 31736

QC Batch:	31736	Date Analyzed:	2006-11-09	Analyzed By:	TP
Prep Batch:	27636	QC Preparation:	2006-11-09	Prepared By:	TP

Parameter	Flag	MDL Result	Units	RL
Total Mercury		<0.00299	mg/Kg	0.04

Method Blank (1) QC Batch: 31781

QC Batch:	31781	Date Analyzed:	2006-11-10	Analyzed By:	TP
Prep Batch:	27345	QC Preparation:	2006-10-31	Prepared By:	TS

Parameter	Flag	MDL Result	Units	RL
Total Potassium		38.9	mg/Kg	50

Method Blank (1) QC Batch: 31781

QC Batch:	31781	Date Analyzed:	2006-11-10	Analyzed By:	TP
Prep Batch:	27345	QC Preparation:	2006-10-31	Prepared By:	TS

Parameter	Flag	MDL Result	Units	RL
Total Sodium		173	mg/Kg	50

Method Blank (1) QC Batch: 31784

QC Batch:	31784	Date Analyzed:	2006-11-10	Analyzed By:	TP
Prep Batch:	27345	QC Preparation:	2006-10-31	Prepared By:	TS

Parameter	Flag	MDL Result	Units	RL
Total Potassium		38.9	mg/Kg	50

Method Blank (1) QC Batch: 31784

QC Batch:	31784	Date Analyzed:	2006-11-10	Analyzed By:	TP
Prep Batch:	27345	QC Preparation:	2006-10-31	Prepared By:	TS

Parameter	Flag	MDL Result	Units	RL
Total Sodium		173	mg/Kg	50

Method Blank (1) QC Batch: 31838

QC Batch:	31838	Date Analyzed:	2006-11-13	Analyzed By:	RR
Prep Batch:	27715	QC Preparation:	2006-11-13	Prepared By:	TS

Parameter	Flag	MDL Result	Units	RL
Total Copper		<0.0268	mg/Kg	0.5

Method Blank (1) QC Batch: 31838

QC Batch: 31838 Date Analyzed: 2006-11-13 Analyzed By: RR
Prep Batch: 27715 QC Preparation: 2006-11-13 Prepared By: TS

Parameter	Flag	MDL Result	Units	RL
Total Phosphorous		2.17	mg/Kg	2

Method Blank (1) QC Batch: 31838

QC Batch: 31838 Date Analyzed: 2006-11-13 Analyzed By: RR
Prep Batch: 27715 QC Preparation: 2006-11-13 Prepared By: TS

Parameter	Flag	MDL Result	Units	RL
Total Zinc		1.48	mg/Kg	2

Method Blank (1) QC Batch: 31838

QC Batch: 31838 Date Analyzed: 2006-11-13 Analyzed By: RR
Prep Batch: 27715 QC Preparation: 2006-11-13 Prepared By: TS

Parameter	Flag	MDL Result	Units	RL
Total Silver		<0.00444	mg/Kg	0.05
Total Arsenic		<0.228	mg/Kg	2
Total Barium		<0.0601	mg/Kg	1
Total Cadmium		<0.00794	mg/Kg	0.1
Total Chromium		<0.0125	mg/Kg	0.5
Total Lead		<0.367	mg/Kg	1
Total Selenium		<0.0767	mg/Kg	1

Method Blank (1) QC Batch: 31923

QC Batch: 31923 Date Analyzed: 2006-11-15 Analyzed By: TP
Prep Batch: 27779 QC Preparation: 2006-11-14 Prepared By: TP

Parameter	Flag	MDL Result	Units	RL
Total Mercury		<0.00299	mg/Kg	0.04

Method Blank (1) QC Batch: 31927

QC Batch: 31927 Date Analyzed: 2006-11-14 Analyzed By: TP
Prep Batch: 27715 QC Preparation: 2006-11-13 Prepared By: TS

Parameter	Flag	MDL Result	Units	RL
Total Potassium		<0.291	mg/Kg	50

Method Blank (1) QC Batch: 31927

QC Batch: 31927 Date Analyzed: 2006-11-14 Analyzed By: TP
Prep Batch: 27715 QC Preparation: 2006-11-13 Prepared By: TS

Parameter	Flag	MDL Result	Units	RL
Total Sodium		247	mg/Kg	50

Method Blank (1) QC Batch: 32009

QC Batch: 32009 Date Analyzed: 2006-11-17 Analyzed By: RR
Prep Batch: 27345 QC Preparation: 2006-10-31 Prepared By: TS

Parameter	Flag	MDL Result	Units	RL
Total Copper		<0.0268	mg/Kg	0.5

Method Blank (1) QC Batch: 32009

QC Batch: 32009 Date Analyzed: 2006-11-17 Analyzed By: RR
Prep Batch: 27345 QC Preparation: 2006-10-31 Prepared By: TS

Parameter	Flag	MDL Result	Units	RL
Total Phosphorous		2.16	mg/Kg	2

Method Blank (1) QC Batch: 32009

QC Batch: 32009 Date Analyzed: 2006-11-17 Analyzed By: RR
Prep Batch: 27345 QC Preparation: 2006-10-31 Prepared By: TS

Parameter	Flag	MDL Result	Units	RL
Total Zinc		1.82	mg/Kg	2

Method Blank (1) QC Batch: 32009

QC Batch: 32009 Date Analyzed: 2006-11-17 Analyzed By: RR
Prep Batch: 27345 QC Preparation: 2006-10-31 Prepared By: TS

Parameter	Flag	MDL Result	Units	RL
Total Silver		<0.00444	mg/Kg	0.05
Total Arsenic		<0.228	mg/Kg	2
Total Barium		<0.0601	mg/Kg	1
Total Cadmium		<0.00794	mg/Kg	0.1
Total Chromium		<0.0125	mg/Kg	0.5
Total Lead		<0.367	mg/Kg	1
Total Selenium		<0.0767	mg/Kg	1

Laboratory Control Spike (LCS-1)

QC Batch: 31411 Date Analyzed: 2006-10-31 Analyzed By: TP
Prep Batch: 27351 QC Preparation: 2006-10-31 Prepared By: TP

Param	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Total Mercury	0.516	mg/Kg	1	0.500	<0.00299	103	85.2 - 118

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Param	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Total Mercury	0.519	mg/Kg	1	0.500	<0.00299	104	85.2 - 118	1	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Laboratory Control Spike (LCS-1)

QC Batch: 31412 Date Analyzed: 2006-10-31 Analyzed By: TP
Prep Batch: 27351 QC Preparation: 2006-10-31 Prepared By: TP

Param	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Total Mercury	0.516	mg/Kg	1	0.500	<0.00299	103	85.2 - 118

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Param	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Total Mercury	0.519	mg/Kg	1	0.500	<0.00299	104	85.2 - 118	1	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Laboratory Control Spike (LCS-1)

QC Batch: 31429 Date Analyzed: 2006-11-01 Analyzed By: RR
Prep Batch: 27288 QC Preparation: 2006-10-30 Prepared By: TS

Param	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Total Copper	11.3	mg/Kg	1	12.5	<0.0268	90	85 - 115

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Param	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Total Copper	11.8	mg/Kg	1	12.5	<0.0268	94	85 - 115	4	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Laboratory Control Spike (LCS-1)

QC Batch: 31429 Date Analyzed: 2006-11-01 Analyzed By: RR
Prep Batch: 27288 QC Preparation: 2006-10-30 Prepared By: TS

Param	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Total Phosphorous	47.3	mg/Kg	1	50.0	<0.223	95	85 - 115

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Param	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Total Phosphorous	48.2	mg/Kg	1	50.0	<0.223	96	85 - 115	2	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Laboratory Control Spike (LCS-1)

QC Batch: 31429 Date Analyzed: 2006-11-01 Analyzed By: RR
Prep Batch: 27288 QC Preparation: 2006-10-30 Prepared By: TS

Param	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Total Zinc	22.8	mg/Kg	1	25.0	<0.124	91	85 - 115

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Param	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Total Zinc	22.7	mg/Kg	1	25.0	<0.124	91	85 - 115	0	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Laboratory Control Spike (LCS-1)

QC Batch: 31429 Date Analyzed: 2006-11-01 Analyzed By: RR
Prep Batch: 27288 QC Preparation: 2006-10-30 Prepared By: TS

Param	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Total Silver	11.7	mg/Kg	1	12.5	<0.00444	94	85 - 113
Total Arsenic	43.2	mg/Kg	1	50.0	<0.228	86	85 - 111
Total Barium	87.1	mg/Kg	1	100	<0.0601	87	85 - 103
Total Cadmium	22.2	mg/Kg	1	25.0	<0.00794	89	85 - 115
Total Chromium	9.98	mg/Kg	1	10.0	<0.0125	100	85 - 115

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Param	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Total Lead	44.0	mg/Kg	1	50.0	<0.367	88	85 - 115
Total Selenium	39.4	mg/Kg	1	50.0	<0.0767	79	75 - 125

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Param	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Total Silver	11.3	mg/Kg	1	12.5	<0.00444	90	85 - 113	4	20
Total Arsenic	42.9	mg/Kg	1	50.0	<0.228	86	85 - 111	1	20
Total Barium	86.6	mg/Kg	1	100	<0.0601	87	85 - 103	1	20
Total Cadmium	22.4	mg/Kg	1	25.0	<0.00794	90	85 - 115	1	20
Total Chromium	9.48	mg/Kg	1	10.0	<0.0125	95	85 - 115	5	20
Total Lead	42.3	mg/Kg	1	50.0	<0.367	85	85 - 115	4	20
Total Selenium	39.7	mg/Kg	1	50.0	<0.0767	79	75 - 125	1	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Laboratory Control Spike (LCS-1)

QC Batch: 31438 Date Analyzed: 2006-11-01 Analyzed By: TP
Prep Batch: 27375 QC Preparation: 2006-11-01 Prepared By: TP

Param	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Total Mercury	0.499	mg/Kg	1	0.500	<0.00299	100	85.2 - 118

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Param	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Total Mercury	0.531	mg/Kg	1	0.500	<0.00299	106	85.2 - 118	6	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Laboratory Control Spike (LCS-1)

QC Batch: 31440 Date Analyzed: 2006-11-01 Analyzed By: TP
Prep Batch: 27288 QC Preparation: 2006-10-30 Prepared By: TS

Param	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Total Potassium	4660	mg/Kg	100	5000	<29.1	93	85 - 115

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Param	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Total Potassium	4640	mg/Kg	100	5000	<29.1	93	85 - 115	0	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Laboratory Control Spike (LCS-1)

QC Batch: 31440 Date Analyzed: 2006-11-01 Analyzed By: TP
Prep Batch: 27288 QC Preparation: 2006-10-30 Prepared By: TS

Param	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Total Sodium	4710	mg/Kg	100	5000	<8.20	94	85.4 - 108

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Param	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Total Sodium	4690	mg/Kg	100	5000	<8.20	94	85.4 - 108	0	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Laboratory Control Spike (LCS-1)

QC Batch: 31736 Date Analyzed: 2006-11-09 Analyzed By: TP
Prep Batch: 27636 QC Preparation: 2006-11-09 Prepared By: TP

Param	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Total Mercury	0.554	mg/Kg	1	0.500	<0.00299	111	85.2 - 118

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Param	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Total Mercury	0.511	mg/Kg	1	0.500	<0.00299	102	85.2 - 118	8	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Laboratory Control Spike (LCS-1)

QC Batch: 31781 Date Analyzed: 2006-11-10 Analyzed By: TP
Prep Batch: 27345 QC Preparation: 2006-10-31 Prepared By: TS

Param	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Total Potassium	4780	mg/Kg	100	5000	<29.1	96	85 - 115

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Param	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Total Potassium	4580	mg/Kg	100	5000	<29.1	92	85 - 115	4	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Laboratory Control Spike (LCS-1)

QC Batch: 31781 Date Analyzed: 2006-11-10 Analyzed By: TP
Prep Batch: 27345 QC Preparation: 2006-10-31 Prepared By: TS

Param	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Total Sodium	4910	mg/Kg	100	5000	<8.20	98	85.4 - 108

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Param	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Total Sodium	4690	mg/Kg	100	5000	<8.20	94	85.4 - 108	5	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Laboratory Control Spike (LCS-1)

QC Batch: 31784 Date Analyzed: 2006-11-10 Analyzed By: TP
Prep Batch: 27345 QC Preparation: 2006-10-31 Prepared By: TS

Param	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Total Potassium	4780	mg/Kg	100	5000	<29.1	96	85 - 115

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Param	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Total Potassium	4580	mg/Kg	100	5000	<29.1	92	85 - 115	4	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Laboratory Control Spike (LCS-1)

QC Batch: 31784 Date Analyzed: 2006-11-10 Analyzed By: TP
Prep Batch: 27345 QC Preparation: 2006-10-31 Prepared By: TS

Param	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Total Sodium	4910	mg/Kg	100	5000	<8.20	98	85.4 - 108

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Param	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Total Sodium	4690	mg/Kg	100	5000	<8.20	94	85.4 - 108	5	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Laboratory Control Spike (LCS-1)

QC Batch: 31838 Date Analyzed: 2006-11-13 Analyzed By: RR
Prep Batch: 27715 QC Preparation: 2006-11-13 Prepared By: TS

Param	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Total Copper	12.2	mg/Kg	1	12.5	<0.0268	98	85 - 115

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Param	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Total Copper	12.2	mg/Kg	1	12.5	<0.0268	98	85 - 115	0	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Laboratory Control Spike (LCS-1)

QC Batch: 31838 Date Analyzed: 2006-11-13 Analyzed By: RR
Prep Batch: 27715 QC Preparation: 2006-11-13 Prepared By: TS

Param	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Total Phosphorous	45.5	mg/Kg	1	50.0	2.17	87	85 - 115

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Param	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Total Phosphorous	45.2	mg/Kg	1	50.0	2.17	86	85 - 115	1	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Laboratory Control Spike (LCS-1)

QC Batch: 31838 Date Analyzed: 2006-11-13 Analyzed By: RR
Prep Batch: 27715 QC Preparation: 2006-11-13 Prepared By: TS

Param	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Total Zinc	26.6	mg/Kg	1	25.0	<0.124	106	85 - 115

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Param	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Total Zinc	27.1	mg/Kg	1	25.0	<0.124	108	85 - 115	2	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Laboratory Control Spike (LCS-1)

QC Batch: 31838 Date Analyzed: 2006-11-13 Analyzed By: RR
Prep Batch: 27715 QC Preparation: 2006-11-13 Prepared By: TS

Param	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Total Silver	11.5	mg/Kg	1	12.5	<0.00444	92	85 - 113
Total Arsenic	45.4	mg/Kg	1	50.0	<0.228	91	85 - 111
Total Barium	95.9	mg/Kg	1	100	<0.0601	96	85 - 103
Total Cadmium	22.6	mg/Kg	1	25.0	<0.00794	90	85 - 115
Total Chromium	10.3	mg/Kg	1	10.0	<0.0125	103	85 - 115
Total Lead	44.4	mg/Kg	1	50.0	<0.367	89	85 - 115
Total Selenium	42.7	mg/Kg	1	50.0	<0.0767	85	75 - 125

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Param	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Total Silver	11.5	mg/Kg	1	12.5	<0.00444	92	85 - 113	0	20
Total Arsenic	45.9	mg/Kg	1	50.0	<0.228	92	85 - 111	1	20
Total Barium	94.5	mg/Kg	1	100	<0.0601	94	85 - 103	2	20
Total Cadmium	22.3	mg/Kg	1	25.0	<0.00794	89	85 - 115	1	20
Total Chromium	10.3	mg/Kg	1	10.0	<0.0125	103	85 - 115	0	20
Total Lead	44.0	mg/Kg	1	50.0	<0.367	88	85 - 115	1	20
Total Selenium	43.3	mg/Kg	1	50.0	<0.0767	87	75 - 125	1	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Laboratory Control Spike (LCS-1)

QC Batch: 31923 Date Analyzed: 2006-11-15 Analyzed By: TP
Prep Batch: 27779 QC Preparation: 2006-11-14 Prepared By: TP

Param	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Total Mercury	0.489	mg/Kg	1	0.500	<0.00299	98	85.2 - 118

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Param	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Total Mercury	0.501	mg/Kg	1	0.500	<0.00299	100	85.2 - 118	2	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Laboratory Control Spike (LCS-1)

QC Batch: 31927 Date Analyzed: 2006-11-14 Analyzed By: TP
Prep Batch: 27715 QC Preparation: 2006-11-13 Prepared By: TS

Param	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Total Potassium	4880	mg/Kg	100	5000	<29.1	98	85 - 115

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Param	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Total Potassium	4620	mg/Kg	100	5000	<29.1	92	85 - 115	6	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Laboratory Control Spike (LCS-1)

QC Batch: 31927 Date Analyzed: 2006-11-14 Analyzed By: TP
Prep Batch: 27715 QC Preparation: 2006-11-13 Prepared By: TS

Param	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Total Sodium	4790	mg/Kg	100	5000	<8.20	96	85.4 - 108

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Param	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Total Sodium	4650	mg/Kg	100	5000	<8.20	93	85.4 - 108	3	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Laboratory Control Spike (LCS-1)

QC Batch: 32009 Date Analyzed: 2006-11-17 Analyzed By: RR
Prep Batch: 27345 QC Preparation: 2006-10-31 Prepared By: TS

Param	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Total Copper	11.2	mg/Kg	1	12.5	<0.0268	90	85 - 115

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Param	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Total Copper	11.6	mg/Kg	1	12.5	<0.0268	93	85 - 115	4	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Laboratory Control Spike (LCS-1)

QC Batch: 32009 Date Analyzed: 2006-11-17 Analyzed By: RR
Prep Batch: 27345 QC Preparation: 2006-10-31 Prepared By: TS

Param	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Total Phosphorous	54.2	mg/Kg	1	50.0	2.16	104	85 - 115

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Param	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Total Phosphorous	56.8	mg/Kg	1	50.0	2.16	109	85 - 115	5	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Laboratory Control Spike (LCS-1)

QC Batch: 32009 Date Analyzed: 2006-11-17 Analyzed By: RR
Prep Batch: 27345 QC Preparation: 2006-10-31 Prepared By: TS

Param	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Total Zinc	26.3	mg/Kg	1	25.0	1.82	98	85 - 115

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Param	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Total Zinc	26.7	mg/Kg	1	25.0	1.82	100	85 - 115	2	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Laboratory Control Spike (LCS-1)

QC Batch: 32009 Date Analyzed: 2006-11-17 Analyzed By: RR
Prep Batch: 27345 QC Preparation: 2006-10-31 Prepared By: TS

Param	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Total Silver	11.2	mg/Kg	1	12.5	<0.00444	90	85 - 113
Total Arsenic	43.4	mg/Kg	1	50.0	<0.228	87	85 - 111
Total Barium	87.3	mg/Kg	1	100	<0.0601	87	85 - 103
Total Cadmium	22.2	mg/Kg	1	25.0	<0.00794	89	85 - 115
Total Chromium	8.72	mg/Kg	1	10.0	<0.0125	87	85 - 115
Total Lead	45.3	mg/Kg	1	50.0	<0.367	91	85 - 115
Total Selenium	40.6	mg/Kg	1	50.0	<0.0767	81	75 - 125

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Param	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Total Silver	11.1	mg/Kg	1	12.5	<0.00444	89	85 - 113	1	20
Total Arsenic	42.5	mg/Kg	1	50.0	<0.228	85	85 - 111	2	20
Total Barium	86.2	mg/Kg	1	100	<0.0601	86	85 - 103	1	20
Total Cadmium	22.6	mg/Kg	1	25.0	<0.00794	90	85 - 115	2	20
Total Chromium	9.12	mg/Kg	1	10.0	<0.0125	91	85 - 115	4	20
Total Lead	44.7	mg/Kg	1	50.0	<0.367	89	85 - 115	1	20
Total Selenium	40.3	mg/Kg	1	50.0	<0.0767	81	75 - 125	1	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Matrix Spike (MS-1) Spiked Sample: 106714

QC Batch: 31411 Date Analyzed: 2006-10-31 Analyzed By: TP
Prep Batch: 27351 QC Preparation: 2006-10-31 Prepared By: TP

Param	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Total Mercury	0.529	mg/Kg	1	0.500	<0.00299	106	77.6 - 124

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Param	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Total Mercury	0.528	mg/Kg	1	0.00	<0.00299	106	77.6 - 124	0	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Matrix Spike (MS-1) Spiked Sample: 106721

QC Batch: 31412 Date Analyzed: 2006-10-31 Analyzed By: TP
Prep Batch: 27351 QC Preparation: 2006-10-31 Prepared By: TP

Param	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Total Mercury	0.511	mg/Kg	1	0.500	0.00424	101	77.6 - 124

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Param	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Total Mercury	0.498	mg/Kg	1	0.00	0.00424	99	77.6 - 124	3	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Matrix Spike (MS-1) Spiked Sample: 106718

QC Batch: 31429 Date Analyzed: 2006-11-01 Analyzed By: RR
Prep Batch: 27288 QC Preparation: 2006-10-30 Prepared By: TS

Param	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Total Copper	13.7	mg/Kg	1	12.5	2.6	89	75 - 125

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Param	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Total Copper	13.5	mg/Kg	1	12.5	2.6	87	75 - 125	2	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Matrix Spike (MS-1) Spiked Sample: 106718

QC Batch: 31429 Date Analyzed: 2006-11-01 Analyzed By: RR
Prep Batch: 27288 QC Preparation: 2006-10-30 Prepared By: TS

Param	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Total Phosphorous [1]	165	mg/Kg	1	50.0	137	56	75 - 125

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Param	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Total Phosphorous [2]	160	mg/Kg	1	50.0	137	46	75 - 125	3	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

[1]Matrix spike recovery out of control limits due to matrix interference. Use LCS/LCSD to demonstrate analysis is under control.
[2]Matrix spike recovery out of control limits due to matrix interference. Use LCS/LCSD to demonstrate analysis is under control.

Matrix Spike (MS-1) Spiked Sample: 106718

QC Batch: 31429 Date Analyzed: 2006-11-01 Analyzed By: RR
Prep Batch: 27288 QC Preparation: 2006-10-30 Prepared By: TS

Param	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Total Zinc	35.4	mg/Kg	1	25.0	14.1	85	75 - 125

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Param	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Total Zinc	34.7	mg/Kg	1	25.0	14.1	82	75 - 125	2	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Matrix Spike (MS-1) Spiked Sample: 106718

QC Batch: 31429 Date Analyzed: 2006-11-01 Analyzed By: RR
Prep Batch: 27288 QC Preparation: 2006-10-30 Prepared By: TS

Param	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Total Silver	10.3	mg/Kg	1	12.5	<0.00444	82	78.1 - 115
Total Arsenic	41.1	mg/Kg	1	50.0	<0.228	82	75 - 114
Total Barium	122	mg/Kg	1	100	29	93	75.7 - 123
Total Cadmium	20.6	mg/Kg	1	25.0	<0.00794	82	75 - 112
Total Chromium	13.7	mg/Kg	1	10.0	4.41	93	75 - 125
Total Lead	48.1	mg/Kg	1	50.0	7.54	81	75 - 125
Total Selenium	39.6	mg/Kg	1	50.0	<0.0767	79	75 - 117

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Param	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Total Silver	10.3	mg/Kg	1	0.00	<0.00444	82	78.1 - 115	0	20
Total Arsenic	41.4	mg/Kg	1	0.00	<0.228	83	75 - 114	1	20
Total Barium	124	mg/Kg	1	0.00	29	95	75.7 - 123	2	20
Total Cadmium	20.3	mg/Kg	1	0.00	<0.00794	81	75 - 112	2	20
Total Chromium	13.3	mg/Kg	1	0.00	4.41	89	75 - 125	3	20
Total Lead	47.0	mg/Kg	1	0.00	7.54	79	75 - 125	2	20
Total Selenium	40.3	mg/Kg	1	0.00	<0.0767	81	75 - 117	2	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Matrix Spike (MS-1) Spiked Sample: 106737

QC Batch: 31438 Date Analyzed: 2006-11-01 Analyzed By: TP
Prep Batch: 27375 QC Preparation: 2006-11-01 Prepared By: TP

Param	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Total Mercury	0.504	mg/Kg	1	0.500	<0.00299	101	77.6 - 124

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Param	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Total Mercury	0.512	mg/Kg	1	0.00	<0.00299	102	77.6 - 124	2	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Matrix Spike (MS-1) Spiked Sample: 106718

QC Batch: 31440 Date Analyzed: 2006-11-01 Analyzed By: TP
Prep Batch: 27288 QC Preparation: 2006-10-30 Prepared By: TS

Param	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Total Potassium	5130	mg/Kg	100	5000	799	87	75 - 125

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Param	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Total Potassium	5280	mg/Kg	100	5000	799	90	75 - 125	3	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Matrix Spike (MS-1) Spiked Sample: 106718

QC Batch: 31440 Date Analyzed: 2006-11-01 Analyzed By: TP
Prep Batch: 27288 QC Preparation: 2006-10-30 Prepared By: TS

Param	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Total Sodium	5520	mg/Kg	100	5000	739	96	78.4 - 125

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Param	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Total Sodium	5290	mg/Kg	100	5000	739	91	78.4 - 125	4	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Matrix Spike (MS-1) Spiked Sample: 107951

QC Batch: 31736 Date Analyzed: 2006-11-09 Analyzed By: TP
Prep Batch: 27636 QC Preparation: 2006-11-09 Prepared By: TP

Param	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Total Mercury	0.506	mg/Kg	1	0.500	0.00648	100	77.6 - 124

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

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matrix spikes continued . . .

Param	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit

Param	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Total Mercury	0.505	mg/Kg	1	0.00	0.00648	100	77.6 - 124	0	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Matrix Spike (MS-1) Spiked Sample:

QC Batch: 31781 Date Analyzed: 2006-11-10 Analyzed By: TP
Prep Batch: 27345 QC Preparation: 2006-10-31 Prepared By: TS

Param	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Total Potassium	6530	mg/Kg	100	5000	1989	91	75 - 125

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Param	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Total Potassium	6820	mg/Kg	100	5000	1989	97	75 - 125	4	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Matrix Spike (MS-1) Spiked Sample:

QC Batch: 31781 Date Analyzed: 2006-11-10 Analyzed By: TP
Prep Batch: 27345 QC Preparation: 2006-10-31 Prepared By: TS

Param	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Total Sodium	6380	mg/Kg	100	5000	1870	90	78.4 - 125

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Param	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Total Sodium	6650	mg/Kg	100	5000	1870	96	78.4 - 125	4	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Matrix Spike (MS-1) Spiked Sample: 106740

QC Batch: 31784 Date Analyzed: 2006-11-10 Analyzed By: TP
Prep Batch: 27345 QC Preparation: 2006-10-31 Prepared By: TS

Param	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Total Potassium	5830	mg/Kg	100	5000	1339	90	75 - 125

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Param	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Total Potassium	5730	mg/Kg	100	5000	1339	88	75 - 125	2	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Matrix Spike (MS-1) Spiked Sample: 106740

QC Batch: 31784 Date Analyzed: 2006-11-10 Analyzed By: TP
Prep Batch: 27345 QC Preparation: 2006-10-31 Prepared By: TS

Param	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Total Sodium	5630	mg/Kg	100	5000	1068	91	78.4 - 125

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Param	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Total Sodium	5500	mg/Kg	100	5000	1068	89	78.4 - 125	2	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Matrix Spike (MS-1) Spiked Sample: 107957

QC Batch: 31838 Date Analyzed: 2006-11-13 Analyzed By: RR
Prep Batch: 27715 QC Preparation: 2006-11-13 Prepared By: TS

Param	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Total Copper	21.9	mg/Kg	1	12.5	7.03	119	75 - 125

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Param	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Total Copper	18.5	mg/Kg	1	12.5	7.03	92	75 - 125	17	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Matrix Spike (MS-1) Spiked Sample: 107957

QC Batch: 31838 Date Analyzed: 2006-11-13 Analyzed By: RR
Prep Batch: 27715 QC Preparation: 2006-11-13 Prepared By: TS

Param	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Total Phosphorous	335	mg/Kg	1	50.0	283	104	75 - 125

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Param	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Total Phosphorous	331	mg/Kg	1	50.0	283	96	75 - 125	1	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Matrix Spike (MS-1) Spiked Sample: 107957

QC Batch: 31838 Date Analyzed: 2006-11-13 Analyzed By: RR
Prep Batch: 27715 QC Preparation: 2006-11-13 Prepared By: TS

Param	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Total Zinc	53.5	mg/Kg	1	25.0	27.1	106	75 - 125

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Param	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Total Zinc	50.7	mg/Kg	1	25.0	27.1	94	75 - 125	5	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Matrix Spike (MS-1) Spiked Sample: 107957

QC Batch: 31838 Date Analyzed: 2006-11-13 Analyzed By: RR
Prep Batch: 27715 QC Preparation: 2006-11-13 Prepared By: TS

Param	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Total Silver	10.6	mg/Kg	1	12.5	<0.00444	85	78.1 - 115
Total Arsenic	44.0	mg/Kg	1	50.0	<0.228	88	75 - 114
Total Barium	195	mg/Kg	1	100	104	91	75.7 - 123
Total Cadmium	21.8	mg/Kg	1	25.0	<0.00794	87	75 - 112
Total Chromium	20.9	mg/Kg	1	10.0	8.94	120	75 - 125
Total Lead	70.4	mg/Kg	1	50.0	17.9	105	75 - 125
Total Selenium	39.9	mg/Kg	1	50.0	<0.0767	80	75 - 117

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Param	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Total Silver	10.8	mg/Kg	1	0.00	<0.00444	86	78.1 - 115	2	20
Total Arsenic	42.6	mg/Kg	1	0.00	<0.228	85	75 - 114	3	20
Total Barium	184	mg/Kg	1	0.00	104	80	75.7 - 123	6	20
Total Cadmium	22.3	mg/Kg	1	0.00	<0.00794	89	75 - 112	2	20
Total Chromium	20.3	mg/Kg	1	0.00	8.94	114	75 - 125	3	20
Total Lead	60.2	mg/Kg	1	0.00	17.9	85	75 - 125	16	20
Total Selenium	40.1	mg/Kg	1	0.00	<0.0767	80	75 - 117	0	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Matrix Spike (MS-1) Spiked Sample: 107957

QC Batch: 31923 Date Analyzed: 2006-11-15 Analyzed By: TP
Prep Batch: 27779 QC Preparation: 2006-11-14 Prepared By: TP

Param	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Total Mercury	0.452	mg/Kg	1	0.500	<0.00299	90	77.6 - 124

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Param	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Total Mercury	0.462	mg/Kg	1	0.00	<0.00299	92	77.6 - 124	2	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Matrix Spike (MS-1) Spiked Sample: 107957

QC Batch: 31927 Date Analyzed: 2006-11-14 Analyzed By: TP
Prep Batch: 27715 QC Preparation: 2006-11-13 Prepared By: TS

Param	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Total Potassium	6770	mg/Kg	100	5000	1865	98	75 - 125

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Param	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Total Potassium	7300	mg/Kg	100	5000	1865	109	75 - 125	8	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Matrix Spike (MS-1) Spiked Sample: 107957

QC Batch: 31927 Date Analyzed: 2006-11-14 Analyzed By: TP
Prep Batch: 27715 QC Preparation: 2006-11-13 Prepared By: TS

Param	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Total Sodium	7090	mg/Kg	100	5000	2354	95	78.4 - 125

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Param	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Total Sodium	7570	mg/Kg	100	5000	2354	104	78.4 - 125	6	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Matrix Spike (MS-1) Spiked Sample: 106724

QC Batch: 32009 Date Analyzed: 2006-11-17 Analyzed By: RR
Prep Batch: 27345 QC Preparation: 2006-10-31 Prepared By: TS

Param	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Total Copper	15.8	mg/Kg	1	12.5	5.13	85	75 - 125

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

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matrix spikes continued . . .

Param	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Param	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Total Copper	16.7	mg/Kg	1	12.5	5.13	92	75 - 125	6	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Matrix Spike (MS-1) Spiked Sample: 106724

QC Batch: 32009 Date Analyzed: 2006-11-17 Analyzed By: RR
Prep Batch: 27345 QC Preparation: 2006-10-31 Prepared By: TS

Param	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Total Phosphorous	243	mg/Kg	1	50.0	192	102	75 - 125

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Param	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Total Phosphorous	242	mg/Kg	1	50.0	192	100	75 - 125	0	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Matrix Spike (MS-1) Spiked Sample: 106724

QC Batch: 32009 Date Analyzed: 2006-11-17 Analyzed By: RR
Prep Batch: 27345 QC Preparation: 2006-10-31 Prepared By: TS

Param	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Total Zinc	42.7	mg/Kg	1	25.0	21.7	84	75 - 125

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Param	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Total Zinc	42.1	mg/Kg	1	25.0	21.7	82	75 - 125	1	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Matrix Spike (MS-1) Spiked Sample: 106724

QC Batch: 32009 Date Analyzed: 2006-11-17 Analyzed By: RR
Prep Batch: 27345 QC Preparation: 2006-10-31 Prepared By: TS

Param	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Total Silver	10.4	mg/Kg	1	12.5	<0.00444	83	78.1 - 115
Total Arsenic	47.5	mg/Kg	1	50.0	3.85	87	75 - 114
Total Barium	140	mg/Kg	1	100	38.6	101	75.7 - 123

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matrix spikes continued . . .

Param	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Total Cadmium	19.7	mg/Kg	1	25.0	<0.00794	79	75 - 112
Total Chromium	12.5	mg/Kg	1	10.0	2.85	96	75 - 125
Total Lead	58.5	mg/Kg	1	50.0	11.9	93	75 - 125
Total Selenium	41.5	mg/Kg	1	50.0	<0.0767	83	75 - 117

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Param	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Total Silver	10.7	mg/Kg	1	0.00	<0.00444	86	78.1 - 115	3	20
Total Arsenic	46.6	mg/Kg	1	0.00	3.85	86	75 - 114	2	20
Total Barium	150	mg/Kg	1	0.00	38.6	111	75.7 - 123	7	20
Total Cadmium	19.3	mg/Kg	1	0.00	<0.00794	77	75 - 112	2	20
Total Chromium	12.4	mg/Kg	1	0.00	2.85	96	75 - 125	1	20
Total Lead	57.1	mg/Kg	1	0.00	11.9	90	75 - 125	2	20
Total Selenium	42.5	mg/Kg	1	0.00	<0.0767	85	75 - 117	2	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Standard (ICV-1)

QC Batch: 31411 Date Analyzed: 2006-10-31 Analyzed By: TP

Param	Flag	Units	ICVs True Conc.	ICVs Found Conc.	ICVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Total Mercury		mg/L	0.00500	0.00516	103	90 - 110	2006-10-31

Standard (CCV-1)

QC Batch: 31411 Date Analyzed: 2006-10-31 Analyzed By: TP

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Total Mercury		mg/L	0.00500	0.00509	102	80 - 120	2006-10-31

Standard (ICV-1)

QC Batch: 31412 Date Analyzed: 2006-10-31 Analyzed By: TP

Param	Flag	Units	ICVs True Conc.	ICVs Found Conc.	ICVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Total Mercury		mg/L	0.00500	0.00516	103	90 - 110	2006-10-31

Standard (CCV-1)

QC Batch: 31412 Date Analyzed: 2006-10-31 Analyzed By: TP

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Total Mercury		mg/L	0.00500	0.00509	102	80 - 120	2006-10-31

Standard (ICV-1)

QC Batch: 31429 Date Analyzed: 2006-11-01 Analyzed By: RR

Param	Flag	Units	ICVs True Conc.	ICVs Found Conc.	ICVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Total Copper		mg/Kg	1.00	0.998	100	90 - 110	2006-11-01

Standard (ICV-1)

QC Batch: 31429 Date Analyzed: 2006-11-01 Analyzed By: RR

Param	Flag	Units	ICVs True Conc.	ICVs Found Conc.	ICVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Total Phosphorous		mg/Kg	5.00	4.95	99	90 - 110	2006-11-01

Standard (ICV-1)

QC Batch: 31429 Date Analyzed: 2006-11-01 Analyzed By: RR

Param	Flag	Units	ICVs True Conc.	ICVs Found Conc.	ICVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Total Zinc		mg/Kg	1.00	0.998	100	90 - 110	2006-11-01

Standard (ICV-1)

QC Batch: 31429 Date Analyzed: 2006-11-01 Analyzed By: RR

Param	Flag	Units	ICVs True Conc.	ICVs Found Conc.	ICVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Total Silver		mg/Kg	0.125	0.126	101	90 - 110	2006-11-01
Total Arsenic		mg/Kg	1.00	0.996	100	95 - 105	2006-11-01
Total Barium		mg/Kg	1.00	1.01	101	95 - 105	2006-11-01
Total Cadmium		mg/Kg	1.00	0.994	99	95 - 105	2006-11-01
Total Chromium		mg/Kg	1.00	0.991	99	90 - 110	2006-11-01
Total Lead		mg/Kg	1.00	0.997	100	90 - 110	2006-11-01
Total Selenium		mg/Kg	1.00	1.01	101	90 - 110	2006-11-01

Standard (CCV-1)

QC Batch: 31429 Date Analyzed: 2006-11-01 Analyzed By: RR

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Total Copper		mg/Kg	1.00	0.971	97	90 - 110	2006-11-01

Standard (CCV-1)

QC Batch: 31429 Date Analyzed: 2006-11-01 Analyzed By: RR

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Total Phosphorous		mg/Kg	5.00	4.72	94	90 - 110	2006-11-01

Standard (CCV-1)

QC Batch: 31429 Date Analyzed: 2006-11-01 Analyzed By: RR

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Total Zinc		mg/Kg	1.00	0.962	96	90 - 110	2006-11-01

Standard (CCV-1)

QC Batch: 31429 Date Analyzed: 2006-11-01 Analyzed By: RR

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Total Silver		mg/Kg	0.125	0.123	98	90 - 110	2006-11-01
Total Arsenic		mg/Kg	1.00	0.956	96	90 - 110	2006-11-01
Total Barium		mg/Kg	1.00	0.983	98	90 - 110	2006-11-01
Total Cadmium		mg/Kg	1.00	0.952	95	90 - 110	2006-11-01
Total Chromium		mg/Kg	1.00	0.950	95	90 - 110	2006-11-01
Total Lead		mg/Kg	1.00	1.02	102	90 - 110	2006-11-01
Total Selenium		mg/Kg	1.00	0.994	99	90 - 110	2006-11-01

Standard (ICV-1)

QC Batch: 31438 Date Analyzed: 2006-11-01 Analyzed By: TP

Param	Flag	Units	ICVs True Conc.	ICVs Found Conc.	ICVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Total Mercury		mg/L	0.00500	0.00488	98	90 - 110	2006-11-01

Standard (CCV-1)

QC Batch: 31438 Date Analyzed: 2006-11-01 Analyzed By: TP

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Total Mercury		mg/L	0.00500	0.00527	105	80 - 120	2006-11-01

Standard (ICV-1)

QC Batch: 31440 Date Analyzed: 2006-11-01 Analyzed By: TP

Param	Flag	Units	ICVs True Conc.	ICVs Found Conc.	ICVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Total Potassium		mg/Kg	50.0	49.5	99	90 - 110	2006-11-01

Standard (ICV-1)

QC Batch: 31440 Date Analyzed: 2006-11-01 Analyzed By: TP

Param	Flag	Units	ICVs True Conc.	ICVs Found Conc.	ICVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Total Sodium		mg/Kg	50.0	49.5	99	90 - 110	2006-11-01

Standard (CCV-1)

QC Batch: 31440 Date Analyzed: 2006-11-01 Analyzed By: TP

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Total Potassium		mg/Kg	50.0	51.0	102	90 - 110	2006-11-01

Standard (CCV-1)

QC Batch: 31440 Date Analyzed: 2006-11-01 Analyzed By: TP

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Total Sodium		mg/Kg	50.0	50.4	101	90 - 110	2006-11-01

Standard (ICV-1)

QC Batch: 31736 Date Analyzed: 2006-11-09 Analyzed By: TP

Param	Flag	Units	ICVs True Conc.	ICVs Found Conc.	ICVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Total Mercury		mg/L	0.00500	0.00506	101	90 - 110	2006-11-09

Standard (CCV-1)

QC Batch: 31736 Date Analyzed: 2006-11-09 Analyzed By: TP

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Total Mercury		mg/L	0.00500	0.00498	100	80 - 120	2006-11-09

Standard (ICV-1)

QC Batch: 31781 Date Analyzed: 2006-11-10 Analyzed By: TP

Param	Flag	Units	ICVs True Conc.	ICVs Found Conc.	ICVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Total Potassium		mg/Kg	50.0	49.2	98	90 - 110	2006-11-10

Standard (ICV-1)

QC Batch: 31781 Date Analyzed: 2006-11-10 Analyzed By: TP

Param	Flag	Units	ICVs True Conc.	ICVs Found Conc.	ICVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Total Sodium		mg/Kg	50.0	49.3	99	90 - 110	2006-11-10

Standard (CCV-1)

QC Batch: 31781 Date Analyzed: 2006-11-10 Analyzed By: TP

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Total Potassium		mg/Kg	50.0	49.7	99	90 - 110	2006-11-10

Standard (CCV-1)

QC Batch: 31781 Date Analyzed: 2006-11-10 Analyzed By: TP

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Total Sodium		mg/Kg	50.0	49.0	98	90 - 110	2006-11-10

Standard (ICV-1)

QC Batch: 31784 Date Analyzed: 2006-11-10 Analyzed By: TP

Param	Flag	Units	ICVs True Conc.	ICVs Found Conc.	ICVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Total Potassium		mg/Kg	50.0	49.2	98	90 - 110	2006-11-10

Standard (ICV-1)

QC Batch: 31784 Date Analyzed: 2006-11-10 Analyzed By: TP

Param	Flag	Units	ICVs True Conc.	ICVs Found Conc.	ICVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Total Sodium		mg/Kg	50.0	49.3	99	90 - 110	2006-11-10

Standard (CCV-1)

QC Batch: 31784 Date Analyzed: 2006-11-10 Analyzed By: TP

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Total Potassium		mg/Kg	50.0	50.2	100	90 - 110	2006-11-10

Standard (CCV-1)

QC Batch: 31784 Date Analyzed: 2006-11-10 Analyzed By: TP

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Total Sodium		mg/Kg	50.0	49.0	98	90 - 110	2006-11-10

Standard (ICV-1)

QC Batch: 31838 Date Analyzed: 2006-11-13 Analyzed By: RR

Param	Flag	Units	ICVs True Conc.	ICVs Found Conc.	ICVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Total Copper		mg/Kg	1.00	0.995	100	90 - 110	2006-11-13

Standard (ICV-1)

QC Batch: 31838 Date Analyzed: 2006-11-13 Analyzed By: RR

Param	Flag	Units	ICVs True Conc.	ICVs Found Conc.	ICVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Total Phosphorous		mg/Kg	5.00	4.94	99	90 - 110	2006-11-13

Standard (ICV-1)

QC Batch: 31838 Date Analyzed: 2006-11-13 Analyzed By: RR

Param	Flag	Units	ICVs True Conc.	ICVs Found Conc.	ICVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Total Zinc		mg/Kg	1.00	1.01	101	90 - 110	2006-11-13

Standard (ICV-1)

QC Batch: 31838 Date Analyzed: 2006-11-13 Analyzed By: RR

Param	Flag	Units	ICVs True Conc.	ICVs Found Conc.	ICVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Total Silver		mg/Kg	0.125	0.127	102	90 - 110	2006-11-13
Total Arsenic		mg/Kg	1.00	1.01	101	95 - 105	2006-11-13
Total Barium		mg/Kg	1.00	1.02	102	95 - 105	2006-11-13
Total Cadmium		mg/Kg	1.00	1.00	100	95 - 105	2006-11-13
Total Chromium		mg/Kg	1.00	0.999	100	90 - 110	2006-11-13
Total Lead		mg/Kg	1.00	0.991	99	90 - 110	2006-11-13
Total Selenium		mg/Kg	1.00	1.02	102	90 - 110	2006-11-13

Standard (CCV-1)

QC Batch: 31838 Date Analyzed: 2006-11-13 Analyzed By: RR

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Total Copper		mg/Kg	1.00	0.926	93	90 - 110	2006-11-13

Standard (CCV-1)

QC Batch: 31838 Date Analyzed: 2006-11-13 Analyzed By: RR

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Total Phosphorous		mg/Kg	5.00	4.50	90	90 - 110	2006-11-13

Standard (CCV-1)

QC Batch: 31838 Date Analyzed: 2006-11-13 Analyzed By: RR

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Total Zinc		mg/Kg	1.00	0.920	92	90 - 110	2006-11-13

Standard (CCV-1)

QC Batch: 31838 Date Analyzed: 2006-11-13 Analyzed By: RR

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Total Silver		mg/Kg	0.125	0.118	94	90 - 110	2006-11-13
Total Arsenic		mg/Kg	1.00	0.926	93	90 - 110	2006-11-13
Total Barium		mg/Kg	1.00	0.957	96	90 - 110	2006-11-13
Total Cadmium		mg/Kg	1.00	0.917	92	90 - 110	2006-11-13
Total Chromium		mg/Kg	1.00	0.921	92	90 - 110	2006-11-13
Total Lead		mg/Kg	1.00	0.949	95	90 - 110	2006-11-13
Total Selenium		mg/Kg	1.00	0.958	96	90 - 110	2006-11-13

Standard (ICV-1)

QC Batch: 31923 Date Analyzed: 2006-11-15 Analyzed By: TP

Param	Flag	Units	ICVs True Conc.	ICVs Found Conc.	ICVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Total Mercury		mg/L	0.00500	0.00487	97	90 - 110	2006-11-15

Standard (CCV-1)

QC Batch: 31923 Date Analyzed: 2006-11-15 Analyzed By: TP

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Total Mercury		mg/L	0.00500	0.00454	91	80 - 120	2006-11-15

Standard (ICV-1)

QC Batch: 31927 Date Analyzed: 2006-11-14 Analyzed By: TP

Param	Flag	Units	ICVs True Conc.	ICVs Found Conc.	ICVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Total Potassium		mg/Kg	50.0	50.2	100	90 - 110	2006-11-14

Standard (ICV-1)

QC Batch: 31927 Date Analyzed: 2006-11-14 Analyzed By: TP

Param	Flag	Units	ICVs True Conc.	ICVs Found Conc.	ICVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Total Sodium		mg/Kg	50.0	48.6	97	90 - 110	2006-11-14

Standard (CCV-1)

QC Batch: 31927 Date Analyzed: 2006-11-14 Analyzed By: TP

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Total Potassium		mg/Kg	50.0	50.0	100	90 - 110	2006-11-14

Standard (CCV-1)

QC Batch: 31927 Date Analyzed: 2006-11-14 Analyzed By: TP

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Total Sodium		mg/Kg	50.0	48.9	98	90 - 110	2006-11-14

Standard (ICV-1)

QC Batch: 32009 Date Analyzed: 2006-11-17 Analyzed By: RR

Param	Flag	Units	ICVs True Conc.	ICVs Found Conc.	ICVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Total Copper		mg/Kg	1.00	0.961	96	90 - 110	2006-11-17

Standard (ICV-1)

QC Batch: 32009 Date Analyzed: 2006-11-17 Analyzed By: RR

Param	Flag	Units	ICVs True Conc.	ICVs Found Conc.	ICVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Total Phosphorous		mg/Kg	5.00	4.61	92	90 - 110	2006-11-17

Standard (ICV-1)

QC Batch: 32009 Date Analyzed: 2006-11-17 Analyzed By: RR

Param	Flag	Units	ICVs True Conc.	ICVs Found Conc.	ICVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Total Zinc		mg/Kg	1.00	0.945	94	90 - 110	2006-11-17

Standard (ICV-1)

QC Batch: 32009 Date Analyzed: 2006-11-17 Analyzed By: RR

Param	Flag	Units	ICVs True Conc.	ICVs Found Conc.	ICVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Total Silver		mg/Kg	0.125	0.121	97	90 - 110	2006-11-17
Total Arsenic		mg/Kg	1.00	0.962	96	95 - 105	2006-11-17
Total Barium		mg/Kg	1.00	0.976	98	95 - 105	2006-11-17
Total Cadmium		mg/Kg	1.00	0.952	95	95 - 105	2006-11-17
Total Chromium		mg/Kg	1.00	0.926	93	90 - 110	2006-11-17
Total Lead		mg/Kg	1.00	0.926	93	90 - 110	2006-11-17
Total Selenium		mg/Kg	1.00	0.973	97	90 - 110	2006-11-17

Standard (CCV-1)

QC Batch: 32009 Date Analyzed: 2006-11-17 Analyzed By: RR

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Total Copper		mg/Kg	1.00	0.965	96	90 - 110	2006-11-17

Standard (CCV-1)

QC Batch: 32009 Date Analyzed: 2006-11-17 Analyzed By: RR

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Total Phosphorous		mg/Kg	5.00	4.73	95	90 - 110	2006-11-17

Standard (CCV-1)

QC Batch: 32009 Date Analyzed: 2006-11-17 Analyzed By: RR

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Total Zinc		mg/Kg	1.00	1.01	101	90 - 110	2006-11-17

Standard (CCV-1)

QC Batch: 32009 Date Analyzed: 2006-11-17 Analyzed By: RR

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Total Silver		mg/Kg	0.125	0.122	98	90 - 110	2006-11-17
Total Arsenic		mg/Kg	1.00	0.969	97	90 - 110	2006-11-17
Total Barium		mg/Kg	1.00	0.971	97	90 - 110	2006-11-17
Total Cadmium		mg/Kg	1.00	0.954	95	90 - 110	2006-11-17
Total Chromium		mg/Kg	1.00	0.963	96	90 - 110	2006-11-17
Total Lead		mg/Kg	1.00	0.954	95	90 - 110	2006-11-17

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Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Total Selenium		mg/Kg	1.00	1.01	101	90 - 110	2006-11-17

work_orde	sample	field_code	matrix	received_c	received_t	collect_da	collect_tin	qctype	test	method	units	dilution	surrogate	param	cas	mdl_sign	mdl_result	mql_sign	mql_result	pql_sign	pql_result	rl_sign	rl_result	mdl	mql	pql	rl	spike_amc	recovery	rpd	prep_batc	qcbatch	analyzed_l	analysis_d	comment	project_na	project_number
6101812	106093	HLSF-0085	soil	########	17:00:00	########	10:35:00		Chromium	SM 3500-C	mg/Kg	1	no	Hexavalen	7440-47-3	<	0.04	<	0.04	<	0.04	<	0.04	0.2	0.4	0.4	0.4	0			27158	31338	WB	########		HELSTF Ph	7
6101812	106093	HLSF-0085	soil	########	17:00:00	########	10:35:00		Cu, Total	S 6010B	mg/Kg	1	no	Total Copp	7440-50-8		2.48		2.48		2.48		2.48	0.26781	0.5	0.5	0.5	0			27065	31110	RR	########		HELSTF Ph	7
6101812	106093	HLSF-0085	soil	########	17:00:00	########	10:35:00		FOC	ASTM D 29	%	1	no	FOC	N/A		2.22		2.22		2.22		2.22					0			27067	31177	WB	########		HELSTF Ph	7
6101812	106093	HLSF-0085	soil	########	17:00:00	########	10:35:00		K, Total	S 6010B	mg/Kg	1	no	Total Pota	9/7/7440		618		618		618		618	0.291	50	50	50	0			27065	31186	TP	########		HELSTF Ph	7
6101812	106093	HLSF-0085	soil	########	17:00:00	########	10:35:00		Na, Total	S 6010B	mg/Kg	1	no	Total Sodi	7440-23-5		455		455		455		455	0.082	50	50	50	0			27065	31186	TP	########		HELSTF Ph	7
6101812	106093	HLSF-0085	soil	########	17:00:00	########	10:35:00		Nitrate and	E 353.3	mg/Kg	25	no	Nitrate and Nitrite as N			6.15		6.15		6.15		6.15	0.0155	0.1	0.1	0.1	0			27540	31626	WB	########		HELSTF Ph	7
6101812	106093	HLSF-0085	soil	########	17:00:00	########	10:35:00		P, Total	S 6010B	mg/Kg	1	no	Total Phos	7723-14-0		42.2		42.2		42.2		42.2	0.2233	1	1	1	0			27065	31110	RR	########		HELSTF Ph	7
6101812	106093	HLSF-0085	soil	########	17:00:00	########	10:35:00		Total 8 Me	S 6010B	mg/Kg	1	no	Total Silver		<	0.0444	<	0.2	<	0.2	<	0.2	0.044386	0.2	0.2	0.2	0			27065	31110	RR	########		HELSTF Ph	7
6101812	106093	HLSF-0085	soil	########	17:00:00	########	10:35:00		Total 8 Me	S 6010B	mg/Kg	1	no	Total Arsenic		<	0.228	<	1	<	1	<	1	0.227774	1	1	1	0			27065	31110	RR	########		HELSTF Ph	7
6101812	106093	HLSF-0085	soil	########	17:00:00	########	10:35:00		Total 8 Me	S 6010B	mg/Kg	1	no	Total Barium			44.2		44.2		44.2		44.2	0.600628	1	1	1	0			27065	31110	RR	########		HELSTF Ph	7
6101812	106093	HLSF-0085	soil	########	17:00:00	########	10:35:00		Total 8 Me	S 6010B	mg/Kg	1	no	Total Cadmium			0.162	<	0.5	<	0.5	<	0.5	0.079491	0.5	0.5	0.5	0			27065	31110	RR	########		HELSTF Ph	7
6101812	106093	HLSF-0085	soil	########	17:00:00	########	10:35:00		Total 8 Me	S 6010B	mg/Kg	1	no	Total Chromium			2.39		2.39		2.39		2.39	0.125172	1	1	1	0			27065	31110	RR	########		HELSTF Ph	7
6101812	106093	HLSF-0085	soil	########	17:00:00	########	10:35:00		Total 8 Me	S 7471A	mg/Kg	1	no	Total Mercury		<	0.00299	<	0.04	<	0.04	<	0.04	0.00299	0.04	0.04	0.04	0			27189	31240	TP	########		HELSTF Ph	7
6101812	106093	HLSF-0085	soil	########	17:00:00	########	10:35:00		Total 8 Me	S 6010B	mg/Kg	1	no	Total Lead		<	0.65	<	1	<	1	<	1	0.650424	1	1	1	0			27065	31110	RR	########		HELSTF Ph	7
6101812	106093	HLSF-0085	soil	########	17:00:00	########	10:35:00		Total 8 Me	S 6010B	mg/Kg	1	no	Total Selenium		<	0.767	<	1	<	1	<	1	0.767141	1	1	1	0			27065	31110	RR	########		HELSTF Ph	7
6101812	106093	HLSF-0085	soil	########	17:00:00	########	10:35:00		Zn, Total	S 6010B	mg/Kg	1	no	Total Zinc	7440-66-6		18.1		18.1		18.1		18.1	0.124	1	1	1	0			27065	31110	RR	########		HELSTF Ph	7
6101812	106094	HLSF-0085	soil	########	17:00:00	########	10:55:00		Chromium	SM 3500-C	mg/Kg	1	no	Hexavalen	7440-47-3	<	0.04	<	0.04	<	0.04	<	0.04	0.2	0.4	0.4	0.4	0			27158	31338	WB	########		HELSTF Ph	7
6101812	106094	HLSF-0085	soil	########	17:00:00	########	10:55:00		Cu, Total	S 6010B	mg/Kg	1	no	Total Copp	7440-50-8		2.86		2.86		2.86		2.86	0.26781	0.5	0.5	0.5	0			27065	31110	RR	########		HELSTF Ph	7
6101812	106094	HLSF-0085	soil	########	17:00:00	########	10:55:00		FOC	ASTM D 29	%	1	no	FOC	N/A		2.31		2.31		2.31		2.31					0			27067	31177	WB	########		HELSTF Ph	7
6101812	106094	HLSF-0085	soil	########	17:00:00	########	10:55:00		K, Total	S 6010B	mg/Kg	1	no	Total Pota	9/7/7440		1010		1010		1010		1010	0.291	50	50	50	0			27065	31186	TP	########		HELSTF Ph	7
6101812	106094	HLSF-0085	soil	########	17:00:00	########	10:55:00		Na, Total	S 6010B	mg/Kg	1	no	Total Sodi	7440-23-5		546		546		546		546	0.082	50	50	50	0			27065	31186	TP	########		HELSTF Ph	7
6101812	106094	HLSF-0085	soil	########	17:00:00	########	10:55:00		Nitrate and	E 353.3	mg/Kg	5	no	Nitrate and Nitrite as N			1.32		1.32		1.32		1.32	0.0155	0.1	0.1	0.1	0			27707	31814	JS	########		HELSTF Ph	7
6101812	106094	HLSF-0085	soil	########	17:00:00	########	10:55:00		P, Total	S 6010B	mg/Kg	1	no	Total Phos	7723-14-0		60.7		60.7		60.7		60.7	0.2233	1	1	1	0			27065	31110	RR	########		HELSTF Ph	7
6101812	106094	HLSF-0085	soil	########	17:00:00	########	10:55:00		Total 8 Me	S 6010B	mg/Kg	1	no	Total Silver		<	0.0444	<	0.2	<	0.2	<	0.2	0.044386	0.2	0.2	0.2	0			27065	31110	RR	########		HELSTF Ph	7
6101812	106094	HLSF-0085	soil	########	17:00:00	########	10:55:00		Total 8 Me	S 6010B	mg/Kg	1	no	Total Arsenic		<	0.228	<	1	<	1	<	1	0.227774	1	1	1	0			27065	31110	RR	########		HELSTF Ph	7
6101812	106094	HLSF-0085	soil	########	17:00:00	########	10:55:00		Total 8 Me	S 6010B	mg/Kg	1	no	Total Barium			44.9		44.9		44.9		44.9	0.600628	1	1	1	0			27065	31110	RR	########		HELSTF Ph	7
6101812	106094	HLSF-0085	soil	########	17:00:00	########	10:55:00		Total 8 Me	S 6010B	mg/Kg	1	no	Total Cadmium			0.322	<	0.5	<	0.5	<	0.5	0.079491	0.5	0.5	0.5	0			27065	31110	RR	########		HELSTF Ph	7
6101812	106094	HLSF-0085	soil	########	17:00:00	########	10:55:00		Total 8 Me	S 6010B	mg/Kg	1	no	Total Chromium			4.63		4.63		4.63		4.63	0.125172	1	1	1	0			27065	31110	RR	########		HELSTF Ph	7
6101812	106094	HLSF-0085	soil	########	17:00:00	########	10:55:00		Total 8 Me	S 7471A	mg/Kg	1	no	Total Mercury		<	0.00299	<	0.04	<	0.04	<	0.04	0.00299	0.04	0.04	0.04	0			27189	31240	TP	########		HELSTF Ph	7
6101812	106094	HLSF-0085	soil	########	17:00:00	########	10:55:00		Total 8 Me	S 6010B	mg/Kg	1	no	Total Lead		<	0.65	<	1	<	1	<	1	0.650424	1	1	1	0			27065	31110	RR	########		HELSTF Ph	7
6101812	106094	HLSF-0085	soil	########	17:00:00	########	10:55:00		Total 8 Me	S 6010B	mg/Kg	1	no	Total Selenium		<	0.767	<	1	<	1	<	1	0.767141	1	1	1	0			27065	31110	RR	########		HELSTF Ph	7
6101812	106094	HLSF-0085	soil	########	17:00:00	########	10:55:00		Zn, Total	S 6010B	mg/Kg	1	no	Total Zinc	7440-66-6		15.8		15.8		15.8		15.8	0.124	1	1	1	0			27065	31110	RR	########		HELSTF Ph	7
6101812	106095	HLSF-0085	soil	########	17:00:00	########	11:25:00		Chromium	SM 3500-C	mg/Kg	1	no	Hexavalen	7440-47-3	<	0.04	<	0.04	<	0.04	<	0.04	0.2	0.4	0.4	0.4	0			27158	31338	WB	########		HELSTF Ph	7
6101812	106095	HLSF-0085	soil	########	17:00:00	########	11:25:00		Cu, Total	S 6010B	mg/Kg	1	no	Total Copp	7440-50-8		4.53		4.53		4.53		4.53	0.26781	0.5	0.5	0.5	0			27065	31110	RR	########		HELSTF Ph	7
6101812	106095	HLSF-0085	soil	########	17:00:00	########	11:25:00		FOC	ASTM D 29	%	1	no	FOC	N/A		1.15		1.15		1.15		1.15					0			27067	31177	WB	########		HELSTF Ph	7
6101812	106095	HLSF-0085	soil	########	17:00:00	########	11:25:00		K, Total	S 6010B	mg/Kg	1	no	Total Pota	9/7/7440		1670		1670		1670		1670	0.291	50	50	50	0			27065	31186	TP	########		HELSTF Ph	7
6101812	106095	HLSF-0085	soil	########	17:00:00	########	11:25:00		Na, Total	S 6010B	mg/Kg	1	no	Total Sodi	7440-23-5		516		516		516		516	0.082	50	50	50	0			27065	31186	TP	########		HELSTF Ph	7
6101812	106095	HLSF-0085	soil	########	17:00:00	########	11:25:00		Nitrate and	E 353.3	mg/Kg	5	no	Nitrate and Nitrite as N			1.22		1.22		1.22		1.22	0.0155	0.1	0.1	0.1	0			27540	31626	WB	########		HELSTF Ph	7
6101812	106095	HLSF-0085	soil	########	17:00:00	########	11:25:00		P, Total	S 6010B	mg/Kg	1	no	Total Phos	7723-14-0		190		190		190		190	0.2233	1	1	1	0			27065	31110	RR	########		HELSTF Ph	7
6101812	106095	HLSF-0085	soil	########	17:00:00	########	11:25:00		Total 8 Me	S 6010B	mg/Kg	1	no	Total Silver		<	0.0444	<	0.2	<	0.2	<	0.2	0.044386	0.2	0.2	0.2	0			27065	31110	RR	########		HELSTF Ph	7
6101812	106095	HLSF-0085	soil	########	17:00:00	########	11:25:00		Total 8 Me	S 6010B	mg/Kg	1	no	Total Arsenic		<	0.228	<	1	<	1	<	1	0.227774	1	1	1	0			27065	31110	RR	########		HELSTF Ph	7
6101812	106095	HLSF-0085	soil	########	17:00:00	########	11:25:00		Total 8 Me	S 6010B	mg/Kg	1	no	Total Barium			56.4		56.4		56.4		56.4	0.600628	1	1	1	0			27065	31110	RR	########		HELSTF Ph	7
6101812	106095	HLSF-0085	soil	########	17:00:00	########	11:25:00		Total 8 Me	S 6010B	mg/Kg	1	no	Total Cadmium			0.759		0.759		0.759		0.759	0.079491	0.5	0.5	0.5	0			27065	31110	RR	########		HELSTF Ph	7
6101812	106095	HLSF-0085	soil	########	17:00:00	########	11:25:00		Total 8 Me	S 6010B	mg/Kg	1	no	Total Chromium			10.1		10.1		10.1		10.1	0.125172	1	1	1	0			27065	31110	RR	########		HELSTF Ph	7
6101812	106095	HLSF-0085	soil	########	17:00:00	########	11:25:00		Total 8 Me	S 7471A	mg/Kg	1	no	Total Mercury		<	0.00299	<	0.04	<	0.04	<	0.04	0.00299	0.04	0.04	0.04	0			27189	31240	TP	########		HELSTF Ph	7
6101812	106095	HLSF-0085	soil	########	17:00:00	########	11:25:00		Total 8 Me	S 6010B	mg/Kg	1	no	Total Lead			8.35		8.35		8.35		8.35	0.650424	1	1	1	0			27065	31110	RR	########		HELSTF Ph	7
6101812	106095	HLSF-0085	soil	########	17:00:00	########	11:25:00		Total 8 Me	S 6010B	mg/Kg	1	no	Total Selenium		<	0.767	<	1	<	1	<	1	0.767141	1	1	1	0			27065	31110	RR	########		HELSTF Ph	7
6101812	106095	HLSF-0085	soil	########	17:00:00	########	11:25:00		Zn, Total	S 6010B	mg/Kg	1	no	Total Zinc	7440-66-6		34.1		34.1		34.1		34.1	0.124	1	1	1	0			27065	31110	RR	########		HELSTF Ph	7
6101812	106096	HLSF-0085	soil	########	17:00:00	########	12:05:00		Chromium	SM 3500-C	mg/Kg	1	no	Hexavalen	7440-47-3	<	0.04	<	0.04	<	0.04	<	0.04	0.2	0.4	0.4	0.4	0			27158	31338	WB	########		HELSTF Ph	7
6101812	106096	HLSF-0085	soil	########	17:00:00	########	12:05:00		Cu, Total	S 6010B	mg/Kg	1	no	Total Copp	7440-50-8		3.19		3.19		3.19		3.19	0.26781	0.5	0.5	0.5	0			27065	31110	RR	########		HELSTF Ph	7
6101812	106096	HLSF-0085	soil	########	17:00:00	########	12:05:00		FOC	ASTM D 29	%	1	no	FOC	N/A		0.68		0.68		0.68		0.68					0			27067	31177	WB	########		HELSTF Ph	7
6101812	106096	HLSF-0085	soil	########	17:00:00	########	12:05:00		K, Total	S 6010B	mg/Kg	1	no	Total Pota	9/7/7440		898		898		898		898	0.291	50	50	50	0			27065	31186	TP	########		HELSTF Ph	7
6101812	106096	HLSF-0085	soil	########	17:00:00	########	12:05:00		Na, Total	S 6010B	mg/Kg	1	no	Total Sodi	7440-23-5		408		408		408		408	0.082	50	50	50	0			27065	31186	TP	########		HELSTF Ph	7
6101812	106096	HLSF-0085	soil	########	17:00:00	########	12:05:00		Nitrate and	E 353.3	mg/Kg	2	no	Nitrate and Nitrite as N			0.485		0.485		0.485		0.485	0.0155	0.1	0.1	0.1	0			27709	31817	JS	########		HELSTF Ph	7
6101812	106096	HLSF-0085	soil	########	17:00:00	########	12:05:00		P, Total	S 6010B	mg/Kg	1	no	Total Phos	7723-14-0		147		147		147		147	0.2233	1	1	1	0			27065	31110	RR	########		HELSTF Ph	7
6101812	106096	HLSF-0085	soil	########	17:00:00	########	12:05:00		Total 8 Me	S 6010B	mg/Kg	1	no	Total Silver		<	0.0444	<	0.2	<	0.2	<	0.2	0.044386	0.2	0.2	0.2	0			27065	31110	RR	########		HELSTF Ph	7
6101812	106096	HLSF-0085	soil	########	17:00:00	########	12:05:00		Total 8 Me	S 6010B	mg/Kg	1	no	Total Arsenic		<	0.228	<	1	<	1	<	1	0.227774	1	1	1	0			27065	31110	RR	########		HELSTF Ph	7
6101812	106096	HLSF-0085	soil	########	17:00:00	########	12:05:00		Total 8 Me	S 6010B	mg/Kg	1	no	Total Barium			62.2		62.2		62.2		62.2	0.600628	1	1	1	0			27065	31110	RR	########		HELSTF Ph	7
6101812	106096	HLSF-0085	soil	########	17:00:00	########	12:05:00		Total 8 Me	S 6010B	mg/Kg	1	no	Total Cadmium			0.501		0.501		0.501		0.501	0.079491	0.5	0.5	0.5	0			27065	31110	RR	########		HELSTF Ph	7
6101812	106096	HLSF-0085	soil	########	17:00:00	########	12:05:00		Total 8 Me	S 6010B	mg/Kg	1	no	Total Chromium			6.72		6.72		6.72		6.72	0.125172	1	1	1	0			27065	31110	RR	########		HELSTF Ph	7
6101812	106096	HLSF-0085	soil	########	17:00:00	########	12:05:00		Total 8 Me	S 7471A	mg/Kg	1	no	Total Mercury			0.00601	<	0.04	<	0.04	<	0.04	0.00299	0.04	0.04	0.04	0			27189	31240	TP	########		HELSTF Ph	7
6101812	106096	HLSF-0085	soil	########	17:00:00	########	12:05:00		Total 8 Me	S 6010B	mg/Kg	1	no	Total Lead			5.38		5.38		5.38		5.38	0.650424	1	1	1	0			27065	31110	RR	########		HELSTF Ph	7
6101812	106096	HLSF-0085	soil	########	17:00:00	########	12:05:00		Total 8 Me	S 6010B	mg/Kg	1	no	Total Selenium		<	0.767	<	1	<	1	<	1	0.767141	1	1	1	0			27065	31110	RR	########		HELSTF Ph	7
6101812	106096	HLSF-0085	soil	########	17:00:00	########	12:05:00		Zn, Total	S 6010B	mg/Kg	1	no	Total Zinc	7440-66-6		17.7		17.7		17.7		17.7	0.124	1	1	1	0			27065	31110	RR	########		HELSTF Ph	7
6101812	106097	HLSF-0085	soil	########	17:00:00	########	12:40:00		Chromium	SM 3500-C	mg/Kg	1	no	Hexavalen	7440-47-3	<	0.04	<	0.04	<	0.04	<	0.04	0.2	0.4	0.4	0.4	0			27158	31338	WB	########		HELSTF Ph	7
6101812	106097	HLSF-0085	soil	########	17:00:00	########	12:40:00		Cu, Total	S 6010B	mg/Kg	1	no	Total Copp	7440-50-8		13.2		13.2		13.2		13.2	0.26781	0.5	0.5	0.5	0			27065	31110	RR	########		HELSTF Ph	7
6101812	106097	HLSF-0085	soil	########	17:00:00	########	12:40:00		FOC	ASTM D 29	%	1	no	FOC	N/A		2.52		2.52		2.52		2.52					0			27067	31177	WB	########		HELSTF Ph	7
6101812	106097	HLSF-0085	soil	########	17:00:00	########	12:40:00		K, Total	S 6010B	mg/Kg	1	no	Total Pota	9/7/7440		3370		3370		3370		3370	0.291	50	50	50	0			27065	31186	TP	########		HELSTF Ph	7
6101812	106097	HLSF-0085	soil	########	17:00:00	########	12:40:00		Na, Total	S 6010B	mg/Kg	1	no	Total Sodi	7440-23-5		2200		2200		2200		2200	0.082	50	50	50	0			27065	31186	TP	########		HELSTF Ph	7
6101812	106097	HLSF-0085	soil	########	17:00:00	########	12:40:00		Nitrate and	E 353.3	mg/Kg	10	no	Nitrate and Nitrite as N			2.38		2.38		2.38		2.38	0.0155	0.1	0.1	0.1	0			27540	31626	WB	########		HELSTF Ph	7
6101812	106097	HLSF-0085	soil	########	17:00:00	########	12:40:00		P, Total	S 6010B	mg/Kg	1	no	Total Phos	7723-14-0		310		310		310		310	0.2233	1	1	1	0			27065	31110	RR	########		HELSTF Ph	7
6101812	106097	HLSF-0085	soil	########	17:00:00	########	12:40:00		Total 8 Me	S 6010B	mg/Kg	1	no	Total Silver		<	0.0444	<	0.2	<	0.2	<	0.2	0.044386	0.2	0.2	0.2	0			27065	31110	RR	########		HELSTF Ph	7
6101812	106097	HLSF-0085	soil	########	17:00:00	########	12:40:00		Total 8 Me	S 6010B	mg/Kg	1	no	Total Arsenic			4.45		4.45		4.45		4.45	0.227774	1	1	1	0			27065	31110	RR	########		HELSTF Ph	7
6101812	106097	HLSF-0085	soil	########	17:00:00	########	12:40:00		Total 8 Me	S 6010B	mg/Kg	1	no	Total Barium			67		67		67		67	0.600628	1	1	1	0			27065	31110	RR	########		HELSTF Ph	7
6101812	106097	HLSF-0085	soil	########	17:00:00	########	12:40:00		Total 8 Me	S 6010B	mg/Kg	1	no	Total Cadmium			1.46		1.46		1.46		1.46	0.079491	0.5	0.5	0.5	0			27065	31110	RR	########		HELSTF Ph	7
6101812	106097	HLSF-0085	soil	########	17:00:00	########	12:40:00		Total 8 Me	S 6010B	mg/Kg	1	no	Total Chromium			22.3		22.3		22.3		22.3	0.125172	1	1	1	0			27065	31110	RR	########		HELSTF Ph	7
6101812	106097	HLSF-0085	soil	########	17:00:00	########	12:40:00		Total 8 Me	S 7471A	mg/Kg	1	no	Total Mercury			0.00465	<	0.04	<	0.04	<	0.04	0.00299	0.04	0.04	0.04	0			27189	31240	TP	########		HELSTF Ph	7
6101812	106097	HLSF-0085	soil	########	17:00:00	########	12:40:00		Total 8 Me	S 6010B	mg/Kg	1	no	Total Lead			21.4		21.4		21.4		21.4	0.650424	1	1	1	0			27065	31110	RR	########		HELSTF Ph	7
6101812	106097	HLSF-0085	soil	########	17:00:00	########	12:40:00		Total 8 Me	S 6010B	mg/Kg	1	no	Total Selenium		<	0.767	<	1	<	1	<	1	0.767141	1	1	1	0			27065	31110	RR	########		HELSTF Ph	7
6101812	106097	HLSF-0085	soil	########	17:00:00	########	12:40:00		Zn, Total	S 6010B	mg/Kg	1	no	Total Zinc	7440-66-6		50.9		50.9		50.9		50.9	0.124	1	1	1	0			27065	31110	RR	########		HELSTF Ph	7
6101812	106098	HLSF-0085	soil	########	17:00:00	########	15:15:00		Chromium	SM 3500-C	mg/Kg	1	no	Hexavalen	7440-47-3	<	0.04	<	0.04	<	0.04	<	0.04	0.2	0.4	0.4	0.4	0			27158	31338	WB	########		HELSTF Ph	7
6101812	106098	HLSF-0085	soil	########	17:00:00	########	15:15:00		Cu, Total	S 6010B	mg/Kg	1	no	Total Copp	7440-50-8		2.18		2.18		2.18		2.18	0.26781	0.5	0.5	0.5	0			27065	31110	RR	########		HELSTF Ph	7
6101812	106098	HLSF-0085	soil	########	17:00:00	########	15:15:00		FOC	ASTM D 29	%	1	no	FOC	N/A		2.06		2.06		2.06		2.06					0			27067	31177	WB	########		HELSTF Ph	7
6101812	106098	HLSF-0085	soil	########	17:00:00	########	15:15:00		K, Total	S 6010B	mg/Kg	1	no	Total Pota	9/7/7440		176		176		176		176	0.291	50	50	50	0			27065	31186	TP	########		HELSTF Ph	7
6101812	106098	HLSF-0085	soil	########	17:00:00	########	15:15:00		Na, Total	S 6010B	mg/Kg	1	no	Total Sodi	7440-23-5		290		290		290		290	0.082	50	50	50	0			27065	31186	TP	########		HELSTF Ph	7
6101812	106098	HLSF-0085	soil	########	17:00:00	########	15:15:00		Nitrate and	E 353.3	mg/Kg	5	no	Nitrate and Nitrite as N			0.276	<	0.5	<	0.5	<	0.5	0.0155	0.1	0.1	0.1	0			27540	31626	WB	########		HELSTF Ph	7
6101812	106098	HLSF-0085	soil	########	17:00:00	########	15:15:00		P, Total	S 6010B	mg/Kg	1	no	Total Phos	7723-14-0		15.2		15.2		15.2		15.2	0.2233	1	1	1	0			27065	31110	RR	########		HELSTF Ph	7
6101812	106098	HLSF-0085	soil	########	17:00:00	########	15:15:00		Total 8 Me	S 6010B	mg/Kg	1	no	Total Silver		<	0.0444	<	0.2	<	0.2	<	0.2	0.044386	0.2	0.2	0.2	0			27065	31110	RR	########		HELSTF Ph	7
6101812	106098	HLSF-0085	soil	########	17:00:00	########	15:15:00		Total 8 Me	S 6010B	mg/Kg	1	no	Total Arsenic		<	0.228	<	1	<	1	<	1	0.227774	1	1	1	0			27065	31110	RR	########		HELSTF Ph	7
6101812	106098	HLSF-0085	soil	########	17:00:00	########	15:15:00		Total 8 Me	S 6010B	mg/Kg	1	no	Total Barium			17.8		17.8		17.8		17.8	0.600628	1	1	1	0			27065	31110	RR	########		HELSTF Ph	7
6101812	106098	HLSF-0085	soil	########	17:00:00	########	15:15:00		Total 8 Me	S 6010B	mg/Kg	1	no	Total Cadmium		<	0.0795	<	0.5	<	0.5	<	0.5	0.079491	0.5	0.5	0.5	0			27065	31110	RR	########		HELSTF Ph	7
6101812	106098	HLSF-0085	soil	########	17:00:00	########	15:15:00		Total 8 Me	S 6010B	mg/Kg	1	no	Total Chromium			1.07		1.07		1.07		1.07	0.125172	1	1	1	0			27065	31110	RR	########		HELSTF Ph	7
6101812	106098	HLSF-0085	soil	########	17:00:00	########	15:15:00		Total 8 Me	S 7471A	mg/Kg	1	no	Total Mercury			0.00697	<	0.04	<	0.04	<	0.04	0.00299	0.04	0.04	0.04	0			27189	31240	TP	########		HELSTF Ph	7
6101812	106098	HLSF-0085	soil	########	17:00:00	########	15:15:00		Total 8 Me	S 6010B	mg/Kg	1	no	Total Lead		<	0.65	<	1	<	1	<	1	0.650424	1	1	1	0			27065	31110	RR	########		HELSTF Ph	7

6101812	106098	HLSF-0085	soil	########	17:00:00	########	15:15:00		Total 8 Me	S 6010B	mg/Kg	1	no	Total Selenium	<	0.767	<	1	<	1	<	1	0.767141	1	1	1	0			27065	31110 RR	########	HELSTF Ph	7
6101812	106098	HLSF-0085	soil	########	17:00:00	########	15:15:00		Zn, Total	S 6010B	mg/Kg	1	no	Total Zinc	7440-66-6	7.48		7.48		7.48		7.48	0.124	1	1	1	0			27065	31110 RR	########	HELSTF Ph	7
								LCS (1)	Cu, Total	S 6010B	mg/Kg	1	no	Total Copp	7440-50-8	11.9		11.9		11.9		11.9	0.26781	0.5	0.5	0.5	12.5	95.2		27065	31110 RR	########		
								LCSD (1)	Cu, Total	S 6010B	mg/Kg	1	no	Total Copp	7440-50-8	11.8		11.8		11.8		11.8	0.26781	0.5	0.5	0.5	12.5	94.4	0.8	27065	31110 RR	########		
								LCS (1)	P, Total	S 6010B	mg/Kg	1	no	Total Phos	7723-14-0	44.1		44.1		44.1		44.1	0.2233	1	1	1	50	88.2		27065	31110 RR	########		
								LCSD (1)	P, Total	S 6010B	mg/Kg	1	no	Total Phos	7723-14-0	47		47		47		47	0.2233	1	1	1	50	94	6.4	27065	31110 RR	########		
								LCS (1)	Zn, Total	S 6010B	mg/Kg	1	no	Total Zinc	7440-66-6	25.5		25.5		25.5		25.5	0.124	0	1	1	25	102		27065	31110 RR	########		
								LCSD (1)	Zn, Total	S 6010B	mg/Kg	1	no	Total Zinc	7440-66-6	26.9		26.9		26.9		26.9	0.124	0	1	1	25	107.6	5.3	27065	31110 RR	########		
								LCS (1)	Total 8 Me	S 6010B	mg/Kg	1	no	Total Silve	7440-22-4	10.9		10.9		10.9		10.9	0.044386	0.2	0.2	0.2	12.5	87.2		27065	31110 RR	########		
								LCS (1)	Total 8 Me	S 6010B	mg/Kg	1	no	Total Arsei	7440-38-2	43.9		43.9		43.9		43.9	0.227774	1	1	1	50	87.8		27065	31110 RR	########		
								LCS (1)	Total 8 Me	S 6010B	mg/Kg	1	no	Total Bariu	7440-39-3	88.7		88.7		88.7		88.7	0.600628	1	1	1	100	88.7		27065	31110 RR	########		
								LCS (1)	Total 8 Me	S 6010B	mg/Kg	1	no	Total Cadn	7440-43-9	21.2		21.2		21.2		21.2	0.079491	0.5	0.5	0.5	25	84.8		27065	31110 RR	########		
								LCS (1)	Total 8 Me	S 6010B	mg/Kg	1	no	Total Chro	7440-47-3	9.35		9.35		9.35		9.35	0.125172	1	1	1	10	93.5		27065	31110 RR	########		
								LCS (1)	Total 8 Me	S 6010B	mg/Kg	1	no	Total Lead	7439-92-1	43.3		43.3		43.3		43.3	0.650424	1	1	1	50	86.6		27065	31110 RR	########		
								LCS (1)	Total 8 Me	S 6010B	mg/Kg	1	no	Total Seler	7782-49-2	39		39		39		39	0.767141	1	1	1	50	78		27065	31110 RR	########		
								LCSD (1)	Total 8 Me	S 6010B	mg/Kg	1	no	Total Silve	7440-22-4	11		11		11		11	0.044386	0.2	0.2	0.2	12.5	88	0.9	27065	31110 RR	########		
								LCSD (1)	Total 8 Me	S 6010B	mg/Kg	1	no	Total Arsei	7440-38-2	43		43		43		43	0.227774	1	1	1	50	86	2.1	27065	31110 RR	########		
								LCSD (1)	Total 8 Me	S 6010B	mg/Kg	1	no	Total Bariu	7440-39-3	88.7		88.7		88.7		88.7	0.600628	1	1	1	100	88.7	0	27065	31110 RR	########		
								LCSD (1)	Total 8 Me	S 6010B	mg/Kg	1	no	Total Cadn	7440-43-9	22.3		22.3		22.3		22.3	0.079491	0.5	0.5	0.5	25	89.2	5	27065	31110 RR	########		
								LCSD (1)	Total 8 Me	S 6010B	mg/Kg	1	no	Total Chro	7440-47-3	9.41		9.41		9.41		9.41	0.125172	1	1	1	10	94.1	0.6	27065	31110 RR	########		
								LCSD (1)	Total 8 Me	S 6010B	mg/Kg	1	no	Total Lead	7439-92-1	43.6		43.6		43.6		43.6	0.650424	1	1	1	50	87.2	0.7	27065	31110 RR	########		
								LCSD (1)	Total 8 Me	S 6010B	mg/Kg	1	no	Total Seler	7782-49-2	40.1		40.1		40.1		40.1	0.767141	1	1	1	50	80.2	2.8	27065	31110 RR	########		
								MS (1)	Cu, Total	S 6010B	mg/Kg	1	no	Total Copp	7440-50-8	11.7		11.7		11.7		11.7	0.26781	0.5	0.5	0.5	12.5	93.6		27065	31110 RR	########		
								MSD (1)	Cu, Total	S 6010B	mg/Kg	1	no	Total Copp	7440-50-8	11.5		11.5		11.5		11.5	0.26781	0.5	0.5	0.5	12.5	92	1.7	27065	31110 RR	########		
								MS (1)	P, Total	S 6010B	mg/Kg	1	no	Total Phos	7723-14-0	327		327		327		327	0.2233	1	1	1	50	114		27065	31110 RR	########		
								MSD (1)	P, Total	S 6010B	mg/Kg	1	no	Total Phos	7723-14-0	310		310		310		310	0.2233	1	1	1	50	80	5.3	27065	31110 RR	########		
								MS (1)	Zn, Total	S 6010B	mg/Kg	1	no	Total Zinc	7440-66-6	63.1		63.1		63.1		63.1	0.124	0	1	1	25	100.4		27065	31110 RR	########		
								MSD (1)	Zn, Total	S 6010B	mg/Kg	1	no	Total Zinc	7440-66-6	60.1		60.1		60.1		60.1	0.124	0	1	1	25	88.4	4.9	27065	31110 RR	########		
								MS (1)	Total 8 Me	S 6010B	mg/Kg	1	no	Total Silve	7440-22-4	10.5		10.5		10.5		10.5	0.044386	0.2	0.2	0.2	12.5	84		27065	31110 RR	########		
								MS (1)	Total 8 Me	S 6010B	mg/Kg	1	no	Total Arsei	7440-38-2	46.1		46.1		46.1		46.1	0.227774	1	1	1	50	92.2		27065	31110 RR	########		
								MS (1)	Total 8 Me	S 6010B	mg/Kg	1	no	Total Bariu	7440-39-3	204		204		204		204	0.600628	1	1	1	100	112.8		27065	31110 RR	########		
								MS (1)	Total 8 Me	S 6010B	mg/Kg	1	no	Total Cadn	7440-43-9	21.3		21.3		21.3		21.3	0.079491	0.5	0.5	0.5	25	80.96		27065	31110 RR	########		
								MS (1)	Total 8 Me	S 6010B	mg/Kg	1	no	Total Chro	7440-47-3	26.6		26.6		26.6		26.6	0.125172	1	1	1	10	120		27065	31110 RR	########		
								MS (1)	Total 8 Me	S 6010B	mg/Kg	1	no	Total Lead	7439-92-1	56.8		56.8		56.8		56.8	0.650424	1	1	1	50	88.8		27065	31110 RR	########		
								MS (1)	Total 8 Me	S 6010B	mg/Kg	1	no	Total Seler	7782-49-2	39.5		39.5		39.5		39.5	0.767141	1	1	1	50	79		27065	31110 RR	########		
								MSD (1)	Total 8 Me	S 6010B	mg/Kg	1	no	Total Silve	7440-22-4	10.8		10.8		10.8		10.8	0.044386	0.2	0.2	0.2	12.5	86.4	2.8	27065	31110 RR	########		
								MSD (1)	Total 8 Me	S 6010B	mg/Kg	1	no	Total Arsei	7440-38-2	44.8		44.8		44.8		44.8	0.227774	1	1	1	50	89.6	2.9	27065	31110 RR	########		
								MSD (1)	Total 8 Me	S 6010B	mg/Kg	1	no	Total Bariu	7440-39-3	213		213		213		213	0.600628	1	1	1	100	121.8	4.3	27065	31110 RR	########		
								MSD (1)	Total 8 Me	S 6010B	mg/Kg	1	no	Total Cadn	7440-43-9	21		21		21		21	0.079491	0.5	0.5	0.5	25	79.76	1.4	27065	31110 RR	########		
								MSD (1)	Total 8 Me	S 6010B	mg/Kg	1	no	Total Chro	7440-47-3	25.1		25.1		25.1		25.1	0.125172	1	1	1	10	105	5.8	27065	31110 RR	########		
								MSD (1)	Total 8 Me	S 6010B	mg/Kg	1	no	Total Lead	7439-92-1	54.9		54.9		54.9		54.9	0.650424	1	1	1	50	85	3.4	27065	31110 RR	########		
								MSD (1)	Total 8 Me	S 6010B	mg/Kg	1	no	Total Seler	7782-49-2	38.2		38.2		38.2		38.2	0.767141	1	1	1	50	76.4	3.3	27065	31110 RR	########		
								Method Bl	Cu, Total	S 6010B	mg/Kg	1	no	Total Copp	7440-50-8	< 0.268	<	0.5	<	0.5	<	0.5	0.26781	0.5	0.5	0.5	0			27065	31110 RR	########		
								Method Bl	P, Total	S 6010B	mg/Kg	1	no	Total Phos	7723-14-0	< 0.223	<	1	<	1	<	1	0.2233	1	1	1	0			27065	31110 RR	########		
								Method Bl	Zn, Total	S 6010B	mg/Kg	1	no	Total Zinc	7440-66-6	< 0.124		0	<	1	<	1	0.124		1	1	0			27065	31110 RR	########		
								Method Bl	Total 8 Me	S 6010B	mg/Kg	1	no	Total Silve	7440-22-4	0.0444	<	0.2	<	0.2	<	0.2	0.044386	0.2	0.2	0.2	0			27065	31110 RR	########		
								Method Bl	Total 8 Me	S 6010B	mg/Kg	1	no	Total Arsei	7440-38-2	0.228	<	1	<	1	<	1	0.227774	1	1	1	0			27065	31110 RR	########		
								Method Bl	Total 8 Me	S 6010B	mg/Kg	1	no	Total Bariu	7440-39-3	0.601	<	1	<	1	<	1	0.600628	1	1	1	0			27065	31110 RR	########		
								Method Bl	Total 8 Me	S 6010B	mg/Kg	1	no	Total Cadn	7440-43-9	0.0795	<	0.5	<	0.5	<	0.5	0.079491	0.5	0.5	0.5	0			27065	31110 RR	########		
								Method Bl	Total 8 Me	S 6010B	mg/Kg	1	no	Total Chro	7440-47-3	0.125	<	1	<	1	<	1	0.125172	1	1	1	0			27065	31110 RR	########		
								Method Bl	Total 8 Me	S 6010B	mg/Kg	1	no	Total Lead	7439-92-1	0.65	<	1	<	1	<	1	0.650424	1	1	1	0			27065	31110 RR	########		
								Method Bl	Total 8 Me	S 6010B	mg/Kg	1	no	Total Seler	7782-49-2	0.767	<	1	<	1	<	1	0.767141	1	1	1	0			27065	31110 RR	########		
								ICV (1)	Cu, Total	S 6010B	mg/Kg	1	no	Total Copp	7440-50-8	0.979		0.979		0.979		0.979	0.26781	0.5	0.5	0.5	1	97.9		27065	31110 RR	########		
								ICV (1)	P, Total	S 6010B	mg/Kg	1	no	Total Phos	7723-14-0	5.03		5.03		5.03		5.03	0.2233	1	1	1	5	100.6		27065	31110 RR	########		
								ICV (1)	Zn, Total	S 6010B	mg/Kg	1	no	Total Zinc	7440-66-6	1		1		1		1	0.124		1	1	1	100		27065	31110 RR	########		
								ICV (1)	Total 8 Me	S 6010B	mg/Kg	1	no	Total Silve	7440-22-4	0.126	<	0.2	<	0.2	<	0.2	0.044386	0.2	0.2	0.2	0.125	100.8		27065	31110 RR	########		
								ICV (1)	Total 8 Me	S 6010B	mg/Kg	1	no	Total Arsei	7440-38-2	1.01		1.01		1.01		1.01	0.227774	1	1	1	1	101		27065	31110 RR	########		
								ICV (1)	Total 8 Me	S 6010B	mg/Kg	1	no	Total Bariu	7440-39-3	1		1		1		1	0.600628	1	1	1	1	100		27065	31110 RR	########		
								ICV (1)	Total 8 Me	S 6010B	mg/Kg	1	no	Total Cadn	7440-43-9	1.01		1.01		1.01		1.01	0.079491	0.5	0.5	0.5	1	101		27065	31110 RR	########		
								ICV (1)	Total 8 Me	S 6010B	mg/Kg	1	no	Total Chro	7440-47-3	1		1		1		1	0.125172	1	1	1	1	100		27065	31110 RR	########		
								ICV (1)	Total 8 Me	S 6010B	mg/Kg	1	no	Total Lead	7439-92-1	1.01		1.01		1.01		1.01	0.650424	1	1	1	1	101		27065	31110 RR	########		
								ICV (1)	Total 8 Me	S 6010B	mg/Kg	1	no	Total Seler	7782-49-2	1.04		1.04		1.04		1.04	0.767141	1	1	1	1	104		27065	31110 RR	########		
								CCV (1)	Cu, Total	S 6010B	mg/Kg	1	no	Total Copp	7440-50-8	0.957		0.957		0.957		0.957	0.26781	0.5	0.5	0.5	1	95.7		27065	31110 RR	########		
								CCV (1)	P, Total	S 6010B	mg/Kg	1	no	Total Phos	7723-14-0	5.02		5.02		5.02		5.02	0.2233	1	1	1	5	100.4		27065	31110 RR	########		
								CCV (1)	Zn, Total	S 6010B	mg/Kg	1	no	Total Zinc	7440-66-6	1.01		1.01		1.01		1.01	0.124		1	1	1	101		27065	31110 RR	########		
								CCV (1)	Total 8 Me	S 6010B	mg/Kg	1	no	Total Silve	7440-22-4	0.126	<	0.2	<	0.2	<	0.2	0.044386	0.2	0.2	0.2	0.125	100.8		27065	31110 RR	########		
								CCV (1)	Total 8 Me	S 6010B	mg/Kg	1	no	Total Arsei	7440-38-2	1.02		1.02		1.02		1.02	0.227774	1	1	1	1	102		27065	31110 RR	########		
								CCV (1)	Total 8 Me	S 6010B	mg/Kg	1	no	Total Bariu	7440-39-3	1.01		1.01		1.01		1.01	0.600628	1	1	1	1	101		27065	31110 RR	########		
								CCV (1)	Total 8 Me	S 6010B	mg/Kg	1	no	Total Cadn	7440-43-9	1.02		1.02		1.02		1.02	0.079491	0.5	0.5	0.5	1	102		27065	31110 RR	########		
								CCV (1)	Total 8 Me	S 6010B	mg/Kg	1	no	Total Chro	7440-47-3	1.02		1.02		1.02		1.02	0.125172	1	1	1	1	102		27065	31110 RR	########		
								CCV (1)	Total 8 Me	S 6010B	mg/Kg	1	no	Total Lead	7439-92-1	1.01		1.01		1.01		1.01	0.650424	1	1	1	1	101		27065	31110 RR	########		
								CCV (1)	Total 8 Me	S 6010B	mg/Kg	1	no	Total Seler	7782-49-2	1.03		1.03		1.03		1.03	0.767141	1	1	1	1	103		27065	31110 RR	########		
								Duplicate (	FOC	ASTM D 25	%	1	no	FOC	N/A	2.02		2.02		2.02		2.02	0	0	0	0	0		2	27067	31177			
								Sample 10	FOC	ASTM D 25	%	1	no	FOC	N/A	2.06		2.06		2.06		2.06	0	0	0	0	0	0	0	27067	31177			
								LCS (1)	K, Total	S 6010B	mg/Kg	100	no	Total Pota	9/7/7440	4470		4470	<	5000	<	5000	0.291	0	50	50	5000	89.4		27065	31186			
								LCSD (1)	K, Total	S 6010B	mg/Kg	100	no	Total Pota	9/7/7440	4570		4570	<	5000	<	5000	0.291	0	50	50	5000	91.4	2.2	27065	31186			
								LCS (1)	Na, Total	S 6010B	mg/Kg	100	no	Total Sodi	7440-23-5	4420		4420	<	5000	<	5000	0.082	0	50	50	5000	88.4		27065	31186			
								LCSD (1)	Na, Total	S 6010B	mg/Kg	100	no	Total Sodi	7440-23-5	4570		4570	<	5000	<	5000	0.082	0	50	50	5000	91.4	3.3	27065	31186			
								MS (1)	K, Total	S 6010B	mg/Kg	100	no	Total Pota	9/7/7440	5460		5460		5460		5460	0.291	0	50	50	5000	91.24		27065	31186			
								MSD (1)	K, Total	S 6010B	mg/Kg	100	no	Total Pota	9/7/7440	5450		5450		5450		5450	0.291	0	50	50	5000	91.04	0.2	27065	31186			
								MS (1)	Na, Total	S 6010B	mg/Kg	100	no	Total Sodi	7440-23-5	5100		5100		5100		5100	0.082	0	50	50	5000	93.84		27065	31186			
								MSD (1)	Na, Total	S 6010B	mg/Kg	100	no	Total Sodi	7440-23-5	5070		5070		5070		5070	0.082	0	50	50	5000	93.24	0.6	27065	31186			
								Method Bl	K, Total	S 6010B	mg/Kg	1	no	Total Pota	9/7/7440	< 0.291		0	<	50	<	50	0.291	0	50	50	0			27065	31186			
								Method Bl	Na, Total	S 6010B	mg/Kg	1	no	Total Sodi	7440-23-5	32.3		32.3	<	50	<	50	0.082	0	50	50	0			27065	31186			
								ICV (1)	K, Total	S 6010B	mg/Kg	1	no	Total Pota	9/7/7440	49.4		49.4	<	50	<	50	0.291	0	50	50	50	98.8		27065	31186			
								ICV (1)	Na, Total	S 6010B	mg/Kg	1	no	Total Sodi	7440-23-5	47.6		47.6	<	50	<	50	0.082	0	50	50	50	95.2		27065	31186			
								CCV (1)	K, Total	S 6010B	mg/Kg	1	no	Total Pota	9/7/7440	47.4		47.4	<	50	<	50	0.291	0	50	50	50	94.8		27065	31186			
								CCV (1)	Na, Total	S 6010B	mg/Kg	1	no	Total Sodi	7440-23-5	48.3		48.3	<	50	<	50	0.082	0	50	50	50	96.6		27065	31186			
								LCS (1)	Total 8 Me	S 7471A	mg/Kg	1	no	Total Merc	7439-97-6	0.509		0.509		0.509		0.509	0.00299	0.04	0.04	0.04	0.5	101.8		27189	31240			
								LCSD (1)	Total 8 Me	S 7471A	mg/Kg	1	no	Total Merc	7439-97-6	0.521		0.521		0.521		0.521	0.00299	0.04	0.04	0.04	0.5	104.2	2.3	27189	31240			
								MS (1)	Total 8 Me	S 7471A	mg/Kg	1	no	Total Merc	7439-97-6	0.537		0.537		0.537		0.537	0.00299	0.04	0.04	0.04	0.5	105.71		27189	31240			
								MSD (1)	Total 8 Me	S 7471A	mg/Kg	1	no	Total Merc	7439-97-6	0.544		0.544		0.544		0.544	0.00299	0.04	0.04	0.04	0.5	107.11	1.3	27189	31240			
								Method Bl	Total 8 Me	S 7471A	mg/Kg	1	no	Total Merc	7439-97-6	0.00299	<	0.04	<	0.04	<	0.04	0.00299	0.04	0.04	0.04	0			27189	31240			
								ICV (1)	Total 8 Me	S 7471A	mg/L	1	no	Total Merc	7439-97-6	0.00505	<	0.04	<	0.04	<	0.04	0.00299	0.04	0.04	0.04	0.005	101		27189	31240			
								CCV (1)	Total 8 Me	S 7471A	mg/L	1	no	Total Merc	7439-97-6	0.00508	<	0.04	<	0.04	<	0.04	0.00299	0.04	0.04	0.04	0.005	101.6		27189	31240			

LCS (1)	Chromium SM 3500-C	mg/Kg	1	no	Hexavalen 7440-47-3	31.7	31.7	31.7	31.7	0.2	0.4	0.4	0.4	40	79.25		27158	31338	
LCSD (1)	Chromium SM 3500-C	mg/Kg	1	no	Hexavalen 7440-47-3	32.2	32.2	32.2	32.2	0.2	0.4	0.4	0.4	40	80.5	1.6	27158	31338	
MS (1)	Chromium SM 3500-C	mg/Kg	1	no	Hexavalen 7440-47-3	30.1	30.1	30.1	30.1	0.2	0.4	0.4	0.4	40	75.25		27158	31338	Matrix spike recovery out of control limits due to matrix interfere
MSD (1)	Chromium SM 3500-C	mg/Kg	1	no	Hexavalen 7440-47-3	27.9	27.9	27.9	27.9	0.2	0.4	0.4	0.4	40	69.75	7.6	27158	31338	Matrix spike recovery out of control limits due to matrix interfere
Method Bl	Chromium SM 3500-C	mg/Kg	1	no	Hexavalen 7440-47-3	< 0.04	< 0.04	< 0.04	0.04	0.2	0.4	0.4	0.4	0			27158	31338	
ICV (1)	Chromium SM 3500-C	mg/L	1	no	Hexavalen 7440-47-3	0.479	0.479	0.479	0.479	0.2	0.4	0.4	0.4	0.5	95.8		27158	31338	
CCV (1)	Chromium SM 3500-C	mg/L	1	no	Hexavalen 7440-47-3	0.485	0.485	0.485	0.485	0.2	0.4	0.4	0.4	0.5	97		27158	31338	
LCS (1)	Nitrate an E 353.3	mg/Kg	1	no	Nitrate and Nitrite as N	0.159	0.159	0.159	0.159	0.0155	0.1	0.1	0.1	0.16	99.375		27540	31626	
LCSD (1)	Nitrate an E 353.3	mg/Kg	1	no	Nitrate and Nitrite as N	0.179	0.179	0.179	0.179	0.0155	0.1	0.1	0.1	0.16	111.875	11.8	27540	31626	
MS (1)	Nitrate an E 353.3	mg/Kg	2	no	Nitrate and Nitrite as N	0.574	0.574	0.574	0.574	0.0155	0.1	0.1	0.1	0.32	-1.25		27540	31626	Matrix spike recovery out of control limits due to matrix interfere
MSD (1)	Nitrate an E 353.3	mg/Kg	2	no	Nitrate and Nitrite as N	0.552	0.552	0.552	0.552	0.0155	0.1	0.1	0.1	0.32	-8.12501	3.9	27540	31626	Matrix spike recovery out of control limits due to matrix interfere
Method Bl	Nitrate an E 353.3	mg/Kg	1	no	Nitrate and Nitrite as	< 0.1	< 0.1	< 0.1	0.1	0.0155	0.1	0.1	0.1	0			27540	31626	
ICV (1)	Nitrate an E 353.3	mg/Kg	1	no	Nitrate and Nitrite as N	0.148	0.148	0.148	0.148	0.0155	0.1	0.1	0.1	0.16	92.5		27540	31626	
CCV (1)	Nitrate an E 353.3	mg/Kg	1	no	Nitrate and Nitrite as N	0.144	0.144	0.144	0.144	0.0155	0.1	0.1	0.1	0.16	90		27540	31626	
LCS (1)	Nitrate an E 353.3	mg/Kg	1	no	Nitrate and Nitrite as N	0.145	0.145	0.145	0.145	0.0155	0.1	0.1	0.1	0.16	90.625		27707	31814	
LCSD (1)	Nitrate an E 353.3	mg/Kg	1	no	Nitrate and Nitrite as N	0.172	0.172	0.172	0.172	0.0155	0.1	0.1	0.1	0.16	107.5	17	27707	31814	
MS (1)	Nitrate an E 353.3	mg/Kg	10	no	Nitrate and Nitrite as N	2.22	2.22	2.22	2.22	0.0155	0.1	0.1	0.1	1.6	-8.12499		27707	31814	Matrix spike recovery out of control limits due to matrix interfere
MSD (1)	Nitrate an E 353.3	mg/Kg	10	no	Nitrate and Nitrite as N	2.22	2.22	2.22	2.22	0.0155	0.1	0.1	0.1	1.6	-8.12499	0	27707	31814	Matrix spike recovery out of control limits due to matrix interfere
Method Bl	Nitrate an E 353.3	mg/Kg	1	no	Nitrate and Nitrite as	< 0.1	< 0.1	< 0.1	0.1	0.0155	0.1	0.1	0.1	0			27707	31814	
ICV (1)	Nitrate an E 353.3	mg/Kg	1	no	Nitrate and Nitrite as N	0.175	0.175	0.175	0.175	0.0155	0.1	0.1	0.1	0.16	109.375		27707	31814	
CCV (1)	Nitrate an E 353.3	mg/Kg	1	no	Nitrate and Nitrite as N	0.172	0.172	0.172	0.172	0.0155	0.1	0.1	0.1	0.16	107.5		27707	31814	
LCS (1)	Nitrate an E 353.3	mg/Kg	1	no	Nitrate and Nitrite as N	0.16	0.16	0.16	0.16	0.0155	0.1	0.1	0.1	0.16	100		27709	31817	
LCSD (1)	Nitrate an E 353.3	mg/Kg	1	no	Nitrate and Nitrite as N	0.175	0.175	0.175	0.175	0.0155	0.1	0.1	0.1	0.16	109.375	9	27709	31817	
MS (1)	Nitrate an E 353.3	mg/Kg	2	no	Nitrate and Nitrite as N	1.18	1.18	1.18	1.18	0.0155	0.1	0.1	0.1	0.32	237.5		27709	31817	Matrix spike recovery out of control limits due to matrix interfere
MSD (1)	Nitrate an E 353.3	mg/Kg	2	no	Nitrate and Nitrite as N	1.14	1.14	1.14	1.14	0.0155	0.1	0.1	0.1	0.32	225	3.4	27709	31817	Matrix spike recovery out of control limits due to matrix interfere
Method Bl	Nitrate an E 353.3	mg/Kg	1	no	Nitrate and Nitrite as	< 0.1	< 0.1	< 0.1	0.1	0.0155	0.1	0.1	0.1	0			27709	31817	
ICV (1)	Nitrate an E 353.3	mg/Kg	1	no	Nitrate and Nitrite as N	0.179	0.179	0.179	0.179	0.0155	0.1	0.1	0.1	0.16	111.875		27709	31817	
CCV (1)	Nitrate an E 353.3	mg/Kg	1	no	Nitrate and Nitrite as N	0.17	0.17	0.17	0.17	0.0155	0.1	0.1	0.1	0.16	106.25		27709	31817	

nce. Use LCS/LCSD to demonstrate analysis is under control.
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Analytical and Quality Control Report

William Little
WTS
P.O. Box 363
Building 126 3RD Floor
WSMR, NM, 88002

Report Date: November 17, 2006

Work Order: 6101812

Project Name: HELSTF Phase III Soil Sampling
Project Number: 7

Enclosed are the Analytical Report and Quality Control Report for the following sample(s) submitted to TraceAnalysis, Inc.

Sample	Description	Matrix	Date Taken	Time Taken	Date Received
106093	HLSF-0085-SB-002(10.0-10.5)	soil	2006-10-13	10:35	2006-10-16
106094	HLSF-0085-SB-002(20.0-20.5)	soil	2006-10-13	10:55	2006-10-16
106095	HLSF-0085-SB-002(30.0-30.5)	soil	2006-10-13	11:25	2006-10-16
106096	HLSF-0085-SB-002(40.0-40.5')	soil	2006-10-13	12:05	2006-10-16
106097	HLSF-0085-SB-002(49.5-50.0)	soil	2006-10-13	12:40	2006-10-16
106098	HLSF-0085-SB-002(0.5-1.0)	soil	2006-10-16	15:15	2006-10-16

These results represent only the samples received in the laboratory. The Quality Control Report is generated on a batch basis. All information contained in this report is for the analytical batch(es) in which your sample(s) were analyzed.

This report consists of a total of 4 pages and shall not be reproduced except in its entirety, without written approval of TraceAnalysis, Inc.

Dr. Blair Leftwich, Director

Standard Flags

B - The sample contains less than ten times the concentration found in the method blank.

Analytical Report

Sample: 106093 - HLSF-0085-SB-002(10.0-10.5)

Analysis:	Chromium, Hexavalent	Analytical Method:	SM 3500-Cr B	Prep Method:	N/A
QC Batch:	31338	Date Analyzed:	2006-10-23	Analyzed By:	WB
Prep Batch:	27158	Sample Preparation:	2006-10-23	Prepared By:	WB

Parameter	Flag	RL Result	Units	Dilution	RL
Hexavalent Chromium		< 0.04	mg/Kg	1	0.400

Sample: 106094 - HLSF-0085-SB-002(20.0-20.5)

Analysis:	Chromium, Hexavalent	Analytical Method:	SM 3500-Cr B	Prep Method:	N/A
QC Batch:	31338	Date Analyzed:	2006-10-23	Analyzed By:	WB
Prep Batch:	27158	Sample Preparation:	2006-10-23	Prepared By:	WB

Parameter	Flag	RL Result	Units	Dilution	RL
Hexavalent Chromium		< 0.04	mg/Kg	1	0.400

Sample: 106095 - HLSF-0085-SB-002(30.0-30.5)

Analysis:	Chromium, Hexavalent	Analytical Method:	SM 3500-Cr B	Prep Method:	N/A
QC Batch:	31338	Date Analyzed:	2006-10-23	Analyzed By:	WB
Prep Batch:	27158	Sample Preparation:	2006-10-23	Prepared By:	WB

Parameter	Flag	RL Result	Units	Dilution	RL
Hexavalent Chromium		< 0.04	mg/Kg	1	0.400

Sample: 106096 - HLSF-0085-SB-002(40.0-40.5')

Analysis:	Chromium, Hexavalent	Analytical Method:	SM 3500-Cr B	Prep Method:	N/A
QC Batch:	31338	Date Analyzed:	2006-10-23	Analyzed By:	WB
Prep Batch:	27158	Sample Preparation:	2006-10-23	Prepared By:	WB

Parameter	Flag	RL Result	Units	Dilution	RL
Hexavalent Chromium		< 0.04	mg/Kg	1	0.400

Sample: 106097 - HLSF-0085-SB-002(49.5-50.0)

Analysis:	Chromium, Hexavalent	Analytical Method:	SM 3500-Cr B	Prep Method:	N/A
QC Batch:	31338	Date Analyzed:	2006-10-23	Analyzed By:	WB
Prep Batch:	27158	Sample Preparation:	2006-10-23	Prepared By:	WB

Parameter	Flag	RL Result	Units	Dilution	RL
Hexavalent Chromium		< 0.04	mg/Kg	1	0.400

Sample: 106098 - HLSF-0085-SB-002(0.5-1.0)

Analysis:	Chromium, Hexavalent	Analytical Method:	SM 3500-Cr B	Prep Method:	N/A
QC Batch:	31338	Date Analyzed:	2006-10-23	Analyzed By:	WB
Prep Batch:	27158	Sample Preparation:	2006-10-23	Prepared By:	WB

Parameter	Flag	RL Result	Units	Dilution	RL
Hexavalent Chromium		< 0.04	mg/Kg	1	0.400

Method Blank (1) QC Batch: 31338

QC Batch:	31338	Date Analyzed:	2006-10-23	Analyzed By:	WB
Prep Batch:	27158	QC Preparation:	2006-10-23	Prepared By:	WB

Parameter	Flag	MDL Result	Units	RL
Hexavalent Chromium		< 0.04	mg/Kg	0.4

Laboratory Control Spike (LCS-1)

QC Batch:	31338	Date Analyzed:	2006-10-23	Analyzed By:	WB
Prep Batch:	27158	QC Preparation:	2006-10-23	Prepared By:	WB

Param	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Hexavalent Chromium	31.7	mg/Kg	1	40.0	<0.200	79	77.3 - 119

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Param	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Hexavalent Chromium	32.2	mg/Kg	1	40.0	<0.200	80	77.3 - 119	2	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Matrix Spike (MS-1) Spiked Sample: 106221

QC Batch:	31338	Date Analyzed:	2006-10-23	Analyzed By:	WB
Prep Batch:	27158	QC Preparation:	2006-10-23	Prepared By:	WB

continued . . .

matrix spikes continued . . .

Param		MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit

Param		MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Hexavalent Chromium	[1]	30.1	mg/Kg	1	40.0	<0.200	75	85 - 115

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Param		MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Hexavalent Chromium	[2]	27.9	mg/Kg	1	40.0	<0.200	70	85 - 115	8	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Standard (ICV-1)

QC Batch: 31338 Date Analyzed: 2006-10-23 Analyzed By: WB

Param	Flag	Units	ICVs True Conc.	ICVs Found Conc.	ICVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Hexavalent Chromium		mg/L	0.500	0.479	96	85 - 115	2006-10-23

Standard (CCV-1)

QC Batch: 31338 Date Analyzed: 2006-10-23 Analyzed By: WB

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Hexavalent Chromium		mg/L	0.500	0.485	97	85 - 115	2006-10-23

[1]Matrix spike recovery out of control limits due to matrix interference. Use LCS/LCSD to demonstrate analysis is under control.
[2]Matrix spike recovery out of control limits due to matrix interference. Use LCS/LCSD to demonstrate analysis is under control.

Analytical and Quality Control Report

William Little
WTS
P.O. Box 363
Building 126 3RD Floor
WSMR, NM, 88002

Report Date: November 17, 2006

Work Order: 6101812

Project Name: HELSTF Phase III Soil Sampling
Project Number: 7

Enclosed are the Analytical Report and Quality Control Report for the following sample(s) submitted to TraceAnalysis, Inc.

Sample	Description	Matrix	Date Taken	Time Taken	Date Received
106093	HLSF-0085-SB-002(10.0-10.5)	soil	2006-10-13	10:35	2006-10-16
106094	HLSF-0085-SB-002(20.0-20.5)	soil	2006-10-13	10:55	2006-10-16
106095	HLSF-0085-SB-002(30.0-30.5)	soil	2006-10-13	11:25	2006-10-16
106096	HLSF-0085-SB-002(40.0-40.5')	soil	2006-10-13	12:05	2006-10-16
106097	HLSF-0085-SB-002(49.5-50.0)	soil	2006-10-13	12:40	2006-10-16
106098	HLSF-0085-SB-002(0.5-1.0)	soil	2006-10-16	15:15	2006-10-16

These results represent only the samples received in the laboratory. The Quality Control Report is generated on a batch basis. All information contained in this report is for the analytical batch(es) in which your sample(s) were analyzed.

This report consists of a total of 3 pages and shall not be reproduced except in its entirety, without written approval of TraceAnalysis, Inc.

Dr. Blair Leftwich, Director

Standard Flags

B - The sample contains less than ten times the concentration found in the method blank.

Analytical Report

Sample: 106093 - HLSF-0085-SB-002(10.0-10.5)

Analysis:	FOC	Analytical Method:	ASTM D 2974-87	Prep Method:	N/A
QC Batch:	31177	Date Analyzed:	2006-10-20	Analyzed By:	WB
Prep Batch:	27067	Sample Preparation:	2006-10-18	Prepared By:	WB

Parameter	Flag	RL Result	Units	Dilution	RL
FOC		**2.22**	%	1	0.00

Sample: 106094 - HLSF-0085-SB-002(20.0-20.5)

Analysis:	FOC	Analytical Method:	ASTM D 2974-87	Prep Method:	N/A
QC Batch:	31177	Date Analyzed:	2006-10-20	Analyzed By:	WB
Prep Batch:	27067	Sample Preparation:	2006-10-18	Prepared By:	WB

Parameter	Flag	RL Result	Units	Dilution	RL
FOC		**2.31**	%	1	0.00

Sample: 106095 - HLSF-0085-SB-002(30.0-30.5)

Analysis:	FOC	Analytical Method:	ASTM D 2974-87	Prep Method:	N/A
QC Batch:	31177	Date Analyzed:	2006-10-20	Analyzed By:	WB
Prep Batch:	27067	Sample Preparation:	2006-10-18	Prepared By:	WB

Parameter	Flag	RL Result	Units	Dilution	RL
FOC		**1.15**	%	1	0.00

Sample: 106096 - HLSF-0085-SB-002(40.0-40.5')

Analysis:	FOC	Analytical Method:	ASTM D 2974-87	Prep Method:	N/A
QC Batch:	31177	Date Analyzed:	2006-10-20	Analyzed By:	WB
Prep Batch:	27067	Sample Preparation:	2006-10-18	Prepared By:	WB

Parameter	Flag	RL Result	Units	Dilution	RL
FOC		**0.680**	%	1	0.00

Sample: 106097 - HLSF-0085-SB-002(49.5-50.0)

Analysis:	FOC	Analytical Method:	ASTM D 2974-87	Prep Method:	N/A
QC Batch:	31177	Date Analyzed:	2006-10-20	Analyzed By:	WB
Prep Batch:	27067	Sample Preparation:	2006-10-18	Prepared By:	WB

Parameter	Flag	RL Result	Units	Dilution	RL
FOC		**2.52**	%	1	0.00

Sample: 106098 - HLSF-0085-SB-002(0.5-1.0)

Analysis:	FOC	Analytical Method:	ASTM D 2974-87	Prep Method:	N/A
QC Batch:	31177	Date Analyzed:	2006-10-20	Analyzed By:	WB
Prep Batch:	27067	Sample Preparation:	2006-10-18	Prepared By:	WB

Parameter	Flag	RL Result	Units	Dilution	RL
FOC		**2.06**	%	1	0.00

Duplicates (1)

QC Batch:	31177	Date Analyzed:	2006-10-20	Analyzed By:	WB
Prep Batch:	27067	QC Preparation:	2006-10-18	Prepared By:	SM

Param	Duplicate Result	Sample Result	Units	Dilution	RPD	RPD Limit
FOC	2.02	2.06	%	1	2	34

Analytical and Quality Control Report

William Little
WTS
P.O. Box 363
Building 126 3RD Floor
WSMR, NM, 88002

Report Date: November 17, 2006

Work Order: 6101812

Project Name: HELSTF Phase III Soil Sampling
Project Number: 7

Enclosed are the Analytical Report and Quality Control Report for the following sample(s) submitted to TraceAnalysis, Inc.

Sample	Description	Matrix	Date Taken	Time Taken	Date Received
106093	HLSF-0085-SB-002(10.0-10.5)	soil	2006-10-13	10:35	2006-10-16
106094	HLSF-0085-SB-002(20.0-20.5)	soil	2006-10-13	10:55	2006-10-16
106095	HLSF-0085-SB-002(30.0-30.5)	soil	2006-10-13	11:25	2006-10-16
106096	HLSF-0085-SB-002(40.0-40.5')	soil	2006-10-13	12:05	2006-10-16
106097	HLSF-0085-SB-002(49.5-50.0)	soil	2006-10-13	12:40	2006-10-16
106098	HLSF-0085-SB-002(0.5-1.0)	soil	2006-10-16	15:15	2006-10-16

These results represent only the samples received in the laboratory. The Quality Control Report is generated on a batch basis. All information contained in this report is for the analytical batch(es) in which your sample(s) were analyzed.

This report consists of a total of 7 pages and shall not be reproduced except in its entirety, without written approval of TraceAnalysis, Inc.

Dr. Blair Leftwich, Director

Standard Flags

B - The sample contains less than ten times the concentration found in the method blank.

Analytical Report

Sample: 106093 - HLSF-0085-SB-002(10.0-10.5)

Analysis:	Nitrate and Nitrite as N	Analytical Method:	E 353.3	Prep Method:	N/A
QC Batch:	31626	Date Analyzed:	2006-11-01	Analyzed By:	WB
Prep Batch:	27540	Sample Preparation:	2006-11-01	Prepared By:	JS

Parameter	Flag	RL Result	Units	Dilution	RL
Nitrate and Nitrite as N		**6.15**	mg/Kg	25	0.100

Sample: 106094 - HLSF-0085-SB-002(20.0-20.5)

Analysis:	Nitrate and Nitrite as N	Analytical Method:	E 353.3	Prep Method:	N/A
QC Batch:	31814	Date Analyzed:	2006-11-09	Analyzed By:	JS
Prep Batch:	27707	Sample Preparation:	2006-11-08	Prepared By:	JS

Parameter	Flag	RL Result	Units	Dilution	RL
Nitrate and Nitrite as N		**1.32**	mg/Kg	5	0.100

Sample: 106095 - HLSF-0085-SB-002(30.0-30.5)

Analysis:	Nitrate and Nitrite as N	Analytical Method:	E 353.3	Prep Method:	N/A
QC Batch:	31626	Date Analyzed:	2006-11-01	Analyzed By:	WB
Prep Batch:	27540	Sample Preparation:	2006-11-01	Prepared By:	JS

Parameter	Flag	RL Result	Units	Dilution	RL
Nitrate and Nitrite as N		**1.22**	mg/Kg	5	0.100

Sample: 106096 - HLSF-0085-SB-002(40.0-40.5')

Analysis:	Nitrate and Nitrite as N	Analytical Method:	E 353.3	Prep Method:	N/A
QC Batch:	31817	Date Analyzed:	2006-11-09	Analyzed By:	JS
Prep Batch:	27709	Sample Preparation:	2006-11-08	Prepared By:	JS

Parameter	Flag	RL Result	Units	Dilution	RL
Nitrate and Nitrite as N		**0.485**	mg/Kg	2	0.100

Sample: 106097 - HLSF-0085-SB-002(49.5-50.0)

Analysis:	Nitrate and Nitrite as N	Analytical Method:	E 353.3	Prep Method:	N/A
QC Batch:	31626	Date Analyzed:	2006-11-01	Analyzed By:	WB
Prep Batch:	27540	Sample Preparation:	2006-11-01	Prepared By:	JS

Parameter	Flag	RL Result	Units	Dilution	RL
Nitrate and Nitrite as N		**2.38**	mg/Kg	10	0.100

Sample: 106098 - HLSF-0085-SB-002(0.5-1.0)

Analysis:	Nitrate and Nitrite as N	Analytical Method:	E 353.3	Prep Method:	N/A
QC Batch:	31626	Date Analyzed:	2006-11-01	Analyzed By:	WB
Prep Batch:	27540	Sample Preparation:	2006-11-01	Prepared By:	JS

Parameter	Flag	RL Result	Units	Dilution	RL
Nitrate and Nitrite as N		<0.500	mg/Kg	5	0.100

Method Blank (1) QC Batch: 31626

QC Batch:	31626	Date Analyzed:	2006-11-01	Analyzed By:	WB
Prep Batch:	27540	QC Preparation:	2006-10-31	Prepared By:	JS

Parameter	Flag	MDL Result	Units	RL
Nitrate and Nitrite as N		< 0.1	mg/Kg	0.1

Method Blank (1) QC Batch: 31814

QC Batch:	31814	Date Analyzed:	2006-11-09	Analyzed By:	JS
Prep Batch:	27707	QC Preparation:	2006-11-08	Prepared By:	JS

Parameter	Flag	MDL Result	Units	RL
Nitrate and Nitrite as N		< 0.10	mg/Kg	0.1

Method Blank (1) QC Batch: 31817

QC Batch:	31817	Date Analyzed:	2006-11-09	Analyzed By:	JS
Prep Batch:	27709	QC Preparation:	2006-11-08	Prepared By:	JS

Parameter	Flag	MDL Result	Units	RL
Nitrate and Nitrite as N		< 0.10	mg/Kg	0.1

Laboratory Control Spike (LCS-1)

QC Batch:	31626	Date Analyzed:	2006-11-01	Analyzed By:	WB
Prep Batch:	27540	QC Preparation:	2006-10-31	Prepared By:	JS

Param	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Nitrate and Nitrite as N	0.159	mg/Kg	1	0.160	<0.0155	99	85 - 115

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Param	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Nitrate and Nitrite as N	0.179	mg/Kg	1	0.160	<0.0155	112	85 - 115	12	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Laboratory Control Spike (LCS-1)

QC Batch: 31814 Date Analyzed: 2006-11-09 Analyzed By: JS
Prep Batch: 27707 QC Preparation: 2006-11-08 Prepared By: JS

Param	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Nitrate and Nitrite as N	0.145	mg/Kg	1	0.160	<0.0155	91	85 - 115

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Param	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Nitrate and Nitrite as N	0.172	mg/Kg	1	0.160	<0.0155	108	85 - 115	17	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Laboratory Control Spike (LCS-1)

QC Batch: 31817 Date Analyzed: 2006-11-09 Analyzed By: JS
Prep Batch: 27709 QC Preparation: 2006-11-08 Prepared By: JS

Param	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Nitrate and Nitrite as N	0.160	mg/Kg	1	0.160	<0.0155	100	85 - 115

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Param	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Nitrate and Nitrite as N	0.175	mg/Kg	1	0.160	<0.0155	109	85 - 115	9	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Matrix Spike (MS-1) Spiked Sample: 106713

QC Batch: 31626 Date Analyzed: 2006-11-01 Analyzed By: WB
Prep Batch: 27540 QC Preparation: 2006-10-31 Prepared By: JS

continued . . .

matrix spikes continued . . .

Param		MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit

Param		MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Nitrate and Nitrite as N	[1]	0.574	mg/Kg	2	0.320	0.578	-1	85 - 115

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Param		MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Nitrate and Nitrite as N	[2]	0.552	mg/Kg	2	0.320	0.578	-8	85 - 115	4	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Matrix Spike (MS-1) Spiked Sample: 106091

QC Batch: 31814 Date Analyzed: 2006-11-09 Analyzed By: JS
Prep Batch: 27707 QC Preparation: 2006-11-08 Prepared By: JS

Param		MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Nitrate and Nitrite as N	[3]	2.22	mg/Kg	10	1.60	2.35	-8	85 - 115

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Param		MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Nitrate and Nitrite as N	[4]	2.22	mg/Kg	10	1.60	2.35	-8	85 - 115	0	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Matrix Spike (MS-1) Spiked Sample: 107951

QC Batch: 31817 Date Analyzed: 2006-11-09 Analyzed By: JS
Prep Batch: 27709 QC Preparation: 2006-11-08 Prepared By: JS

Param		MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Nitrate and Nitrite as N	[5]	1.18	mg/Kg	2	0.320	0.42	238	85 - 115

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Param		MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Nitrate and Nitrite as N	[6]	1.14	mg/Kg	2	0.00	0.42	225	85 - 115	3	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

[1]Matrix spike recovery out of control limits due to matrix interference. Use LCS/LCSD to demonstrate analysis is under control.
[2]Matrix spike recovery out of control limits due to matrix interference. Use LCS/LCSD to demonstrate analysis is under control.
[3]Matrix spike recovery out of control limits due to matrix interference. Use LCS/LCSD to demonstrate analysis is under control.
[4]Matrix spike recovery out of control limits due to matrix interference. Use LCS/LCSD to demonstrate analysis is under control.
[5]Matrix spike recovery out of control limits due to matrix interference. Use LCS/LCSD to demonstrate analysis is under control.
[6]Matrix spike recovery out of control limits due to matrix interference. Use LCS/LCSD to demonstrate analysis is under control.

Standard (ICV-1)

QC Batch: 31626 Date Analyzed: 2006-11-01 Analyzed By: WB

Param	Flag	Units	ICVs True Conc.	ICVs Found Conc.	ICVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Nitrate and Nitrite as N		mg/Kg	0.160	0.148	92	85 - 115	2006-11-01

Standard (CCV-1)

QC Batch: 31626 Date Analyzed: 2006-11-01 Analyzed By: WB

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Nitrate and Nitrite as N		mg/Kg	0.160	0.144	90	85 - 115	2006-11-01

Standard (ICV-1)

QC Batch: 31814 Date Analyzed: 2006-11-09 Analyzed By: JS

Param	Flag	Units	ICVs True Conc.	ICVs Found Conc.	ICVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Nitrate and Nitrite as N		mg/Kg	0.160	0.175	109	85 - 115	2006-11-09

Standard (CCV-1)

QC Batch: 31814 Date Analyzed: 2006-11-09 Analyzed By: JS

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Nitrate and Nitrite as N		mg/Kg	0.160	0.172	108	85 - 115	2006-11-09

Standard (ICV-1)

QC Batch: 31817 Date Analyzed: 2006-11-09 Analyzed By: JS

Param	Flag	Units	ICVs True Conc.	ICVs Found Conc.	ICVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Nitrate and Nitrite as N		mg/Kg	0.160	0.179	112	85 - 115	2006-11-09

Standard (CCV-1)

QC Batch: 31817 Date Analyzed: 2006-11-09 Analyzed By: JS

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Nitrate and Nitrite as N		mg/Kg	0.160	0.170	106	85 - 115	2006-11-09

Analytical and Quality Control Report

William Little
WTS
P.O. Box 363
Building 126 3RD Floor
WSMR, NM, 88002

Report Date: November 17, 2006

Work Order: 6101812

Project Name: HELSTF Phase III Soil Sampling
Project Number: 7

Enclosed are the Analytical Report and Quality Control Report for the following sample(s) submitted to TraceAnalysis, Inc.

Sample	Description	Matrix	Date Taken	Time Taken	Date Received
106093	HLSF-0085-SB-002(10.0-10.5)	soil	2006-10-13	10:35	2006-10-16
106094	HLSF-0085-SB-002(20.0-20.5)	soil	2006-10-13	10:55	2006-10-16
106095	HLSF-0085-SB-002(30.0-30.5)	soil	2006-10-13	11:25	2006-10-16
106096	HLSF-0085-SB-002(40.0-40.5')	soil	2006-10-13	12:05	2006-10-16
106097	HLSF-0085-SB-002(49.5-50.0)	soil	2006-10-13	12:40	2006-10-16
106098	HLSF-0085-SB-002(0.5-1.0)	soil	2006-10-16	15:15	2006-10-16

These results represent only the samples received in the laboratory. The Quality Control Report is generated on a batch basis. All information contained in this report is for the analytical batch(es) in which your sample(s) were analyzed.

This report consists of a total of 14 pages and shall not be reproduced except in its entirety, without written approval of TraceAnalysis, Inc.

Dr. Blair Leftwich, Director

Standard Flags

B - The sample contains less than ten times the concentration found in the method blank.

Analytical Report

Sample: 106093 - HLSF-0085-SB-002(10.0-10.5)

Analysis:	Cu, Total	Analytical Method:	S 6010B	Prep Method:	S 3050B
QC Batch:	31110	Date Analyzed:	2006-10-20	Analyzed By:	RR
Prep Batch:	27065	Sample Preparation:	2006-10-19	Prepared By:	TS

Parameter	Flag	RL Result	Units	Dilution	RL
Total Copper		**2.48**	mg/Kg	1	0.500

Sample: 106093 - HLSF-0085-SB-002(10.0-10.5)

Analysis:	Na, Total	Analytical Method:	S 6010B	Prep Method:	S 3050B
QC Batch:	31186	Date Analyzed:	2006-10-24	Analyzed By:	TP
Prep Batch:	27065	Sample Preparation:	2006-10-19	Prepared By:	TS

Parameter	Flag	RL Result	Units	Dilution	RL
Total Sodium		**455**	mg/Kg	1	50.0

Sample: 106093 - HLSF-0085-SB-002(10.0-10.5)

Analysis:	P, Total	Analytical Method:	S 6010B	Prep Method:	S 3050B
QC Batch:	31110	Date Analyzed:	2006-10-20	Analyzed By:	RR
Prep Batch:	27065	Sample Preparation:	2006-10-19	Prepared By:	TS

Parameter	Flag	RL Result	Units	Dilution	RL
Total Phosphorous		**42.2**	mg/Kg	1	1.00

Sample: 106093 - HLSF-0085-SB-002(10.0-10.5)

Analysis:	Total 8 Metals	Analytical Method:	S 6010B	Prep Method:	S 3050B
QC Batch:	31110	Date Analyzed:	2006-10-20	Analyzed By:	RR
Prep Batch:	27065	Sample Preparation:	2006-10-19	Prepared By:	TS
Analysis:	Total 8 Metals	Analytical Method:	S 7471A	Prep Method:	N/A
QC Batch:	31240	Date Analyzed:	2006-10-25	Analyzed By:	TP
Prep Batch:	27189	Sample Preparation:	2006-10-24	Prepared By:	TP

Parameter	Flag	RL Result	Units	Dilution	RL
Total Silver		<0.200	mg/Kg	1	0.200
Total Arsenic		<1.00	mg/Kg	1	1.00
Total Barium		**44.2**	mg/Kg	1	1.00
Total Cadmium		<0.500	mg/Kg	1	0.500
Total Mercury		<0.0400	mg/Kg	1	0.0400
Total Lead		<1.00	mg/Kg	1	1.00
Total Selenium		<1.00	mg/Kg	1	1.00

Sample: 106094 - HLSF-0085-SB-002(20.0-20.5)

Analysis:	Cu, Total	Analytical Method:	S 6010B	Prep Method:	S 3050B
QC Batch:	31110	Date Analyzed:	2006-10-20	Analyzed By:	RR
Prep Batch:	27065	Sample Preparation:	2006-10-19	Prepared By:	TS

Parameter	Flag	RL Result	Units	Dilution	RL
Total Copper		**2.86**	mg/Kg	1	0.500

Sample: 106094 - HLSF-0085-SB-002(20.0-20.5)

Analysis:	Na, Total	Analytical Method:	S 6010B	Prep Method:	S 3050B
QC Batch:	31186	Date Analyzed:	2006-10-24	Analyzed By:	TP
Prep Batch:	27065	Sample Preparation:	2006-10-19	Prepared By:	TS

Parameter	Flag	RL Result	Units	Dilution	RL
Total Sodium		**546**	mg/Kg	1	50.0

Sample: 106094 - HLSF-0085-SB-002(20.0-20.5)

Analysis:	P, Total	Analytical Method:	S 6010B	Prep Method:	S 3050B
QC Batch:	31110	Date Analyzed:	2006-10-20	Analyzed By:	RR
Prep Batch:	27065	Sample Preparation:	2006-10-19	Prepared By:	TS

Parameter	Flag	RL Result	Units	Dilution	RL
Total Phosphorous		**60.7**	mg/Kg	1	1.00

Sample: 106094 - HLSF-0085-SB-002(20.0-20.5)

Analysis:	Total 8 Metals	Analytical Method:	S 6010B	Prep Method:	S 3050B
QC Batch:	31110	Date Analyzed:	2006-10-20	Analyzed By:	RR
Prep Batch:	27065	Sample Preparation:	2006-10-19	Prepared By:	TS
Analysis:	Total 8 Metals	Analytical Method:	S 7471A	Prep Method:	N/A
QC Batch:	31240	Date Analyzed:	2006-10-25	Analyzed By:	TP
Prep Batch:	27189	Sample Preparation:	2006-10-24	Prepared By:	TP

Parameter	Flag	RL Result	Units	Dilution	RL
Total Silver		<0.200	mg/Kg	1	0.200
Total Arsenic		<1.00	mg/Kg	1	1.00
Total Barium		**44.9**	mg/Kg	1	1.00
Total Cadmium		<0.500	mg/Kg	1	0.500
Total Mercury		<0.0400	mg/Kg	1	0.0400
Total Lead		<1.00	mg/Kg	1	1.00
Total Selenium		<1.00	mg/Kg	1	1.00

Sample: 106095 - HLSF-0085-SB-002(30.0-30.5)

Analysis:	Cu, Total	Analytical Method:	S 6010B	Prep Method:	S 3050B
QC Batch:	31110	Date Analyzed:	2006-10-20	Analyzed By:	RR
Prep Batch:	27065	Sample Preparation:	2006-10-19	Prepared By:	TS

Parameter	Flag	RL Result	Units	Dilution	RL
Total Copper		**4.53**	mg/Kg	1	0.500

Sample: 106095 - HLSF-0085-SB-002(30.0-30.5)

Analysis:	Na, Total	Analytical Method:	S 6010B	Prep Method:	S 3050B
QC Batch:	31186	Date Analyzed:	2006-10-24	Analyzed By:	TP
Prep Batch:	27065	Sample Preparation:	2006-10-19	Prepared By:	TS

Parameter	Flag	RL Result	Units	Dilution	RL
Total Sodium		**516**	mg/Kg	1	50.0

Sample: 106095 - HLSF-0085-SB-002(30.0-30.5)

Analysis:	P, Total	Analytical Method:	S 6010B	Prep Method:	S 3050B
QC Batch:	31110	Date Analyzed:	2006-10-20	Analyzed By:	RR
Prep Batch:	27065	Sample Preparation:	2006-10-19	Prepared By:	TS

Parameter	Flag	RL Result	Units	Dilution	RL
Total Phosphorous		**190**	mg/Kg	1	1.00

Sample: 106095 - HLSF-0085-SB-002(30.0-30.5)

Analysis:	Total 8 Metals	Analytical Method:	S 6010B	Prep Method:	S 3050B
QC Batch:	31110	Date Analyzed:	2006-10-20	Analyzed By:	RR
Prep Batch:	27065	Sample Preparation:	2006-10-19	Prepared By:	TS
Analysis:	Total 8 Metals	Analytical Method:	S 7471A	Prep Method:	N/A
QC Batch:	31240	Date Analyzed:	2006-10-25	Analyzed By:	TP
Prep Batch:	27189	Sample Preparation:	2006-10-24	Prepared By:	TP

Parameter	Flag	RL Result	Units	Dilution	RL
Total Silver		<0.200	mg/Kg	1	0.200
Total Arsenic		<1.00	mg/Kg	1	1.00
Total Barium		**56.4**	mg/Kg	1	1.00
Total Cadmium		**0.759**	mg/Kg	1	0.500
Total Mercury		<0.0400	mg/Kg	1	0.0400
Total Lead		**8.35**	mg/Kg	1	1.00
Total Selenium		<1.00	mg/Kg	1	1.00

Sample: 106096 - HLSF-0085-SB-002(40.0-40.5')

Analysis:	Cu, Total	Analytical Method:	S 6010B	Prep Method:	S 3050B
QC Batch:	31110	Date Analyzed:	2006-10-20	Analyzed By:	RR
Prep Batch:	27065	Sample Preparation:	2006-10-19	Prepared By:	TS

Parameter	Flag	RL Result	Units	Dilution	RL
Total Copper		**3.19**	mg/Kg	1	0.500

Sample: 106096 - HLSF-0085-SB-002(40.0-40.5')

Analysis:	Na, Total	Analytical Method:	S 6010B	Prep Method:	S 3050B
QC Batch:	31186	Date Analyzed:	2006-10-24	Analyzed By:	TP
Prep Batch:	27065	Sample Preparation:	2006-10-19	Prepared By:	TS

Parameter	Flag	RL Result	Units	Dilution	RL
Total Sodium		**408**	mg/Kg	1	50.0

Sample: 106096 - HLSF-0085-SB-002(40.0-40.5')

Analysis:	P, Total	Analytical Method:	S 6010B	Prep Method:	S 3050B
QC Batch:	31110	Date Analyzed:	2006-10-20	Analyzed By:	RR
Prep Batch:	27065	Sample Preparation:	2006-10-19	Prepared By:	TS

Parameter	Flag	RL Result	Units	Dilution	RL
Total Phosphorous		**147**	mg/Kg	1	1.00

Sample: 106096 - HLSF-0085-SB-002(40.0-40.5')

Analysis:	Total 8 Metals	Analytical Method:	S 6010B	Prep Method:	S 3050B
QC Batch:	31110	Date Analyzed:	2006-10-20	Analyzed By:	RR
Prep Batch:	27065	Sample Preparation:	2006-10-19	Prepared By:	TS
Analysis:	Total 8 Metals	Analytical Method:	S 7471A	Prep Method:	N/A
QC Batch:	31240	Date Analyzed:	2006-10-25	Analyzed By:	TP
Prep Batch:	27189	Sample Preparation:	2006-10-24	Prepared By:	TP

Parameter	Flag	RL Result	Units	Dilution	RL
Total Silver		<0.200	mg/Kg	1	0.200
Total Arsenic		<1.00	mg/Kg	1	1.00
Total Barium		**62.2**	mg/Kg	1	1.00
Total Cadmium		**0.501**	mg/Kg	1	0.500
Total Mercury		<0.0400	mg/Kg	1	0.0400
Total Lead		**5.38**	mg/Kg	1	1.00
Total Selenium		<1.00	mg/Kg	1	1.00

Sample: 106097 - HLSF-0085-SB-002(49.5-50.0)

Analysis:	Cu, Total	Analytical Method:	S 6010B	Prep Method:	S 3050B
QC Batch:	31110	Date Analyzed:	2006-10-20	Analyzed By:	RR
Prep Batch:	27065	Sample Preparation:	2006-10-19	Prepared By:	TS

Parameter	Flag	RL Result	Units	Dilution	RL
Total Copper		**13.2**	mg/Kg	1	0.500

Sample: 106097 - HLSF-0085-SB-002(49.5-50.0)

Analysis:	Na, Total	Analytical Method:	S 6010B	Prep Method:	S 3050B
QC Batch:	31186	Date Analyzed:	2006-10-24	Analyzed By:	TP
Prep Batch:	27065	Sample Preparation:	2006-10-19	Prepared By:	TS

Parameter	Flag	RL Result	Units	Dilution	RL
Total Sodium		**2200**	mg/Kg	1	50.0

Sample: 106097 - HLSF-0085-SB-002(49.5-50.0)

Analysis:	P, Total	Analytical Method:	S 6010B	Prep Method:	S 3050B
QC Batch:	31110	Date Analyzed:	2006-10-20	Analyzed By:	RR
Prep Batch:	27065	Sample Preparation:	2006-10-19	Prepared By:	TS

Parameter	Flag	RL Result	Units	Dilution	RL
Total Phosphorous		**310**	mg/Kg	1	1.00

Sample: 106097 - HLSF-0085-SB-002(49.5-50.0)

Analysis:	Total 8 Metals	Analytical Method:	S 6010B	Prep Method:	S 3050B
QC Batch:	31110	Date Analyzed:	2006-10-20	Analyzed By:	RR
Prep Batch:	27065	Sample Preparation:	2006-10-19	Prepared By:	TS
Analysis:	Total 8 Metals	Analytical Method:	S 7471A	Prep Method:	N/A
QC Batch:	31240	Date Analyzed:	2006-10-25	Analyzed By:	TP
Prep Batch:	27189	Sample Preparation:	2006-10-24	Prepared By:	TP

Parameter	Flag	RL Result	Units	Dilution	RL
Total Silver		<0.200	mg/Kg	1	0.200
Total Arsenic		**4.45**	mg/Kg	1	1.00
Total Barium		**67.0**	mg/Kg	1	1.00
Total Cadmium		**1.46**	mg/Kg	1	0.500
Total Mercury		<0.0400	mg/Kg	1	0.0400
Total Lead		**21.4**	mg/Kg	1	1.00
Total Selenium		<1.00	mg/Kg	1	1.00

Sample: 106098 - HLSF-0085-SB-002(0.5-1.0)

Analysis:	Cu, Total	Analytical Method:	S 6010B	Prep Method:	S 3050B
QC Batch:	31110	Date Analyzed:	2006-10-20	Analyzed By:	RR
Prep Batch:	27065	Sample Preparation:	2006-10-19	Prepared By:	TS

Parameter	Flag	RL Result	Units	Dilution	RL
Total Copper		**2.18**	mg/Kg	1	0.500

Sample: 106098 - HLSF-0085-SB-002(0.5-1.0)

Analysis:	Na, Total	Analytical Method:	S 6010B	Prep Method:	S 3050B
QC Batch:	31186	Date Analyzed:	2006-10-24	Analyzed By:	TP
Prep Batch:	27065	Sample Preparation:	2006-10-19	Prepared By:	TS

Parameter	Flag	RL Result	Units	Dilution	RL
Total Sodium		**290**	mg/Kg	1	50.0

Sample: 106098 - HLSF-0085-SB-002(0.5-1.0)

Analysis:	P, Total	Analytical Method:	S 6010B	Prep Method:	S 3050B
QC Batch:	31110	Date Analyzed:	2006-10-20	Analyzed By:	RR
Prep Batch:	27065	Sample Preparation:	2006-10-19	Prepared By:	TS

Parameter	Flag	RL Result	Units	Dilution	RL
Total Phosphorous		**15.2**	mg/Kg	1	1.00

Sample: 106098 - HLSF-0085-SB-002(0.5-1.0)

Analysis:	Total 8 Metals	Analytical Method:	S 6010B	Prep Method:	S 3050B
QC Batch:	31110	Date Analyzed:	2006-10-20	Analyzed By:	RR
Prep Batch:	27065	Sample Preparation:	2006-10-19	Prepared By:	TS
Analysis:	Total 8 Metals	Analytical Method:	S 7471A	Prep Method:	N/A
QC Batch:	31240	Date Analyzed:	2006-10-25	Analyzed By:	TP
Prep Batch:	27189	Sample Preparation:	2006-10-24	Prepared By:	TP

Parameter	Flag	RL Result	Units	Dilution	RL
Total Silver		<0.200	mg/Kg	1	0.200
Total Arsenic		<1.00	mg/Kg	1	1.00
Total Barium		**17.8**	mg/Kg	1	1.00
Total Cadmium		<0.500	mg/Kg	1	0.500
Total Mercury		<0.0400	mg/Kg	1	0.0400
Total Lead		<1.00	mg/Kg	1	1.00
Total Selenium		<1.00	mg/Kg	1	1.00

Method Blank (1) QC Batch: 31110

QC Batch:	31110	Date Analyzed:	2006-10-20	Analyzed By:	RR
Prep Batch:	27065	QC Preparation:	2006-10-19	Prepared By:	TS

Parameter	Flag	MDL Result	Units	RL
Total Copper		<0.268	mg/Kg	0.5

Method Blank (1) QC Batch: 31110

QC Batch:	31110	Date Analyzed:	2006-10-20	Analyzed By:	RR
Prep Batch:	27065	QC Preparation:	2006-10-19	Prepared By:	TS

Parameter	Flag	MDL Result	Units	RL
Total Phosphorous		<0.223	mg/Kg	1

Method Blank (1) QC Batch: 31110

QC Batch:	31110	Date Analyzed:	2006-10-20	Analyzed By:	RR
Prep Batch:	27065	QC Preparation:	2006-10-19	Prepared By:	TS

Parameter	Flag	MDL Result	Units	RL
Total Silver		<0.0444	mg/Kg	0.2
Total Arsenic		<0.228	mg/Kg	1
Total Barium		<0.601	mg/Kg	1
Total Cadmium		<0.0795	mg/Kg	0.5
Total Lead		<0.650	mg/Kg	1
Total Selenium		<0.767	mg/Kg	1

Method Blank (1) QC Batch: 31186

QC Batch:	31186	Date Analyzed:	2006-10-24	Analyzed By:	TP
Prep Batch:	27065	QC Preparation:	2006-10-19	Prepared By:	TS

Parameter	Flag	MDL Result	Units	RL
Total Sodium		32.3	mg/Kg	50

Method Blank (1) QC Batch: 31240

QC Batch:	31240	Date Analyzed:	2006-10-25	Analyzed By:	TP
Prep Batch:	27189	QC Preparation:	2006-10-24	Prepared By:	TP

Parameter	Flag	MDL Result	Units	RL
Total Mercury		<0.00299	mg/Kg	0.04

Laboratory Control Spike (LCS-1)

QC Batch: 31110 Date Analyzed: 2006-10-20 Analyzed By: RR
Prep Batch: 27065 QC Preparation: 2006-10-19 Prepared By: TS

Param	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Total Copper	11.9	mg/Kg	1	12.5	<0.268	95	92.1 - 108

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Param	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Total Copper	11.8	mg/Kg	1	12.5	<0.268	94	92.1 - 108	1	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Laboratory Control Spike (LCS-1)

QC Batch: 31110 Date Analyzed: 2006-10-20 Analyzed By: RR
Prep Batch: 27065 QC Preparation: 2006-10-19 Prepared By: TS

Param	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Total Phosphorous	44.1	mg/Kg	1	50.0	<0.223	88	84.5 - 111

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Param	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Total Phosphorous	47.0	mg/Kg	1	50.0	<0.223	94	84.5 - 111	6	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Laboratory Control Spike (LCS-1)

QC Batch: 31110 Date Analyzed: 2006-10-20 Analyzed By: RR
Prep Batch: 27065 QC Preparation: 2006-10-19 Prepared By: TS

Param	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Total Silver	10.9	mg/Kg	1	12.5	<0.0444	87	84 - 110
Total Arsenic	43.9	mg/Kg	1	50.0	<0.228	88	86 - 107
Total Barium	88.7	mg/Kg	1	100	<0.601	89	75 - 125
Total Cadmium	21.2	mg/Kg	1	25.0	<0.0795	85	84 - 108
Total Lead	43.3	mg/Kg	1	50.0	<0.650	87	75 - 125
Total Selenium	39.0	mg/Kg	1	50.0	<0.767	78	75 - 125

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Param	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Total Silver	11.0	mg/Kg	1	12.5	<0.0444	88	84 - 110	1	20
Total Arsenic	43.0	mg/Kg	1	50.0	<0.228	86	86 - 107	2	20
Total Barium	88.7	mg/Kg	1	100	<0.601	89	75 - 125	0	20
Total Cadmium	22.3	mg/Kg	1	25.0	<0.0795	89	84 - 108	5	20
Total Lead	43.6	mg/Kg	1	50.0	<0.650	87	75 - 125	1	20
Total Selenium	40.1	mg/Kg	1	50.0	<0.767	80	75 - 125	3	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Laboratory Control Spike (LCS-1)

QC Batch: 31186 Date Analyzed: 2006-10-24 Analyzed By: TP
Prep Batch: 27065 QC Preparation: 2006-10-19 Prepared By: TS

Param	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Total Sodium	4420	mg/Kg	100	5000	<8.20	88	85.4 - 108

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Param	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Total Sodium	4570	mg/Kg	100	5000	<8.20	91	85.4 - 108	3	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Laboratory Control Spike (LCS-1)

QC Batch: 31240 Date Analyzed: 2006-10-25 Analyzed By: TP
Prep Batch: 27189 QC Preparation: 2006-10-24 Prepared By: TP

Param	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Total Mercury	0.509	mg/Kg	1	0.500	<0.00299	102	85.2 - 118

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Param	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Total Mercury	0.521	mg/Kg	1	0.500	<0.00299	104	85.2 - 118	2	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Matrix Spike (MS-1) Spiked Sample: 106083

QC Batch: 31110 Date Analyzed: 2006-10-20 Analyzed By: RR
Prep Batch: 27065 QC Preparation: 2006-10-19 Prepared By: TS

Param	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Total Copper	11.7	mg/Kg	1	12.5	<0.268	94	75 - 123

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Param	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Total Copper	11.5	mg/Kg	1	12.5	<0.268	92	75 - 123	2	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Matrix Spike (MS-1) Spiked Sample: 106083

QC Batch: 31110 Date Analyzed: 2006-10-20 Analyzed By: RR
Prep Batch: 27065 QC Preparation: 2006-10-19 Prepared By: TS

Param	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Total Phosphorous	327	mg/Kg	1	50.0	270	114	75 - 125

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Param	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Total Phosphorous	310	mg/Kg	1	50.0	270	80	75 - 125	5	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Matrix Spike (MS-1) Spiked Sample: 106083

QC Batch: 31110 Date Analyzed: 2006-10-20 Analyzed By: RR
Prep Batch: 27065 QC Preparation: 2006-10-19 Prepared By: TS

Param	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Total Silver	10.5	mg/Kg	1	12.5	<0.0444	84	81.3 - 109
Total Arsenic	46.1	mg/Kg	1	50.0	<0.228	92	74.2 - 113
Total Barium	204	mg/Kg	1	100	91.2	113	75 - 125
Total Cadmium	21.3	mg/Kg	1	25.0	1.06	81	75 - 115
Total Lead	56.8	mg/Kg	1	50.0	12.4	89	75 - 125
Total Selenium	39.5	mg/Kg	1	50.0	<0.767	79	75 - 125

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Param	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Total Silver	10.8	mg/Kg	1	0.00	<0.0444	86	81.3 - 109	3	20
Total Arsenic	44.8	mg/Kg	1	0.00	<0.228	90	74.2 - 113	3	20
Total Barium	213	mg/Kg	1	0.00	91.2	122	75 - 125	4	20
Total Cadmium	21.0	mg/Kg	1	0.00	1.06	80	75 - 115	1	20
Total Lead	54.9	mg/Kg	1	0.00	12.4	85	75 - 125	3	20
Total Selenium	38.2	mg/Kg	1	0.00	<0.767	76	75 - 125	3	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Matrix Spike (MS-1) Spiked Sample: 106096

QC Batch: 31186 Date Analyzed: 2006-10-24 Analyzed By: TP
Prep Batch: 27065 QC Preparation: 2006-10-19 Prepared By: TS

Param	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Total Sodium	5100	mg/Kg	100	5000	408	94	78.4 - 125

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Param	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Total Sodium	5070	mg/Kg	100	5000	408	93	78.4 - 125	1	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Matrix Spike (MS-1) Spiked Sample: 106088

QC Batch: 31240 Date Analyzed: 2006-10-25 Analyzed By: TP
Prep Batch: 27189 QC Preparation: 2006-10-24 Prepared By: TP

Param	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Total Mercury	0.537	mg/Kg	1	0.500	0.00845	106	77.6 - 124

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Param	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Total Mercury	0.544	mg/Kg	1	0.00	0.00845	107	77.6 - 124	1	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Standard (ICV-1)

QC Batch: 31110 Date Analyzed: 2006-10-20 Analyzed By: RR

Param	Flag	Units	ICVs True Conc.	ICVs Found Conc.	ICVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Total Copper		mg/Kg	1.00	0.979	98	90 - 110	2006-10-20

Standard (ICV-1)

QC Batch: 31110 Date Analyzed: 2006-10-20 Analyzed By: RR

Param	Flag	Units	ICVs True Conc.	ICVs Found Conc.	ICVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Total Phosphorous		mg/Kg	5.00	5.03	101	90 - 110	2006-10-20

Standard (ICV-1)

QC Batch: 31110 Date Analyzed: 2006-10-20 Analyzed By: RR

Param	Flag	Units	ICVs True Conc.	ICVs Found Conc.	ICVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Total Silver		mg/Kg	0.125	0.126	101	90 - 110	2006-10-20
Total Arsenic		mg/Kg	1.00	1.01	101	90 - 110	2006-10-20
Total Barium		mg/Kg	1.00	1.00	100	90 - 110	2006-10-20
Total Cadmium		mg/Kg	1.00	1.01	101	90 - 110	2006-10-20
Total Lead		mg/Kg	1.00	1.01	101	90 - 110	2006-10-20
Total Selenium		mg/Kg	1.00	1.04	104	90 - 110	2006-10-20

Standard (CCV-1)

QC Batch: 31110 Date Analyzed: 2006-10-20 Analyzed By: RR

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Total Copper		mg/Kg	1.00	0.957	96	90 - 110	2006-10-20

Standard (CCV-1)

QC Batch: 31110 Date Analyzed: 2006-10-20 Analyzed By: RR

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Total Phosphorous		mg/Kg	5.00	5.02	100	90 - 110	2006-10-20

Standard (CCV-1)

QC Batch: 31110 Date Analyzed: 2006-10-20 Analyzed By: RR

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Total Silver		mg/Kg	0.125	0.126	101	90 - 110	2006-10-20
Total Arsenic		mg/Kg	1.00	1.02	102	90 - 110	2006-10-20
Total Barium		mg/Kg	1.00	1.01	101	90 - 110	2006-10-20
Total Cadmium		mg/Kg	1.00	1.02	102	90 - 110	2006-10-20
Total Lead		mg/Kg	1.00	1.01	101	90 - 110	2006-10-20
Total Selenium		mg/Kg	1.00	1.03	103	90 - 110	2006-10-20

Standard (ICV-1)

QC Batch: 31186 Date Analyzed: 2006-10-24 Analyzed By: TP

Param	Flag	Units	ICVs True Conc.	ICVs Found Conc.	ICVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Total Sodium		mg/Kg	50.0	47.6	95	90 - 110	2006-10-24

Standard (CCV-1)

QC Batch: 31186 Date Analyzed: 2006-10-24 Analyzed By: TP

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Total Sodium		mg/Kg	50.0	48.3	97	90 - 110	2006-10-24

Standard (ICV-1)

QC Batch: 31240 Date Analyzed: 2006-10-25 Analyzed By: TP

Param	Flag	Units	ICVs True Conc.	ICVs Found Conc.	ICVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Total Mercury		mg/L	0.00500	0.00505	101	90 - 110	2006-10-25

Standard (CCV-1)

QC Batch: 31240 Date Analyzed: 2006-10-25 Analyzed By: TP

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Total Mercury		mg/L	0.00500	0.00508	102	80 - 120	2006-10-25

Analytical and Quality Control Report

William Little
WTS
P.O. Box 363
Building 126 3RD Floor
WSMR, NM, 88002

Report Date: December 28, 2006

Work Order: 6101906

Project Name: HELSTF Phase III Soil Sampling
Project Number: 7

Enclosed are the Analytical Report and Quality Control Report for the following sample(s) submitted to TraceAnalysis, Inc.

Sample	Description	Matrix	Date Taken	Time Taken	Date Received
106218	HLSF-0085-SB-007(0.5-1.0)	soil	2006-10-17	09:40	2006-10-18
106219	HLSF-0085-SB-007(10.0-11.0)	soil	2006-10-17	10:05	2006-10-18
106220	HLSF-0085-SB-007(20.0-21.0)	soil	2006-10-17	10:20	2006-10-18
106221	HLSF-0085-SB-007(30.0-31.0)	soil	2006-10-17	11:00	2006-10-18
106222	HLSF-0085-SB-007(40.0-41.0)	soil	2006-10-17	11:25	2006-10-18
106223	HLSF-0085-SB-007(49.0-50.0)	soil	2006-10-17	12:00	2006-10-18
106224	HLSF-0085-SB-008(0.5-1.0)	soil	2006-10-17	14:00	2006-10-18
106225	HLSF-0085-SB-008(10.0-11.0)	soil	2006-10-17	14:45	2006-10-18
106226	HLSF-0085-SB-008(20.0-21.0)	soil	2006-10-17	15:20	2006-10-18
106227	HLSF-0085-SB-008(30.0-31.0)	soil	2006-10-17	15:50	2006-10-18

These results represent only the samples received in the laboratory. The Quality Control Report is generated on a batch basis. All information contained in this report is for the analytical batch(es) in which your sample(s) were analyzed.

This report consists of a total of 6 pages and shall not be reproduced except in its entirety, without written approval of TraceAnalysis, Inc.

Dr. Blair Leftwich, Director

Standard Flags

B - The sample contains less than ten times the concentration found in the method blank.

Analytical Report

Sample: 106218 - HLSF-0085-SB-007(0.5-1.0)

Analysis:	Chromium, Hexavalent	Analytical Method:	SM 3500-Cr B	Prep Method:	N/A
QC Batch:	31338	Date Analyzed:	2006-10-23	Analyzed By:	WB
Prep Batch:	27158	Sample Preparation:	2006-10-23	Prepared By:	WB

Parameter	Flag	RL Result	Units	Dilution	RL
Hexavalent Chromium		<5.00	mg/Kg	1	5.00

Sample: 106219 - HLSF-0085-SB-007(10.0-11.0)

Analysis:	Chromium, Hexavalent	Analytical Method:	SM 3500-Cr B	Prep Method:	N/A
QC Batch:	31338	Date Analyzed:	2006-10-23	Analyzed By:	WB
Prep Batch:	27158	Sample Preparation:	2006-10-23	Prepared By:	WB

Parameter	Flag	RL Result	Units	Dilution	RL
Hexavalent Chromium		<5.00	mg/Kg	1	5.00

Sample: 106220 - HLSF-0085-SB-007(20.0-21.0)

Analysis:	Chromium, Hexavalent	Analytical Method:	SM 3500-Cr B	Prep Method:	N/A
QC Batch:	31338	Date Analyzed:	2006-10-23	Analyzed By:	WB
Prep Batch:	27158	Sample Preparation:	2006-10-23	Prepared By:	WB

Parameter	Flag	RL Result	Units	Dilution	RL
Hexavalent Chromium		<5.00	mg/Kg	1	5.00

Sample: 106221 - HLSF-0085-SB-007(30.0-31.0)

Analysis:	Chromium, Hexavalent	Analytical Method:	SM 3500-Cr B	Prep Method:	N/A
QC Batch:	31338	Date Analyzed:	2006-10-23	Analyzed By:	WB
Prep Batch:	27158	Sample Preparation:	2006-10-23	Prepared By:	WB

Parameter	Flag	RL Result	Units	Dilution	RL
Hexavalent Chromium		<5.00	mg/Kg	1	5.00

Sample: 106222 - HLSF-0085-SB-007(40.0-41.0)

Analysis:	Chromium, Hexavalent	Analytical Method:	SM 3500-Cr B	Prep Method:	N/A
QC Batch:	31339	Date Analyzed:	2006-10-23	Analyzed By:	WB
Prep Batch:	27159	Sample Preparation:	2006-10-23	Prepared By:	WB

Parameter	Flag	RL Result	Units	Dilution	RL
Hexavalent Chromium		<5.00	mg/Kg	1	5.00

Sample: 106223 - HLSF-0085-SB-007(49.0-50.0)

Analysis:	Chromium, Hexavalent	Analytical Method:	SM 3500-Cr B	Prep Method:	N/A
QC Batch:	31339	Date Analyzed:	2006-10-23	Analyzed By:	WB
Prep Batch:	27159	Sample Preparation:	2006-10-23	Prepared By:	WB

Parameter	Flag	RL Result	Units	Dilution	RL
Hexavalent Chromium		<5.00	mg/Kg	1	5.00

Sample: 106224 - HLSF-0085-SB-008(0.5-1.0)

Analysis:	Chromium, Hexavalent	Analytical Method:	SM 3500-Cr B	Prep Method:	N/A
QC Batch:	31339	Date Analyzed:	2006-10-23	Analyzed By:	WB
Prep Batch:	27159	Sample Preparation:	2006-10-23	Prepared By:	WB

Parameter	Flag	RL Result	Units	Dilution	RL
Hexavalent Chromium		<5.00	mg/Kg	1	5.00

Sample: 106225 - HLSF-0085-SB-008(10.0-11.0)

Analysis:	Chromium, Hexavalent	Analytical Method:	SM 3500-Cr B	Prep Method:	N/A
QC Batch:	31339	Date Analyzed:	2006-10-23	Analyzed By:	WB
Prep Batch:	27159	Sample Preparation:	2006-10-23	Prepared By:	WB

Parameter	Flag	RL Result	Units	Dilution	RL
Hexavalent Chromium		<5.00	mg/Kg	1	5.00

Sample: 106226 - HLSF-0085-SB-008(20.0-21.0)

Analysis:	Chromium, Hexavalent	Analytical Method:	SM 3500-Cr B	Prep Method:	N/A
QC Batch:	31339	Date Analyzed:	2006-10-23	Analyzed By:	WB
Prep Batch:	27159	Sample Preparation:	2006-10-23	Prepared By:	WB

Parameter	Flag	RL Result	Units	Dilution	RL
Hexavalent Chromium		<5.00	mg/Kg	1	5.00

Sample: 106227 - HLSF-0085-SB-008(30.0-31.0)

Analysis:	Chromium, Hexavalent	Analytical Method:	SM 3500-Cr B	Prep Method:	N/A
QC Batch:	31339	Date Analyzed:	2006-10-23	Analyzed By:	WB
Prep Batch:	27159	Sample Preparation:	2006-10-23	Prepared By:	WB

Parameter	Flag	RL Result	Units	Dilution	RL
Hexavalent Chromium		<5.00	mg/Kg	1	5.00

Method Blank (1) QC Batch: 31338

QC Batch:	31338	Date Analyzed:	2006-10-23	Analyzed By:	WB
Prep Batch:	27158	QC Preparation:	2006-10-23	Prepared By:	WB

Parameter	Flag	MDL Result	Units	RL
Hexavalent Chromium		<2.32	mg/Kg	5

Method Blank (1) QC Batch: 31339

QC Batch:	31339	Date Analyzed:	2006-10-23	Analyzed By:	WB
Prep Batch:	27159	QC Preparation:	2006-10-23	Prepared By:	WB

Parameter	Flag	MDL Result	Units	RL
Hexavalent Chromium		<2.32	mg/Kg	5

Laboratory Control Spike (LCS-1)

QC Batch:	31338	Date Analyzed:	2006-10-23	Analyzed By:	WB
Prep Batch:	27158	QC Preparation:	2006-10-23	Prepared By:	WB

Param	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Hexavalent Chromium	31.7	mg/Kg	1	40.0	<2.32	79	77.3 - 119

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Param	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Hexavalent Chromium	32.2	mg/Kg	1	40.0	<2.32	80	77.3 - 119	2	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Laboratory Control Spike (LCS-1)

QC Batch:	31339	Date Analyzed:	2006-10-23	Analyzed By:	WB
Prep Batch:	27159	QC Preparation:	2006-10-23	Prepared By:	WB

Param	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Hexavalent Chromium	31.8	mg/Kg	1	40.0	<2.32	80	77.3 - 119

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Param	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Hexavalent Chromium	31.1	mg/Kg	1	40.0	<2.32	78	77.3 - 119	2	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Matrix Spike (MS-1) Spiked Sample: 106221

QC Batch: 31338 Date Analyzed: 2006-10-23 Analyzed By: WB
Prep Batch: 27158 QC Preparation: 2006-10-23 Prepared By: WB

Param	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Hexavalent Chromium [1]	30.1	mg/Kg	1	40.0	<2.32	75	85 - 115

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Param	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Hexavalent Chromium [2]	27.9	mg/Kg	1	40.0	<2.32	70	85 - 115	8	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Matrix Spike (MS-1) Spiked Sample: 106628

QC Batch: 31339 Date Analyzed: 2006-10-23 Analyzed By: WB
Prep Batch: 27159 QC Preparation: 2006-10-23 Prepared By: WB

Param	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Hexavalent Chromium [3]	28.7	mg/Kg	1	40.0	<2.32	72	85 - 115

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Param	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Hexavalent Chromium [4]	26.8	mg/Kg	1	40.0	<2.32	67	85 - 115	7	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Standard (ICV-1)

QC Batch: 31338 Date Analyzed: 2006-10-23 Analyzed By: WB

[1]Matrix spike recovery out of control limits due to matrix interference. Use LCS/LCSD to demonstrate analysis is under control.
[2]Matrix spike recovery out of control limits due to matrix interference. Use LCS/LCSD to demonstrate analysis is under control.
[3]Matrix spike recovery out of control limits due to matrix interference. Use LCS/LCSD to demonstrate analysis is under control.
[4]Matrix spike recovery out of control limits due to matrix interference. Use LCS/LCSD to demonstrate analysis is under control.

Param	Flag	Units	ICVs True Conc.	ICVs Found Conc.	ICVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Hexavalent Chromium		mg/L	0.500	0.479	96	85 - 115	2006-10-23

Standard (CCV-1)

QC Batch: 31338 Date Analyzed: 2006-10-23 Analyzed By: WB

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Hexavalent Chromium		mg/L	0.500	0.485	97	85 - 115	2006-10-23

Standard (ICV-1)

QC Batch: 31339 Date Analyzed: 2006-10-23 Analyzed By: WB

Param	Flag	Units	ICVs True Conc.	ICVs Found Conc.	ICVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Hexavalent Chromium		mg/L	0.500	0.483	97	85 - 115	2006-10-23

Standard (CCV-1)

QC Batch: 31339 Date Analyzed: 2006-10-23 Analyzed By: WB

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Hexavalent Chromium		mg/L	0.500	0.485	97	85 - 115	2006-10-23

Analytical and Quality Control Report

William Little
WTS
P.O. Box 363
Building 126 3RD Floor
WSMR, NM, 88002

Report Date: December 28, 2006

Work Order: 6101906

Project Name: HELSTF Phase III Soil Sampling
Project Number: 7

Enclosed are the Analytical Report and Quality Control Report for the following sample(s) submitted to TraceAnalysis, Inc.

Sample	Description	Matrix	Date Taken	Time Taken	Date Received
106218	HLSF-0085-SB-007(0.5-1.0)	soil	2006-10-17	09:40	2006-10-18
106219	HLSF-0085-SB-007(10.0-11.0)	soil	2006-10-17	10:05	2006-10-18
106220	HLSF-0085-SB-007(20.0-21.0)	soil	2006-10-17	10:20	2006-10-18
106221	HLSF-0085-SB-007(30.0-31.0)	soil	2006-10-17	11:00	2006-10-18
106222	HLSF-0085-SB-007(40.0-41.0)	soil	2006-10-17	11:25	2006-10-18
106223	HLSF-0085-SB-007(49.0-50.0)	soil	2006-10-17	12:00	2006-10-18
106224	HLSF-0085-SB-008(0.5-1.0)	soil	2006-10-17	14:00	2006-10-18
106225	HLSF-0085-SB-008(10.0-11.0)	soil	2006-10-17	14:45	2006-10-18
106226	HLSF-0085-SB-008(20.0-21.0)	soil	2006-10-17	15:20	2006-10-18
106227	HLSF-0085-SB-008(30.0-31.0)	soil	2006-10-17	15:50	2006-10-18

These results represent only the samples received in the laboratory. The Quality Control Report is generated on a batch basis. All information contained in this report is for the analytical batch(es) in which your sample(s) were analyzed.

This report consists of a total of 4 pages and shall not be reproduced except in its entirety, without written approval of TraceAnalysis, Inc.

Dr. Blair Leftwich, Director

Standard Flags

B - The sample contains less than ten times the concentration found in the method blank.

Analytical Report

Sample: 106218 - HLSF-0085-SB-007(0.5-1.0)

Analysis:	FOC	Analytical Method:	ASTM D 2974-87	Prep Method:	N/A
QC Batch:	31395	Date Analyzed:	2006-10-27	Analyzed By:	SM
Prep Batch:	27316	Sample Preparation:	2006-10-25	Prepared By:	WB

Parameter	Flag	RL Result	Units	Dilution	RL
FOC		**2.49**	%	1	0.00

Sample: 106219 - HLSF-0085-SB-007(10.0-11.0)

Analysis:	FOC	Analytical Method:	ASTM D 2974-87	Prep Method:	N/A
QC Batch:	31395	Date Analyzed:	2006-10-27	Analyzed By:	SM
Prep Batch:	27316	Sample Preparation:	2006-10-25	Prepared By:	WB

Parameter	Flag	RL Result	Units	Dilution	RL
FOC		**5.30**	%	1	0.00

Sample: 106220 - HLSF-0085-SB-007(20.0-21.0)

Analysis:	FOC	Analytical Method:	ASTM D 2974-87	Prep Method:	N/A
QC Batch:	31395	Date Analyzed:	2006-10-27	Analyzed By:	SM
Prep Batch:	27316	Sample Preparation:	2006-10-25	Prepared By:	WB

Parameter	Flag	RL Result	Units	Dilution	RL
FOC		**5.08**	%	1	0.00

Sample: 106221 - HLSF-0085-SB-007(30.0-31.0)

Analysis:	FOC	Analytical Method:	ASTM D 2974-87	Prep Method:	N/A
QC Batch:	31395	Date Analyzed:	2006-10-27	Analyzed By:	SM
Prep Batch:	27316	Sample Preparation:	2006-10-25	Prepared By:	WB

Parameter	Flag	RL Result	Units	Dilution	RL
FOC		**4.85**	%	1	0.00

Sample: 106222 - HLSF-0085-SB-007(40.0-41.0)

Analysis:	FOC	Analytical Method:	ASTM D 2974-87	Prep Method:	N/A
QC Batch:	31395	Date Analyzed:	2006-10-27	Analyzed By:	SM
Prep Batch:	27316	Sample Preparation:	2006-10-25	Prepared By:	WB

Parameter	Flag	RL Result	Units	Dilution	RL
FOC		**6.06**	%	1	0.00

Sample: 106223 - HLSF-0085-SB-007(49.0-50.0)

Analysis:	FOC	Analytical Method:	ASTM D 2974-87	Prep Method:	N/A
QC Batch:	31395	Date Analyzed:	2006-10-27	Analyzed By:	SM
Prep Batch:	27316	Sample Preparation:	2006-10-25	Prepared By:	WB

Parameter	Flag	RL Result	Units	Dilution	RL
FOC		**3.26**	%	1	0.00

Sample: 106224 - HLSF-0085-SB-008(0.5-1.0)

Analysis:	FOC	Analytical Method:	ASTM D 2974-87	Prep Method:	N/A
QC Batch:	31395	Date Analyzed:	2006-10-27	Analyzed By:	SM
Prep Batch:	27316	Sample Preparation:	2006-10-25	Prepared By:	WB

Parameter	Flag	RL Result	Units	Dilution	RL
FOC		**3.00**	%	1	0.00

Sample: 106225 - HLSF-0085-SB-008(10.0-11.0)

Analysis:	FOC	Analytical Method:	ASTM D 2974-87	Prep Method:	N/A
QC Batch:	31395	Date Analyzed:	2006-10-27	Analyzed By:	SM
Prep Batch:	27317	Sample Preparation:	2006-10-25	Prepared By:	WB

Parameter	Flag	RL Result	Units	Dilution	RL
FOC		**5.27**	%	1	0.00

Sample: 106226 - HLSF-0085-SB-008(20.0-21.0)

Analysis:	FOC	Analytical Method:	ASTM D 2974-87	Prep Method:	N/A
QC Batch:	31395	Date Analyzed:	2006-10-27	Analyzed By:	SM
Prep Batch:	27317	Sample Preparation:	2006-10-25	Prepared By:	WB

Parameter	Flag	RL Result	Units	Dilution	RL
FOC		**5.60**	%	1	0.00

Sample: 106227 - HLSF-0085-SB-008(30.0-31.0)

Analysis:	FOC	Analytical Method:	ASTM D 2974-87	Prep Method:	N/A
QC Batch:	31395	Date Analyzed:	2006-10-27	Analyzed By:	SM
Prep Batch:	27317	Sample Preparation:	2006-10-25	Prepared By:	WB

Parameter	Flag	RL Result	Units	Dilution	RL
FOC		**3.84**	%	1	0.00

Duplicates (1)

QC Batch:	31395	Date Analyzed:	2006-10-27	Analyzed By:	SM
Prep Batch:	27316	QC Preparation:	2006-10-25	Prepared By:	SM

Param	Duplicate Result	Sample Result	Units	Dilution	RPD	RPD Limit
FOC	4.95	5.08	%	1	3	34

Analytical and Quality Control Report

William Little
WTS
P.O. Box 363
Building 126 3RD Floor
WSMR, NM, 88002

Report Date: December 28, 2006

Work Order: 6101906

Project Name: HELSTF Phase III Soil Sampling
Project Number: 7

Enclosed are the Analytical Report and Quality Control Report for the following sample(s) submitted to TraceAnalysis, Inc.

Sample	Description	Matrix	Date Taken	Time Taken	Date Received
106218	HLSF-0085-SB-007(0.5-1.0)	soil	2006-10-17	09:40	2006-10-18
106219	HLSF-0085-SB-007(10.0-11.0)	soil	2006-10-17	10:05	2006-10-18
106220	HLSF-0085-SB-007(20.0-21.0)	soil	2006-10-17	10:20	2006-10-18
106221	HLSF-0085-SB-007(30.0-31.0)	soil	2006-10-17	11:00	2006-10-18
106222	HLSF-0085-SB-007(40.0-41.0)	soil	2006-10-17	11:25	2006-10-18
106223	HLSF-0085-SB-007(49.0-50.0)	soil	2006-10-17	12:00	2006-10-18
106224	HLSF-0085-SB-008(0.5-1.0)	soil	2006-10-17	14:00	2006-10-18
106225	HLSF-0085-SB-008(10.0-11.0)	soil	2006-10-17	14:45	2006-10-18
106226	HLSF-0085-SB-008(20.0-21.0)	soil	2006-10-17	15:20	2006-10-18
106227	HLSF-0085-SB-008(30.0-31.0)	soil	2006-10-17	15:50	2006-10-18

These results represent only the samples received in the laboratory. The Quality Control Report is generated on a batch basis. All information contained in this report is for the analytical batch(es) in which your sample(s) were analyzed.

This report consists of a total of 7 pages and shall not be reproduced except in its entirety, without written approval of TraceAnalysis, Inc.

Dr. Blair Leftwich, Director

Standard Flags

B - The sample contains less than ten times the concentration found in the method blank.

Analytical Report

Sample: 106218 - HLSF-0085-SB-007(0.5-1.0)

Analysis:	Nitrate and Nitrite as N	Analytical Method:	E 353.3	Prep Method:	N/A
QC Batch:	31626	Date Analyzed:	2006-11-01	Analyzed By:	WB
Prep Batch:	27540	Sample Preparation:	2006-11-01	Prepared By:	JS

Parameter	Flag	RL Result	Units	Dilution	RL
Nitrate and Nitrite as N		**15.4**	mg/Kg	50	0.100

Sample: 106219 - HLSF-0085-SB-007(10.0-11.0)

Analysis:	Nitrate and Nitrite as N	Analytical Method:	E 353.3	Prep Method:	N/A
QC Batch:	31626	Date Analyzed:	2006-11-01	Analyzed By:	WB
Prep Batch:	27540	Sample Preparation:	2006-11-01	Prepared By:	JS

Parameter	Flag	RL Result	Units	Dilution	RL
Nitrate and Nitrite as N		**1.56**	mg/Kg	5	0.100

Sample: 106220 - HLSF-0085-SB-007(20.0-21.0)

Analysis:	Nitrate and Nitrite as N	Analytical Method:	E 353.3	Prep Method:	N/A
QC Batch:	31626	Date Analyzed:	2006-11-01	Analyzed By:	WB
Prep Batch:	27540	Sample Preparation:	2006-11-01	Prepared By:	JS

Parameter	Flag	RL Result	Units	Dilution	RL
Nitrate and Nitrite as N		**1.22**	mg/Kg	5	0.100

Sample: 106221 - HLSF-0085-SB-007(30.0-31.0)

Analysis:	Nitrate and Nitrite as N	Analytical Method:	E 353.3	Prep Method:	N/A
QC Batch:	31626	Date Analyzed:	2006-11-01	Analyzed By:	WB
Prep Batch:	27540	Sample Preparation:	2006-11-01	Prepared By:	JS

Parameter	Flag	RL Result	Units	Dilution	RL
Nitrate and Nitrite as N		**1.23**	mg/Kg	5	0.100

Sample: 106222 - HLSF-0085-SB-007(40.0-41.0)

Analysis:	Nitrate and Nitrite as N	Analytical Method:	E 353.3	Prep Method:	N/A
QC Batch:	31626	Date Analyzed:	2006-11-01	Analyzed By:	WB
Prep Batch:	27540	Sample Preparation:	2006-11-01	Prepared By:	JS

Parameter	Flag	RL Result	Units	Dilution	RL
Nitrate and Nitrite as N		**1.94**	mg/Kg	10	0.100

Sample: 106223 - HLSF-0085-SB-007(49.0-50.0)

Analysis:	Nitrate and Nitrite as N	Analytical Method:	E 353.3	Prep Method:	N/A
QC Batch:	31625	Date Analyzed:	2006-11-01	Analyzed By:	WB
Prep Batch:	27539	Sample Preparation:	2006-11-01	Prepared By:	JS

Parameter	Flag	RL Result	Units	Dilution	RL
Nitrate and Nitrite as N		**3.82**	mg/Kg	25	0.100

Sample: 106224 - HLSF-0085-SB-008(0.5-1.0)

Analysis:	Nitrate and Nitrite as N	Analytical Method:	E 353.3	Prep Method:	N/A
QC Batch:	31625	Date Analyzed:	2006-11-01	Analyzed By:	WB
Prep Batch:	27539	Sample Preparation:	2006-11-01	Prepared By:	JS

Parameter	Flag	RL Result	Units	Dilution	RL
Nitrate and Nitrite as N		**1.26**	mg/Kg	5	0.100

Sample: 106225 - HLSF-0085-SB-008(10.0-11.0)

Analysis:	Nitrate and Nitrite as N	Analytical Method:	E 353.3	Prep Method:	N/A
QC Batch:	31817	Date Analyzed:	2006-11-09	Analyzed By:	JS
Prep Batch:	27709	Sample Preparation:	2006-11-08	Prepared By:	JS

Parameter	Flag	RL Result	Units	Dilution	RL
Nitrate and Nitrite as N		**0.579**	mg/Kg	2	0.100

Sample: 106226 - HLSF-0085-SB-008(20.0-21.0)

Analysis:	Nitrate and Nitrite as N	Analytical Method:	E 353.3	Prep Method:	N/A
QC Batch:	31625	Date Analyzed:	2006-11-01	Analyzed By:	WB
Prep Batch:	27539	Sample Preparation:	2006-11-01	Prepared By:	JS

Parameter	Flag	RL Result	Units	Dilution	RL
Nitrate and Nitrite as N		**1.90**	mg/Kg	10	0.100

Sample: 106227 - HLSF-0085-SB-008(30.0-31.0)

Analysis:	Nitrate and Nitrite as N	Analytical Method:	E 353.3	Prep Method:	N/A
QC Batch:	31625	Date Analyzed:	2006-11-01	Analyzed By:	WB
Prep Batch:	27539	Sample Preparation:	2006-11-01	Prepared By:	JS

Parameter	Flag	RL Result	Units	Dilution	RL
Nitrate and Nitrite as N		**2.16**	mg/Kg	10	0.100

Method Blank (1) QC Batch: 31625

QC Batch:	31625	Date Analyzed:	2006-11-01	Analyzed By:	WB
Prep Batch:	27539	QC Preparation:	2006-10-31	Prepared By:	JS

Parameter	Flag	MDL Result	Units	RL
Nitrate and Nitrite as N		< 0.1	mg/Kg	0.1

Method Blank (1) QC Batch: 31626

QC Batch:	31626	Date Analyzed:	2006-11-01	Analyzed By:	WB
Prep Batch:	27540	QC Preparation:	2006-10-31	Prepared By:	JS

Parameter	Flag	MDL Result	Units	RL
Nitrate and Nitrite as N		< 0.1	mg/Kg	0.1

Method Blank (1) QC Batch: 31817

QC Batch:	31817	Date Analyzed:	2006-11-09	Analyzed By:	JS
Prep Batch:	27709	QC Preparation:	2006-11-08	Prepared By:	JS

Parameter	Flag	MDL Result	Units	RL
Nitrate and Nitrite as N		< 0.10	mg/Kg	0.1

Laboratory Control Spike (LCS-1)

QC Batch:	31625	Date Analyzed:	2006-11-01	Analyzed By:	WB
Prep Batch:	27539	QC Preparation:	2006-10-31	Prepared By:	JS

Param	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Nitrate and Nitrite as N	0.177	mg/Kg	1	0.160	<0.0155	111	85 - 115

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Param	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Nitrate and Nitrite as N	0.178	mg/Kg	1	0.160	<0.0155	111	85 - 115	1	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Laboratory Control Spike (LCS-1)

QC Batch: 31626 Date Analyzed: 2006-11-01 Analyzed By: WB
Prep Batch: 27540 QC Preparation: 2006-10-31 Prepared By: JS

Param	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Nitrate and Nitrite as N	0.159	mg/Kg	1	0.160	<0.0155	99	85 - 115

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Param	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Nitrate and Nitrite as N	0.179	mg/Kg	1	0.160	<0.0155	112	85 - 115	12	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Laboratory Control Spike (LCS-1)

QC Batch: 31817 Date Analyzed: 2006-11-09 Analyzed By: JS
Prep Batch: 27709 QC Preparation: 2006-11-08 Prepared By: JS

Param	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Nitrate and Nitrite as N	0.160	mg/Kg	1	0.160	<0.0155	100	85 - 115

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Param	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Nitrate and Nitrite as N	0.175	mg/Kg	1	0.160	<0.0155	109	85 - 115	9	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Matrix Spike (MS-1) Spiked Sample: 106714

QC Batch: 31625 Date Analyzed: 2006-11-01 Analyzed By: WB
Prep Batch: 27539 QC Preparation: 2006-10-31 Prepared By: JS

Param	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Nitrate and Nitrite as N [1]	131	mg/Kg	500	80.0	157	-32	85 - 115

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

continued . . .

[1]Matrix spike recovery out of control limits due to matrix interference. Use LCS/LCSD to demonstrate analysis is under control.

matrix spikes continued . . .

Param		MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit

Param		MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Nitrate and Nitrite as N	[2]	119	mg/Kg	500	80.0	157	-46	85 - 115	10	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Matrix Spike (MS-1) Spiked Sample: 106713

QC Batch: 31626 Date Analyzed: 2006-11-01 Analyzed By: WB
Prep Batch: 27540 QC Preparation: 2006-10-31 Prepared By: JS

Param		MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Nitrate and Nitrite as N	[3]	0.574	mg/Kg	2	0.320	0.578	-1	85 - 115

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Param		MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Nitrate and Nitrite as N	[4]	0.552	mg/Kg	2	0.320	0.578	-8	85 - 115	4	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Matrix Spike (MS-1) Spiked Sample: 107951

QC Batch: 31817 Date Analyzed: 2006-11-09 Analyzed By: JS
Prep Batch: 27709 QC Preparation: 2006-11-08 Prepared By: JS

Param		MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Nitrate and Nitrite as N	[5]	1.18	mg/Kg	2	0.320	0.42	238	85 - 115

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Param		MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Nitrate and Nitrite as N	[6]	1.14	mg/Kg	2	0.00	0.42	225	85 - 115	3	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Standard (ICV-1)

QC Batch: 31625 Date Analyzed: 2006-11-01 Analyzed By: WB

[2]Matrix spike recovery out of control limits due to matrix interference. Use LCS/LCSD to demonstrate analysis is under control.
[3]Matrix spike recovery out of control limits due to matrix interference. Use LCS/LCSD to demonstrate analysis is under control.
[4]Matrix spike recovery out of control limits due to matrix interference. Use LCS/LCSD to demonstrate analysis is under control.
[5]Matrix spike recovery out of control limits due to matrix interference. Use LCS/LCSD to demonstrate analysis is under control.
[6]Matrix spike recovery out of control limits due to matrix interference. Use LCS/LCSD to demonstrate analysis is under control.

Param	Flag	Units	ICVs True Conc.	ICVs Found Conc.	ICVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Nitrate and Nitrite as N		mg/Kg	0.160	0.178	111	85 - 115	2006-11-01

Standard (CCV-1)

QC Batch: 31625 Date Analyzed: 2006-11-01 Analyzed By: WB

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Nitrate and Nitrite as N		mg/Kg	0.160	0.182	114	85 - 115	2006-11-01

Standard (ICV-1)

QC Batch: 31626 Date Analyzed: 2006-11-01 Analyzed By: WB

Param	Flag	Units	ICVs True Conc.	ICVs Found Conc.	ICVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Nitrate and Nitrite as N		mg/Kg	0.160	0.148	92	85 - 115	2006-11-01

Standard (CCV-1)

QC Batch: 31626 Date Analyzed: 2006-11-01 Analyzed By: WB

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Nitrate and Nitrite as N		mg/Kg	0.160	0.144	90	85 - 115	2006-11-01

Standard (ICV-1)

QC Batch: 31817 Date Analyzed: 2006-11-09 Analyzed By: JS

Param	Flag	Units	ICVs True Conc.	ICVs Found Conc.	ICVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Nitrate and Nitrite as N		mg/Kg	0.160	0.179	112	85 - 115	2006-11-09

Standard (CCV-1)

QC Batch: 31817 Date Analyzed: 2006-11-09 Analyzed By: JS

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Nitrate and Nitrite as N		mg/Kg	0.160	0.170	106	85 - 115	2006-11-09

Analytical and Quality Control Report

William Little
WTS
P.O. Box 363
Building 126 3RD Floor
WSMR, NM, 88002

Report Date: December 28, 2006

Work Order: 6101906

Project Name: HELSTF Phase III Soil Sampling
Project Number: 7

Enclosed are the Analytical Report and Quality Control Report for the following sample(s) submitted to TraceAnalysis, Inc.

Sample	Description	Matrix	Date Taken	Time Taken	Date Received
106218	HLSF-0085-SB-007(0.5-1.0)	soil	2006-10-17	09:40	2006-10-18
106219	HLSF-0085-SB-007(10.0-11.0)	soil	2006-10-17	10:05	2006-10-18
106220	HLSF-0085-SB-007(20.0-21.0)	soil	2006-10-17	10:20	2006-10-18
106221	HLSF-0085-SB-007(30.0-31.0)	soil	2006-10-17	11:00	2006-10-18
106222	HLSF-0085-SB-007(40.0-41.0)	soil	2006-10-17	11:25	2006-10-18
106223	HLSF-0085-SB-007(49.0-50.0)	soil	2006-10-17	12:00	2006-10-18
106224	HLSF-0085-SB-008(0.5-1.0)	soil	2006-10-17	14:00	2006-10-18
106225	HLSF-0085-SB-008(10.0-11.0)	soil	2006-10-17	14:45	2006-10-18
106226	HLSF-0085-SB-008(20.0-21.0)	soil	2006-10-17	15:20	2006-10-18
106227	HLSF-0085-SB-008(30.0-31.0)	soil	2006-10-17	15:50	2006-10-18

These results represent only the samples received in the laboratory. The Quality Control Report is generated on a batch basis. All information contained in this report is for the analytical batch(es) in which your sample(s) were analyzed.

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Dr. Blair Leftwich, Director

Standard Flags

B - The sample contains less than ten times the concentration found in the method blank.

Analytical Report

Sample: 106218 - HLSF-0085-SB-007(0.5-1.0)

Analysis:	Semivolatiles WTS	Analytical Method:	S 8270C	Prep Method:	S 3550
QC Batch:	32371	Date Analyzed:	2006-10-21	Analyzed By:	DS
Prep Batch:	28187	Sample Preparation:	2006-10-21	Prepared By:	DS

Parameter	Flag	RL Result	Units	Dilution	RL
2-Butoxy Ethanol		<0.250	mg/Kg	1	0.250

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
2-Fluorophenol		1.16	mg/Kg	1	2.67	43	8.6 - 115
Phenol-d5		1.38	mg/Kg	1	2.67	52	6.3 - 124
Nitrobenzene-d5		1.31	mg/Kg	1	2.67	49	11.3 - 116
2-Fluorobiphenyl		1.84	mg/Kg	1	2.67	69	14.6 - 122
2,4,6-Tribromophenol		2.12	mg/Kg	1	2.67	79	13.8 - 123
Terphenyl-d14		2.97	mg/Kg	1	2.67	111	30.8 - 134

Sample: 106219 - HLSF-0085-SB-007(10.0-11.0)

Analysis:	Semivolatiles WTS	Analytical Method:	S 8270C	Prep Method:	S 3550
QC Batch:	32371	Date Analyzed:	2006-10-21	Analyzed By:	DS
Prep Batch:	28187	Sample Preparation:	2006-10-21	Prepared By:	DS

Parameter	Flag	RL Result	Units	Dilution	RL
2-Butoxy Ethanol		<0.250	mg/Kg	1	0.250

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
2-Fluorophenol		1.23	mg/Kg	1	2.67	46	8.6 - 115
Phenol-d5		1.53	mg/Kg	1	2.67	57	6.3 - 124
Nitrobenzene-d5		1.41	mg/Kg	1	2.67	53	11.3 - 116
2-Fluorobiphenyl		2.00	mg/Kg	1	2.67	75	14.6 - 122
2,4,6-Tribromophenol		2.01	mg/Kg	1	2.67	75	13.8 - 123
Terphenyl-d14		3.09	mg/Kg	1	2.67	116	30.8 - 134

Sample: 106220 - HLSF-0085-SB-007(20.0-21.0)

Analysis:	Semivolatiles WTS	Analytical Method:	S 8270C	Prep Method:	S 3550
QC Batch:	32371	Date Analyzed:	2006-10-21	Analyzed By:	DS
Prep Batch:	28187	Sample Preparation:	2006-10-21	Prepared By:	DS

Parameter	Flag	RL Result	Units	Dilution	RL
2-Butoxy Ethanol		<0.250	mg/Kg	1	0.250

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
2-Fluorophenol		1.44	mg/Kg	1	2.67	54	8.6 - 115
Phenol-d5		1.53	mg/Kg	1	2.67	57	6.3 - 124
Nitrobenzene-d5		1.49	mg/Kg	1	2.67	56	11.3 - 116
2-Fluorobiphenyl		2.05	mg/Kg	1	2.67	77	14.6 - 122
2,4,6-Tribromophenol		2.43	mg/Kg	1	2.67	91	13.8 - 123
Terphenyl-d14		3.08	mg/Kg	1	2.67	115	30.8 - 134

Sample: 106221 - HLSF-0085-SB-007(30.0-31.0)

Analysis:	Semivolatiles WTS	Analytical Method:	S 8270C	Prep Method:	S 3550
QC Batch:	32371	Date Analyzed:	2006-10-21	Analyzed By:	DS
Prep Batch:	28187	Sample Preparation:	2006-10-21	Prepared By:	DS

Parameter	Flag	RL Result	Units	Dilution	RL
2-Butoxy Ethanol		<0.250	mg/Kg	1	0.250

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
2-Fluorophenol		1.21	mg/Kg	1	2.67	45	8.6 - 115
Phenol-d5		1.63	mg/Kg	1	2.67	61	6.3 - 124
Nitrobenzene-d5		1.55	mg/Kg	1	2.67	58	11.3 - 116
2-Fluorobiphenyl		2.13	mg/Kg	1	2.67	80	14.6 - 122
2,4,6-Tribromophenol		2.03	mg/Kg	1	2.67	76	13.8 - 123
Terphenyl-d14		2.72	mg/Kg	1	2.67	102	30.8 - 134

Sample: 106222 - HLSF-0085-SB-007(40.0-41.0)

Analysis:	Semivolatiles WTS	Analytical Method:	S 8270C	Prep Method:	S 3550
QC Batch:	32371	Date Analyzed:	2006-10-21	Analyzed By:	DS
Prep Batch:	28187	Sample Preparation:	2006-10-21	Prepared By:	DS

Parameter	Flag	RL Result	Units	Dilution	RL
2-Butoxy Ethanol		<0.250	mg/Kg	1	0.250

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
2-Fluorophenol		1.10	mg/Kg	1	2.67	41	8.6 - 115
Phenol-d5		1.28	mg/Kg	1	2.67	48	6.3 - 124
Nitrobenzene-d5		1.30	mg/Kg	1	2.67	49	11.3 - 116
2-Fluorobiphenyl		1.71	mg/Kg	1	2.67	64	14.6 - 122
2,4,6-Tribromophenol		1.97	mg/Kg	1	2.67	74	13.8 - 123
Terphenyl-d14		2.26	mg/Kg	1	2.67	85	30.8 - 134

Sample: 106223 - HLSF-0085-SB-007(49.0-50.0)

Analysis:	Semivolatiles WTS	Analytical Method:	S 8270C	Prep Method:	S 3550
QC Batch:	32371	Date Analyzed:	2006-10-21	Analyzed By:	DS
Prep Batch:	28187	Sample Preparation:	2006-10-21	Prepared By:	DS

Parameter	Flag	RL Result	Units	Dilution	RL
2-Butoxy Ethanol		<0.250	mg/Kg	1	0.250

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
2-Fluorophenol		1.38	mg/Kg	1	2.67	52	8.6 - 115
Phenol-d5		1.56	mg/Kg	1	2.67	58	6.3 - 124
Nitrobenzene-d5		1.48	mg/Kg	1	2.67	55	11.3 - 116
2-Fluorobiphenyl		2.00	mg/Kg	1	2.67	75	14.6 - 122
2,4,6-Tribromophenol		2.14	mg/Kg	1	2.67	80	13.8 - 123
Terphenyl-d14		3.09	mg/Kg	1	2.67	116	30.8 - 134

Sample: 106224 - HLSF-0085-SB-008(0.5-1.0)

Analysis:	Semivolatiles WTS	Analytical Method:	S 8270C	Prep Method:	S 3550
QC Batch:	32371	Date Analyzed:	2006-10-21	Analyzed By:	DS
Prep Batch:	28187	Sample Preparation:	2006-10-21	Prepared By:	DS

Parameter	Flag	RL Result	Units	Dilution	RL
2-Butoxy Ethanol		<0.250	mg/Kg	1	0.250

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
2-Fluorophenol		1.31	mg/Kg	1	2.67	49	8.6 - 115
Phenol-d5		1.33	mg/Kg	1	2.67	50	6.3 - 124
Nitrobenzene-d5		1.32	mg/Kg	1	2.67	49	11.3 - 116
2-Fluorobiphenyl		1.80	mg/Kg	1	2.67	67	14.6 - 122
2,4,6-Tribromophenol		1.76	mg/Kg	1	2.67	66	13.8 - 123
Terphenyl-d14		2.64	mg/Kg	1	2.67	99	30.8 - 134

Sample: 106225 - HLSF-0085-SB-008(10.0-11.0)

Analysis:	Semivolatiles WTS	Analytical Method:	S 8270C	Prep Method:	S 3550
QC Batch:	32371	Date Analyzed:	2006-10-21	Analyzed By:	DS
Prep Batch:	28187	Sample Preparation:	2006-10-21	Prepared By:	DS

Parameter	Flag	RL Result	Units	Dilution	RL
2-Butoxy Ethanol		<0.250	mg/Kg	1	0.250

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
2-Fluorophenol		1.27	mg/Kg	1	2.67	48	8.6 - 115

continued . . .

sample continued . . .

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Phenol-d5		1.52	mg/Kg	1	2.67	57	6.3 - 124
Nitrobenzene-d5		1.47	mg/Kg	1	2.67	55	11.3 - 116
2-Fluorobiphenyl		2.05	mg/Kg	1	2.67	77	14.6 - 122
2,4,6-Tribromophenol		2.04	mg/Kg	1	2.67	76	13.8 - 123
Terphenyl-d14		3.09	mg/Kg	1	2.67	116	30.8 - 134

Sample: 106226 - HLSF-0085-SB-008(20.0-21.0)

Analysis:	Semivolatiles WTS	Analytical Method:	S 8270C	Prep Method:	S 3550
QC Batch:	32371	Date Analyzed:	2006-10-21	Analyzed By:	DS
Prep Batch:	28187	Sample Preparation:	2006-10-21	Prepared By:	DS

Parameter	Flag	RL Result	Units	Dilution	RL
2-Butoxy Ethanol		<0.250	mg/Kg	1	0.250

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
2-Fluorophenol		1.22	mg/Kg	1	2.67	46	8.6 - 115
Phenol-d5		1.70	mg/Kg	1	2.67	64	6.3 - 124
Nitrobenzene-d5		1.59	mg/Kg	1	2.67	60	11.3 - 116
2-Fluorobiphenyl		2.21	mg/Kg	1	2.67	83	14.6 - 122
2,4,6-Tribromophenol		2.12	mg/Kg	1	2.67	79	13.8 - 123
Terphenyl-d14		3.37	mg/Kg	1	2.67	126	30.8 - 134

Sample: 106227 - HLSF-0085-SB-008(30.0-31.0)

Analysis:	Semivolatiles WTS	Analytical Method:	S 8270C	Prep Method:	S 3550
QC Batch:	32371	Date Analyzed:	2006-10-21	Analyzed By:	DS
Prep Batch:	28187	Sample Preparation:	2006-10-21	Prepared By:	DS

Parameter	Flag	RL Result	Units	Dilution	RL
2-Butoxy Ethanol		<0.250	mg/Kg	1	0.250

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
2-Fluorophenol		1.20	mg/Kg	1	2.67	45	8.6 - 115
Phenol-d5		1.52	mg/Kg	1	2.67	57	6.3 - 124
Nitrobenzene-d5		1.44	mg/Kg	1	2.67	54	11.3 - 116
2-Fluorobiphenyl		1.97	mg/Kg	1	2.67	74	14.6 - 122
2,4,6-Tribromophenol		1.99	mg/Kg	1	2.67	74	13.8 - 123
Terphenyl-d14		3.22	mg/Kg	1	2.67	120	30.8 - 134

Method Blank (1) QC Batch: 32371

QC Batch:	32371	Date Analyzed:	2006-10-21	Analyzed By:	DS
Prep Batch:	28187	QC Preparation:	2006-10-21	Prepared By:	DS

Parameter	Flag	MDL Result	Units	RL
Pyridine		<0.0637	mg/Kg	0.25
n-Nitrosodimethylamine		<0.0307	mg/Kg	0.25
2-Picoline		<0.0698	mg/Kg	0.25
Methyl methanesulfonate		<0.0299	mg/Kg	0.25
Ethyl methanesulfonate		<0.0390	mg/Kg	0.25
Phenol		<0.0602	mg/Kg	0.25
Aniline		<0.0369	mg/Kg	0.25
bis(2-chloroethyl)ether		<0.0407	mg/Kg	0.25
2-Chlorophenol		<0.0923	mg/Kg	0.25
1,3-Dichlorobenzene (meta)		<0.0299	mg/Kg	0.25
1,4-Dichlorobenzene (para)		<0.0303	mg/Kg	0.25
Benzyl alcohol		<0.0618	mg/Kg	0.25
1,2-Dichlorobenzene (ortho)		<0.0308	mg/Kg	0.25
2-Methylphenol		<0.0504	mg/Kg	0.25
bis(2-chloroisopropyl)ether		<0.0272	mg/Kg	0.25
4-Methylphenol / 3-Methylphenol		<0.0349	mg/Kg	0.25
Acetophenone		<0.0422	mg/Kg	0.25
n-Nitrosodi-n-propylamine		<0.0480	mg/Kg	0.25
Hexachloroethane		<0.0522	mg/Kg	0.25
Nitrobenzene		<0.179	mg/Kg	0.25
n-Nitrosopiperidine		<0.0354	mg/Kg	0.25
Isophorone		<0.0802	mg/Kg	0.25
2-Nitrophenol		<0.0236	mg/Kg	0.25
2,4-Dimethylphenol		<0.0416	mg/Kg	0.25
bis(2-chloroethoxy)methane		<0.0490	mg/Kg	0.25
Benzoic acid		<0.137	mg/Kg	0.25
2,4-Dichlorophenol		<0.130	mg/Kg	0.25
1,2,4-Trichlorobenzene		<0.0297	mg/Kg	0.25
a,a-Dimethylphenethylamine		<0.0533	mg/Kg	0.25
Naphthalene		<0.0367	mg/Kg	0.25
4-Chloroaniline		<0.0492	mg/Kg	0.25
2,6-Dichlorophenol		<0.0365	mg/Kg	0.25
Hexachlorobutadiene		<0.0364	mg/Kg	0.25
n-Nitroso-di-n-butylamine		<0.0512	mg/Kg	0.25
4-Chloro-3-methylphenol		<0.0474	mg/Kg	0.25
1-Methylnaphthalene		<0.0417	mg/Kg	0.25
2-Methylnaphthalene		<0.0339	mg/Kg	0.25
1,2,4,5-Tetrachlorobenzene		<0.0300	mg/Kg	0.25
Hexachlorocyclopentadiene		<0.0352	mg/Kg	0.25
2,4,6-Trichlorophenol		<0.0336	mg/Kg	0.25
2,4,5-Trichlorophenol		<0.0403	mg/Kg	0.25
2-Chloronaphthalene		<0.0266	mg/Kg	0.25
1-Chloronaphthalene		<0.0263	mg/Kg	0.25
2-Nitroaniline		<0.0290	mg/Kg	0.25
Dimethylphthalate		<0.0290	mg/Kg	0.25
Acenaphthylene		<0.0651	mg/Kg	0.25
2,6-Dinitrotoluene		<0.0535	mg/Kg	0.25

continued . . .

method blank continued . . .

Parameter	Flag	MDL Result	Units	RL
3-Nitroaniline		<0.0421	mg/Kg	0.25
Acenaphthene		<0.0745	mg/Kg	0.25
2,4-Dinitrophenol		<0.0860	mg/Kg	0.25
Dibenzofuran		<0.0274	mg/Kg	0.25
Pentachlorobenzene		<0.0396	mg/Kg	0.25
4-Nitrophenol		<0.169	mg/Kg	0.25
1-Naphthylamine		<0.0304	mg/Kg	0.25
2,4-Dinitrotoluene		<0.0609	mg/Kg	0.25
2-Naphthylamine		<0.153	mg/Kg	0.25
2,3,4,6-Tetrachlorophenol		<0.0404	mg/Kg	0.25
Fluorene		<0.0435	mg/Kg	0.25
Diethylphthalate		<0.0402	mg/Kg	0.25
4-Chlorophenyl-phenylether		<0.0345	mg/Kg	0.25
4-Nitroaniline		<0.0176	mg/Kg	0.25
4,6-Dinitro-2-methylphenol		<0.330	mg/Kg	0.25
Diphenylamine		<0.0471	mg/Kg	0.25
Diphenylhydrazine		<0.0641	mg/Kg	0.25
4-Bromophenyl-phenylether		<0.0310	mg/Kg	0.25
Phenacetin		<0.0344	mg/Kg	0.25
Hexachlorobenzene		<0.0306	mg/Kg	0.25
4-Aminobiphenyl		<0.128	mg/Kg	0.25
Pentachlorophenol		<0.151	mg/Kg	0.25
Pentachloronitrobenzene		<0.0775	mg/Kg	0.25
Pronamide		<0.0265	mg/Kg	0.25
Phenanthrene		<0.0737	mg/Kg	0.25
Anthracene		<0.0378	mg/Kg	0.25
Di-n-butylphthalate		<0.0300	mg/Kg	0.25
Fluoranthene		<0.0346	mg/Kg	0.25
Benzidine		<1.14	mg/Kg	2.5
Pyrene		<0.151	mg/Kg	0.25
p-Dimethylaminoazobenzene		<0.0298	mg/Kg	0.25
Butylbenzylphthalate		<0.0589	mg/Kg	0.25
Benzo(a)anthracene		<0.0449	mg/Kg	0.25
3,3-Dichlorobenzidine		<0.162	mg/Kg	0.25
Chrysene		<0.0357	mg/Kg	0.25
bis(2-ethylhexyl)phthalate		<0.0805	mg/Kg	0.25
Di-n-octylphthalate		<0.0394	mg/Kg	0.25
Benzo(b)fluoranthene		<0.0644	mg/Kg	0.25
7,12-Dimethylbenz(a)anthracene		<0.0356	mg/Kg	0.25
Benzo(k)fluoranthene		<0.0464	mg/Kg	0.25
Benzo(a)pyrene		<0.0349	mg/Kg	0.25
3-Methylcholanthrene		<0.0741	mg/Kg	0.25
Dibenzo(a,j)acridine		<0.0290	mg/Kg	0.25
Indeno(1,2,3-cd)pyrene		<0.0287	mg/Kg	0.25
Dibenzo(a,h)anthracene		<0.0448	mg/Kg	0.25
Benzo(g,h,i)perylene		<0.0276	mg/Kg	0.25
2-Butoxy Ethanol		<0.150	mg/Kg	0.25

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
2-Fluorophenol		1.64	mg/Kg	1	2.67	61	8.6 - 115
Phenol-d5		1.78	mg/Kg	1	2.67	67	6.3 - 124
Nitrobenzene-d5		1.62	mg/Kg	1	2.67	61	11.3 - 116
2-Fluorobiphenyl		2.23	mg/Kg	1	2.67	84	14.6 - 122
2,4,6-Tribromophenol		2.44	mg/Kg	1	2.67	91	13.8 - 123
Terphenyl-d14		3.17	mg/Kg	1	2.67	119	30.8 - 134

Laboratory Control Spike (LCS-1)

QC Batch: 32371 Date Analyzed: 2006-10-21 Analyzed By: DS
Prep Batch: 28187 QC Preparation: 2006-10-21 Prepared By: DS

Param	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Phenol	1.46	mg/Kg	1	2.67	<0.0602	55	10 - 125.6
2-Chlorophenol	1.43	mg/Kg	1	2.67	<0.0923	54	10 - 144
1,4-Dichlorobenzene (para)	1.44	mg/Kg	1	2.67	<0.0303	54	10 - 172
n-Nitrosodi-n-propylamine	1.43	mg/Kg	1	2.67	<0.0480	54	10 - 203
1,2,4-Trichlorobenzene	1.41	mg/Kg	1	2.67	<0.0297	53	10 - 176
4-Chloro-3-methylphenol	1.29	mg/Kg	1	2.67	<0.0474	48	10 - 168
Acenaphthene	1.64	mg/Kg	1	2.67	<0.0745	61	10 - 215
4-Nitrophenol	0.495	mg/Kg	1	2.67	<0.169	18	10 - 160
2,4-Dinitrotoluene	1.64	mg/Kg	1	2.67	<0.0609	61	10 - 226
Pentachlorophenol	0.988	mg/Kg	1	2.67	<0.151	37	10 - 187
Pyrene	2.51	mg/Kg	1	2.67	<0.151	94	10 - 248

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Param	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Phenol	1.46	mg/Kg	1	2.67	<0.0602	55	10 - 125.6	0	20
2-Chlorophenol	1.43	mg/Kg	1	2.67	<0.0923	54	10 - 144	0	20
1,4-Dichlorobenzene (para)	1.42	mg/Kg	1	2.67	<0.0303	53	10 - 172	1	20
n-Nitrosodi-n-propylamine	1.48	mg/Kg	1	2.67	<0.0480	55	10 - 203	4	20
1,2,4-Trichlorobenzene	1.41	mg/Kg	1	2.67	<0.0297	53	10 - 176	0	20
4-Chloro-3-methylphenol	1.38	mg/Kg	1	2.67	<0.0474	52	10 - 168	7	20
Acenaphthene	1.63	mg/Kg	1	2.67	<0.0745	61	10 - 215	1	20
4-Nitrophenol	0.488	mg/Kg	1	2.67	<0.169	18	10 - 160	1	20
2,4-Dinitrotoluene	1.66	mg/Kg	1	2.67	<0.0609	62	10 - 226	1	20
Pentachlorophenol	1.03	mg/Kg	1	2.67	<0.151	38	10 - 187	4	20
Pyrene	2.50	mg/Kg	1	2.67	<0.151	94	10 - 248	0	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Surrogate	LCS Result	LCSD Result	Units	Dil.	Spike Amount	LCS Rec.	LCSD Rec.	Rec. Limit
2-Fluorophenol	1.22	1.20	mg/Kg	1	2.67	46	45	10 - 130.2
Phenol-d5	1.52	1.49	mg/Kg	1	2.67	57	56	10 - 133.4
Nitrobenzene-d5	1.28	1.33	mg/Kg	1	2.67	48	50	21 - 130.5
2-Fluorobiphenyl	1.86	1.82	mg/Kg	1	2.67	70	68	22 - 129.2
2,4,6-Tribromophenol	2.04	2.16	mg/Kg	1	2.67	76	81	41 - 149

continued . . .

control spikes continued . . .

Surrogate	LCS Result	LCSD Result	Units	Dil.	Spike Amount	LCS Rec.	LCSD Rec.	Rec. Limit
Terphenyl-d14	2.75	2.75	mg/Kg	1	2.67	103	103	44.1 - 161

Matrix Spike (MS-1) Spiked Sample: 106090

QC Batch: 32371 Date Analyzed: 2006-10-21 Analyzed By: DS
Prep Batch: 28187 QC Preparation: 2006-10-21 Prepared By: DS

Param	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Phenol	1.41	mg/Kg	1	2.67	<0.0602	53	10 - 109
2-Chlorophenol	1.45	mg/Kg	1	2.67	<0.0923	54	10 - 130
1,4-Dichlorobenzene (para)	1.43	mg/Kg	1	2.67	<0.0303	54	10 - 124
n-Nitrosodi-n-propylamine	1.57	mg/Kg	1	2.67	<0.0480	59	10 - 172
1,2,4-Trichlorobenzene	1.54	mg/Kg	1	2.67	<0.0297	58	10 - 136
4-Chloro-3-methylphenol	1.34	mg/Kg	1	2.67	<0.0474	50	10 - 121
Acenaphthene	1.69	mg/Kg	1	2.67	<0.0745	63	10 - 158
4-Nitrophenol	0.483	mg/Kg	1	2.67	<0.169	18	10 - 84
2,4-Dinitrotoluene	1.52	mg/Kg	1	2.67	<0.0609	57	10 - 126
Pentachlorophenol	1.30	mg/Kg	1	2.67	<0.151	49	10 - 143
Pyrene	2.09	mg/Kg	1	2.67	<0.151	78	10 - 174

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Param	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Phenol	1.41	mg/Kg	1	2.67	<0.0602	53	10 - 109	0	20
2-Chlorophenol	1.38	mg/Kg	1	2.67	<0.0923	52	10 - 130	5	20
1,4-Dichlorobenzene (para)	1.37	mg/Kg	1	2.67	<0.0303	51	10 - 124	5	20
n-Nitrosodi-n-propylamine	1.54	mg/Kg	1	2.67	<0.0480	58	10 - 172	2	20
1,2,4-Trichlorobenzene	1.44	mg/Kg	1	2.67	<0.0297	54	10 - 136	7	20
4-Chloro-3-methylphenol	1.30	mg/Kg	1	2.67	<0.0474	49	10 - 121	3	20
Acenaphthene	1.61	mg/Kg	1	2.67	<0.0745	60	10 - 158	5	20
4-Nitrophenol	0.482	mg/Kg	1	2.67	<0.169	18	10 - 84	0	20
2,4-Dinitrotoluene	1.44	mg/Kg	1	2.67	<0.0609	54	10 - 126	6	20
Pentachlorophenol	1.31	mg/Kg	1	2.67	<0.151	49	10 - 143	1	20
Pyrene	2.04	mg/Kg	1	2.67	<0.151	76	10 - 174	2	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Surrogate	MS Result	MSD Result	Units	Dil.	Spike Amount	MS Rec.	MSD Rec.	Rec. Limit
2-Fluorophenol	0.990	1.04	mg/Kg	1	2.67	37	39	10 - 98.6
Phenol-d5	1.35	1.32	mg/Kg	1	2.67	50	49	10 - 103
Nitrobenzene-d5	1.46	1.41	mg/Kg	1	2.67	55	53	24 - 93.4
2-Fluorobiphenyl	1.88	1.79	mg/Kg	1	2.67	70	67	13.1 - 102
2,4,6-Tribromophenol	2.07	1.97	mg/Kg	1	2.67	78	74	21.5 - 112
Terphenyl-d14	2.28	2.20	mg/Kg	1	2.67	85	82	24.3 - 121

Standard (CCV-2)

QC Batch: 32371 Date Analyzed: 2006-10-21 Analyzed By: DS

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Phenol		mg/Kg	60.0	54.0	90	80 - 120	2006-10-21
1,4-Dichlorobenzene (para)		mg/Kg	60.0	61.2	102	80 - 120	2006-10-21
2-Nitrophenol		mg/Kg	60.0	54.8	91	80 - 120	2006-10-21
2,4-Dichlorophenol		mg/Kg	60.0	50.4	84	80 - 120	2006-10-21
Hexachlorobutadiene		mg/Kg	60.0	68.2	114	80 - 120	2006-10-21
4-Chloro-3-methylphenol		mg/Kg	60.0	52.4	87	80 - 120	2006-10-21
2,4,6-Trichlorophenol		mg/Kg	60.0	57.1	95	80 - 120	2006-10-21
Acenaphthene		mg/Kg	60.0	60.9	102	80 - 120	2006-10-21
Diphenylamine		mg/Kg	60.0	58.4	97	80 - 120	2006-10-21
Pentachlorophenol		mg/Kg	60.0	64.1	107	80 - 120	2006-10-21
Fluoranthene		mg/Kg	60.0	62.7	104	80 - 120	2006-10-21
Di-n-octylphthalate		mg/Kg	60.0	61.0	102	80 - 120	2006-10-21
Benzo(a)pyrene		mg/Kg	60.0	60.6	101	80 - 120	2006-10-21

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limit
2-Fluorophenol		51.7	mg/Kg	1	60.0	86	80 - 120
Phenol-d5		53.2	mg/Kg	1	60.0	89	80 - 120
Nitrobenzene-d5		57.3	mg/Kg	1	60.0	96	80 - 120
2-Fluorobiphenyl		57.9	mg/Kg	1	60.0	96	80 - 120
2,4,6-Tribromophenol	[1]	75.0	mg/Kg	1	60.0	125	80 - 120
Terphenyl-d14		67.6	mg/Kg	1	60.0	113	80 - 120

[1] 2,4,6-Tribromophenol outside of control limits on CCV(ICV). CCV(ICV) component average is 99.0% which is within acceptable range. This is acceptable by Method 8000.

Analytical and Quality Control Report

William Little
WTS
P.O. Box 363
Building 126 3RD Floor
WSMR, NM, 88002

Report Date: December 28, 2006

Work Order: 6101906

Project Name: HELSTF Phase III Soil Sampling
Project Number: 7

Enclosed are the Analytical Report and Quality Control Report for the following sample(s) submitted to TraceAnalysis, Inc.

Sample	Description	Matrix	Date Taken	Time Taken	Date Received
106218	HLSF-0085-SB-007(0.5-1.0)	soil	2006-10-17	09:40	2006-10-18
106219	HLSF-0085-SB-007(10.0-11.0)	soil	2006-10-17	10:05	2006-10-18
106220	HLSF-0085-SB-007(20.0-21.0)	soil	2006-10-17	10:20	2006-10-18
106221	HLSF-0085-SB-007(30.0-31.0)	soil	2006-10-17	11:00	2006-10-18
106222	HLSF-0085-SB-007(40.0-41.0)	soil	2006-10-17	11:25	2006-10-18
106223	HLSF-0085-SB-007(49.0-50.0)	soil	2006-10-17	12:00	2006-10-18
106224	HLSF-0085-SB-008(0.5-1.0)	soil	2006-10-17	14:00	2006-10-18
106225	HLSF-0085-SB-008(10.0-11.0)	soil	2006-10-17	14:45	2006-10-18
106226	HLSF-0085-SB-008(20.0-21.0)	soil	2006-10-17	15:20	2006-10-18
106227	HLSF-0085-SB-008(30.0-31.0)	soil	2006-10-17	15:50	2006-10-18

These results represent only the samples received in the laboratory. The Quality Control Report is generated on a batch basis. All information contained in this report is for the analytical batch(es) in which your sample(s) were analyzed.

This report consists of a total of 10 pages and shall not be reproduced except in its entirety, without written approval of TraceAnalysis, Inc.

Dr. Blair Leftwich, Director

Standard Flags

B - The sample contains less than ten times the concentration found in the method blank.

Analytical Report

Sample: 106218 - HLSF-0085-SB-007(0.5-1.0)

Analysis:	Total 8 Metals	Analytical Method:	S 6010B	Prep Method:	S 3050B
QC Batch:	31183	Date Analyzed:	2006-10-23	Analyzed By:	RR
Prep Batch:	27154	Sample Preparation:	2006-10-23	Prepared By:	TS
Analysis:	Total 8 Metals	Analytical Method:	S 7471A	Prep Method:	N/A
QC Batch:	31241	Date Analyzed:	2006-10-24	Analyzed By:	TP
Prep Batch:	27189	Sample Preparation:	2006-10-24	Prepared By:	TP

Parameter	Flag	RL Result	Units	Dilution	RL
Total Silver		<0.0500	mg/Kg	1	0.0500
Total Arsenic		<2.00	mg/Kg	1	2.00
Total Barium		**75.2**	mg/Kg	1	1.00
Total Cadmium		<0.100	mg/Kg	1	0.100
Total Chromium		**8.80**	mg/Kg	1	0.500
Total Mercury		<0.0400	mg/Kg	1	0.0400
Total Lead		**16.3**	mg/Kg	1	1.00
Total Selenium		<1.00	mg/Kg	1	1.00

Sample: 106219 - HLSF-0085-SB-007(10.0-11.0)

Analysis:	Total 8 Metals	Analytical Method:	S 6010B	Prep Method:	S 3050B
QC Batch:	31183	Date Analyzed:	2006-10-23	Analyzed By:	RR
Prep Batch:	27154	Sample Preparation:	2006-10-23	Prepared By:	TS
Analysis:	Total 8 Metals	Analytical Method:	S 7471A	Prep Method:	N/A
QC Batch:	31241	Date Analyzed:	2006-10-24	Analyzed By:	TP
Prep Batch:	27189	Sample Preparation:	2006-10-24	Prepared By:	TP

Parameter	Flag	RL Result	Units	Dilution	RL
Total Silver		<0.0500	mg/Kg	1	0.0500
Total Arsenic		<2.00	mg/Kg	1	2.00
Total Barium		**31.9**	mg/Kg	1	1.00
Total Cadmium		<0.100	mg/Kg	1	0.100
Total Chromium		**2.99**	mg/Kg	1	0.500
Total Mercury		<0.0400	mg/Kg	1	0.0400
Total Lead		**2.98**	mg/Kg	1	1.00
Total Selenium		<1.00	mg/Kg	1	1.00

Sample: 106220 - HLSF-0085-SB-007(20.0-21.0)

Analysis:	Total 8 Metals	Analytical Method:	S 6010B	Prep Method:	S 3050B
QC Batch:	31183	Date Analyzed:	2006-10-23	Analyzed By:	RR
Prep Batch:	27154	Sample Preparation:	2006-10-23	Prepared By:	TS
Analysis:	Total 8 Metals	Analytical Method:	S 7471A	Prep Method:	N/A
QC Batch:	31241	Date Analyzed:	2006-10-24	Analyzed By:	TP
Prep Batch:	27189	Sample Preparation:	2006-10-24	Prepared By:	TP

Parameter	Flag	RL Result	Units	Dilution	RL
Total Silver		<0.0500	mg/Kg	1	0.0500
Total Arsenic		<2.00	mg/Kg	1	2.00
Total Barium		**75.5**	mg/Kg	1	1.00
Total Cadmium		<0.100	mg/Kg	1	0.100
Total Chromium		**7.57**	mg/Kg	1	0.500
Total Mercury		<0.0400	mg/Kg	1	0.0400
Total Lead		**11.9**	mg/Kg	1	1.00
Total Selenium		<1.00	mg/Kg	1	1.00

Sample: 106221 - HLSF-0085-SB-007(30.0-31.0)

Analysis:	Total 8 Metals	Analytical Method:	S 6010B	Prep Method:	S 3050B
QC Batch:	31183	Date Analyzed:	2006-10-23	Analyzed By:	RR
Prep Batch:	27154	Sample Preparation:	2006-10-23	Prepared By:	TS
Analysis:	Total 8 Metals	Analytical Method:	S 7471A	Prep Method:	N/A
QC Batch:	31241	Date Analyzed:	2006-10-24	Analyzed By:	TP
Prep Batch:	27189	Sample Preparation:	2006-10-24	Prepared By:	TP

Parameter	Flag	RL Result	Units	Dilution	RL
Total Silver		<0.0500	mg/Kg	1	0.0500
Total Arsenic		**2.93**	mg/Kg	1	2.00
Total Barium		**14.8**	mg/Kg	1	1.00
Total Cadmium		<0.100	mg/Kg	1	0.100
Total Chromium		**8.67**	mg/Kg	1	0.500
Total Mercury		<0.0400	mg/Kg	1	0.0400
Total Lead		**13.5**	mg/Kg	1	1.00
Total Selenium		<1.00	mg/Kg	1	1.00

Sample: 106222 - HLSF-0085-SB-007(40.0-41.0)

Analysis:	Total 8 Metals	Analytical Method:	S 6010B	Prep Method:	S 3050B
QC Batch:	31183	Date Analyzed:	2006-10-23	Analyzed By:	RR
Prep Batch:	27154	Sample Preparation:	2006-10-23	Prepared By:	TS
Analysis:	Total 8 Metals	Analytical Method:	S 7471A	Prep Method:	N/A
QC Batch:	31241	Date Analyzed:	2006-10-24	Analyzed By:	TP
Prep Batch:	27189	Sample Preparation:	2006-10-24	Prepared By:	TP

Parameter	Flag	RL Result	Units	Dilution	RL
Total Silver		<0.0500	mg/Kg	1	0.0500
Total Arsenic		<2.00	mg/Kg	1	2.00
Total Barium		**53.3**	mg/Kg	1	1.00
Total Cadmium		<0.100	mg/Kg	1	0.100
Total Chromium		**16.9**	mg/Kg	1	0.500
Total Mercury		<0.0400	mg/Kg	1	0.0400
Total Lead		**37.1**	mg/Kg	1	1.00
Total Selenium		<1.00	mg/Kg	1	1.00

Sample: 106223 - HLSF-0085-SB-007(49.0-50.0)

Analysis:	Total 8 Metals	Analytical Method:	S 6010B	Prep Method:	S 3050B
QC Batch:	31183	Date Analyzed:	2006-10-23	Analyzed By:	RR
Prep Batch:	27154	Sample Preparation:	2006-10-23	Prepared By:	TS
Analysis:	Total 8 Metals	Analytical Method:	S 7471A	Prep Method:	N/A
QC Batch:	31241	Date Analyzed:	2006-10-24	Analyzed By:	TP
Prep Batch:	27189	Sample Preparation:	2006-10-24	Prepared By:	TP

Parameter	Flag	RL Result	Units	Dilution	RL
Total Silver		<0.0500	mg/Kg	1	0.0500
Total Arsenic		**3.19**	mg/Kg	1	2.00
Total Barium		**17.3**	mg/Kg	1	1.00
Total Cadmium		<0.100	mg/Kg	1	0.100
Total Chromium		**12.0**	mg/Kg	1	0.500
Total Mercury		<0.0400	mg/Kg	1	0.0400
Total Lead		**30.5**	mg/Kg	1	1.00
Total Selenium		<1.00	mg/Kg	1	1.00

Sample: 106224 - HLSF-0085-SB-008(0.5-1.0)

Analysis:	Total 8 Metals	Analytical Method:	S 6010B	Prep Method:	S 3050B
QC Batch:	31183	Date Analyzed:	2006-10-23	Analyzed By:	RR
Prep Batch:	27154	Sample Preparation:	2006-10-23	Prepared By:	TS
Analysis:	Total 8 Metals	Analytical Method:	S 7471A	Prep Method:	N/A
QC Batch:	31241	Date Analyzed:	2006-10-24	Analyzed By:	TP
Prep Batch:	27189	Sample Preparation:	2006-10-24	Prepared By:	TP

Parameter	Flag	RL Result	Units	Dilution	RL
Total Silver		<0.0500	mg/Kg	1	0.0500
Total Arsenic		<2.00	mg/Kg	1	2.00
Total Barium		**70.6**	mg/Kg	1	1.00
Total Cadmium		<0.100	mg/Kg	1	0.100
Total Chromium		**9.06**	mg/Kg	1	0.500
Total Mercury		<0.0400	mg/Kg	1	0.0400
Total Lead		**17.3**	mg/Kg	1	1.00
Total Selenium		<1.00	mg/Kg	1	1.00

Sample: 106225 - HLSF-0085-SB-008(10.0-11.0)

Analysis:	Total 8 Metals	Analytical Method:	S 6010B	Prep Method:	S 3050B
QC Batch:	31183	Date Analyzed:	2006-10-23	Analyzed By:	RR
Prep Batch:	27154	Sample Preparation:	2006-10-23	Prepared By:	TS
Analysis:	Total 8 Metals	Analytical Method:	S 7471A	Prep Method:	N/A
QC Batch:	31241	Date Analyzed:	2006-10-24	Analyzed By:	TP
Prep Batch:	27189	Sample Preparation:	2006-10-24	Prepared By:	TP

continued . . .

sample 106225 continued . . .

Parameter	Flag	RL Result	Units	Dilution	RL

Parameter	Flag	RL Result	Units	Dilution	RL
Total Silver		<0.0500	mg/Kg	1	0.0500
Total Arsenic		<2.00	mg/Kg	1	2.00
Total Barium		**32.9**	mg/Kg	1	1.00
Total Cadmium		<0.100	mg/Kg	1	0.100
Total Chromium		**3.28**	mg/Kg	1	0.500
Total Mercury		<0.0400	mg/Kg	1	0.0400
Total Lead		**3.57**	mg/Kg	1	1.00
Total Selenium		<1.00	mg/Kg	1	1.00

Sample: 106226 - HLSF-0085-SB-008(20.0-21.0)

Analysis:	Total 8 Metals	Analytical Method:	S 6010B	Prep Method:	S 3050B
QC Batch:	31183	Date Analyzed:	2006-10-23	Analyzed By:	RR
Prep Batch:	27154	Sample Preparation:	2006-10-23	Prepared By:	TS
Analysis:	Total 8 Metals	Analytical Method:	S 7471A	Prep Method:	N/A
QC Batch:	31241	Date Analyzed:	2006-10-24	Analyzed By:	TP
Prep Batch:	27189	Sample Preparation:	2006-10-24	Prepared By:	TP

Parameter	Flag	RL Result	Units	Dilution	RL
Total Silver		<0.0500	mg/Kg	1	0.0500
Total Arsenic		<2.00	mg/Kg	1	2.00
Total Barium		**82.1**	mg/Kg	1	1.00
Total Cadmium		<0.100	mg/Kg	1	0.100
Total Chromium		**6.92**	mg/Kg	1	0.500
Total Mercury		<0.0400	mg/Kg	1	0.0400
Total Lead		**10.8**	mg/Kg	1	1.00
Total Selenium		<1.00	mg/Kg	1	1.00

Sample: 106227 - HLSF-0085-SB-008(30.0-31.0)

Analysis:	Total 8 Metals	Analytical Method:	S 6010B	Prep Method:	S 3050B
QC Batch:	31183	Date Analyzed:	2006-10-23	Analyzed By:	RR
Prep Batch:	27154	Sample Preparation:	2006-10-23	Prepared By:	TS
Analysis:	Total 8 Metals	Analytical Method:	S 7471A	Prep Method:	N/A
QC Batch:	31242	Date Analyzed:	2006-10-25	Analyzed By:	TP
Prep Batch:	27190	Sample Preparation:	2006-10-24	Prepared By:	TP

Parameter	Flag	RL Result	Units	Dilution	RL
Total Silver		<0.0500	mg/Kg	1	0.0500
Total Arsenic		<2.00	mg/Kg	1	2.00
Total Barium		**15.8**	mg/Kg	1	1.00
Total Cadmium		<0.100	mg/Kg	1	0.100

continued . . .

sample 106227 continued . . .

Parameter	Flag	RL Result	Units	Dilution	RL
Total Chromium		**5.91**	mg/Kg	1	0.500
Total Mercury		<0.0400	mg/Kg	1	0.0400
Total Lead		**8.01**	mg/Kg	1	1.00
Total Selenium		<1.00	mg/Kg	1	1.00

Method Blank (1) QC Batch: 31183

QC Batch:	31183	Date Analyzed:	2006-10-23	Analyzed By:	RR
Prep Batch:	27154	QC Preparation:	2006-10-23	Prepared By:	TS

Parameter	Flag	MDL Result	Units	RL
Total Silver		<0.00444	mg/Kg	0.05
Total Arsenic		<0.228	mg/Kg	2
Total Barium		<0.0601	mg/Kg	1
Total Cadmium		<0.00794	mg/Kg	0.1
Total Chromium		<0.0125	mg/Kg	0.5
Total Lead		<0.367	mg/Kg	1
Total Selenium		<0.0767	mg/Kg	1

Method Blank (1) QC Batch: 31241

QC Batch:	31241	Date Analyzed:	2006-10-24	Analyzed By:	TP
Prep Batch:	27189	QC Preparation:	2006-10-24	Prepared By:	TP

Parameter	Flag	MDL Result	Units	RL
Total Mercury		<0.00299	mg/Kg	0.04

Method Blank (1) QC Batch: 31242

QC Batch:	31242	Date Analyzed:	2006-10-25	Analyzed By:	TP
Prep Batch:	27190	QC Preparation:	2006-10-24	Prepared By:	TP

Parameter	Flag	MDL Result	Units	RL
Total Mercury		<0.00299	mg/Kg	0.04

Laboratory Control Spike (LCS-1)

QC Batch:	31183	Date Analyzed:	2006-10-23	Analyzed By:	RR
Prep Batch:	27154	QC Preparation:	2006-10-23	Prepared By:	TS

Param	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Total Silver	11.5	mg/Kg	1	12.5	<0.00444	92	85 - 113
Total Arsenic	43.9	mg/Kg	1	50.0	<0.228	88	85 - 111
Total Barium	91.2	mg/Kg	1	100	<0.0601	91	85 - 103
Total Cadmium	22.6	mg/Kg	1	25.0	<0.00794	90	85 - 115
Total Chromium	10.1	mg/Kg	1	10.0	<0.0125	101	85 - 115
Total Lead	44.9	mg/Kg	1	50.0	<0.367	90	85 - 115
Total Selenium	39.6	mg/Kg	1	50.0	<0.0767	79	75 - 125

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Param	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Total Silver	11.6	mg/Kg	1	12.5	<0.00444	93	85 - 113	1	20
Total Arsenic	45.0	mg/Kg	1	50.0	<0.228	90	85 - 111	2	20
Total Barium	92.8	mg/Kg	1	100	<0.0601	93	85 - 103	2	20
Total Cadmium	22.7	mg/Kg	1	25.0	<0.00794	91	85 - 115	0	20
Total Chromium	10.5	mg/Kg	1	10.0	<0.0125	105	85 - 115	4	20
Total Lead	45.4	mg/Kg	1	50.0	<0.367	91	85 - 115	1	20
Total Selenium	39.5	mg/Kg	1	50.0	<0.0767	79	75 - 125	0	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Laboratory Control Spike (LCS-1)

QC Batch: 31241 Date Analyzed: 2006-10-24 Analyzed By: TP
Prep Batch: 27189 QC Preparation: 2006-10-24 Prepared By: TP

Param	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Total Mercury	0.509	mg/Kg	1	0.500	<0.00299	102	85.2 - 118

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Param	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Total Mercury	0.521	mg/Kg	1	0.500	<0.00299	104	85.2 - 118	2	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Laboratory Control Spike (LCS-1)

QC Batch: 31242 Date Analyzed: 2006-10-25 Analyzed By: TP
Prep Batch: 27190 QC Preparation: 2006-10-24 Prepared By: TP

Param	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Total Mercury	0.492	mg/Kg	1	0.500	<0.00299	98	85.2 - 118

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Param	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Total Mercury	0.463	mg/Kg	1	0.500	<0.00299	93	85.2 - 118	6	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Matrix Spike (MS-1) Spiked Sample: 106218

QC Batch: 31183 Date Analyzed: 2006-10-23 Analyzed By: RR
Prep Batch: 27154 QC Preparation: 2006-10-23 Prepared By: TS

Param	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Total Silver	10.6	mg/Kg	1	12.5	<0.00444	85	78.1 - 115
Total Arsenic	44.3	mg/Kg	1	50.0	<0.228	89	75 - 114
Total Barium	156	mg/Kg	1	100	75.2	81	75.7 - 123
Total Cadmium	21.5	mg/Kg	1	25.0	<0.00794	86	75 - 112
Total Chromium	18.7	mg/Kg	1	10.0	8.8	99	75 - 125
Total Lead	59.1	mg/Kg	1	50.0	16.3	86	75 - 125
Total Selenium	39.3	mg/Kg	1	50.0	<0.0767	79	75 - 117

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Param	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Total Silver	11.0	mg/Kg	1	0.00	<0.00444	88	78.1 - 115	4	20
Total Arsenic	46.0	mg/Kg	1	0.00	<0.228	92	75 - 114	4	20
Total Barium	161	mg/Kg	1	0.00	75.2	86	75.7 - 123	3	20
Total Cadmium	21.2	mg/Kg	1	0.00	<0.00794	85	75 - 112	1	20
Total Chromium	19.7	mg/Kg	1	0.00	8.8	109	75 - 125	5	20
Total Lead	62.2	mg/Kg	1	0.00	16.3	92	75 - 125	5	20
Total Selenium	39.3	mg/Kg	1	0.00	<0.0767	79	75 - 117	0	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Matrix Spike (MS-1) Spiked Sample: 106218

QC Batch: 31241 Date Analyzed: 2006-10-24 Analyzed By: TP
Prep Batch: 27189 QC Preparation: 2006-10-24 Prepared By: TP

Param	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Total Mercury	0.473	mg/Kg	1	0.500	0.00667	93	77.6 - 124

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Param	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Total Mercury	0.532	mg/Kg	1	0.00	0.00667	105	77.6 - 124	12	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Matrix Spike (MS-1) Spiked Sample: 106227

QC Batch: 31242 Date Analyzed: 2006-10-25 Analyzed By: TP
Prep Batch: 27190 QC Preparation: 2006-10-24 Prepared By: TP

Param	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Total Mercury	0.494	mg/Kg	1	0.500	<0.00299	99	77.6 - 124

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Param	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Total Mercury	0.478	mg/Kg	1	0.00	<0.00299	96	77.6 - 124	3	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Standard (ICV-1)

QC Batch: 31183 Date Analyzed: 2006-10-23 Analyzed By: RR

Param	Flag	Units	ICVs True Conc.	ICVs Found Conc.	ICVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Total Silver		mg/Kg	0.125	0.126	101	90 - 110	2006-10-23
Total Arsenic		mg/Kg	1.00	0.997	100	95 - 105	2006-10-23
Total Barium		mg/Kg	1.00	1.01	101	95 - 105	2006-10-23
Total Cadmium		mg/Kg	1.00	1.00	100	95 - 105	2006-10-23
Total Chromium		mg/Kg	1.00	0.994	99	90 - 110	2006-10-23
Total Lead		mg/Kg	1.00	1.00	100	90 - 110	2006-10-23
Total Selenium		mg/Kg	1.00	1.01	101	90 - 110	2006-10-23

Standard (CCV-1)

QC Batch: 31183 Date Analyzed: 2006-10-23 Analyzed By: RR

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Total Silver		mg/Kg	0.125	0.123	98	90 - 110	2006-10-23
Total Arsenic		mg/Kg	1.00	0.993	99	90 - 110	2006-10-23
Total Barium		mg/Kg	1.00	0.974	97	90 - 110	2006-10-23
Total Cadmium		mg/Kg	1.00	0.976	98	90 - 110	2006-10-23
Total Chromium		mg/Kg	1.00	0.967	97	90 - 110	2006-10-23
Total Lead		mg/Kg	1.00	0.989	99	90 - 110	2006-10-23
Total Selenium		mg/Kg	1.00	1.00	100	90 - 110	2006-10-23

Standard (ICV-1)

QC Batch: 31241 Date Analyzed: 2006-10-24 Analyzed By: TP

Param	Flag	Units	ICVs True Conc.	ICVs Found Conc.	ICVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Total Mercury		mg/L	0.00500	0.00505	101	90 - 110	2006-10-24

Standard (CCV-1)

QC Batch: 31241 Date Analyzed: 2006-10-24 Analyzed By: TP

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Total Mercury		mg/L	0.00500	0.00494	99	80 - 120	2006-10-24

Standard (ICV-1)

QC Batch: 31242 Date Analyzed: 2006-10-25 Analyzed By: TP

Param	Flag	Units	ICVs True Conc.	ICVs Found Conc.	ICVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Total Mercury		mg/L	0.00500	0.00505	101	90 - 110	2006-10-25

Standard (CCV-1)

QC Batch: 31242 Date Analyzed: 2006-10-25 Analyzed By: TP

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Total Mercury		mg/L	0.00500	0.00509	102	80 - 120	2006-10-25

Analytical and Quality Control Report

William Little
WTS
P.O. Box 363
Building 126 3RD Floor
WSMR, NM, 88002

Report Date: December 28, 2006

Work Order: 6101906

Project Name: HELSTF Phase III Soil Sampling
Project Number: 7

Enclosed are the Analytical Report and Quality Control Report for the following sample(s) submitted to TraceAnalysis, Inc.

Sample	Description	Matrix	Date Taken	Time Taken	Date Received
106218	HLSF-0085-SB-007(0.5-1.0)	soil	2006-10-17	09:40	2006-10-18
106219	HLSF-0085-SB-007(10.0-11.0)	soil	2006-10-17	10:05	2006-10-18
106220	HLSF-0085-SB-007(20.0-21.0)	soil	2006-10-17	10:20	2006-10-18
106221	HLSF-0085-SB-007(30.0-31.0)	soil	2006-10-17	11:00	2006-10-18
106222	HLSF-0085-SB-007(40.0-41.0)	soil	2006-10-17	11:25	2006-10-18
106223	HLSF-0085-SB-007(49.0-50.0)	soil	2006-10-17	12:00	2006-10-18
106224	HLSF-0085-SB-008(0.5-1.0)	soil	2006-10-17	14:00	2006-10-18
106225	HLSF-0085-SB-008(10.0-11.0)	soil	2006-10-17	14:45	2006-10-18
106226	HLSF-0085-SB-008(20.0-21.0)	soil	2006-10-17	15:20	2006-10-18
106227	HLSF-0085-SB-008(30.0-31.0)	soil	2006-10-17	15:50	2006-10-18
106228	TB-575	water	2006-10-17	09:40	2006-10-18

These results represent only the samples received in the laboratory. The Quality Control Report is generated on a batch basis. All information contained in this report is for the analytical batch(es) in which your sample(s) were analyzed.

This report consists of a total of 28 pages and shall not be reproduced except in its entirety, without written approval of TraceAnalysis, Inc.

Dr. Blair Leftwich, Director

Standard Flags

B - The sample contains less than ten times the concentration found in the method blank.

Analytical Report

Sample: 106218 - HLSF-0085-SB-007(0.5-1.0)

Analysis:	Volatiles	Analytical Method:	S 8260B	Prep Method:	S 5030B
QC Batch:	31243	Date Analyzed:	2006-10-22	Analyzed By:	JG
Prep Batch:	27203	Sample Preparation:	2006-10-22	Prepared By:	JG

Parameter	Flag	RL Result	Units	Dilution	RL
Bromochloromethane		<10.0	µg/Kg	1	10.0
Dichlorodifluoromethane		<10.0	µg/Kg	1	10.0
Chloromethane (methyl chloride)		<10.0	µg/Kg	1	10.0
Vinyl Chloride		<10.0	µg/Kg	1	10.0
Bromomethane (methyl bromide)		<50.0	µg/Kg	1	50.0
Chloroethane		<10.0	µg/Kg	1	10.0
Trichlorofluoromethane		<10.0	µg/Kg	1	10.0
Acetone		<100	µg/Kg	1	100
Iodomethane (methyl iodide)		<50.0	µg/Kg	1	50.0
Carbon Disulfide		<10.0	µg/Kg	1	10.0
Acrylonitrile		<10.0	µg/Kg	1	10.0
2-Butanone (MEK)		<50.0	µg/Kg	1	50.0
4-Methyl-2-pentanone (MIBK)		<50.0	µg/Kg	1	50.0
2-Hexanone		<50.0	µg/Kg	1	50.0
trans 1,4-Dichloro-2-butene		<100	µg/Kg	1	100
1,1-Dichloroethene		<10.0	µg/Kg	1	10.0
Methylene chloride	*B*	<50.0	µg/Kg	1	50.0
MTBE		<10.0	µg/Kg	1	10.0
trans-1,2-Dichloroethene		<10.0	µg/Kg	1	10.0
1,1-Dichloroethane		<10.0	µg/Kg	1	10.0
cis-1,2-Dichloroethene		<10.0	µg/Kg	1	10.0
2,2-Dichloropropane		<10.0	µg/Kg	1	10.0
1,2-Dichloroethane (EDC)		<10.0	µg/Kg	1	10.0
Chloroform		<10.0	µg/Kg	1	10.0
1,1,1-Trichloroethane		<10.0	µg/Kg	1	10.0
1,1-Dichloropropene		<10.0	µg/Kg	1	10.0
Benzene		<10.0	µg/Kg	1	10.0
Carbon Tetrachloride		<10.0	µg/Kg	1	10.0
1,2-Dichloropropane		<10.0	µg/Kg	1	10.0
Trichloroethene (TCE)		<10.0	µg/Kg	1	10.0
Dibromomethane (methylene bromide)		<10.0	µg/Kg	1	10.0
Bromodichloromethane		<10.0	µg/Kg	1	10.0
2-Chloroethyl vinyl ether		<50.0	µg/Kg	1	50.0
cis-1,3-Dichloropropene		<10.0	µg/Kg	1	10.0
trans-1,3-Dichloropropene		<10.0	µg/Kg	1	10.0
Toluene	*B*	<10.0	µg/Kg	1	10.0
1,1,2-Trichloroethane		<10.0	µg/Kg	1	10.0
1,3-Dichloropropane		<10.0	µg/Kg	1	10.0
Dibromochloromethane		<10.0	µg/Kg	1	10.0
1,2-Dibromoethane (EDB)		<10.0	µg/Kg	1	10.0
Tetrachloroethene (PCE)		<10.0	µg/Kg	1	10.0
Chlorobenzene		<10.0	µg/Kg	1	10.0
1,1,1,2-Tetrachloroethane		<10.0	µg/Kg	1	10.0
Ethylbenzene		<10.0	µg/Kg	1	10.0

continued . . .

sample 106218 continued . . .

Parameter	Flag	RL Result	Units	Dilution	RL
m,p-Xylene		<10.0	µg/Kg	1	10.0
Bromoform		<10.0	µg/Kg	1	10.0
Styrene		<10.0	µg/Kg	1	10.0
o-Xylene		<10.0	µg/Kg	1	10.0
1,1,2,2-Tetrachloroethane		<10.0	µg/Kg	1	10.0
2-Chlorotoluene		<10.0	µg/Kg	1	10.0
1,2,3-Trichloropropane		<10.0	µg/Kg	1	10.0
Isopropylbenzene		<10.0	µg/Kg	1	10.0
Bromobenzene		<10.0	µg/Kg	1	10.0
n-Propylbenzene		<10.0	µg/Kg	1	10.0
1,3,5-Trimethylbenzene		<10.0	µg/Kg	1	10.0
tert-Butylbenzene		<10.0	µg/Kg	1	10.0
1,2,4-Trimethylbenzene		<10.0	µg/Kg	1	10.0
1,4-Dichlorobenzene (para)		<10.0	µg/Kg	1	10.0
sec-Butylbenzene		<10.0	µg/Kg	1	10.0
1,3-Dichlorobenzene (meta)		<10.0	µg/Kg	1	10.0
p-Isopropyltoluene		<10.0	µg/Kg	1	10.0
4-Chlorotoluene		<10.0	µg/Kg	1	10.0
1,2-Dichlorobenzene (ortho)		<10.0	µg/Kg	1	10.0
n-Butylbenzene		<10.0	µg/Kg	1	10.0
1,2-Dibromo-3-chloropropane		<50.0	µg/Kg	1	50.0
1,2,3-Trichlorobenzene		<50.0	µg/Kg	1	50.0
1,2,4-Trichlorobenzene		<50.0	µg/Kg	1	50.0
Naphthalene		<50.0	µg/Kg	1	50.0
Hexachlorobutadiene		<50.0	µg/Kg	1	50.0

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Dibromofluoromethane		470	µg/Kg	1	500	94	42 - 129
Toluene-d8		478	µg/Kg	1	500	96	93 - 107
4-Bromofluorobenzene (4-BFB)		491	µg/Kg	1	500	98	78 - 120

Sample: 106219 - HLSF-0085-SB-007(10.0-11.0)

Analysis:	Volatiles	Analytical Method:	S 8260B	Prep Method:	S 5030B
QC Batch:	31243	Date Analyzed:	2006-10-22	Analyzed By:	JG
Prep Batch:	27203	Sample Preparation:	2006-10-22	Prepared By:	JG

Parameter	Flag	RL Result	Units	Dilution	RL
Bromochloromethane		<10.0	µg/Kg	1	10.0
Dichlorodifluoromethane		<10.0	µg/Kg	1	10.0
Chloromethane (methyl chloride)		<10.0	µg/Kg	1	10.0
Vinyl Chloride		<10.0	µg/Kg	1	10.0
Bromomethane (methyl bromide)		<50.0	µg/Kg	1	50.0
Chloroethane		<10.0	µg/Kg	1	10.0
Trichlorofluoromethane		<10.0	µg/Kg	1	10.0
Acetone		<100	µg/Kg	1	100

continued . . .

sample 106219 continued . . .

Parameter	Flag	RL Result	Units	Dilution	RL
Iodomethane (methyl iodide)		<50.0	μg/Kg	1	50.0
Carbon Disulfide		<10.0	μg/Kg	1	10.0
Acrylonitrile		<10.0	μg/Kg	1	10.0
2-Butanone (MEK)		<50.0	μg/Kg	1	50.0
4-Methyl-2-pentanone (MIBK)		<50.0	μg/Kg	1	50.0
2-Hexanone		<50.0	μg/Kg	1	50.0
trans 1,4-Dichloro-2-butene		<100	μg/Kg	1	100
1,1-Dichloroethene		<10.0	μg/Kg	1	10.0
Methylene chloride	*B*	<50.0	μg/Kg	1	50.0
MTBE		<10.0	μg/Kg	1	10.0
trans-1,2-Dichloroethene		<10.0	μg/Kg	1	10.0
1,1-Dichloroethane		<10.0	μg/Kg	1	10.0
cis-1,2-Dichloroethene		<10.0	μg/Kg	1	10.0
2,2-Dichloropropane		<10.0	μg/Kg	1	10.0
1,2-Dichloroethane (EDC)		<10.0	μg/Kg	1	10.0
Chloroform		<10.0	μg/Kg	1	10.0
1,1,1-Trichloroethane		<10.0	μg/Kg	1	10.0
1,1-Dichloropropene		<10.0	μg/Kg	1	10.0
Benzene		<10.0	μg/Kg	1	10.0
Carbon Tetrachloride		<10.0	μg/Kg	1	10.0
1,2-Dichloropropane		<10.0	μg/Kg	1	10.0
Trichloroethene (TCE)		<10.0	μg/Kg	1	10.0
Dibromomethane (methylene bromide)		<10.0	μg/Kg	1	10.0
Bromodichloromethane		<10.0	μg/Kg	1	10.0
2-Chloroethyl vinyl ether		<50.0	μg/Kg	1	50.0
cis-1,3-Dichloropropene		<10.0	μg/Kg	1	10.0
trans-1,3-Dichloropropene		<10.0	μg/Kg	1	10.0
Toluene	*B*	<10.0	μg/Kg	1	10.0
1,1,2-Trichloroethane		<10.0	μg/Kg	1	10.0
1,3-Dichloropropane		<10.0	μg/Kg	1	10.0
Dibromochloromethane		<10.0	μg/Kg	1	10.0
1,2-Dibromoethane (EDB)		<10.0	μg/Kg	1	10.0
Tetrachloroethene (PCE)		<10.0	μg/Kg	1	10.0
Chlorobenzene		<10.0	μg/Kg	1	10.0
1,1,1,2-Tetrachloroethane		<10.0	μg/Kg	1	10.0
Ethylbenzene		<10.0	μg/Kg	1	10.0
m,p-Xylene		<10.0	μg/Kg	1	10.0
Bromoform		<10.0	μg/Kg	1	10.0
Styrene		<10.0	μg/Kg	1	10.0
o-Xylene		<10.0	μg/Kg	1	10.0
1,1,2,2-Tetrachloroethane		<10.0	μg/Kg	1	10.0
2-Chlorotoluene		<10.0	μg/Kg	1	10.0
1,2,3-Trichloropropane		<10.0	μg/Kg	1	10.0
Isopropylbenzene		<10.0	μg/Kg	1	10.0
Bromobenzene		<10.0	μg/Kg	1	10.0
n-Propylbenzene		<10.0	μg/Kg	1	10.0
1,3,5-Trimethylbenzene		<10.0	μg/Kg	1	10.0
tert-Butylbenzene		<10.0	μg/Kg	1	10.0
1,2,4-Trimethylbenzene		<10.0	μg/Kg	1	10.0

continued . . .

sample 106219 continued . . .

Parameter	Flag	RL Result	Units	Dilution	RL
1,4-Dichlorobenzene (para)		<10.0	μg/Kg	1	10.0
sec-Butylbenzene		<10.0	μg/Kg	1	10.0
1,3-Dichlorobenzene (meta)		<10.0	μg/Kg	1	10.0
p-Isopropyltoluene		<10.0	μg/Kg	1	10.0
4-Chlorotoluene		<10.0	μg/Kg	1	10.0
1,2-Dichlorobenzene (ortho)		<10.0	μg/Kg	1	10.0
n-Butylbenzene		<10.0	μg/Kg	1	10.0
1,2-Dibromo-3-chloropropane		<50.0	μg/Kg	1	50.0
1,2,3-Trichlorobenzene		<50.0	μg/Kg	1	50.0
1,2,4-Trichlorobenzene		<50.0	μg/Kg	1	50.0
Naphthalene		<50.0	μg/Kg	1	50.0
Hexachlorobutadiene		<50.0	μg/Kg	1	50.0

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Dibromofluoromethane		471	μg/Kg	1	500	94	42 - 129
Toluene-d8		481	μg/Kg	1	500	96	93 - 107
4-Bromofluorobenzene (4-BFB)		488	μg/Kg	1	500	98	78 - 120

Sample: 106220 - HLSF-0085-SB-007(20.0-21.0)

Analysis:	Volatiles	Analytical Method:	S 8260B	Prep Method:	S 5030B
QC Batch:	31243	Date Analyzed:	2006-10-22	Analyzed By:	JG
Prep Batch:	27203	Sample Preparation:	2006-10-22	Prepared By:	JG

Parameter	Flag	RL Result	Units	Dilution	RL
Bromochloromethane		<10.0	μg/Kg	1	10.0
Dichlorodifluoromethane		<10.0	μg/Kg	1	10.0
Chloromethane (methyl chloride)		<10.0	μg/Kg	1	10.0
Vinyl Chloride		<10.0	μg/Kg	1	10.0
Bromomethane (methyl bromide)		<50.0	μg/Kg	1	50.0
Chloroethane		<10.0	μg/Kg	1	10.0
Trichlorofluoromethane		<10.0	μg/Kg	1	10.0
Acetone		<100	μg/Kg	1	100
Iodomethane (methyl iodide)		<50.0	μg/Kg	1	50.0
Carbon Disulfide		<10.0	μg/Kg	1	10.0
Acrylonitrile		<10.0	μg/Kg	1	10.0
2-Butanone (MEK)		<50.0	μg/Kg	1	50.0
4-Methyl-2-pentanone (MIBK)		<50.0	μg/Kg	1	50.0
2-Hexanone		<50.0	μg/Kg	1	50.0
trans 1,4-Dichloro-2-butene		<100	μg/Kg	1	100
1,1-Dichloroethene		<10.0	μg/Kg	1	10.0
Methylene chloride	*B*	<50.0	μg/Kg	1	50.0
MTBE		<10.0	μg/Kg	1	10.0
trans-1,2-Dichloroethene		<10.0	μg/Kg	1	10.0
1,1-Dichloroethane		<10.0	μg/Kg	1	10.0
cis-1,2-Dichloroethene		<10.0	μg/Kg	1	10.0

continued . . .

sample 106220 continued . . .

Parameter	Flag	RL Result	Units	Dilution	RL
2,2-Dichloropropane		<10.0	μg/Kg	1	10.0
1,2-Dichloroethane (EDC)		<10.0	μg/Kg	1	10.0
Chloroform		<10.0	μg/Kg	1	10.0
1,1,1-Trichloroethane		<10.0	μg/Kg	1	10.0
1,1-Dichloropropene		<10.0	μg/Kg	1	10.0
Benzene		<10.0	μg/Kg	1	10.0
Carbon Tetrachloride		<10.0	μg/Kg	1	10.0
1,2-Dichloropropane		<10.0	μg/Kg	1	10.0
Trichloroethene (TCE)		<10.0	μg/Kg	1	10.0
Dibromomethane (methylene bromide)		<10.0	μg/Kg	1	10.0
Bromodichloromethane		<10.0	μg/Kg	1	10.0
2-Chloroethyl vinyl ether		<50.0	μg/Kg	1	50.0
cis-1,3-Dichloropropene		<10.0	μg/Kg	1	10.0
trans-1,3-Dichloropropene		<10.0	μg/Kg	1	10.0
Toluene	*B*	<10.0	μg/Kg	1	10.0
1,1,2-Trichloroethane		<10.0	μg/Kg	1	10.0
1,3-Dichloropropane		<10.0	μg/Kg	1	10.0
Dibromochloromethane		<10.0	μg/Kg	1	10.0
1,2-Dibromoethane (EDB)		<10.0	μg/Kg	1	10.0
Tetrachloroethene (PCE)		<10.0	μg/Kg	1	10.0
Chlorobenzene		<10.0	μg/Kg	1	10.0
1,1,1,2-Tetrachloroethane		<10.0	μg/Kg	1	10.0
Ethylbenzene		<10.0	μg/Kg	1	10.0
m,p-Xylene		<10.0	μg/Kg	1	10.0
Bromoform		<10.0	μg/Kg	1	10.0
Styrene		<10.0	μg/Kg	1	10.0
o-Xylene		<10.0	μg/Kg	1	10.0
1,1,2,2-Tetrachloroethane		<10.0	μg/Kg	1	10.0
2-Chlorotoluene		<10.0	μg/Kg	1	10.0
1,2,3-Trichloropropane		<10.0	μg/Kg	1	10.0
Isopropylbenzene		<10.0	μg/Kg	1	10.0
Bromobenzene		<10.0	μg/Kg	1	10.0
n-Propylbenzene		<10.0	μg/Kg	1	10.0
1,3,5-Trimethylbenzene		<10.0	μg/Kg	1	10.0
tert-Butylbenzene		<10.0	μg/Kg	1	10.0
1,2,4-Trimethylbenzene		<10.0	μg/Kg	1	10.0
1,4-Dichlorobenzene (para)		<10.0	μg/Kg	1	10.0
sec-Butylbenzene		<10.0	μg/Kg	1	10.0
1,3-Dichlorobenzene (meta)		<10.0	μg/Kg	1	10.0
p-Isopropyltoluene		<10.0	μg/Kg	1	10.0
4-Chlorotoluene		<10.0	μg/Kg	1	10.0
1,2-Dichlorobenzene (ortho)		<10.0	μg/Kg	1	10.0
n-Butylbenzene		<10.0	μg/Kg	1	10.0
1,2-Dibromo-3-chloropropane		<50.0	μg/Kg	1	50.0
1,2,3-Trichlorobenzene		<50.0	μg/Kg	1	50.0
1,2,4-Trichlorobenzene		<50.0	μg/Kg	1	50.0
Naphthalene		<50.0	μg/Kg	1	50.0
Hexachlorobutadiene		<50.0	μg/Kg	1	50.0

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Dibromofluoromethane		471	µg/Kg	1	500	94	42 - 129
Toluene-d8		484	µg/Kg	1	500	97	93 - 107
4-Bromofluorobenzene (4-BFB)		488	µg/Kg	1	500	98	78 - 120

Sample: 106221 - HLSF-0085-SB-007(30.0-31.0)

Analysis:	Volatiles	Analytical Method:	S 8260B	Prep Method:	S 5030B
QC Batch:	31243	Date Analyzed:	2006-10-22	Analyzed By:	JG
Prep Batch:	27203	Sample Preparation:	2006-10-22	Prepared By:	JG

Parameter	Flag	RL Result	Units	Dilution	RL
Bromochloromethane		<10.0	µg/Kg	1	10.0
Dichlorodifluoromethane		<10.0	µg/Kg	1	10.0
Chloromethane (methyl chloride)		<10.0	µg/Kg	1	10.0
Vinyl Chloride		<10.0	µg/Kg	1	10.0
Bromomethane (methyl bromide)		<50.0	µg/Kg	1	50.0
Chloroethane		<10.0	µg/Kg	1	10.0
Trichlorofluoromethane		<10.0	µg/Kg	1	10.0
Acetone		<100	µg/Kg	1	100
Iodomethane (methyl iodide)		<50.0	µg/Kg	1	50.0
Carbon Disulfide		<10.0	µg/Kg	1	10.0
Acrylonitrile		<10.0	µg/Kg	1	10.0
2-Butanone (MEK)		<50.0	µg/Kg	1	50.0
4-Methyl-2-pentanone (MIBK)		<50.0	µg/Kg	1	50.0
2-Hexanone		<50.0	µg/Kg	1	50.0
trans 1,4-Dichloro-2-butene		<100	µg/Kg	1	100
1,1-Dichloroethene		<10.0	µg/Kg	1	10.0
Methylene chloride	B	<50.0	µg/Kg	1	50.0
MTBE		<10.0	µg/Kg	1	10.0
trans-1,2-Dichloroethene		<10.0	µg/Kg	1	10.0
1,1-Dichloroethane		<10.0	µg/Kg	1	10.0
cis-1,2-Dichloroethene		<10.0	µg/Kg	1	10.0
2,2-Dichloropropane		<10.0	µg/Kg	1	10.0
1,2-Dichloroethane (EDC)		<10.0	µg/Kg	1	10.0
Chloroform		<10.0	µg/Kg	1	10.0
1,1,1-Trichloroethane		<10.0	µg/Kg	1	10.0
1,1-Dichloropropene		<10.0	µg/Kg	1	10.0
Benzene		<10.0	µg/Kg	1	10.0
Carbon Tetrachloride		<10.0	µg/Kg	1	10.0
1,2-Dichloropropane		<10.0	µg/Kg	1	10.0
Trichloroethene (TCE)		<10.0	µg/Kg	1	10.0
Dibromomethane (methylene bromide)		<10.0	µg/Kg	1	10.0
Bromodichloromethane		<10.0	µg/Kg	1	10.0
2-Chloroethyl vinyl ether		<50.0	µg/Kg	1	50.0
cis-1,3-Dichloropropene		<10.0	µg/Kg	1	10.0
trans-1,3-Dichloropropene		<10.0	µg/Kg	1	10.0
Toluene	B	<10.0	µg/Kg	1	10.0
1,1,2-Trichloroethane		<10.0	µg/Kg	1	10.0
1,3-Dichloropropane		<10.0	µg/Kg	1	10.0

continued . . .

sample 106221 continued . . .

Parameter	Flag	RL Result	Units	Dilution	RL
Dibromochloromethane		<10.0	μg/Kg	1	10.0
1,2-Dibromoethane (EDB)		<10.0	μg/Kg	1	10.0
Tetrachloroethene (PCE)		<10.0	μg/Kg	1	10.0
Chlorobenzene		<10.0	μg/Kg	1	10.0
1,1,1,2-Tetrachloroethane		<10.0	μg/Kg	1	10.0
Ethylbenzene		<10.0	μg/Kg	1	10.0
m,p-Xylene		<10.0	μg/Kg	1	10.0
Bromoform		<10.0	μg/Kg	1	10.0
Styrene		<10.0	μg/Kg	1	10.0
o-Xylene		<10.0	μg/Kg	1	10.0
1,1,2,2-Tetrachloroethane		<10.0	μg/Kg	1	10.0
2-Chlorotoluene		<10.0	μg/Kg	1	10.0
1,2,3-Trichloropropane		<10.0	μg/Kg	1	10.0
Isopropylbenzene		<10.0	μg/Kg	1	10.0
Bromobenzene		<10.0	μg/Kg	1	10.0
n-Propylbenzene		<10.0	μg/Kg	1	10.0
1,3,5-Trimethylbenzene		<10.0	μg/Kg	1	10.0
tert-Butylbenzene		<10.0	μg/Kg	1	10.0
1,2,4-Trimethylbenzene		<10.0	μg/Kg	1	10.0
1,4-Dichlorobenzene (para)		<10.0	μg/Kg	1	10.0
sec-Butylbenzene		<10.0	μg/Kg	1	10.0
1,3-Dichlorobenzene (meta)		<10.0	μg/Kg	1	10.0
p-Isopropyltoluene		<10.0	μg/Kg	1	10.0
4-Chlorotoluene		<10.0	μg/Kg	1	10.0
1,2-Dichlorobenzene (ortho)		<10.0	μg/Kg	1	10.0
n-Butylbenzene		<10.0	μg/Kg	1	10.0
1,2-Dibromo-3-chloropropane		<50.0	μg/Kg	1	50.0
1,2,3-Trichlorobenzene		<50.0	μg/Kg	1	50.0
1,2,4-Trichlorobenzene		<50.0	μg/Kg	1	50.0
Naphthalene		<50.0	μg/Kg	1	50.0
Hexachlorobutadiene		<50.0	μg/Kg	1	50.0

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Dibromofluoromethane		465	μg/Kg	1	500	93	42 - 129
Toluene-d8		480	μg/Kg	1	500	96	93 - 107
4-Bromofluorobenzene (4-BFB)		481	μg/Kg	1	500	96	78 - 120

Sample: 106222 - HLSF-0085-SB-007(40.0-41.0)

Analysis:	Volatiles	Analytical Method:	S 8260B	Prep Method:	S 5030B
QC Batch:	31243	Date Analyzed:	2006-10-22	Analyzed By:	JG
Prep Batch:	27203	Sample Preparation:	2006-10-22	Prepared By:	JG

Parameter	Flag	RL Result	Units	Dilution	RL
Bromochloromethane		<10.0	μg/Kg	1	10.0
Dichlorodifluoromethane		<10.0	μg/Kg	1	10.0

continued . . .

sample 106222 continued . . .

Parameter	Flag	RL Result	Units	Dilution	RL
Chloromethane (methyl chloride)		<10.0	μg/Kg	1	10.0
Vinyl Chloride		<10.0	μg/Kg	1	10.0
Bromomethane (methyl bromide)		<50.0	μg/Kg	1	50.0
Chloroethane		<10.0	μg/Kg	1	10.0
Trichlorofluoromethane		<10.0	μg/Kg	1	10.0
Acetone		<100	μg/Kg	1	100
Iodomethane (methyl iodide)		<50.0	μg/Kg	1	50.0
Carbon Disulfide		<10.0	μg/Kg	1	10.0
Acrylonitrile		<10.0	μg/Kg	1	10.0
2-Butanone (MEK)		<50.0	μg/Kg	1	50.0
4-Methyl-2-pentanone (MIBK)		<50.0	μg/Kg	1	50.0
2-Hexanone		<50.0	μg/Kg	1	50.0
trans 1,4-Dichloro-2-butene		<100	μg/Kg	1	100
1,1-Dichloroethene		<10.0	μg/Kg	1	10.0
Methylene chloride	B	<50.0	μg/Kg	1	50.0
MTBE		<10.0	μg/Kg	1	10.0
trans-1,2-Dichloroethene		<10.0	μg/Kg	1	10.0
1,1-Dichloroethane		<10.0	μg/Kg	1	10.0
cis-1,2-Dichloroethene		<10.0	μg/Kg	1	10.0
2,2-Dichloropropane		<10.0	μg/Kg	1	10.0
1,2-Dichloroethane (EDC)		<10.0	μg/Kg	1	10.0
Chloroform		<10.0	μg/Kg	1	10.0
1,1,1-Trichloroethane		<10.0	μg/Kg	1	10.0
1,1-Dichloropropene		<10.0	μg/Kg	1	10.0
Benzene		<10.0	μg/Kg	1	10.0
Carbon Tetrachloride		<10.0	μg/Kg	1	10.0
1,2-Dichloropropane		<10.0	μg/Kg	1	10.0
Trichloroethene (TCE)		<10.0	μg/Kg	1	10.0
Dibromomethane (methylene bromide)		<10.0	μg/Kg	1	10.0
Bromodichloromethane		<10.0	μg/Kg	1	10.0
2-Chloroethyl vinyl ether		<50.0	μg/Kg	1	50.0
cis-1,3-Dichloropropene		<10.0	μg/Kg	1	10.0
trans-1,3-Dichloropropene		<10.0	μg/Kg	1	10.0
Toluene	B	<10.0	μg/Kg	1	10.0
1,1,2-Trichloroethane		<10.0	μg/Kg	1	10.0
1,3-Dichloropropane		<10.0	μg/Kg	1	10.0
Dibromochloromethane		<10.0	μg/Kg	1	10.0
1,2-Dibromoethane (EDB)		<10.0	μg/Kg	1	10.0
Tetrachloroethene (PCE)		<10.0	μg/Kg	1	10.0
Chlorobenzene		<10.0	μg/Kg	1	10.0
1,1,1,2-Tetrachloroethane		<10.0	μg/Kg	1	10.0
Ethylbenzene		<10.0	μg/Kg	1	10.0
m,p-Xylene		<10.0	μg/Kg	1	10.0
Bromoform		<10.0	μg/Kg	1	10.0
Styrene		<10.0	μg/Kg	1	10.0
o-Xylene		<10.0	μg/Kg	1	10.0
1,1,2,2-Tetrachloroethane		<10.0	μg/Kg	1	10.0
2-Chlorotoluene		<10.0	μg/Kg	1	10.0
1,2,3-Trichloropropane		<10.0	μg/Kg	1	10.0

continued . . .

sample 106222 continued . . .

Parameter	Flag	RL Result	Units	Dilution	RL
Isopropylbenzene		<10.0	μg/Kg	1	10.0
Bromobenzene		<10.0	μg/Kg	1	10.0
n-Propylbenzene		<10.0	μg/Kg	1	10.0
1,3,5-Trimethylbenzene		<10.0	μg/Kg	1	10.0
tert-Butylbenzene		<10.0	μg/Kg	1	10.0
1,2,4-Trimethylbenzene		<10.0	μg/Kg	1	10.0
1,4-Dichlorobenzene (para)		<10.0	μg/Kg	1	10.0
sec-Butylbenzene		<10.0	μg/Kg	1	10.0
1,3-Dichlorobenzene (meta)		<10.0	μg/Kg	1	10.0
p-Isopropyltoluene		<10.0	μg/Kg	1	10.0
4-Chlorotoluene		<10.0	μg/Kg	1	10.0
1,2-Dichlorobenzene (ortho)		<10.0	μg/Kg	1	10.0
n-Butylbenzene		<10.0	μg/Kg	1	10.0
1,2-Dibromo-3-chloropropane		<50.0	μg/Kg	1	50.0
1,2,3-Trichlorobenzene		<50.0	μg/Kg	1	50.0
1,2,4-Trichlorobenzene		<50.0	μg/Kg	1	50.0
Naphthalene		<50.0	μg/Kg	1	50.0
Hexachlorobutadiene		<50.0	μg/Kg	1	50.0

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Dibromofluoromethane		472	μg/Kg	1	500	94	42 - 129
Toluene-d8		488	μg/Kg	1	500	98	93 - 107
4-Bromofluorobenzene (4-BFB)		484	μg/Kg	1	500	97	78 - 120

Sample: 106223 - HLSF-0085-SB-007(49.0-50.0)

Analysis:	Volatiles	Analytical Method:	S 8260B	Prep Method:	S 5030B
QC Batch:	31243	Date Analyzed:	2006-10-22	Analyzed By:	JG
Prep Batch:	27203	Sample Preparation:	2006-10-22	Prepared By:	JG

Parameter	Flag	RL Result	Units	Dilution	RL
Bromochloromethane		<10.0	μg/Kg	1	10.0
Dichlorodifluoromethane		<10.0	μg/Kg	1	10.0
Chloromethane (methyl chloride)		<10.0	μg/Kg	1	10.0
Vinyl Chloride		<10.0	μg/Kg	1	10.0
Bromomethane (methyl bromide)		<50.0	μg/Kg	1	50.0
Chloroethane		<10.0	μg/Kg	1	10.0
Trichlorofluoromethane		<10.0	μg/Kg	1	10.0
Acetone		<100	μg/Kg	1	100
Iodomethane (methyl iodide)		<50.0	μg/Kg	1	50.0
Carbon Disulfide		<10.0	μg/Kg	1	10.0
Acrylonitrile		<10.0	μg/Kg	1	10.0
2-Butanone (MEK)		<50.0	μg/Kg	1	50.0
4-Methyl-2-pentanone (MIBK)		<50.0	μg/Kg	1	50.0
2-Hexanone		<50.0	μg/Kg	1	50.0
trans 1,4-Dichloro-2-butene		<100	μg/Kg	1	100

continued . . .

sample 106223 continued . . .

Parameter	Flag	RL Result	Units	Dilution	RL
1,1-Dichloroethene		<10.0	μg/Kg	1	10.0
Methylene chloride	B	<50.0	μg/Kg	1	50.0
MTBE		<10.0	μg/Kg	1	10.0
trans-1,2-Dichloroethene		<10.0	μg/Kg	1	10.0
1,1-Dichloroethane		<10.0	μg/Kg	1	10.0
cis-1,2-Dichloroethene		<10.0	μg/Kg	1	10.0
2,2-Dichloropropane		<10.0	μg/Kg	1	10.0
1,2-Dichloroethane (EDC)		<10.0	μg/Kg	1	10.0
Chloroform		<10.0	μg/Kg	1	10.0
1,1,1-Trichloroethane		<10.0	μg/Kg	1	10.0
1,1-Dichloropropene		<10.0	μg/Kg	1	10.0
Benzene		<10.0	μg/Kg	1	10.0
Carbon Tetrachloride		<10.0	μg/Kg	1	10.0
1,2-Dichloropropane		<10.0	μg/Kg	1	10.0
Trichloroethene (TCE)		<10.0	μg/Kg	1	10.0
Dibromomethane (methylene bromide)		<10.0	μg/Kg	1	10.0
Bromodichloromethane		<10.0	μg/Kg	1	10.0
2-Chloroethyl vinyl ether		<50.0	μg/Kg	1	50.0
cis-1,3-Dichloropropene		<10.0	μg/Kg	1	10.0
trans-1,3-Dichloropropene		<10.0	μg/Kg	1	10.0
Toluene	B	<10.0	μg/Kg	1	10.0
1,1,2-Trichloroethane		<10.0	μg/Kg	1	10.0
1,3-Dichloropropane		<10.0	μg/Kg	1	10.0
Dibromochloromethane		<10.0	μg/Kg	1	10.0
1,2-Dibromoethane (EDB)		<10.0	μg/Kg	1	10.0
Tetrachloroethene (PCE)		<10.0	μg/Kg	1	10.0
Chlorobenzene		<10.0	μg/Kg	1	10.0
1,1,1,2-Tetrachloroethane		<10.0	μg/Kg	1	10.0
Ethylbenzene		<10.0	μg/Kg	1	10.0
m,p-Xylene		<10.0	μg/Kg	1	10.0
Bromoform		<10.0	μg/Kg	1	10.0
Styrene		<10.0	μg/Kg	1	10.0
o-Xylene		<10.0	μg/Kg	1	10.0
1,1,2,2-Tetrachloroethane		<10.0	μg/Kg	1	10.0
2-Chlorotoluene		<10.0	μg/Kg	1	10.0
1,2,3-Trichloropropane		<10.0	μg/Kg	1	10.0
Isopropylbenzene		<10.0	μg/Kg	1	10.0
Bromobenzene		<10.0	μg/Kg	1	10.0
n-Propylbenzene		<10.0	μg/Kg	1	10.0
1,3,5-Trimethylbenzene		<10.0	μg/Kg	1	10.0
tert-Butylbenzene		<10.0	μg/Kg	1	10.0
1,2,4-Trimethylbenzene		<10.0	μg/Kg	1	10.0
1,4-Dichlorobenzene (para)		<10.0	μg/Kg	1	10.0
sec-Butylbenzene		<10.0	μg/Kg	1	10.0
1,3-Dichlorobenzene (meta)		<10.0	μg/Kg	1	10.0
p-Isopropyltoluene		<10.0	μg/Kg	1	10.0
4-Chlorotoluene		<10.0	μg/Kg	1	10.0
1,2-Dichlorobenzene (ortho)		<10.0	μg/Kg	1	10.0
n-Butylbenzene		<10.0	μg/Kg	1	10.0

continued . . .

sample 106223 continued . . .

Parameter	Flag	RL Result	Units	Dilution	RL
1,2-Dibromo-3-chloropropane		<50.0	μg/Kg	1	50.0
1,2,3-Trichlorobenzene		<50.0	μg/Kg	1	50.0
1,2,4-Trichlorobenzene		<50.0	μg/Kg	1	50.0
Naphthalene		<50.0	μg/Kg	1	50.0
Hexachlorobutadiene		<50.0	μg/Kg	1	50.0

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Dibromofluoromethane		473	μg/Kg	1	500	95	42 - 129
Toluene-d8		482	μg/Kg	1	500	96	93 - 107
4-Bromofluorobenzene (4-BFB)		481	μg/Kg	1	500	96	78 - 120

Sample: 106224 - HLSF-0085-SB-008(0.5-1.0)

Analysis:	Volatiles	Analytical Method:	S 8260B	Prep Method:	S 5030B
QC Batch:	31243	Date Analyzed:	2006-10-22	Analyzed By:	JG
Prep Batch:	27203	Sample Preparation:	2006-10-22	Prepared By:	JG

Parameter	Flag	RL Result	Units	Dilution	RL
Bromochloromethane		<10.0	μg/Kg	1	10.0
Dichlorodifluoromethane		<10.0	μg/Kg	1	10.0
Chloromethane (methyl chloride)		<10.0	μg/Kg	1	10.0
Vinyl Chloride		<10.0	μg/Kg	1	10.0
Bromomethane (methyl bromide)		<50.0	μg/Kg	1	50.0
Chloroethane		<10.0	μg/Kg	1	10.0
Trichlorofluoromethane		<10.0	μg/Kg	1	10.0
Acetone		<100	μg/Kg	1	100
Iodomethane (methyl iodide)		<50.0	μg/Kg	1	50.0
Carbon Disulfide		<10.0	μg/Kg	1	10.0
Acrylonitrile		<10.0	μg/Kg	1	10.0
2-Butanone (MEK)		<50.0	μg/Kg	1	50.0
4-Methyl-2-pentanone (MIBK)		<50.0	μg/Kg	1	50.0
2-Hexanone		<50.0	μg/Kg	1	50.0
trans 1,4-Dichloro-2-butene		<100	μg/Kg	1	100
1,1-Dichloroethene		<10.0	μg/Kg	1	10.0
Methylene chloride	*B*	<50.0	μg/Kg	1	50.0
MTBE		<10.0	μg/Kg	1	10.0
trans-1,2-Dichloroethene		<10.0	μg/Kg	1	10.0
1,1-Dichloroethane		<10.0	μg/Kg	1	10.0
cis-1,2-Dichloroethene		<10.0	μg/Kg	1	10.0
2,2-Dichloropropane		<10.0	μg/Kg	1	10.0
1,2-Dichloroethane (EDC)		<10.0	μg/Kg	1	10.0
Chloroform		<10.0	μg/Kg	1	10.0
1,1,1-Trichloroethane		<10.0	μg/Kg	1	10.0
1,1-Dichloropropene		<10.0	μg/Kg	1	10.0
Benzene		<10.0	μg/Kg	1	10.0
Carbon Tetrachloride		<10.0	μg/Kg	1	10.0

continued . . .

sample 106224 continued . . .

Parameter	Flag	RL Result	Units	Dilution	RL
1,2-Dichloropropane		<10.0	μg/Kg	1	10.0
Trichloroethene (TCE)		<10.0	μg/Kg	1	10.0
Dibromomethane (methylene bromide)		<10.0	μg/Kg	1	10.0
Bromodichloromethane		<10.0	μg/Kg	1	10.0
2-Chloroethyl vinyl ether		<50.0	μg/Kg	1	50.0
cis-1,3-Dichloropropene		<10.0	μg/Kg	1	10.0
trans-1,3-Dichloropropene		<10.0	μg/Kg	1	10.0
Toluene	*B*	<10.0	μg/Kg	1	10.0
1,1,2-Trichloroethane		<10.0	μg/Kg	1	10.0
1,3-Dichloropropane		<10.0	μg/Kg	1	10.0
Dibromochloromethane		<10.0	μg/Kg	1	10.0
1,2-Dibromoethane (EDB)		<10.0	μg/Kg	1	10.0
Tetrachloroethene (PCE)		<10.0	μg/Kg	1	10.0
Chlorobenzene		<10.0	μg/Kg	1	10.0
1,1,1,2-Tetrachloroethane		<10.0	μg/Kg	1	10.0
Ethylbenzene		<10.0	μg/Kg	1	10.0
m,p-Xylene		<10.0	μg/Kg	1	10.0
Bromoform		<10.0	μg/Kg	1	10.0
Styrene		<10.0	μg/Kg	1	10.0
o-Xylene		<10.0	μg/Kg	1	10.0
1,1,2,2-Tetrachloroethane		<10.0	μg/Kg	1	10.0
2-Chlorotoluene		<10.0	μg/Kg	1	10.0
1,2,3-Trichloropropane		<10.0	μg/Kg	1	10.0
Isopropylbenzene		<10.0	μg/Kg	1	10.0
Bromobenzene		<10.0	μg/Kg	1	10.0
n-Propylbenzene		<10.0	μg/Kg	1	10.0
1,3,5-Trimethylbenzene		<10.0	μg/Kg	1	10.0
tert-Butylbenzene		<10.0	μg/Kg	1	10.0
1,2,4-Trimethylbenzene		<10.0	μg/Kg	1	10.0
1,4-Dichlorobenzene (para)		<10.0	μg/Kg	1	10.0
sec-Butylbenzene		<10.0	μg/Kg	1	10.0
1,3-Dichlorobenzene (meta)		<10.0	μg/Kg	1	10.0
p-Isopropyltoluene		<10.0	μg/Kg	1	10.0
4-Chlorotoluene		<10.0	μg/Kg	1	10.0
1,2-Dichlorobenzene (ortho)		<10.0	μg/Kg	1	10.0
n-Butylbenzene		<10.0	μg/Kg	1	10.0
1,2-Dibromo-3-chloropropane		<50.0	μg/Kg	1	50.0
1,2,3-Trichlorobenzene		<50.0	μg/Kg	1	50.0
1,2,4-Trichlorobenzene		<50.0	μg/Kg	1	50.0
Naphthalene		<50.0	μg/Kg	1	50.0
Hexachlorobutadiene		<50.0	μg/Kg	1	50.0

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Dibromofluoromethane		478	μg/Kg	1	500	96	42 - 129
Toluene-d8		484	μg/Kg	1	500	97	93 - 107
4-Bromofluorobenzene (4-BFB)		487	μg/Kg	1	500	97	78 - 120

Sample: 106225 - HLSF-0085-SB-008(10.0-11.0)

Analysis:	Volatiles	Analytical Method:	S 8260B	Prep Method:	S 5030B
QC Batch:	31243	Date Analyzed:	2006-10-22	Analyzed By:	JG
Prep Batch:	27203	Sample Preparation:	2006-10-22	Prepared By:	JG

Parameter	Flag	RL Result	Units	Dilution	RL
Bromochloromethane		<10.0	µg/Kg	1	10.0
Dichlorodifluoromethane		<10.0	µg/Kg	1	10.0
Chloromethane (methyl chloride)		<10.0	µg/Kg	1	10.0
Vinyl Chloride		<10.0	µg/Kg	1	10.0
Bromomethane (methyl bromide)		<50.0	µg/Kg	1	50.0
Chloroethane		<10.0	µg/Kg	1	10.0
Trichlorofluoromethane		<10.0	µg/Kg	1	10.0
Acetone		<100	µg/Kg	1	100
Iodomethane (methyl iodide)		<50.0	µg/Kg	1	50.0
Carbon Disulfide		<10.0	µg/Kg	1	10.0
Acrylonitrile		<10.0	µg/Kg	1	10.0
2-Butanone (MEK)		<50.0	µg/Kg	1	50.0
4-Methyl-2-pentanone (MIBK)		<50.0	µg/Kg	1	50.0
2-Hexanone		<50.0	µg/Kg	1	50.0
trans 1,4-Dichloro-2-butene		<100	µg/Kg	1	100
1,1-Dichloroethene		<10.0	µg/Kg	1	10.0
Methylene chloride	*B*	<50.0	µg/Kg	1	50.0
MTBE		<10.0	µg/Kg	1	10.0
trans-1,2-Dichloroethene		<10.0	µg/Kg	1	10.0
1,1-Dichloroethane		<10.0	µg/Kg	1	10.0
cis-1,2-Dichloroethene		<10.0	µg/Kg	1	10.0
2,2-Dichloropropane		<10.0	µg/Kg	1	10.0
1,2-Dichloroethane (EDC)		<10.0	µg/Kg	1	10.0
Chloroform		<10.0	µg/Kg	1	10.0
1,1,1-Trichloroethane		<10.0	µg/Kg	1	10.0
1,1-Dichloropropene		<10.0	µg/Kg	1	10.0
Benzene		<10.0	µg/Kg	1	10.0
Carbon Tetrachloride		<10.0	µg/Kg	1	10.0
1,2-Dichloropropane		<10.0	µg/Kg	1	10.0
Trichloroethene (TCE)		<10.0	µg/Kg	1	10.0
Dibromomethane (methylene bromide)		<10.0	µg/Kg	1	10.0
Bromodichloromethane		<10.0	µg/Kg	1	10.0
2-Chloroethyl vinyl ether		<50.0	µg/Kg	1	50.0
cis-1,3-Dichloropropene		<10.0	µg/Kg	1	10.0
trans-1,3-Dichloropropene		<10.0	µg/Kg	1	10.0
Toluene	*B*	<10.0	µg/Kg	1	10.0
1,1,2-Trichloroethane		<10.0	µg/Kg	1	10.0
1,3-Dichloropropane		<10.0	µg/Kg	1	10.0
Dibromochloromethane		<10.0	µg/Kg	1	10.0
1,2-Dibromoethane (EDB)		<10.0	µg/Kg	1	10.0
Tetrachloroethene (PCE)		<10.0	µg/Kg	1	10.0
Chlorobenzene		<10.0	µg/Kg	1	10.0
1,1,1,2-Tetrachloroethane		<10.0	µg/Kg	1	10.0
Ethylbenzene		<10.0	µg/Kg	1	10.0
m,p-Xylene		<10.0	µg/Kg	1	10.0
Bromoform		<10.0	µg/Kg	1	10.0

continued . . .

sample 106225 continued . . .

Parameter	Flag	RL Result	Units	Dilution	RL
Styrene		<10.0	µg/Kg	1	10.0
o-Xylene		<10.0	µg/Kg	1	10.0
1,1,2,2-Tetrachloroethane		<10.0	µg/Kg	1	10.0
2-Chlorotoluene		<10.0	µg/Kg	1	10.0
1,2,3-Trichloropropane		<10.0	µg/Kg	1	10.0
Isopropylbenzene		<10.0	µg/Kg	1	10.0
Bromobenzene		<10.0	µg/Kg	1	10.0
n-Propylbenzene		<10.0	µg/Kg	1	10.0
1,3,5-Trimethylbenzene		<10.0	µg/Kg	1	10.0
tert-Butylbenzene		<10.0	µg/Kg	1	10.0
1,2,4-Trimethylbenzene		<10.0	µg/Kg	1	10.0
1,4-Dichlorobenzene (para)		<10.0	µg/Kg	1	10.0
sec-Butylbenzene		<10.0	µg/Kg	1	10.0
1,3-Dichlorobenzene (meta)		<10.0	µg/Kg	1	10.0
p-Isopropyltoluene		<10.0	µg/Kg	1	10.0
4-Chlorotoluene		<10.0	µg/Kg	1	10.0
1,2-Dichlorobenzene (ortho)		<10.0	µg/Kg	1	10.0
n-Butylbenzene		<10.0	µg/Kg	1	10.0
1,2-Dibromo-3-chloropropane		<50.0	µg/Kg	1	50.0
1,2,3-Trichlorobenzene		<50.0	µg/Kg	1	50.0
1,2,4-Trichlorobenzene		<50.0	µg/Kg	1	50.0
Naphthalene		<50.0	µg/Kg	1	50.0
Hexachlorobutadiene		<50.0	µg/Kg	1	50.0

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Dibromofluoromethane		474	µg/Kg	1	500	95	42 - 129
Toluene-d8		482	µg/Kg	1	500	96	93 - 107
4-Bromofluorobenzene (4-BFB)		484	µg/Kg	1	500	97	78 - 120

Sample: 106226 - HLSF-0085-SB-008(20.0-21.0)

Analysis:	Volatiles	Analytical Method:	S 8260B	Prep Method:	S 5030B
QC Batch:	31243	Date Analyzed:	2006-10-22	Analyzed By:	JG
Prep Batch:	27203	Sample Preparation:	2006-10-22	Prepared By:	JG

Parameter	Flag	RL Result	Units	Dilution	RL
Bromochloromethane		<10.0	µg/Kg	1	10.0
Dichlorodifluoromethane		<10.0	µg/Kg	1	10.0
Chloromethane (methyl chloride)		<10.0	µg/Kg	1	10.0
Vinyl Chloride		<10.0	µg/Kg	1	10.0
Bromomethane (methyl bromide)		<50.0	µg/Kg	1	50.0
Chloroethane		<10.0	µg/Kg	1	10.0
Trichlorofluoromethane		<10.0	µg/Kg	1	10.0
Acetone		<100	µg/Kg	1	100
Iodomethane (methyl iodide)		<50.0	µg/Kg	1	50.0
Carbon Disulfide		<10.0	µg/Kg	1	10.0

continued . . .

sample 106226 continued . . .

Parameter	Flag	RL Result	Units	Dilution	RL
Acrylonitrile		<10.0	μg/Kg	1	10.0
2-Butanone (MEK)		<50.0	μg/Kg	1	50.0
4-Methyl-2-pentanone (MIBK)		<50.0	μg/Kg	1	50.0
2-Hexanone		<50.0	μg/Kg	1	50.0
trans 1,4-Dichloro-2-butene		<100	μg/Kg	1	100
1,1-Dichloroethene		<10.0	μg/Kg	1	10.0
Methylene chloride	*B*	<50.0	μg/Kg	1	50.0
MTBE		<10.0	μg/Kg	1	10.0
trans-1,2-Dichloroethene		<10.0	μg/Kg	1	10.0
1,1-Dichloroethane		<10.0	μg/Kg	1	10.0
cis-1,2-Dichloroethene		<10.0	μg/Kg	1	10.0
2,2-Dichloropropane		<10.0	μg/Kg	1	10.0
1,2-Dichloroethane (EDC)		<10.0	μg/Kg	1	10.0
Chloroform		<10.0	μg/Kg	1	10.0
1,1,1-Trichloroethane		<10.0	μg/Kg	1	10.0
1,1-Dichloropropene		<10.0	μg/Kg	1	10.0
Benzene		<10.0	μg/Kg	1	10.0
Carbon Tetrachloride		<10.0	μg/Kg	1	10.0
1,2-Dichloropropane		<10.0	μg/Kg	1	10.0
Trichloroethene (TCE)		<10.0	μg/Kg	1	10.0
Dibromomethane (methylene bromide)		<10.0	μg/Kg	1	10.0
Bromodichloromethane		<10.0	μg/Kg	1	10.0
2-Chloroethyl vinyl ether		<50.0	μg/Kg	1	50.0
cis-1,3-Dichloropropene		<10.0	μg/Kg	1	10.0
trans-1,3-Dichloropropene		<10.0	μg/Kg	1	10.0
Toluene	*B*	<10.0	μg/Kg	1	10.0
1,1,2-Trichloroethane		<10.0	μg/Kg	1	10.0
1,3-Dichloropropane		<10.0	μg/Kg	1	10.0
Dibromochloromethane		<10.0	μg/Kg	1	10.0
1,2-Dibromoethane (EDB)		<10.0	μg/Kg	1	10.0
Tetrachloroethene (PCE)		<10.0	μg/Kg	1	10.0
Chlorobenzene		<10.0	μg/Kg	1	10.0
1,1,1,2-Tetrachloroethane		<10.0	μg/Kg	1	10.0
Ethylbenzene		<10.0	μg/Kg	1	10.0
m,p-Xylene		<10.0	μg/Kg	1	10.0
Bromoform		<10.0	μg/Kg	1	10.0
Styrene		<10.0	μg/Kg	1	10.0
o-Xylene		<10.0	μg/Kg	1	10.0
1,1,2,2-Tetrachloroethane		<10.0	μg/Kg	1	10.0
2-Chlorotoluene		<10.0	μg/Kg	1	10.0
1,2,3-Trichloropropane		<10.0	μg/Kg	1	10.0
Isopropylbenzene		<10.0	μg/Kg	1	10.0
Bromobenzene		<10.0	μg/Kg	1	10.0
n-Propylbenzene		<10.0	μg/Kg	1	10.0
1,3,5-Trimethylbenzene		<10.0	μg/Kg	1	10.0
tert-Butylbenzene		<10.0	μg/Kg	1	10.0
1,2,4-Trimethylbenzene		<10.0	μg/Kg	1	10.0
1,4-Dichlorobenzene (para)		<10.0	μg/Kg	1	10.0
sec-Butylbenzene		<10.0	μg/Kg	1	10.0

continued . . .

sample 106226 continued . . .

Parameter	Flag	RL Result	Units	Dilution	RL
1,3-Dichlorobenzene (meta)		<10.0	μg/Kg	1	10.0
p-Isopropyltoluene		<10.0	μg/Kg	1	10.0
4-Chlorotoluene		<10.0	μg/Kg	1	10.0
1,2-Dichlorobenzene (ortho)		<10.0	μg/Kg	1	10.0
n-Butylbenzene		<10.0	μg/Kg	1	10.0
1,2-Dibromo-3-chloropropane		<50.0	μg/Kg	1	50.0
1,2,3-Trichlorobenzene		<50.0	μg/Kg	1	50.0
1,2,4-Trichlorobenzene		<50.0	μg/Kg	1	50.0
Naphthalene		<50.0	μg/Kg	1	50.0
Hexachlorobutadiene		<50.0	μg/Kg	1	50.0

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Dibromofluoromethane		487	μg/Kg	1	500	97	42 - 129
Toluene-d8		481	μg/Kg	1	500	96	93 - 107
4-Bromofluorobenzene (4-BFB)		480	μg/Kg	1	500	96	78 - 120

Sample: 106227 - HLSF-0085-SB-008(30.0-31.0)

Analysis:	Volatiles	Analytical Method:	S 8260B	Prep Method:	S 5030B
QC Batch:	31243	Date Analyzed:	2006-10-22	Analyzed By:	JG
Prep Batch:	27203	Sample Preparation:	2006-10-22	Prepared By:	JG

Parameter	Flag	RL Result	Units	Dilution	RL
Bromochloromethane		<10.0	μg/Kg	1	10.0
Dichlorodifluoromethane		<10.0	μg/Kg	1	10.0
Chloromethane (methyl chloride)		<10.0	μg/Kg	1	10.0
Vinyl Chloride		<10.0	μg/Kg	1	10.0
Bromomethane (methyl bromide)		<50.0	μg/Kg	1	50.0
Chloroethane		<10.0	μg/Kg	1	10.0
Trichlorofluoromethane		<10.0	μg/Kg	1	10.0
Acetone		<100	μg/Kg	1	100
Iodomethane (methyl iodide)		<50.0	μg/Kg	1	50.0
Carbon Disulfide		<10.0	μg/Kg	1	10.0
Acrylonitrile		<10.0	μg/Kg	1	10.0
2-Butanone (MEK)		<50.0	μg/Kg	1	50.0
4-Methyl-2-pentanone (MIBK)		<50.0	μg/Kg	1	50.0
2-Hexanone		<50.0	μg/Kg	1	50.0
trans 1,4-Dichloro-2-butene		<100	μg/Kg	1	100
1,1-Dichloroethene		<10.0	μg/Kg	1	10.0
Methylene chloride	*B*	<50.0	μg/Kg	1	50.0
MTBE		<10.0	μg/Kg	1	10.0
trans-1,2-Dichloroethene		<10.0	μg/Kg	1	10.0
1,1-Dichloroethane		<10.0	μg/Kg	1	10.0
cis-1,2-Dichloroethene		<10.0	μg/Kg	1	10.0
2,2-Dichloropropane		<10.0	μg/Kg	1	10.0
1,2-Dichloroethane (EDC)		<10.0	μg/Kg	1	10.0

continued . . .

sample 106227 continued . . .

Parameter	Flag	RL Result	Units	Dilution	RL
Chloroform		<10.0	μg/Kg	1	10.0
1,1,1-Trichloroethane		<10.0	μg/Kg	1	10.0
1,1-Dichloropropene		<10.0	μg/Kg	1	10.0
Benzene		<10.0	μg/Kg	1	10.0
Carbon Tetrachloride		<10.0	μg/Kg	1	10.0
1,2-Dichloropropane		<10.0	μg/Kg	1	10.0
Trichloroethene (TCE)		<10.0	μg/Kg	1	10.0
Dibromomethane (methylene bromide)		<10.0	μg/Kg	1	10.0
Bromodichloromethane		<10.0	μg/Kg	1	10.0
2-Chloroethyl vinyl ether		<50.0	μg/Kg	1	50.0
cis-1,3-Dichloropropene		<10.0	μg/Kg	1	10.0
trans-1,3-Dichloropropene		<10.0	μg/Kg	1	10.0
Toluene	*B*	<10.0	μg/Kg	1	10.0
1,1,2-Trichloroethane		<10.0	μg/Kg	1	10.0
1,3-Dichloropropane		<10.0	μg/Kg	1	10.0
Dibromochloromethane		<10.0	μg/Kg	1	10.0
1,2-Dibromoethane (EDB)		<10.0	μg/Kg	1	10.0
Tetrachloroethene (PCE)		<10.0	μg/Kg	1	10.0
Chlorobenzene		<10.0	μg/Kg	1	10.0
1,1,1,2-Tetrachloroethane		<10.0	μg/Kg	1	10.0
Ethylbenzene		<10.0	μg/Kg	1	10.0
m,p-Xylene		<10.0	μg/Kg	1	10.0
Bromoform		<10.0	μg/Kg	1	10.0
Styrene		<10.0	μg/Kg	1	10.0
o-Xylene		<10.0	μg/Kg	1	10.0
1,1,2,2-Tetrachloroethane		<10.0	μg/Kg	1	10.0
2-Chlorotoluene		<10.0	μg/Kg	1	10.0
1,2,3-Trichloropropane		<10.0	μg/Kg	1	10.0
Isopropylbenzene		<10.0	μg/Kg	1	10.0
Bromobenzene		<10.0	μg/Kg	1	10.0
n-Propylbenzene		<10.0	μg/Kg	1	10.0
1,3,5-Trimethylbenzene		<10.0	μg/Kg	1	10.0
tert-Butylbenzene		<10.0	μg/Kg	1	10.0
1,2,4-Trimethylbenzene		<10.0	μg/Kg	1	10.0
1,4-Dichlorobenzene (para)		<10.0	μg/Kg	1	10.0
sec-Butylbenzene		<10.0	μg/Kg	1	10.0
1,3-Dichlorobenzene (meta)		<10.0	μg/Kg	1	10.0
p-Isopropyltoluene		<10.0	μg/Kg	1	10.0
4-Chlorotoluene		<10.0	μg/Kg	1	10.0
1,2-Dichlorobenzene (ortho)		<10.0	μg/Kg	1	10.0
n-Butylbenzene		<10.0	μg/Kg	1	10.0
1,2-Dibromo-3-chloropropane		<50.0	μg/Kg	1	50.0
1,2,3-Trichlorobenzene		<50.0	μg/Kg	1	50.0
1,2,4-Trichlorobenzene		<50.0	μg/Kg	1	50.0
Naphthalene		<50.0	μg/Kg	1	50.0
Hexachlorobutadiene		<50.0	μg/Kg	1	50.0

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Dibromofluoromethane		482	μg/Kg	1	500	96	42 - 129
Toluene-d8		484	μg/Kg	1	500	97	93 - 107
4-Bromofluorobenzene (4-BFB)		488	μg/Kg	1	500	98	78 - 120

Sample: 106228 - TB-575

Analysis:	Volatiles	Analytical Method:	S 8260B	Prep Method:	S 5030B
QC Batch:	31277	Date Analyzed:	2006-10-24	Analyzed By:	JG
Prep Batch:	27234	Sample Preparation:	2006-10-24	Prepared By:	JG

Parameter	Flag	RL Result	Units	Dilution	RL
Bromochloromethane		<1.00	μg/L	1	1.00
Dichlorodifluoromethane		<1.00	μg/L	1	1.00
Chloromethane (methyl chloride)		<1.00	μg/L	1	1.00
Vinyl Chloride		<1.00	μg/L	1	1.00
Bromomethane (methyl bromide)		<5.00	μg/L	1	5.00
Chloroethane		<1.00	μg/L	1	1.00
Trichlorofluoromethane		<1.00	μg/L	1	1.00
Acetone		<10.0	μg/L	1	10.0
Iodomethane (methyl iodide)		<5.00	μg/L	1	5.00
Carbon Disulfide		<1.00	μg/L	1	1.00
Acrylonitrile		<1.00	μg/L	1	1.00
2-Butanone (MEK)		<5.00	μg/L	1	5.00
4-Methyl-2-pentanone (MIBK)		<5.00	μg/L	1	5.00
2-Hexanone		<5.00	μg/L	1	5.00
trans 1,4-Dichloro-2-butene		<10.0	μg/L	1	10.0
1,1-Dichloroethene		<1.00	μg/L	1	1.00
Methylene chloride	*B*	<5.00	μg/L	1	5.00
MTBE		<1.00	μg/L	1	1.00
trans-1,2-Dichloroethene		<1.00	μg/L	1	1.00
1,1-Dichloroethane		<1.00	μg/L	1	1.00
cis-1,2-Dichloroethene		<1.00	μg/L	1	1.00
2,2-Dichloropropane		<1.00	μg/L	1	1.00
1,2-Dichloroethane (EDC)		<1.00	μg/L	1	1.00
Chloroform		**2.01**	μg/L	1	1.00
1,1,1-Trichloroethane		<1.00	μg/L	1	1.00
1,1-Dichloropropene		<1.00	μg/L	1	1.00
Benzene	*B*	<1.00	μg/L	1	1.00
Carbon Tetrachloride		<1.00	μg/L	1	1.00
1,2-Dichloropropane		<1.00	μg/L	1	1.00
Trichloroethene (TCE)		<1.00	μg/L	1	1.00
Dibromomethane (methylene bromide)		<1.00	μg/L	1	1.00
Bromodichloromethane		<1.00	μg/L	1	1.00
2-Chloroethyl vinyl ether		<5.00	μg/L	1	5.00
cis-1,3-Dichloropropene		<1.00	μg/L	1	1.00
trans-1,3-Dichloropropene		<1.00	μg/L	1	1.00
Toluene	*B*	<1.00	μg/L	1	1.00
1,1,2-Trichloroethane		<1.00	μg/L	1	1.00
1,3-Dichloropropane		<1.00	μg/L	1	1.00

continued . . .

sample 106228 continued . . .

Parameter	Flag	RL Result	Units	Dilution	RL
Dibromochloromethane		<1.00	μg/L	1	1.00
1,2-Dibromoethane (EDB)		<1.00	μg/L	1	1.00
Tetrachloroethene (PCE)		<1.00	μg/L	1	1.00
Chlorobenzene		<1.00	μg/L	1	1.00
1,1,1,2-Tetrachloroethane		<1.00	μg/L	1	1.00
Ethylbenzene		<1.00	μg/L	1	1.00
m,p-Xylene		<1.00	μg/L	1	1.00
Bromoform		<1.00	μg/L	1	1.00
Styrene		<1.00	μg/L	1	1.00
o-Xylene		<1.00	μg/L	1	1.00
1,1,2,2-Tetrachloroethane		<1.00	μg/L	1	1.00
2-Chlorotoluene		<1.00	μg/L	1	1.00
1,2,3-Trichloropropane		<1.00	μg/L	1	1.00
Isopropylbenzene		<1.00	μg/L	1	1.00
Bromobenzene		<1.00	μg/L	1	1.00
n-Propylbenzene		<1.00	μg/L	1	1.00
1,3,5-Trimethylbenzene		<1.00	μg/L	1	1.00
tert-Butylbenzene		<1.00	μg/L	1	1.00
1,2,4-Trimethylbenzene		<1.00	μg/L	1	1.00
1,4-Dichlorobenzene (para)		<1.00	μg/L	1	1.00
sec-Butylbenzene		<1.00	μg/L	1	1.00
1,3-Dichlorobenzene (meta)		<1.00	μg/L	1	1.00
p-Isopropyltoluene		<1.00	μg/L	1	1.00
4-Chlorotoluene		<1.00	μg/L	1	1.00
1,2-Dichlorobenzene (ortho)		<1.00	μg/L	1	1.00
n-Butylbenzene		<1.00	μg/L	1	1.00
1,2-Dibromo-3-chloropropane		<5.00	μg/L	1	5.00
1,2,3-Trichlorobenzene		<5.00	μg/L	1	5.00
1,2,4-Trichlorobenzene		<5.00	μg/L	1	5.00
Naphthalene		<5.00	μg/L	1	5.00
Hexachlorobutadiene		<5.00	μg/L	1	5.00

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Dibromofluoromethane		50.8	μg/L	1	50.0	102	82.4 - 115
Toluene-d8		46.4	μg/L	1	50.0	93	89.7 - 108
4-Bromofluorobenzene (4-BFB)		47.9	μg/L	1	50.0	96	84.6 - 114

Method Blank (1) QC Batch: 31243

QC Batch:	31243	Date Analyzed:	2006-10-22	Analyzed By:	JG
Prep Batch:	27203	QC Preparation:	2006-10-22	Prepared By:	JG

Parameter	Flag	MDL Result	Units	RL
Bromochloromethane		<0.825	μg/Kg	10
Dichlorodifluoromethane		<0.889	μg/Kg	10
Chloromethane (methyl chloride)		<0.929	μg/Kg	10

continued . . .

method blank continued . . .

Parameter	Flag	MDL Result	Units	RL
Vinyl Chloride		<0.463	μg/Kg	10
Bromomethane (methyl bromide)		<1.71	μg/Kg	50
Chloroethane		<3.68	μg/Kg	10
Trichlorofluoromethane		<0.306	μg/Kg	10
Acetone		<1.70	μg/Kg	100
Iodomethane (methyl iodide)		<0.640	μg/Kg	50
Carbon Disulfide		<0.346	μg/Kg	10
Acrylonitrile		<1.51	μg/Kg	10
2-Butanone (MEK)		<3.78	μg/Kg	50
4-Methyl-2-pentanone (MIBK)		<7.86	μg/Kg	50
2-Hexanone		<5.70	μg/Kg	50
trans 1,4-Dichloro-2-butene		<1.33	μg/Kg	100
1,1-Dichloroethene		<0.639	μg/Kg	10
Methylene chloride		36.2	μg/Kg	50
MTBE		<0.362	μg/Kg	10
trans-1,2-Dichloroethene		<0.419	μg/Kg	10
1,1-Dichloroethane		<0.257	μg/Kg	10
cis-1,2-Dichloroethene		<0.627	μg/Kg	10
2,2-Dichloropropane		<0.593	μg/Kg	10
1,2-Dichloroethane (EDC)		<0.524	μg/Kg	10
Chloroform		<0.440	μg/Kg	10
1,1,1-Trichloroethane		<0.750	μg/Kg	10
1,1-Dichloropropene		<0.622	μg/Kg	10
Benzene		<0.644	μg/Kg	10
Carbon Tetrachloride		<0.485	μg/Kg	10
1,2-Dichloropropane		<0.547	μg/Kg	10
Trichloroethene (TCE)		<0.836	μg/Kg	10
Dibromomethane (methylene bromide)		<0.435	μg/Kg	10
Bromodichloromethane		<0.457	μg/Kg	10
2-Chloroethyl vinyl ether		<0.547	μg/Kg	50
cis-1,3-Dichloropropene		<0.596	μg/Kg	10
trans-1,3-Dichloropropene		<0.561	μg/Kg	10
Toluene		1.17	μg/Kg	10
1,1,2-Trichloroethane		<3.25	μg/Kg	10
1,3-Dichloropropane		<0.505	μg/Kg	10
Dibromochloromethane		<0.552	μg/Kg	10
1,2-Dibromoethane (EDB)		<0.688	μg/Kg	10
Tetrachloroethene (PCE)		<0.826	μg/Kg	10
Chlorobenzene		<0.426	μg/Kg	10
1,1,1,2-Tetrachloroethane		<0.289	μg/Kg	10
Ethylbenzene		<0.376	μg/Kg	10
m,p-Xylene		<0.714	μg/Kg	10
Bromoform		<0.426	μg/Kg	10
Styrene		<0.796	μg/Kg	10
o-Xylene		<0.679	μg/Kg	10
1,1,2,2-Tetrachloroethane		<0.703	μg/Kg	10
2-Chlorotoluene		<1.26	μg/Kg	10
1,2,3-Trichloropropane		<0.504	μg/Kg	10
Isopropylbenzene		<1.30	μg/Kg	10
Bromobenzene		<0.480	μg/Kg	10

continued . . .

method blank continued . . .

Parameter	Flag	MDL Result	Units	RL
n-Propylbenzene		<0.421	μg/Kg	10
1,3,5-Trimethylbenzene		<2.10	μg/Kg	10
tert-Butylbenzene		<0.410	μg/Kg	10
1,2,4-Trimethylbenzene		<0.535	μg/Kg	10
1,4-Dichlorobenzene (para)		<0.387	μg/Kg	10
sec-Butylbenzene		<0.632	μg/Kg	10
1,3-Dichlorobenzene (meta)		<0.534	μg/Kg	10
p-Isopropyltoluene		<0.679	μg/Kg	10
4-Chlorotoluene		<0.675	μg/Kg	10
1,2-Dichlorobenzene (ortho)		<0.475	μg/Kg	10
n-Butylbenzene		<0.979	μg/Kg	10
1,2-Dibromo-3-chloropropane		<0.883	μg/Kg	50
1,2,3-Trichlorobenzene		<3.64	μg/Kg	50
1,2,4-Trichlorobenzene		<2.28	μg/Kg	50
Naphthalene		<4.41	μg/Kg	50
Hexachlorobutadiene		<3.24	μg/Kg	50

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Dibromofluoromethane		475	μg/Kg	1	500	95	42 - 129
Toluene-d8		477	μg/Kg	1	500	95	93 - 107
4-Bromofluorobenzene (4-BFB)		492	μg/Kg	1	500	98	78 - 120

Method Blank (1) QC Batch: 31277

QC Batch:	31277	Date Analyzed:	2006-10-24	Analyzed By:	JG
Prep Batch:	27234	QC Preparation:	2006-10-24	Prepared By:	JG

Parameter	Flag	MDL Result	Units	RL
Bromochloromethane		<0.351	μg/L	1
Dichlorodifluoromethane		<0.306	μg/L	1
Chloromethane (methyl chloride)		<0.240	μg/L	1
Vinyl Chloride		<0.224	μg/L	1
Bromomethane (methyl bromide)		<0.325	μg/L	5
Chloroethane		<0.303	μg/L	1
Trichlorofluoromethane		<0.255	μg/L	1
Acetone		<1.86	μg/L	10
Iodomethane (methyl iodide)		<0.397	μg/L	5
Carbon Disulfide		<0.354	μg/L	1
Acrylonitrile		<0.306	μg/L	1
2-Butanone (MEK)		<0.670	μg/L	5
4-Methyl-2-pentanone (MIBK)		<0.463	μg/L	5
2-Hexanone		<0.303	μg/L	5
trans 1,4-Dichloro-2-butene		<0.406	μg/L	10
1,1-Dichloroethene		<0.326	μg/L	1
Methylene chloride		1.88	μg/L	5
MTBE		<0.352	μg/L	1
trans-1,2-Dichloroethene		<0.322	μg/L	1

continued . . .

method blank continued . . .

Parameter	Flag	MDL Result	Units	RL
1,1-Dichloroethane		<0.324	μg/L	1
cis-1,2-Dichloroethene		<0.331	μg/L	1
2,2-Dichloropropane		<0.440	μg/L	1
1,2-Dichloroethane (EDC)		<0.327	μg/L	1
Chloroform		<0.345	μg/L	1
1,1,1-Trichloroethane		<0.303	μg/L	1
1,1-Dichloropropene		<0.356	μg/L	1
Benzene		<0.356	μg/L	1
Carbon Tetrachloride		<0.342	μg/L	1
1,2-Dichloropropane		<0.366	μg/L	1
Trichloroethene (TCE)		<0.434	μg/L	1
Dibromomethane (methylene bromide)		<0.406	μg/L	1
Bromodichloromethane		<0.325	μg/L	1
2-Chloroethyl vinyl ether		<0.366	μg/L	5
cis-1,3-Dichloropropene		<0.387	μg/L	1
trans-1,3-Dichloropropene		<0.367	μg/L	1
Toluene		<0.366	μg/L	1
1,1,2-Trichloroethane		<0.397	μg/L	1
1,3-Dichloropropane		<0.355	μg/L	1
Dibromochloromethane		<0.315	μg/L	1
1,2-Dibromoethane (EDB)		<0.340	μg/L	1
Tetrachloroethene (PCE)		<0.355	μg/L	1
Chlorobenzene		<0.363	μg/L	1
1,1,1,2-Tetrachloroethane		<0.338	μg/L	1
Ethylbenzene		<0.350	μg/L	1
m,p-Xylene		<0.752	μg/L	1
Bromoform		<0.275	μg/L	1
Styrene		<0.395	μg/L	1
o-Xylene		<0.375	μg/L	1
1,1,2,2-Tetrachloroethane		<0.283	μg/L	1
2-Chlorotoluene		<0.445	μg/L	1
1,2,3-Trichloropropane		<0.430	μg/L	1
Isopropylbenzene		<0.521	μg/L	1
Bromobenzene		<0.494	μg/L	1
n-Propylbenzene		<0.483	μg/L	1
1,3,5-Trimethylbenzene		<0.487	μg/L	1
tert-Butylbenzene		<0.496	μg/L	1
1,2,4-Trimethylbenzene		<0.532	μg/L	1
1,4-Dichlorobenzene (para)		<0.413	μg/L	1
sec-Butylbenzene		<0.449	μg/L	1
1,3-Dichlorobenzene (meta)		<0.451	μg/L	1
p-Isopropyltoluene		<0.450	μg/L	1
4-Chlorotoluene		<0.489	μg/L	1
1,2-Dichlorobenzene (ortho)		<0.438	μg/L	1
n-Butylbenzene		<0.461	μg/L	1
1,2-Dibromo-3-chloropropane		<0.532	μg/L	5
1,2,3-Trichlorobenzene		<0.288	μg/L	5
1,2,4-Trichlorobenzene		<0.273	μg/L	5
Naphthalene		<0.299	μg/L	5
Hexachlorobutadiene		<0.483	μg/L	5

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Dibromofluoromethane		46.6	μg/L	1	50.0	93	82.4 - 115
Toluene-d8		47.3	μg/L	1	50.0	95	89.7 - 108
4-Bromofluorobenzene (4-BFB)		47.8	μg/L	1	50.0	96	84.6 - 114

Laboratory Control Spike (LCS-1)

QC Batch: 31243 Date Analyzed: 2006-10-22 Analyzed By: JG
Prep Batch: 27203 QC Preparation: 2006-10-22 Prepared By: JG

Param	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
1,1-Dichloroethene	490	μg/Kg	1	500	<0.639	98	76.9 - 114
Benzene	485	μg/Kg	1	500	<0.644	97	79.7 - 113
Trichloroethene (TCE)	512	μg/Kg	1	500	<0.836	102	84.2 - 119
Toluene	478	μg/Kg	1	500	<1.12	96	82 - 110
Chlorobenzene	475	μg/Kg	1	500	<0.426	95	85.9 - 110

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Param	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
1,1-Dichloroethene	487	μg/Kg	1	500	<0.639	97	76.9 - 114	1	20
Benzene	502	μg/Kg	1	500	<0.644	100	79.7 - 113	3	20
Trichloroethene (TCE)	525	μg/Kg	1	500	<0.836	105	84.2 - 119	2	20
Toluene	500	μg/Kg	1	500	<1.12	100	82 - 110	4	20
Chlorobenzene	496	μg/Kg	1	500	<0.426	99	85.9 - 110	4	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Surrogate	LCS Result	LCSD Result	Units	Dil.	Spike Amount	LCS Rec.	LCSD Rec.	Rec. Limit
Dibromofluoromethane	489	487	μg/Kg	1	500	98	97	87 - 108
Toluene-d8	473	470	μg/Kg	1	500	95	94	92.3 - 106
4-Bromofluorobenzene (4-BFB)	464	463	μg/Kg	1	500	93	93	83.4 - 117

Laboratory Control Spike (LCS-1)

QC Batch: 31277 Date Analyzed: 2006-10-24 Analyzed By: JG
Prep Batch: 27234 QC Preparation: 2006-10-24 Prepared By: JG

Param	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
1,1-Dichloroethene	49.2	μg/L	1	50.0	<0.326	98	83.4 - 114
MTBE	51.4	μg/L	1	50.0	<0.352	103	70 - 132
Benzene	50.7	μg/L	1	50.0	<0.356	101	83.5 - 115
Trichloroethene (TCE)	53.7	μg/L	1	50.0	<0.434	107	91.3 - 111
Toluene	50.6	μg/L	1	50.0	<0.366	101	82 - 110
Chlorobenzene	49.6	μg/L	1	50.0	<0.363	99	87.9 - 109
Ethylbenzene	47.7	μg/L	1	50.0	<0.350	95	82.4 - 116

continued . . .

control spikes continued . . .

Param	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
m,p-Xylene	97.1	μg/L	1	50.0	<0.752	194	161 - 237
o-Xylene	49.3	μg/L	1	50.0	<0.375	99	82.1 - 119

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Param	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
1,1-Dichloroethene	49.0	μg/L	1	50.0	<0.326	98	83.4 - 114	0	20
MTBE	50.9	μg/L	1	50.0	<0.352	102	70 - 132	1	20
Benzene	51.1	μg/L	1	50.0	<0.356	102	83.5 - 115	1	20
Trichloroethene (TCE)	54.5	μg/L	1	50.0	<0.434	109	91.3 - 111	2	20
Toluene	50.7	μg/L	1	50.0	<0.366	101	82 - 110	0	20
Chlorobenzene	49.6	μg/L	1	50.0	<0.363	99	87.9 - 109	0	20
Ethylbenzene	47.4	μg/L	1	50.0	<0.350	95	82.4 - 116	1	20
m,p-Xylene	96.1	μg/L	1	50.0	<0.752	192	161 - 237	1	20
o-Xylene	49.2	μg/L	1	50.0	<0.375	98	82.1 - 119	0	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Surrogate	LCS Result	LCSD Result	Units	Dil.	Spike Amount	LCS Rec.	LCSD Rec.	Rec. Limit
Dibromofluoromethane	49.6	49.6	μg/L	1	50.0	99	99	82.4 - 115
Toluene-d8	47.2	47.2	μg/L	1	50.0	94	94	89.7 - 108
4-Bromofluorobenzene (4-BFB)	46.6	46.2	μg/L	1	50.0	93	92	84.6 - 114

Matrix Spike (MS-1) Spiked Sample: 106083

QC Batch: 31243 Date Analyzed: 2006-10-22 Analyzed By: JG
Prep Batch: 27203 QC Preparation: 2006-10-22 Prepared By: JG

Param	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
1,1-Dichloroethene	473	μg/Kg	1	500	<0.639	95	76.1 - 115
Benzene	488	μg/Kg	1	500	<0.644	98	82.1 - 110
Trichloroethene (TCE)	503	μg/Kg	1	500	<0.836	101	75.5 - 129
Toluene	477	μg/Kg	1	500	<1.12	95	82.3 - 108
Chlorobenzene	473	μg/Kg	1	500	<0.426	95	84.1 - 111

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Param	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
1,1-Dichloroethene	490	μg/Kg	1	500	<0.639	98	76.1 - 115	4	20
Benzene	503	μg/Kg	1	500	<0.644	101	82.1 - 110	3	20
Trichloroethene (TCE)	531	μg/Kg	1	500	<0.836	106	75.5 - 129	5	20
Toluene	500	μg/Kg	1	500	<1.12	100	82.3 - 108	5	20
Chlorobenzene	488	μg/Kg	1	500	<0.426	98	84.1 - 111	3	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

continued . . .

matrix spikes continued . . .

Surrogate	MS Result	MSD Result	Units	Dil.	Spike Amount	MS Rec.	MSD Rec.	Rec. Limit

Surrogate	MS Result	MSD Result	Units	Dil.	Spike Amount	MS Rec.	MSD Rec.	Rec. Limit
Dibromofluoromethane	490	494	μg/Kg	1	500	98	99	87.9 - 105
Toluene-d8	476	464	μg/Kg	1	500	95	93	90.2 - 109
4-Bromofluorobenzene (4-BFB)	462	464	μg/Kg	1	500	92	93	82.9 - 116

Matrix Spike (MS-1) Spiked Sample: 106445

QC Batch: 31277 Date Analyzed: 2006-10-24 Analyzed By: JG
Prep Batch: 27234 QC Preparation: 2006-10-24 Prepared By: JG

Param	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
1,1-Dichloroethene	47.6	μg/L	1	50.0	<0.0736	95	78.7 - 119
MTBE	49.0	μg/L	1	50.0	<0.0504	98	46.6 - 162
Benzene	50.1	μg/L	1	50.0	<0.0495	100	75.8 - 125
Trichloroethene (TCE)	51.0	μg/L	1	50.0	<0.0495	102	83.6 - 112
Toluene	49.6	μg/L	1	50.0	<0.0736	99	81.6 - 115
Chlorobenzene	48.3	μg/L	1	50.0	<0.0217	97	83.9 - 113
Ethylbenzene	46.3	μg/L	1	50.0	<0.0566	93	75.4 - 121
m,p-Xylene	93.3	μg/L	1	50.0	<0.0363	187	148 - 247
o-Xylene	48.1	μg/L	1	50.0	<0.0504	96	75.4 - 126

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Param	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
1,1-Dichloroethene	47.0	μg/L	1	50.0	<0.0736	94	78.7 - 119	1	20
MTBE	49.3	μg/L	1	50.0	<0.0504	99	46.6 - 162	1	20
Benzene	49.3	μg/L	1	50.0	<0.0495	99	75.8 - 125	2	20
Trichloroethene (TCE)	51.0	μg/L	1	50.0	<0.0495	102	83.6 - 112	0	20
Toluene	49.1	μg/L	1	50.0	<0.0736	98	81.6 - 115	1	20
Chlorobenzene	48.0	μg/L	1	50.0	<0.0217	96	83.9 - 113	1	20
Ethylbenzene	46.0	μg/L	1	50.0	<0.0566	92	75.4 - 121	1	20
m,p-Xylene	93.2	μg/L	1	50.0	<0.0363	186	148 - 247	0	20
o-Xylene	47.6	μg/L	1	50.0	<0.0504	95	75.4 - 126	1	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Surrogate	MS Result	MSD Result	Units	Dil.	Spike Amount	MS Rec.	MSD Rec.	Rec. Limit
Dibromofluoromethane	50.1	49.8	μg/L	1	50	100	100	86.6 - 114
Toluene-d8	47.0	47.5	μg/L	1	50	94	95	91 - 109
4-Bromofluorobenzene (4-BFB)	45.9	46.1	μg/L	1	50	92	92	87.2 - 113

Standard (CCV-1)

QC Batch: 31243 Date Analyzed: 2006-10-22 Analyzed By: JG

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Vinyl Chloride		µg/Kg	50.0	49.9	100	80 - 120	2006-10-22
1,1-Dichloroethene		µg/Kg	50.0	52.6	105	80 - 120	2006-10-22
Chloroform		µg/Kg	50.0	51.8	104	80 - 120	2006-10-22
1,2-Dichloropropane		µg/Kg	50.0	55.0	110	80 - 120	2006-10-22
Toluene		µg/Kg	50.0	52.7	105	80 - 120	2006-10-22
Chlorobenzene		µg/Kg	50.0	51.6	103	80 - 120	2006-10-22
Ethylbenzene		µg/Kg	50.0	49.5	99	80 - 120	2006-10-22

Standard (CCV-2)

QC Batch: 31243 Date Analyzed: 2006-10-22 Analyzed By: JG

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Vinyl Chloride		µg/Kg	50.0	50.9	102	80 - 120	2006-10-22
1,1-Dichloroethene		µg/Kg	50.0	52.4	105	80 - 120	2006-10-22
Chloroform		µg/Kg	50.0	53.7	107	80 - 120	2006-10-22
1,2-Dichloropropane		µg/Kg	50.0	54.5	109	80 - 120	2006-10-22
Toluene		µg/Kg	50.0	52.4	105	80 - 120	2006-10-22
Chlorobenzene		µg/Kg	50.0	50.7	101	80 - 120	2006-10-22
Ethylbenzene		µg/Kg	50.0	49.0	98	80 - 120	2006-10-22

Standard (CCV-1)

QC Batch: 31277 Date Analyzed: 2006-10-24 Analyzed By: JG

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Vinyl Chloride		µg/L	50.0	41.5	83	80 - 120	2006-10-24
1,1-Dichloroethene		µg/L	50.0	49.4	99	80 - 120	2006-10-24
MTBE		µg/L	50.0	49.2	98	70 - 130	2006-10-24
Chloroform		µg/L	50.0	48.5	97	80 - 120	2006-10-24
Benzene		µg/L	50.0	49.6	99	70 - 130	2006-10-24
1,2-Dichloropropane		µg/L	50.0	51.5	103	80 - 120	2006-10-24
Toluene		µg/L	50.0	49.7	99	80 - 120	2006-10-24
Chlorobenzene		µg/L	50.0	49.9	100	80 - 120	2006-10-24
Ethylbenzene		µg/L	50.0	47.3	95	80 - 120	2006-10-24
m,p-Xylene		µg/L	50.0	95.2	190	140 - 260	2006-10-24
o-Xylene		µg/L	50.0	48.5	97	70 - 130	2006-10-24

Standard (CCV-2)

QC Batch: 31277 Date Analyzed: 2006-10-24 Analyzed By: JG

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Vinyl Chloride		µg/L	50.0	48.7	97	80 - 120	2006-10-24
1,1-Dichloroethene		µg/L	50.0	49.4	99	80 - 120	2006-10-24
MTBE		µg/L	50.0	51.5	103	70 - 130	2006-10-24
Chloroform		µg/L	50.0	50.9	102	80 - 120	2006-10-24
Benzene		µg/L	50.0	50.3	101	70 - 130	2006-10-24
1,2-Dichloropropane		µg/L	50.0	52.7	105	80 - 120	2006-10-24
Toluene		µg/L	50.0	49.7	99	80 - 120	2006-10-24
Chlorobenzene		µg/L	50.0	48.0	96	80 - 120	2006-10-24
Ethylbenzene		µg/L	50.0	45.3	91	80 - 120	2006-10-24
m,p-Xylene		µg/L	50.0	91.6	183	140 - 260	2006-10-24
o-Xylene		µg/L	50.0	47.8	96	70 - 130	2006-10-24

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CHAIN OF CUSTODY RECORD

PAGE 1 OF 1

PROJECT NO.: 7

PROJECT NAME: HELSTF Groundwater Sampling

SAMPLER'S SIGNATURE: George Esqueda

DATE	TIME	SAMPLE ID	MATRIX	LAB NO.	NO. OF CONTAINERS	VOC	DRO/GRO	D.I.A	TOC	SVOC	Water Quality	Amm Nitrogen	Total Metals	Diss Metals	Diss Ions	REMARKS
																NH3
01/10/07	0915	HLSF-0085-D RIN-005-~~1206~~ SE 0107	Water	113751	19	X•	X	X	X	X	X	X	X	X	X	•
01/10/07	0915	HLSF-0085-TB-739-~~1206~~ SE 0107	Water	113752	2	X•										

PROJECT INFORMATION			1. RELINQUISHED BY: (SIGNATURE)	2. RELINQUISHED BY: (SIGNATURE)	3. RECEIVED BY LAB: (SIGNATURE)
PROJECT MANAGER: William Little	SAMPLES RECEIVED		George Esqueda	[signature]	[signature]
	TOTAL NO. OF CONTAINERS		(PRINTED NAME) George Esqueda	(PRINTED NAME) Jeffrey Lane	(PRINTED NAME) [illegible]
SHIPPING ID NO.: 3930255 85	CHAIN OF CUSTODY SEALS		RECEIVED BY: (SIGNATURE) [signature]	RECEIVED BY: (SIGNATURE) [signature]	(COMPANY) Trace analysis
	GOOD CONDITION/CHILLED	4°C	(TIME/DATE) 4:15 pm 10 Jan 07	(TIME/DATE) 1225 1-10 07	(TIME/DATE) 1-12-07 9:00
VIA: Courier	CONFORMS TO RECORD		SPECIAL INSTRUCTIONS/COMMENTS: PLEASE SEE ATTACHED ANALYTE LIST FOR DETAILS	Analyte Table A	

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Analyte Table A

HELSTF Phase III RFI

Groundwater Sample Collection

Parameter	Analytical Method	Container	Min Hold Time	Preservative
Water Quality *Total Dissolved Solids* *Alkalinity, Carbonate/Bicarbonate* *Alkalinity, Hydroxide* *pH* *Conductance*	EPA 160.1 EPA 310.1 EPA 150.1 EPA 120.1	1 L Poly	48 hours	4°C
Ammonia Nitrogen	EPA 350.2	1-500mL poly	28 days	H_2SO_4 pH<2
Dissolved Ions *Bromide* *Nitrate-N* *Chloride* *Nitrite-N* *Fluoride* *Sulfate*	EPA 300.0	Take from Water Quality container	48 hrs NO3 & NO2; others 28 days	4°C
Total Metals *Cadmium* *Phosphorous* *Chromium* *Silver* *Copper* *Sodium* *Lead* *Zinc*	SW 6010B	500 mL Poly	180 days	HNO_3 pH <2
Dissolved Metals *Cadmium* *Chromium* *Silver* *Copper* *Sodium* *Lead* *Zinc*	SW 6010B	500 mL Poly Field Filtered	180 Days	HNO_3 pH <2
VOCs	SW 8260B	3-40mL VOAs	14 days	HCl pH<2
Direct Inject Alcohols *ethylene glycol*	SW 8015B Mod	2-40mL VOAs	7 days	No Preservative 4°C
SVOCs, including benzyl alcohol and 2-butoxy ethanol	SW 8270C	2-1 L ambers	7 days extraction/ 40 days analysis	4°C
Petroleum Hydrocarbons	Diesel Range Organics SW 8015B Mod	3-40mL VOAs	14 days	HCl pH<2
	Gasoline Range Organics SW 8015B Mod	3-40mL VOAs	14 days	HCl pH<2
Total Organic Carbon	EPA 415.1	2-40mL VOAs amber glass	28 days	H_2SO_4 pH<2

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CHAIN OF CUSTODY RECORD

PAGE 1 OF 1

PROJECT NO.: 7

PROJECT NAME: HELSTF Groundwater Sampling

SAMPLER'S SIGNATURE: George Esqueda

DATE	TIME	SAMPLE ID	MATRIX	LAB NO.	NO. OF CONTAINERS	VOC	DRO/GRO	D.I.A	TOC	SVOC	Water Quality	Amm Nitrogen	Total Metals	Diss Metals	Diss Ions	REMARKS
																NH3
1/10/07	1248	HLSF-0085-D RW-006-~~1206~~ SE 0107	Water	113753	19	X	X	X	X	X	X	X	X	X	X	
1/10/07	1248	HLSF-0085-TB-740-~~1206~~ SE 0107	Water	113754	2	X										

PROJECT INFORMATION	SAMPLES RECEIVED		1. RELINQUISHED BY: (SIGNATURE)	2. RELINQUISHED BY: (SIGNATURE)	3. RECEIVED BY LAB: (SIGNATURE)
PROJECT MANAGER: William Little	TOTAL NO. OF CONTAINERS		(PRINTED NAME) GEORGE ESQUEDA	(PRINTED NAME) Jeffrey Lane	(PRINTED NAME) Teena Ripley
SHIPPING ID NO.: 39302585	CHAIN OF CUSTODY SEALS		RECEIVED BY: (SIGNATURE)	RECEIVED BY: (SIGNATURE)	(COMPANY) Trace Analysis
	GOOD CONDITION/COOLED	4°C	(TIME/DATE) 4:15pm 10Jan07	(TIME/DATE) 1725 1-10-07	(TIME/DATE) 1/12/07 9:00
VIA: Courier LS	CONFORMS TO RECORD		SPECIAL INSTRUCTIONS/COMMENTS: PLEASE SEE ATTACHED ANALYTE LIST FOR DETAILS Analyte Table A		

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Analyte Table A

HELSTF Phase III RFI

Groundwater Sample Collection

Parameter	Analytical Method	Container	Min Hold Time	Preservative
Water Quality *Total Dissolved Solids* *Alkalinity, Carbonate/Bicarbonate* *Alkalinity, Hydroxide* *pH* *Conductance*	EPA 160.1 EPA 310.1 EPA 150.1 EPA 120.1	1 L Poly	48 hours	4°C
Ammonia Nitrogen	EPA 350.2	1-500mL poly	28 days	H_2SO_4 pH<2
Dissolved Ions *Bromide* *Nitrate-N* *Chloride* *Nitrite-N* *Fluoride* *Sulfate*	EPA 300.0	Take from Water Quality container	48 hrs NO3 & NO2; others 28 days	4°C
Total Metals *Cadmium* *Phosphorous* *Chromium* *Silver* *Copper* *Sodium* *Lead* *Zinc*	SW 6010B	500 mL Poly	180 days	HNO_3 pH <2
Dissolved Metals *Cadmium* *Chromium* *Silver* *Copper* *Sodium* *Lead* *Zinc*	SW 6010B	500 mL Poly Field Filtered	180 Days	HNO_3 pH <2
VOCs	SW 8260B	3-40mL VOAs	14 days	HCl pH<2
Direct Inject Alcohols *ethylene glycol*	SW 8015B Mod	2-40mL VOAs	7 days	No Preservative 4°C
SVOCs, including benzyl alcohol and 2-butoxy ethanol	SW 8270C	2-1 L ambers	7 days extraction/ 40 days analysis	4°C
Petroleum Hydrocarbons	Diesel Range Organics SW 8015B Mod	3-40mL VOAs	14 days	HCl pH<2
	Gasoline Range Organics SW 8015B Mod	3-40mL VOAs	14 days	HCl pH<2
Total Organic Carbon	EPA 415.1	2-40mL VOAs amber glass	28 days	H_2SO_4 pH<2

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CHAIN OF CUSTODY RECORD

PAGE 1 OF 1

PROJECT NO.: 7

PROJECT NAME: HELSTF Groundwater Sampling

SAMPLER'S SIGNATURE: George Esqueda

DATE	TIME	SAMPLE ID	MATRIX	LAB NO.	NO. OF CONTAINERS	VOC	DRO/GRO	D.I.A	TOC	SVOC	Water Quality	Amm Nitrogen	Total Metals	Diss Metals	Diss Ions	REMARKS
						ANALYSIS REQUESTED										NHS
1/10/07	1505	HLSF-0085-D RIW-007-~~1206~~ GE 0107	Water	113763	19	X	X	X	X	X	X	X	X	X	X	•
1/10/07	1505	HLSF-0085-TB-741-~~1206~~ GE 0107	Water	113764	2	X										

PROJECT INFORMATION		
PROJECT MANAGER: William Little	SAMPLES RECEIVED	
	TOTAL NO. OF CONTAINERS	
	CHAIN OF CUSTODY SEALS	
SHIPPING ID NO.: 3913022682	GOOD CONDITION/CHILLED	4°C
VIA: Courier	CONFORMS TO RECORD	

1. RELINQUISHED BY: (SIGNATURE) George Esqueda
(PRINTED NAME) GEORGE ESQUEDA
RECEIVED BY: (SIGNATURE) Jeffrey Lane
(TIME/DATE) 0815am 11 Jan 07

2. RELINQUISHED BY: (SIGNATURE) Jeffrey Lane
(PRINTED NAME) Jeffrey Lane
RECEIVED BY: (SIGNATURE) Dennis Rafferty
(TIME/DATE) 9:30am 11 Jan 07

3. RECEIVED BY LAB: (SIGNATURE) Lowestor Greena Shipley
(PRINTED NAME) 1700 11 Jan 07 Greena Shipley
(COMPANY) Traccanalysis
(TIME/DATE) 1-12-07 9:00

SPECIAL INSTRUCTIONS/COMMENTS:
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Analyte Table A

HELSTF Phase III RFI

Groundwater Sample Collection

Parameter	Analytical Method	Container	Min Hold Time	Preservative
Water Quality *Total Dissolved Solids* *Alkalinity, Carbonate/Bicarbonate* *Alkalinity, Hydroxide* *pH* *Conductance*	EPA 160.1 EPA 310.1 EPA 150.1 EPA 120.1	1 L Poly	48 hours	4°C
Ammonia Nitrogen	EPA 350.2	1-500mL poly	28 days	H_2SO_4 pH<2
Dissolved Ions *Bromide* *Nitrate-N* *Chloride* *Nitrite-N* *Fluoride* *Sulfate*	EPA 300.0	Take from Water Quality container	48 hrs NO3 & NO2; others 28 days	4°C
Total Metals *Cadmium* *Phosphorous* *Chromium* *Silver* *Copper* *Sodium* *Lead* *Zinc*	SW 6010B	500 mL Poly	180 days	HNO_3 pH <2
Dissolved Metals *Cadmium* *Chromium* *Silver* *Copper* *Sodium* *Lead* *Zinc*	SW 6010B	500 mL Poly Field Filtered	180 Days	HNO_3 pH <2
VOCs	SW 8260B	3-40mL VOAs	14 days	HCl pH<2
Direct Inject Alcohols *ethylene glycol*	SW 8015B Mod	2-40mL VOAs	7 days	No Preservative 4°C
SVOCs, including benzyl alcohol and 2-butoxy ethanol	SW 8270C	2-1 L ambers	7 days extraction/ 40 days analysis	4°C
Petroleum Hydrocarbons	Diesel Range Organics SW 8015B Mod	3-40mL VOAs	14 days	HCl pH<2
	Gasoline Range Organics SW 8015B Mod	3-40mL VOAs	14 days	HCl pH<2
Total Organic Carbon	EPA 415.1	2-40mL VOAs amber glass	28 days	H_2SO_4 pH<2

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CHAIN OF CUSTODY RECORD

PAGE 1 OF 1

PROJECT NO.	PROJECT NAME
7	HELSTF Groundwater Sampling

SAMPLER'S SIGNATURE: George Esqueda

DATE	TIME	SAMPLE ID	MATRIX	LAB NO.	NO. OF CONTAINERS	VOC	DRO/GRO	D.I.A	TOC	SVOC	Water Quality	Amm Nitrogen	Total Metals	Diss Metals	Diss Ions	REMARKS
																NH3
																113765
1/11/07	0950	HLSF-0085-D RW-008-~~1206~~ GE 0107	Water	113765	19	X	X	X	X	X	X	X	X	X	X	*NO2,NO3, ran by Spec in Lubbock
1/11/07	0950	HLSF-0085-TB-742-~~1206~~ GE 0107	Water	113766	2	X										

PROJECT INFORMATION	SAMPLES RECEIVED		1. RELINQUISHED BY: (SIGNATURE)	2. RELINQUISHED BY: (SIGNATURE)	3. RECEIVED BY LAB: (SIGNATURE)
PROJECT MANAGER: William Little	TOTAL NO. OF CONTAINERS		(PRINTED NAME) George Esqueda	(PRINTED NAME) Jeffrey Lane	(PRINTED NAME) Sheena Ripley
SHIPPING ID NO.: 3932021460	CHAIN OF CUSTODY SEALS		RECEIVED BY: (SIGNATURE)	RECEIVED BY: (SIGNATURE)	(COMPANY) Trace Analysis
	GOOD CONDITION/CHILLED	4C	(TIME/DATE) 03:25pm 11 Jan 07	(TIME/DATE) 1745 1-11-07	(TIME/DATE) 1-12-07 9:00
VIA: Courier	CONFORMS TO RECORD		SPECIAL INSTRUCTIONS/COMMENTS: PLEASE SEE ATTACHED ANALYTE LIST FOR DETAILS Analyte Table A		

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Analyte Table A

HELSTF Phase III RFI

Groundwater Sample Collection

Parameter	Analytical Method	Container	Min Hold Time	Preservative
Water Quality *Total Dissolved Solids* *Alkalinity, Carbonate/Bicarbonate* *Alkalinity, Hydroxide* *pH* *Conductance*	EPA 160.1 EPA 310.1 EPA 150.1 EPA 120.1	1 L Poly	48 hours	4°C
Ammonia Nitrogen	EPA 350.2	1-500mL poly	28 days	H_2SO_4 pH<2
Dissolved Ions *Bromide* *Nitrate-N* *Chloride* *Nitrite-N* *Fluoride* *Sulfate*	EPA 300.0	Take from Water Quality container	48 hrs NO3 & NO2; others 28 days	4°C
Total Metals *Cadmium* *Phosphorous* *Chromium* *Silver* *Copper* *Sodium* *Lead* *Zinc*	SW 6010B	500 mL Poly	180 days	HNO_3 pH <2
Dissolved Metals *Cadmium* *Chromium* *Silver* *Copper* *Sodium* *Lead* *Zinc*	SW 6010B	500 mL Poly Field Filtered	180 Days	HNO_3 pH <2
VOCs	SW 8260B	3-40mL VOAs	14 days	HCl pH<2
Direct Inject Alcohols *ethylene glycol*	SW 8015B Mod	2-40mL VOAs	7 days	No Preservative 4°C
SVOCs, including benzyl-alcohol and 2-butoxy ethanol	SW 8270C	2-1 L ambers	7 days extraction/ 40 days analysis	4°C
Petroleum Hydrocarbons	Diesel Range Organics SW 8015B Mod	3-40mL VOAs	14 days	HCl pH<2
	Gasoline Range Organics SW 8015B Mod	3-40mL VOAs	14 days	HCl pH<2
Total Organic Carbon	EPA 415.1	2-40mL VOAs amber glass	28 days	H_2SO_4 pH<2

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CHAIN OF CUSTODY RECORD

PAGE 1 OF 1

PROJECT NO.	PROJECT NAME
7	HELSTF Groundwater Sampling

SAMPLER'S SIGNATURE: George Esqueda

DATE	TIME	SAMPLE ID	MATRIX	LAB NO.	NO. OF CONTAINERS	VOC	DRO/GRO	D.I.A	TOC	SVOC	Water Quality	Amm Nitrogen	Total Metals	Diss Metals	Diss Ions	REMARKS
	1432															NH3
1/16/07	~~1043~~ 1432	HLSF-0085-DRW-011-~~1206~~ 0107	Water	114196	19	X	X	X	X	X	X	X	X	X	X	•
1/16/07	1432	HLSF-0085-TB-743-~~1206~~ 0107	Water	114197	2	X										

PROJECT INFORMATION			
PROJECT MANAGER: William Little	SAMPLES RECEIVED		
	TOTAL NO. OF CONTAINERS		
SHIPPING ID NO.: 3930 2597	CHAIN OF CUSTODY SEALS		
	GOOD CONDITION/CHILLED	Y	
VIA: Courier	CONFORMS TO RECORD	N/A	

1. RELINQUISHED BY: (SIGNATURE) George Esqueda
(PRINTED NAME) GEORGE ESQUEDA
RECEIVED BY: (SIGNATURE) Jeffrey Lane
(TIME/DATE) 9:40 am 17 Jan 07

2. RELINQUISHED BY: (SIGNATURE) Jeffrey Lane
(PRINTED NAME) Jeffrey Lane
RECEIVED BY: (SIGNATURE)
(TIME/DATE)

3. RECEIVED BY LAB: (SIGNATURE) Sharon Ripley
(PRINTED NAME) Sharon Ripley
(COMPANY) Trace Analysis
(TIME/DATE) 1/19/07 8:30

SPECIAL INSTRUCTIONS/COMMENTS:
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Analyte Table A

HELSTF Phase III RFI

Groundwater Sample Collection

Parameter	Analytical Method	Container	Min Hold Time	Preservative
Water Quality *Total Dissolved Solids* *Alkalinity, Carbonate/Bicarbonate* *Alkalinity, Hydroxide* *pH* *Conductance*	EPA 160.1 EPA 310.1 EPA 150.1 EPA 120.1	1 L Poly	48 hours	4°C
Ammonia Nitrogen	EPA 350.2	1-500mL poly	28 days	H_2SO_4 pH<2
Dissolved Ions *Bromide* *Nitrate-N* *Chloride* *Nitrite-N* *Fluoride* *Sulfate*	EPA 300.0	Take from Water Quality container	48 hrs NO3 & NO2; others 28 days	4°C
Total Metals *Cadmium* *Phosphorous* *Chromium* *Silver* *Copper* *Sodium* *Lead* *Zinc*	SW 6010B	500 mL Poly	180 days	HNO_3 pH <2
Dissolved Metals *Cadmium* *Chromium* *Silver* *Copper* *Sodium* *Lead* *Zinc*	SW 6010B	500 mL Poly Field Filtered	180 Days	HNO_3 pH <2
VOCs	SW 8260B	3-40mL VOAs	14 days	HCl pH<2
Direct Inject Alcohols *ethylene glycol*	SW 8015B Mod	2-40mL VOAs	7 days	No Preservative 4°C
SVOCs, including benzyl alcohol and 2-butoxy ethanol	SW 8270C	2-1 L ambers	7 days extraction/ 40 days analysis	4°C
Petroleum Hydrocarbons	Diesel Range Organics SW 8015B Mod	3-40mL VOAs	14 days	HCl pH<2
	Gasoline Range Organics SW 8015B Mod	3-40mL VOAs	14 days	HCl pH<2
Total Organic Carbon	EPA 415.1	2-40mL VOAs amber glass	28 days	H_2SO_4 pH<2

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CHAIN OF CUSTODY RECORD

PAGE 1 OF 1

PROJECT NO.	PROJECT NAME
7	HELSTF Groundwater Sampling

SAMPLER'S SIGNATURE

DATE	TIME	SAMPLE ID	MATRIX	LAB NO.	NO. OF CONTAINERS	VOC	DRO/GRO	D.I.A	TOC	SVOC	Water Quality	Amm Nitrogen	Total Metals	Diss Metals	Diss Ions	REMARKS
						ANALYSIS REQUESTED										MK3
1-12-07	1230	HLSF-0085-D RW-013 ~~1206~~ 0107	Water	114010	19	X	X	X	X	X	X	X	X	X	X	
1-12-07	1230	HLSF-0085-TB-745 ~~1206~~ 0107	Water	114011	2	X										

PROJECT INFORMATION	SAMPLES RECEIVED		1. RELINQUISHED BY: (SIGNATURE)	2. RELINQUISHED BY: (SIGNATURE)	3. RECEIVED BY LAB: (SIGNATURE)
PROJECT MANAGER: William Little	TOTAL NO. OF CONTAINERS		(PRINTED NAME) GABRIEL GARCIA	(PRINTED NAME) Jeffrey Lane	(PRINTED NAME) Sheena Shipley
SHIPPING ID NO. 393502594	CHAIN OF CUSTODY SEALS		RECEIVED BY: (SIGNATURE)	RECEIVED BY: (SIGNATURE) James Ratcliff	(COMPANY) Traco analysis
	GOOD CONDITION/CHILLED	4 C	(TIME/DATE) 3:50 pm 12Jan07	(TIME/DATE) 1710 1-12-07	(TIME/DATE) 1/16/07 10:00
VIA: Courier GS	CONFORMS TO RECORD	MA	SPECIAL INSTRUCTIONS/COMMENTS: PLEASE SEE ATTACHED ANALYTE LIST FOR DETAILS ANALYTE TABLE A		

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Analyte Table A

HELSTF Phase III RFI

Groundwater Sample Collection

Parameter	Analytical Method	Container	Min Hold Time	Preservative
Water Quality *Total Dissolved Solids* *Alkalinity, Carbonate/Bicarbonate* *Alkalinity, Hydroxide* *pH* *Conductance*	EPA 160.1 EPA 310.1 EPA 150.1 EPA 120.1	1 L Poly	48 hours	4°C
Ammonia Nitrogen	EPA 350.2	1-500mL poly	28 days	H_2SO_4 pH<2
Dissolved Ions *Bromide* *Nitrate-N* *Chloride* *Nitrite-N* *Fluoride* *Sulfate*	EPA 300.0	Take from Water Quality container	48 hrs NO3 & NO2; others 28 days	4°C
Total Metals *Cadmium* *Phosphorous* *Chromium* *Silver* *Copper* *Sodium* *Lead* *Zinc*	SW 6010B	500 mL Poly	180 days	HNO_3 pH <2
Dissolved Metals *Cadmium* *Chromium* *Silver* *Copper* *Sodium* *Lead* *Zinc*	SW 6010B	500 mL Poly Field Filtered	180 Days	HNO_3 pH <2
VOCs	SW 8260B	3-40mL VOAs	14 days	HCl pH<2
Direct Inject Alcohols *ethylene glycol*	SW 8015B Mod	2-40mL VOAs	7 days	No Preservative 4°C
SVOCs, including benzyl alcohol and 2-butoxy ethanol	SW 8270C	2-1 L ambers	7 days extraction/ 40 days analysis	4°C
Petroleum Hydrocarbons	Diesel Range Organics SW 8015B Mod	3-40mL VOAs	14 days	HCl pH<2
	Gasoline Range Organics SW 8015B Mod	3-40mL VOAs	14 days	HCl pH<2
Total Organic Carbon	EPA 415.1	2-40mL VOAs amber glass	28 days	H_2SO_4 pH<2

10/4/2006 10:28 AM

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CHAIN OF CUSTODY RECORD

PAGE 1 OF 1

PROJECT NO.: 7

PROJECT NAME: HELSTF Groundwater Sampling

SAMPLER'S SIGNATURE:

DATE	TIME	SAMPLE ID	MATRIX	LAB NO.	NO. OF CONTAINERS	VOC	DRO/GRO	D.I.A	TOC	SVOC	Water Quality	Amm Nitrogen	Total Metals	Diss Metals	Diss Ions	REMARKS
1-12-07	1230	HLSF-0085-D RW-113 ~~1206~~ 0107	Water	114012	14	X	X	X	X	X	X	X	X	X	X	NH3
1-12-07	1230	HLSF-0085-TB-746 ~~1206~~ 0107	Water	114013	2	X										

PROJECT INFORMATION	SAMPLES RECEIVED		1. RELINQUISHED BY: (SIGNATURE)	2. RELINQUISHED BY: (SIGNATURE)	3. RECEIVED BY LAB: (SIGNATURE)
PROJECT MANAGER: William Little	TOTAL NO. OF CONTAINERS		(PRINTED NAME)	(PRINTED NAME) Jeffrey Lane	(PRINTED NAME)
SHIPPING ID NO.: 39302594	CHAIN OF CUSTODY SEALS		RECEIVED BY: (SIGNATURE)	RECEIVED BY: (SIGNATURE)	(COMPANY) Inacon analytical
	GOOD CONDITION/CHILLED	4°C	(TIME/DATE) 3:50 pm 12 Jan 07	(TIME/DATE) 1710 1-12-07	(TIME/DATE) 1/16/07 10:00
VIA: Courier	CONFORMS TO RECORD	MA	SPECIAL INSTRUCTIONS/COMMENTS: PLEASE SEE ATTACHED ANALYTE LIST FOR DETAILS ANALYTE TABLE A		

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Analyte Table A

HELSTF Phase III RFI

Groundwater Sample Collection

Parameter	Analytical Method	Container	Min Hold Time	Preservative
Water Quality *Total Dissolved Solids* *Alkalinity, Carbonate/Bicarbonate* *Alkalinity, Hydroxide* *pH* *Conductance*	EPA 160.1 EPA 310.1 EPA 150.1 EPA 120.1	1 L Poly	48 hours	4°C
Ammonia Nitrogen	EPA 350.2	1-500mL poly	28 days	H_2SO_4 pH<2
Dissolved Ions *Bromide* *Nitrate-N* *Chloride* *Nitrite-N* *Fluoride* *Sulfate*	EPA 300.0	Take from Water Quality container	48 hrs NO3 & NO2; others 28 days	4°C
Total Metals *Cadmium* *Phosphorous* *Chromium* *Silver* *Copper* *Sodium* *Lead* *Zinc*	SW 6010B	500 mL Poly	180 days	HNO_3 pH <2
Dissolved Metals *Cadmium* *Chromium* *Silver* *Copper* *Sodium* *Lead* *Zinc*	SW 6010B	500 mL Poly Field Filtered	180 Days	HNO_3 pH <2
VOCs	SW 8260B	3-40mL VOAs	14 days	HCl pH<2
Direct Inject Alcohols *ethylene glycol*	SW 8015B Mod	2-40mL VOAs	7 days	No Preservative 4°C
SVOCs, including benzyl alcohol and 2-butoxy ethanol	SW 8270C	2-1 L ambers	7 days extraction/ 40 days analysis	4°C
Petroleum Hydrocarbons	Diesel Range Organics SW 8015B Mod	3-40mL VOAs	14 days	HCl pH<2
	Gasoline Range Organics SW 8015B Mod	3-40mL VOAs	14 days	HCl pH<2
Total Organic Carbon	EPA 415.1	2-40mL VOAs amber glass	28 days	H_2SO_4 pH<2

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CHAIN OF CUSTODY RECORD

PAGE 1 OF 1

PROJECT NO.: 7

PROJECT NAME: HELSTF Groundwater Sampling

SAMPLER'S SIGNATURE: George Esqueda

DATE	TIME	SAMPLE ID	MATRIX	LAB NO.	NO. OF CONTAINERS	VOC	DRO/GRO	D.I.A	TOC	SVOC	Water Quality	Amm Nitrogen	Total Metals	Diss Metals	Diss Ions	NO_3-NO_2 Chloride/Sulfate	REMARKS
12-11-06	1220	HLSF-0085-D RIW-014-1206	Water	111623	19	X	X	X	X	X	X	X	X	X	X	X X	
12-11-06	1220	HLSF-0085-TB-747-1206	Water	111624	2	X											

PROJECT INFORMATION	SAMPLES RECEIVED		1. RELINQUISHED BY: (SIGNATURE)	2. RELINQUISHED BY: (SIGNATURE)	3. RECEIVED BY LAB: (SIGNATURE)
PROJECT MANAGER: William Little	TOTAL NO. OF CONTAINERS		(PRINTED NAME) George Esqueda	(PRINTED NAME) James Gutierrez	(PRINTED NAME) Queena Ripley
SHIPPING ID NO.: 391923604	CHAIN OF CUSTODY SEALS		RECEIVED BY: (SIGNATURE)	RECEIVED BY: (SIGNATURE)	(COMPANY) TALS Analytical
	GOOD CONDITION/CHILLED	4°C	(TIME/DATE) 09:40 12-12-06	(TIME/DATE) 10:55 12-12-06	(TIME/DATE) 12/13/06 9:00
VIA: Courier LS	CONFORMS TO RECORD	BK	SPECIAL INSTRUCTIONS/COMMENTS: PLEASE SEE ATTACHED ANALYTE LIST FOR DETAILS		

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Analyte Table A

HELSTF Phase III RFI

Groundwater Sample Collection

Parameter	Analytical Method	Container	Min Hold Time	Preservative
Water Quality *Total Dissolved Solids* *Alkalinity, Carbonate/Bicarbonate* *Alkalinity, Hydroxide* *pH* *Conductance*	EPA 160.1 EPA 310.1 EPA 150.1 EPA 120.1	1 L Poly	48 hours	4°C
Ammonia Nitrogen	EPA 350.2	1-500mL poly	28 days	H_2SO_4 pH<2
Dissolved Ions *Bromide* *Nitrate-N* *Chloride* *Nitrite-N* *Fluoride* *Sulfate*	EPA 300.0	Take from Water Quality container	48 hrs NO3 & NO2; others 28 days	4°C
Total Metals *Cadmium* *Phosphorous* *Chromium* *Silver* *Copper* *Sodium* *Lead* *Zinc*	SW 6010B	500 mL Poly	180 days	HNO_3 pH <2
Dissolved Metals *Cadmium* *Chromium* *Silver* *Copper* *Sodium* *Lead* *Zinc*	SW 6010B	500 mL Poly Field Filtered	180 Days	HNO_3 pH <2
VOCs	SW 8260B	3-40mL VOAs	14 days	HCl pH<2
Direct Inject Alcohols *ethylene glycol*	SW 8015B Mod	2-40mL VOAs	7 days	No Preservative 4°C
SVOCs, including benzyl alcohol and 2-butoxy ethanol	SW 8270C	2-1 L ambers	7 days extraction/ 40 days analysis	4°C
Petroleum Hydrocarbons	Diesel Range Organics SW 8015B Mod	3-40mL VOAs	14 days	HCl pH<2
	Gasoline Range Organics SW 8015B Mod	3-40mL VOAs	14 days	HCl pH<2
Total Organic Carbon	EPA 415.1	2-40mL VOAs amber glass	28 days	H_2SO_4 pH<2

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PAGE 1 OF 1

PROJECT NO.: 7

PROJECT NAME: HELSTF Groundwater Sampling

SAMPLER'S SIGNATURE: George Esqueda

DATE	TIME	SAMPLE ID	MATRIX	LAB NO.	NO. OF CONTAINERS	VOC	DRO/GRO	D.I.A	TOC	SVOC	Water Quality	Amm Nitrogen	Total Metals	Diss Metals	Diss Ions	REMARKS
																NH3
1/12/07	1240	HLSF-0085-D RW-015-~~1206~~ 0107 (DE)	Water	114014	19	X	X	X	X	X	X	X	X	X	X	•
1/12/07	1240	HLSF-0085-TB-748-~~1206~~ 0107 (DE)	Water	114015	2	X										

PROJECT INFORMATION			1. RELINQUISHED BY: (SIGNATURE)	2. RELINQUISHED BY: (SIGNATURE)	3. RECEIVED BY LAB: (SIGNATURE)
PROJECT MANAGER: William Little	SAMPLES RECEIVED		George Esqueda	Jeffrey Lane	Teresa Ripley
	TOTAL NO. OF CONTAINERS		(PRINTED NAME) George Esqueda	(PRINTED NAME) Jeffrey Lane	(PRINTED NAME) Teresa Ripley
SHIPPING ID NO.: 39302595	CHAIN OF CUSTODY SEALS		RECEIVED BY: (SIGNATURE) Jeffrey Lane	RECEIVED BY: (SIGNATURE) James Ratliff	(COMPANY) TRC
	GOOD CONDITION/CHILLED	4°C	(TIME/DATE) 3:50 pm 12 Jan 06	(TIME/DATE) 1210 1-12-07	(TIME/DATE) 1/16/07 10:00
VIA: Courier	CONFORMS TO RECORD	NA	SPECIAL INSTRUCTIONS/COMMENTS: PLEASE SEE ATTACHED ANALYTE LIST FOR DETAILS Analyte Table A		

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PAGE 1 OF 1

PROJECT NO.: 7

PROJECT NAME: HELSTF Groundwater Sampling

SAMPLER'S SIGNATURE: George Esqueda

DATE	TIME	SAMPLE ID	MATRIX	LAB NO.	NO. OF CONTAINERS	VOC	DRO/GRO	~~DLA~~	TOC	SVOC	Water Quality	Amm Nitrogen	Total Metals	Diss Metals	Diss Ions	REMARKS
		0107 JE														
1/12/07	1240	HLSF-0085-D RW-015 ~~1206~~-ms/msd	Water	114014	18	X	X	X	X	X	X	X	X	X	X	
		0107														
~~1/12/07~~	JE	~~HLSF-0085-TB-749-1200~~ JE JE	~~Water~~	JE	~~2~~	~~X~~	JE									

PROJECT INFORMATION	SAMPLES RECEIVED		1. RELINQUISHED BY: (SIGNATURE)	2. RELINQUISHED BY: (SIGNATURE)	3. RECEIVED BY LAB: (SIGNATURE)
PROJECT MANAGER: William Little	TOTAL NO. OF CONTAINERS		(PRINTED NAME) GEORGE ESQUEDA	(PRINTED NAME) Jeffrey Lane	(PRINTED NAME)
SHIPPING ID NO.	CHAIN OF CUSTODY SEALS		RECEIVED BY: (SIGNATURE)	RECEIVED BY: (SIGNATURE)	(COMPANY)
	GOOD CONDITION/CHILLED	4C	(TIME/ DATE) 3:50 pm 12 Jan 07	(TIME/ DATE) 1710 1-12-07	(TIME/ DATE)
VIA: Courier	CONFORMS TO RECORD	MA	SPECIAL INSTRUCTIONS / COMMENTS: PLEASE SEE ATTACHED ANALYTE LIST FOR DETAILS Tabel A		lab send Containers

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Analyte Table A

HELSTF Phase III RFI

Groundwater Sample Collection

Parameter	Analytical Method	Container	Min Hold Time	Preservative
Water Quality *Total Dissolved Solids* *Alkalinity, Carbonate/Bicarbonate* *Alkalinity, Hydroxide* *pH* *Conductance*	EPA 160.1 EPA 310.1 EPA 150.1 EPA 120.1	1 L Poly	48 hours	4°C
Ammonia-Nitrogen	EPA 350.2	1-500mL poly	28 days	H_2SO_4 pH<2
Dissolved Ions *Bromide* *Nitrate-N* *Chloride* *Nitrite-N* *Fluoride* *Sulfate*	EPA 300.0	Take from Water Quality container	48 hrs NO3 & NO2; others 28 days	4°C
Total Metals *Cadmium* *Phosphorous* *Chromium* *Silver* *Copper* *Sodium* *Lead* *Zinc*	SW 6010B	500 mL Poly	180 days	HNO_3 pH <2
Dissolved Metals *Cadmium* *Chromium* *Silver* *Copper* *Sodium* *Lead* *Zinc*	SW 6010B	500 mL Poly Field Filtered	180 Days	HNO_3 pH <2
VOCs	SW 8260B	3-40mL VOAs	14 days	HCl pH<2
Direct Inject Alcohols *ethylene glycol*	SW 8015B Mod	2-40mL VOAs	7 days	No Preservative 4°C
SVOCs, including benzyl alcohol and 2-butoxy ethanol	SW 8270C	2-1 L ambers	7 days extraction/ 40 days analysis	4°C
Petroleum Hydrocarbons	Diesel Range Organics SW 8015B Mod	3-40mL VOAs	14 days	HCl pH<2
	Gasoline Range Organics SW 8015B Mod	3-40mL VOAs	14 days	HCl pH<2
Total Organic Carbon	EPA 415.1	2-40mL VOAs amber glass	28 days	H_2SO_4 pH<2

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750

CHAIN OF CUSTODY RECORD

PAGE 1 OF 1

PROJECT NO.: 7

PROJECT NAME: HELSTF Groundwater Sampling

SAMPLER'S SIGNATURE: George Esqueda

DATE	TIME	SAMPLE ID	MATRIX	LAB NO.	NO. OF CONTAINERS	VOC	DRO/GRO	D.I.A	TOC	SVOC	Water Quality	Amm Nitrogen	Total Metals	Diss Metals	Diss Ions	REMARKS
																N H3
1/12/07	0945	HLSF-0085-DRW-016-~~1206~~ 0107	Water	114016	19	X	X	X	X	X	X	X	X	X	X	•
1/12/07	0945	HLSF-0085-TB-750-~~1206~~ 0107	Water	114017	2	X										

PROJECT INFORMATION			1. RELINQUISHED BY: (SIGNATURE)	2. RELINQUISHED BY: (SIGNATURE)	3. RECEIVED BY LAB: (SIGNATURE)
PROJECT MANAGER: William Little	SAMPLES RECEIVED		George Esqueda	Jeffrey Lane	Sierra Ripley
	TOTAL NO. OF CONTAINERS		(PRINTED NAME) GEORGE ESQUEDA	(PRINTED NAME) Jeffrey Lane	(PRINTED NAME) Sierra Ripley
SHIPPING ID NO. 5130-2592	CHAIN OF CUSTODY SEALS		RECEIVED BY: (SIGNATURE) Jeffrey Lane	RECEIVED BY: (SIGNATURE) James Rotelli	(COMPANY) Trace Analytical
	GOOD CONDITION/CHILLED	4C	(TIME/DATE) 2:50pm 12Jan07	(TIME/DATE) 1710 1-12-07	(TIME/DATE) 1/16/07 10:00
VIA: Courier LS	CONFORMS TO RECORD	MK	SPECIAL INSTRUCTIONS / COMMENTS: PLEASE SEE ATTACHED ANALYTE LIST FOR DETAILS Analyte Table A		

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Analyte Table A

HELSTF Phase III RFI

Groundwater Sample Collection

Parameter	Analytical Method	Container	Min Hold Time	Preservative
Water Quality *Total Dissolved Solids* *Alkalinity, Carbonate/Bicarbonate* *Alkalinity, Hydroxide* *pH* *Conductance*	EPA 160.1 EPA 310.1 EPA 150.1 EPA 120.1	1 L Poly	48 hours	4°C
Ammonia Nitrogen	EPA 350.2	1-500mL poly	28 days	H_2SO_4 pH<2
Dissolved Ions *Bromide* *Nitrate-N* *Chloride* *Nitrite-N* *Fluoride* *Sulfate*	EPA 300.0	Take from Water Quality container	48 hrs NO3 & NO2; others 28 days	4°C
Total Metals *Cadmium* *Phosphorous* *Chromium* *Silver* *Copper* *Sodium* *Lead* *Zinc*	SW 6010B	500 mL Poly	180 days	HNO_3 pH <2
Dissolved Metals *Cadmium* *Chromium* *Silver* *Copper* *Sodium* *Lead* *Zinc*	SW 6010B	500 mL Poly Field Filtered	180 Days	HNO_3 pH <2
VOCs	SW 8260B	3-40mL VOAs	14 days	HCl pH<2
Direct Inject Alcohols *ethylene glycol*	SW 8015B Mod	2-40mL VOAs	7 days	No Preservative 4°C
SVOCs, including benzyl alcohol and 2-butoxy ethanol	SW 8270C	2-1 L ambers	7 days extraction/ 40 days analysis	4°C
Petroleum Hydrocarbons	Diesel Range Organics SW 8015B Mod	3-40mL VOAs	14 days	HCl pH<2
	Gasoline Range Organics SW 8015B Mod	3-40mL VOAs	14 days	HCl pH<2
Total Organic Carbon	EPA 415.1	2-40mL VOAs amber glass	28 days	H_2SO_4 pH<2

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751

CHAIN OF CUSTODY RECORD

PAGE 1 OF 1

PROJECT NO.: 7

PROJECT NAME: HELSTF Groundwater Sampling

SAMPLER'S SIGNATURE: George Esqueda

DATE	TIME	SAMPLE ID	MATRIX	LAB NO.	NO. OF CONTAINERS	VOC	DRO/GRO	D.I.A	TOC	SVOC	Water Quality	Amm Nitrogen	Total Metals	Diss Metals	Diss Ions	REMARKS
																WHS 113770
1/11/07	1310	HLSF-0085-D RW-017-~~1206~~ BE 0107	Water	113770	19	X	X	X	X	X	X	X	X	X	X	NO2, NO3, by spec • in Lubbock
1/11/07	1310	HLSF-0085-TB-751-~~1206~~ BE 0107	Water	113771	2	X										

PROJECT INFORMATION			
PROJECT MANAGER: William Little	SAMPLES RECEIVED		
	TOTAL NO. OF CONTAINERS		
SHIPPING ID NO.: 3913302591	CHAIN OF CUSTODY SEALS		
	GOOD CONDITION/CHILLED	4°C	
VIA: Courier	CONFORMS TO RECORD		

1. RELINQUISHED BY: (SIGNATURE)	2. RELINQUISHED BY: (SIGNATURE)	3. RECEIVED BY LAB: (SIGNATURE)
George Esqueda	Jeffrey Lane	Sueena Ripley
(PRINTED NAME) GEORGE ESQUEDA	(PRINTED NAME) Jeffrey Lane	(PRINTED NAME) Sueena Ripley
RECEIVED BY: (SIGNATURE) Jeffrey Lane	RECEIVED BY: (SIGNATURE) [illegible]	(COMPANY) Traces Analytics
(TIME/DATE) 3:25 pm 11 Jan 07	(TIME/DATE) 1245 1-12-07	(TIME/DATE) 1-12-07 9:00

SPECIAL INSTRUCTIONS / COMMENTS:
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Analyte Table A

HELSTF Phase III RFI

Groundwater Sample Collection

Parameter	Analytical Method	Container	Min Hold Time	Preservative
Water Quality *Total Dissolved Solids* *Alkalinity, Carbonate/Bicarbonate* *Alkalinity, Hydroxide* *pH* *Conductance*	EPA 160.1 EPA 310.1 EPA 150.1 EPA 120.1	1 L Poly	48 hours	4°C
Ammonia Nitrogen	EPA 350.2	1-500mL poly	28 days	H_2SO_4 pH<2
Dissolved Ions *Bromide* *Nitrate-N* *Chloride* *Nitrite-N* *Fluoride* *Sulfate*	EPA 300.0	Take from Water Quality container	48 hrs NO3 & NO2; others 28 days	4°C
Total Metals *Cadmium* *Phosphorous* *Chromium* *Silver* *Copper* *Sodium* *Lead* *Zinc*	SW 6010B	500 mL Poly	180 days	HNO_3 pH <2
Dissolved Metals *Cadmium* *Chromium* *Silver* *Copper* *Sodium* *Lead* *Zinc*	SW 6010B	500 mL Poly Field Filtered	180 Days	HNO_3 pH <2
VOCs	SW 8260B	3-40mL VOAs	14 days	HCl pH<2
Direct Inject Alcohols *ethylene glycol*	SW 8015B Mod	2-40mL VOAs	7 days	No Preservative 4°C
SVOCs, including benzyl alcohol and 2-butoxy ethanol	SW 8270C	2-1 L ambers	7 days extraction/ 40 days analysis	4°C
Petroleum Hydrocarbons	Diesel Range Organics SW 8015B Mod	3-40mL VOAs	14 days	HCl pH<2
	Gasoline Range Organics SW 8015B Mod	3-40mL VOAs	14 days	HCl pH<2
Total Organic Carbon	EPA 415.1	2-40mL VOAs amber glass	28 days	H_2SO_4 pH<2

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CHAIN OF CUSTODY RECORD

PAGE 1 OF 1

PROJECT NO.: 7

PROJECT NAME: HELSTF Groundwater Sampling

SAMPLER'S SIGNATURE: George Esqueda

DATE	TIME	SAMPLE ID	MATRIX	LAB NO.	NO. OF CONTAINERS	VOC	DRO/GRO	D.I.A	TOC	SVOC	Water Quality	Amm Nitrogen	Total Metals	Diss Metals	Diss Ions	REMARKS
1/18/07	1050	HLSF-0085-HCF-002-~~1206~~ 0107 SE	Water	114289	19	X	X	X	X	X	X	X	X	X	X	
1/18/07	1050	HLSF-0085-TB-753-~~1206~~ 0107 SE	Water	114290	2	X										

PROJECT INFORMATION	SAMPLES RECEIVED		1. RELINQUISHED BY: (SIGNATURE)	2. RELINQUISHED BY: (SIGNATURE)	3. RECEIVED BY LAB: (SIGNATURE)
PROJECT MANAGER: William Little	TOTAL NO. OF CONTAINERS		(PRINTED NAME) George Esqueda	(PRINTED NAME) Jeffrey Lane	(PRINTED NAME) Sheena Shipley
SHIPPING ID NO.: 39362605	CHAIN OF CUSTODY SEALS		RECEIVED BY: (SIGNATURE)	RECEIVED BY: (SIGNATURE)	(COMPANY) Trace analysis
VIA: Courier GS	GOOD CONDITION/CHILLED	4°C	(TIME/DATE) 4:30pm 18Jan07	(TIME/DATE) 18:05 1-18-07	(TIME/DATE) 1/22/07 8:30
	CONFORMS TO RECORD		SPECIAL INSTRUCTIONS / COMMENTS: PLEASE SEE ATTACHED ANALYTE LIST FOR DETAILS Table A		

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CHAIN OF CUSTODY RECORD

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PROJECT NO.	PROJECT NAME
7	HELSTF Groundwater Sampling

SAMPLER'S SIGNATURE

DATE	TIME	SAMPLE ID	MATRIX	LAB NO.	NO. OF CONTAINERS	VOC	DRO/GRO	D.I.A	TOC	SVOC	Water Quality	Amm Nitrogen	Total Metals	Diss Metals	Diss Ions	Br/F/NO3-NO2 Cl/SO4/Alk	REMARKS
							D G										
12-15-06	0938	HLSF-0085-HMW-001-1206	Water	112192	19	X	X	X	X	X	X	X	X	X	X	+ X	
12-15-06	0938	HLSF-0085-TB-755-1206	Water	112193	2	X											

PROJECT INFORMATION	SAMPLES RECEIVED		1. RELINQUISHED BY: (SIGNATURE)	2. RELINQUISHED BY: (SIGNATURE)	3. RECEIVED BY LAB: (SIGNATURE)
PROJECT MANAGER: William Little	TOTAL NO. OF CONTAINERS		(PRINTED NAME) GABRIEL GARCIA	(PRINTED NAME) James Gutierrez	(PRINTED NAME) James Taylor
SHIPPING ID NO. 36913004	CHAIN OF CUSTODY SEALS		RECEIVED BY: (SIGNATURE)	RECEIVED BY: (SIGNATURE)	(COMPANY) Pace Analysis
	GOOD CONDITION/CHILLED	4C	(TIME/DATE) 1537 12/15/06	(TIME/DATE) 1720 12-15-06	(TIME/DATE) 9:32 am 12/16/06
VIA: Courier US	CONFORMS TO RECORD	MA	SPECIAL INSTRUCTIONS/COMMENTS: PLEASE SEE ATTACHED ANALYTE LIST FOR DETAILS US 38793032		

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Analyte Table A

HELSTF Phase III RFI

Groundwater Sample Collection

Parameter	Analytical Method	Container	Min Hold Time	Preservative
Water Quality *Total Dissolved Solids* *Alkalinity, Carbonate/Bicarbonate* *Alkalinity, Hydroxide* *pH* *Conductance*	EPA 160.1 EPA 310.1 EPA 150.1 EPA 120.1	1 L Poly	48 hours	4°C
Ammonia Nitrogen	EPA 350.2	1-500mL poly	28 days	H_2SO_4 pH<2
Dissolved Ions *Bromide* *Nitrate-N* *Chloride* *Nitrite-N* *Fluoride* *Sulfate*	EPA 300.0	Take from Water Quality container	48 hrs NO3 & NO2; others 28 days	4°C
Total Metals *Cadmium* *Phosphorous* *Chromium* *Silver* *Copper* *Sodium* *Lead* *Zinc*	SW 6010B	500 mL Poly	180 days	HNO_3 pH <2
Dissolved Metals *Cadmium* *Chromium* *Silver* *Copper* *Sodium* *Lead* *Zinc*	SW 6010B	500 mL Poly Field Filtered	180 Days	HNO_3 pH <2
VOCs	SW 8260B	3-40mL VOAs	14 days	HCl pH<2
Direct Inject Alcohols *ethylene glycol*	SW 8015B Mod	2-40mL VOAs	7 days	No Preservative 4°C
SVOCs, including benzyl alcohol and 2-butoxy ethanol	SW 8270C	2-1 L ambers	7 days extraction/ 40 days analysis	4°C
Petroleum Hydrocarbons	Diesel Range Organics SW 8015B Mod	3-40mL VOAs	14 days	HCl pH<2
	Gasoline Range Organics SW 8015B Mod	3-40mL VOAs	14 days	HCl pH<2
Total Organic Carbon	EPA 415.1	2-40mL VOAs amber glass	28 days	H_2SO_4 pH<2

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756

CHAIN OF CUSTODY RECORD

PAGE 1 OF 1

PROJECT NO.: 7

PROJECT NAME: HELSTF Groundwater Sampling

SAMPLER'S SIGNATURE:

DATE	TIME	SAMPLE ID	MATRIX	LAB NO.	NO. OF CONTAINERS	VOC	DRO/GRO	D.I.A	TOC	SVOC	Water Quality	Amm Nitrogen	Total Metals	Diss Metals	Diss Ions	REMARKS
12-13-06	1240	HLSF-0085-HMW-002-1206	Water	111876	19	X	X	X	X	X	X	X	X	X	X	
12-13-06	1240	HLSF-0085-TB-756-1206	Water	111877	2	X										

PROJECT INFORMATION	SAMPLES RECEIVED		1. RELINQUISHED BY: (SIGNATURE)	2. RELINQUISHED BY: (SIGNATURE)	3. RECEIVED BY LABS: (SIGNATURE)
PROJECT MANAGER: William Little	TOTAL NO. OF CONTAINERS		(PRINTED NAME) GABRIEL GARUTA	(PRINTED NAME) James Gutierrez	(PRINTED NAME) Glenna Ripley
SHIPPING ID NO.: 35913003	CHAIN OF CUSTODY SEALS		RECEIVED BY: (SIGNATURE)	RECEIVED BY: (SIGNATURE)	(COMPANY) Trace Analysis
	GOOD CONDITION/CHILLED	4°C	(TIME/DATE) 09:50 12/14/06	(TIME/DATE) 11:15 12-14-06	(TIME/DATE) 12/15/06 9:00
VIA: Courier	CONFORMS TO RECORD		SPECIAL INSTRUCTIONS / COMMENTS: PLEASE SEE ATTACHED ANALYTE LIST FOR DETAILS		

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Analyte Table A

HELSTF Phase III RFI

Groundwater Sample Collection

Parameter	Analytical Method	Container	Min Hold Time	Preservative
Water Quality *Total Dissolved Solids* *Alkalinity, Carbonate/Bicarbonate* *Alkalinity, Hydroxide* *pH* *Conductance*	EPA 160.1 EPA 310.1 EPA 150.1 EPA 120.1	1 L Poly	48 hours	4°C
Ammonia Nitrogen	EPA 350.2	1-500mL poly	28 days	H_2SO_4 pH<2
Dissolved Ions *Bromide* *Nitrate-N* *Chloride* *Nitrite-N* *Fluoride* *Sulfate*	EPA 300.0	Take from Water Quality container	48 hrs NO3 & NO2; others 28 days	4°C
Total Metals *Cadmium* *Phosphorous* *Chromium* *Silver* *Copper* *Sodium* *Lead* *Zinc*	SW 6010B	500 mL Poly	180 days	HNO_3 pH <2
Dissolved Metals *Cadmium* *Chromium* *Silver* *Copper* *Sodium* *Lead* *Zinc*	SW 6010B	500 mL Poly Field Filtered	180 Days	HNO_3 pH <2
VOCs	SW 8260B	3-40mL VOAs	14 days	HCl pH<2
Direct Inject Alcohols *ethylene glycol*	SW 8015B Mod	2-40mL VOAs	7 days	No Preservative 4°C
SVOCs, including benzyl alcohol and 2-butoxy ethanol	SW 8270C	2-1 L ambers	7 days extraction/ 40 days analysis	4°C
Petroleum Hydrocarbons	Diesel Range Organics SW 8015B Mod	3-40mL VOAs	14 days	HCl pH<2
	Gasoline Range Organics SW 8015B Mod	3-40mL VOAs	14 days	HCl pH<2
Total Organic Carbon	EPA 415.1	2-40mL VOAs amber glass	28 days	H_2SO_4 pH<2

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757

CHAIN OF CUSTODY RECORD

PAGE 1 OF 1

PROJECT NO.: 7

PROJECT NAME: HELSTF Groundwater Sampling

SAMPLER'S SIGNATURE:

DATE	TIME	SAMPLE ID	MATRIX	LAB NO.	NO. OF CONTAINERS	VOC	DRO/GRO	D.I.A	TOC	SVOC	Water Quality	Amm Nitrogen	Total Metals	Diss Metals	Diss Ions	Cl, Fl, Br, Sulfate, Nitrate, Nitrite	REMARKS
							D G										
12-14-06	1330	HLSF-0085-HMW-003-1206	Water	112186	19	X	X X	X	X	X	X	X	X	X	X	X X	
12-14-06	1330	HLSF-0085-TB-757-1206	Water	112187	2	X											

PROJECT INFORMATION	SAMPLES RECEIVED		1. RELINQUISHED BY: (SIGNATURE)	2. RELINQUISHED BY: (SIGNATURE)	3. RECEIVED BY LAB: (SIGNATURE)
PROJECT MANAGER: William Little	TOTAL NO. OF CONTAINERS		(PRINTED NAME) GABRIEL GALLEGOS	(PRINTED NAME) James Gutierrez	(PRINTED NAME) James Taylor
SHIPPING ID NO.: 3579300C1	CHAIN OF CUSTODY SEALS		RECEIVED BY: (SIGNATURE)	RECEIVED BY: (SIGNATURE)	(COMPANY) Trace Analysis
	GOOD CONDITION/COLD	4°C	(TIME/DATE) 1537 12/15/06	(TIME/DATE) 1720 12-15-06	(TIME/DATE) 12/18/06 9:32 am
VIA: Courier LS	CONFORMS TO RECORD	MA	SPECIAL INSTRUCTIONS / COMMENTS: PLEASE SEE ATTACHED ANALYTE LIST FOR DETAILS		LJ 3879302

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Analyte Table A

HELSTF Phase III RFI

Groundwater Sample Collection

Parameter	Analytical Method	Container	Min Hold Time	Preservative
Water Quality *Total Dissolved Solids* *Alkalinity, Carbonate/Bicarbonate* *Alkalinity, Hydroxide* *pH* *Conductance*	EPA 160.1 EPA 310.1 EPA 150.1 EPA 120.1	1 L Poly	48 hours	4°C
Ammonia Nitrogen	EPA 350.2	1-500mL poly	28 days	H_2SO_4 pH<2
Dissolved Ions *Bromide* *Nitrate-N* *Chloride* *Nitrite-N* *Fluoride* *Sulfate*	EPA 300.0	Take from Water Quality container	48 hrs NO3 & NO2; others 28 days	4°C
Total Metals *Cadmium* *Phosphorous* *Chromium* *Silver* *Copper* *Sodium* *Lead* *Zinc*	SW 6010B	500 mL Poly	180 days	HNO_3 pH <2
Dissolved Metals *Cadmium* *Chromium* *Silver* *Copper* *Sodium* *Lead* *Zinc*	SW 6010B	500 mL Poly Field Filtered	180 Days	HNO_3 pH <2
VOCs	SW 8260B	3-40mL VOAs	14 days	HCl pH<2
Direct Inject Alcohols *ethylene glycol*	SW 8015B Mod	2-40mL VOAs	7 days	No Preservative 4°C
SVOCs, including benzyl alcohol and 2-butoxy ethanol	SW 8270C	2-1 L ambers	7 days extraction/ 40 days analysis	4°C
Petroleum Hydrocarbons	Diesel Range Organics SW 8015B Mod	3-40mL VOAs	14 days	HCl pH<2
	Gasoline Range Organics SW 8015B Mod	3-40mL VOAs	14 days	HCl pH<2
Total Organic Carbon	EPA 415.1	2-40mL VOAs amber glass	28 days	H_2SO_4 pH<2

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CHAIN OF CUSTODY RECORD

PAGE 1 OF 1

PROJECT NO.: 7

PROJECT NAME: HELSTF Groundwater Sampling

SAMPLER'S SIGNATURE:

DATE	TIME	SAMPLE ID	MATRIX	LAB NO.	NO. OF CONTAINERS	VOC	DRO/GRO	D.I.A	TOC	SVOC	Water Quality	Amm Nitrogen	Total Metals	Diss Metals	Diss Ions	REMARKS
12-13-06	1440	HLSF-0085-HMW-004-1206	Water	111874	19	X	X	X	X	X	X	X	X	X	X	
12-13-06	1440	HLSF-0085-TB-758-1206	Water	111875	2	X										

PROJECT INFORMATION	SAMPLES RECEIVED		1. RELINQUISHED BY: (SIGNATURE)	2. RELINQUISHED BY: (SIGNATURE)	3. RECEIVED BY LAB: (SIGNATURE)
PROJECT MANAGER: William Little	TOTAL NO. OF CONTAINERS		(PRINTED NAME) ABEL GARCIA	(PRINTED NAME) James Gutierrez	(PRINTED NAME) Shena Shipley
SHIPPING ID NO.: 3697 3003	CHAIN OF CUSTODY SEALS		RECEIVED BY: (SIGNATURE)	RECEIVED BY: (SIGNATURE)	(COMPANY) Trace Analysis
	GOOD CONDITION/CHILLED	4°C/ice	(TIME/DATE) 9:50 12/14/06	(TIME/DATE) 9:15 12-14-06	(TIME/DATE) 12/15/06 9:00
VIA: Courier	CONFORMS TO RECORD		SPECIAL INSTRUCTIONS / COMMENTS: PLEASE SEE ATTACHED ANALYTE LIST FOR DETAILS		

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Analyte Table A

HELSTF Phase III RFI

Groundwater Sample Collection

Parameter	Analytical Method	Container	Min Hold Time	Preservative
Water Quality *Total Dissolved Solids* *Alkalinity, Carbonate/Bicarbonate* *Alkalinity, Hydroxide* *pH* *Conductance*	EPA 160.1 EPA 310.1 EPA 150.1 EPA 120.1	1 L Poly	48 hours	4°C
Ammonia Nitrogen	EPA 350.2	1-500mL poly	28 days	H_2SO_4 pH<2
Dissolved Ions *Bromide* *Nitrate=N* *Chloride* *Nitrite-N* *Fluoride* *Sulfate*	EPA 300.0	Take from Water Quality container	48 hrs NO3 & NO2; others 28 days	4°C
Total Metals *Cadmium* *Phosphorous* *Chromium* *Silver* *Copper* *Sodium* *Lead* *Zinc*	SW 6010B	500 mL Poly	180 days	HNO_3 pH <2
Dissolved Metals *Cadmium* *Chromium* *Silver* *Copper* *Sodium* *Lead* *Zinc*	SW 6010B	500 mL Poly Field Filtered	180 Days	HNO_3 pH <2
VOCs	SW 8260B	3-40mL VOAs	14 days	HCl pH<2
Direct Inject Alcohols *ethylene glycol*	SW 8015B Mod	2-40mL VOAs	7 days	No Preservative 4°C
SVOCs, including benzyl alcohol and 2-butoxy ethanol	SW 8270C	2-1 L ambers	7 days extraction/ 40 days analysis	4°C
Petroleum Hydrocarbons	Diesel Range Organics SW 8015B Mod	3-40mL VOAs	14 days	HCl pH<2
	Gasoline Range Organics SW 8015B Mod	3-40mL VOAs	14 days	HCl pH<2
Total Organic Carbon	EPA 415.1	2-40mL VOAs amber glass	28 days	H_2SO_4 pH<2

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759

CHAIN OF CUSTODY RECORD

PAGE 1 OF 1

PROJECT NO.: 7

PROJECT NAME: HELSTF Groundwater Sampling

SAMPLER'S SIGNATURE:

DATE	TIME	SAMPLE ID	MATRIX	LAB NO.	NO. OF CONTAINERS	VOC	DRO/GRO	D.I.A	TOC	SVOC	Water Quality	Amm Nitrogen	Total Metals	Diss Metals	Diss Ions	REMARKS
																NH3
1-11-07	1500	HLSF-0085-HMW-010-~~1206~~ 0107	Water	113767	19	X	X	X	X	X	X	X	X	X	X	NO2, NO3 run by Spec in Lubbock!
1-11-07	1500	HLSF-0085-TB-759-~~1206~~ 0107	Water	113768	2	X										

PROJECT INFORMATION	SAMPLES RECEIVED		1. RELINQUISHED BY: (SIGNATURE)	2. RELINQUISHED BY: (SIGNATURE)	3. RECEIVED BY LAB: (SIGNATURE)
PROJECT MANAGER: William Little	TOTAL NO. OF CONTAINERS		(PRINTED NAME) GABRIEL GARCIA	(PRINTED NAME) Jeffrey Lane	(PRINTED NAME) Arlene Ripley
SHIPPING ID NO.: 3913026482	CHAIN OF CUSTODY SEALS		RECEIVED BY: (SIGNATURE)	RECEIVED BY: (SIGNATURE)	(COMPANY) Trace Analysis
	GOOD CONDITION/COOLED	4°C	(TIME/DATE) 4:25 pm 11 Jan 07	(TIME/DATE) 1745 1-11-07	(TIME/DATE) 1-12-07 9:00
VIA: Courier 65	CONFORMS TO RECORD		SPECIAL INSTRUCTIONS/COMMENTS: PLEASE SEE ATTACHED ANALYTE LIST FOR DETAILS ANALYTE TABLE A		

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Analyte Table A

HELSTF Phase III RFI

Groundwater Sample Collection

Parameter	Analytical Method	Container	Min Hold Time	Preservative
Water Quality *Total Dissolved Solids* *Alkalinity, Carbonate/Bicarbonate* *Alkalinity, Hydroxide* *pH* *Conductance*	EPA 160.1 EPA 310.1 EPA 150.1 EPA 120.1	1 L Poly	48 hours	4°C
Ammonia Nitrogen	EPA 350.2	1-500mL poly	28 days	H_2SO_4 pH<2
Dissolved Ions *Bromide* *Nitrate-N* *Chloride* *Nitrite-N* *Fluoride* *Sulfate*	EPA 300.0	Take from Water Quality container	48 hrs NO3 & NO2; others 28 days	4°C
Total Metals *Cadmium* *Phosphorous* *Chromium* *Silver* *Copper* *Sodium* *Lead* *Zinc*	SW 6010B	500 mL Poly	180 days	HNO_3 pH <2
Dissolved Metals *Cadmium* *Chromium* *Silver* *Copper* *Sodium* *Lead* *Zinc*	SW 6010B	500 mL Poly Field Filtered	180 Days	HNO_3 pH <2
VOCs	SW 8260B	3-40mL VOAs	14 days	HCl pH<2
Direct Inject Alcohols *ethylene glycol*	SW 8015B Mod	2-40mL VOAs	7 days	No Preservative 4°C
SVOCs, including benzyl alcohol and 2-butoxy ethanol	SW 8270C	2-1 L ambers	7 days extraction/ 40 days analysis	4°C
Petroleum Hydrocarbons	Diesel Range Organics SW 8015B Mod	3-40mL VOAs	14 days	HCl pH<2
	Gasoline Range Organics SW 8015B Mod	3-40mL VOAs	14 days	HCl pH<2
Total Organic Carbon	EPA 415.1	2-40mL VOAs amber glass	28 days	H_2SO_4 pH<2

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CHAIN OF CUSTODY RECORD

PAGE 1 OF 1

PROJECT NO.: 7

PROJECT NAME: HELSTF Groundwater Sampling

SAMPLER'S SIGNATURE: George Esqueda

DATE	TIME	SAMPLE ID	MATRIX	LAB NO.	NO. OF CONTAINERS	VOC	DRO/GRO	D.I.A	TOC	SVOC	Water Quality	Amm Nitrogen	Total Metals	Diss Metals	Diss Ions	REMARKS
																Sulfate Br/Cl/NO3-NO2
12/19/06	1407	HLSF-0085-HMW-011-1206	Water	112408	19	X	X	X	X	X	X	X	X	X	X	X
12/19/06	1407	HLSF-0085-TB-760-1206	Water	112409	2	X										

PROJECT INFORMATION	SAMPLES RECEIVED		1. RELINQUISHED BY: (SIGNATURE)	2. RELINQUISHED BY: (SIGNATURE)	3. RECEIVED BY LAB: (SIGNATURE)
PROJECT MANAGER: William Little	TOTAL NO. OF CONTAINERS		(PRINTED NAME) GEORGE ESQUEDA	(PRINTED NAME) James Gutierrez	(PRINTED NAME) Sueann Ripley
SHIPPING ID NO.: 3677 3023	CHAIN OF CUSTODY SEALS		RECEIVED BY: (SIGNATURE)	RECEIVED BY: (SIGNATURE)	(COMPANY) Trace Analysis
	GOOD CONDITION/COOLED	Y	(TIME/DATE) 4:00 12/19/06	(TIME/DATE) 1735 12-19-06	(TIME/DATE) 12/21/06 9:00
VIA: Courier	CONFORMS TO RECORD		SPECIAL INSTRUCTIONS/COMMENTS: PLEASE SEE ATTACHED ANALYTE LIST FOR DETAILS		

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Analyte Table A

HELSTF Phase III RFI

Groundwater Sample Collection

Parameter	Analytical Method	Container	Min Hold Time	Preservative
Water Quality *Total Dissolved Solids* *Alkalinity, Carbonate/Bicarbonate* *Alkalinity, Hydroxide* *pH* *Conductance*	EPA 160.1 EPA 310.1 EPA 150.1 EPA 120.1	1 L Poly	48 hours	4°C
Ammonia Nitrogen	EPA 350.2	1-500mL poly	28 days	H_2SO_4 pH<2
Dissolved Ions *Bromide* *Nitrate-N* *Chloride* *Nitrite-N* *Fluoride* *Sulfate*	EPA 300.0	Take from Water Quality container	48 hrs NO3 & NO2; others 28 days	4°C
Total Metals *Cadmium* *Phosphorous* *Chromium* *Silver* *Copper* *Sodium* *Lead* *Zinc*	SW 6010B	500 mL Poly	180 days	HNO_3 pH <2
Dissolved Metals *Cadmium* *Chromium* *Silver* *Copper* *Sodium* *Lead* *Zinc*	SW 6010B	500 mL Poly Field Filtered	180 Days	HNO_3 pH <2
VOCs	SW 8260B	3-40mL VOAs	14 days	HCl pH<2
Direct Inject Alcohols *ethylene glycol*	SW 8015B Mod	2-40mL VOAs	7 days	No Preservative 4°C
SVOCs, including benzyl alcohol and 2-butoxy ethanol	SW 8270C	2-1 L ambers	7 days extraction/ 40 days analysis	4°C
Petroleum Hydrocarbons	Diesel Range Organics SW 8015B Mod	3-40mL VOAs	14 days	HCl pH<2
	Gasoline Range Organics SW 8015B Mod	3-40mL VOAs	14 days	HCl pH<2
Total Organic Carbon	EPA 415.1	2-40mL VOAs amber glass	28 days	H_2SO_4 pH<2

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761

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CHAIN OF CUSTODY RECORD

PAGE 1 OF 1

PROJECT NO.: 7

PROJECT NAME: HELSTF Groundwater Sampling

SAMPLER'S SIGNATURE:

DATE	TIME	SAMPLE ID	MATRIX	LAB NO.	NO. OF CONTAINERS	VOC	DRO/GRO	D.I.A.	TOC	SVOC	Water Quality	Amm Nitrogen	Total Metals	Diss Metals	Diss Ions	REMARKS
12-5-06	1520	HLSF-0085-HMW-012-1206	Water	110939	19	X	X	X	X	X	X	X	X	X	X	
12-5-06	1520	HLSF-0085-TB-761-1206	Water	110940	2	X										

PROJECT INFORMATION			1. RELINQUISHED BY: (SIGNATURE)	2. RELINQUISHED BY: (SIGNATURE)	3. RECEIVED BY LAB: (SIGNATURE)
PROJECT MANAGER: William Little	SAMPLES RECEIVED		(PRINTED NAME) GABRIEL GARCIA	(PRINTED NAME) Jeffrey Lane	(PRINTED NAME) Sheena Ripley
SHIPPING ID NO.: LS	TOTAL NO. OF CONTAINERS		RECEIVED BY: (SIGNATURE)	RECEIVED BY: (SIGNATURE)	(COMPANY) Traco Analytical
VIA: Courier 3119 2350	CHAIN OF CUSTODY SEALS		(TIME/DATE) 08:05am 06 Dec 06	(TIME/DATE) 9:40 12-6-06	(TIME/DATE) 12-7-06 9:00
	GOOD CONDITION/CHILLED	4°C	SPECIAL INSTRUCTIONS/COMMENTS: PLEASE SEE ATTACHED ANALYTE LIST FOR DETAILS		
	CONFORMS TO RECORD	Y			

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Analyte Table A

HELSTF Phase III RFI

Groundwater Sample Collection

Parameter	Analytical Method	Container	Min Hold Time	Preservative
Water Quality *Total Dissolved Solids* *Alkalinity, Carbonate/Bicarbonate* *Alkalinity, Hydroxide* *pH* *Conductance*	EPA 160.1 EPA 310.1 EPA 150.1 EPA 120.1	1 L Poly	48 hours	4°C
Ammonia-Nitrogen	EPA 350.2	1-500mL poly	28 days	H_2SO_4 pH<2
Dissolved Ions *Bromide* *Nitrate-N* *Chloride* *Nitrite-N* *Fluoride* *Sulfate*	EPA 300.0	Take from Water Quality container	48 hrs NO3 & NO2; others 28 days	4°C
Total Metals *Cadmium* *Phosphorous* *Chromium* *Silver* *Copper* *Sodium* *Lead* *Zinc*	SW 6010B	500 mL Poly	180 days	HNO_3 pH <2
Dissolved Metals *Cadmium* *Chromium* *Silver* *Copper* *Sodium* *Lead* *Zinc*	SW 6010B	500 mL Poly Field Filtered	180 Days	HNO_3 pH <2
VOCs	SW 8260B	3-40mL VOAs	14 days	HCl pH<2
Direct Inject Alcohols *ethylene glycol*	SW 8015B Mod	2-40mL VOAs	7 days	No Preservative 4°C
SVOCs, including benzyl alcohol and 2-butoxy ethanol	SW 8270C	2-1 L ambers	7 days extraction/ 40 days analysis	4°C
Petroleum Hydrocarbons	Diesel Range Organics SW 8015B Mod	3-40mL VOAs	14 days	HCl pH<2
	Gasoline Range Organics SW 8015B Mod	3-40mL VOAs	14 days	HCl pH<2
Total Organic Carbon	EPA 415.1	2-40mL VOAs amber glass	28 days	H_2SO_4 pH<2

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CHAIN OF CUSTODY RECORD

PAGE 1 OF 1

PROJECT NO.: 7

PROJECT NAME: HELSTF Groundwater Sampling

SAMPLER'S SIGNATURE:

DATE	TIME	SAMPLE ID	MATRIX	LAB NO.	NO. OF CONTAINERS	VOC	DRO/GRO	D.I.A	TOC	SVOC	Water Quality	Amm Nitrogen	Total Metals	Diss Metals	Diss Ions	REMARKS
12-6-06	1314	HLSF-0085-HMW-014-1206	Water	111156	19	X	X	X	X	X	X	X	X	X	X	
12-6-06	1314	HLSF-0085-TB-762-1206	Water	111157	2	X										

PROJECT INFORMATION	SAMPLES RECEIVED		1. RELINQUISHED BY: (SIGNATURE)	2. RELINQUISHED BY: (SIGNATURE)	3. RECEIVED BY LAB: (SIGNATURE)
PROJECT MANAGER: William Little	TOTAL NO. OF CONTAINERS		(PRINTED NAME) GABRIEL GARCIA	(PRINTED NAME) Jeffrey Lane	(PRINTED NAME) Sheena Tipley
SHIPPING ID NO.: 3912 3556	CHAIN OF CUSTODY SEALS		RECEIVED BY: (SIGNATURE)	RECEIVED BY: (SIGNATURE)	(COMPANY) Trace Analysis
	GOOD CONDITION/CHILLED	4°C	(TIME/DATE) 8:15am 07 Dec 06	(TIME/DATE) 9:30 12-7-07	(TIME/DATE) 12-8-06 9:10
VIA: Courier	CONFORMS TO RECORD		SPECIAL INSTRUCTIONS/COMMENTS: PLEASE SEE ATTACHED ANALYTE LIST FOR DETAILS		

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Analyte Table A

HELSTF Phase III RFI

Groundwater Sample Collection

Parameter	Analytical Method	Container	Min Hold Time	Preservative
Water Quality *Total Dissolved Solids* *Alkalinity, Carbonate/Bicarbonate* *Alkalinity, Hydroxide* *pH* *Conductance*	EPA 160.1 EPA 310.1 EPA 150.1 EPA 120.1	1 L Poly	48 hours	4°C
Ammonia Nitrogen	EPA 350.2	1-500mL poly	28 days	H_2SO_4 pH<2
Dissolved Ions *Bromide* *Nitrate-N* *Chloride* *Nitrite-N* *Fluoride* *Sulfate*	EPA 300.0	Take from Water Quality container	48 hrs NO3 & NO2; others 28 days	4°C
Total Metals *Cadmium* *Phosphorous* *Chromium* *Silver* *Copper* *Sodium* *Lead* *Zinc*	SW 6010B	500 mL Poly	180 days	HNO_3 pH <2
Dissolved Metals *Cadmium* *Chromium* *Silver* *Copper* *Sodium* *Lead* *Zinc*	SW 6010B	500 mL Poly Field Filtered	180 Days	HNO_3 pH <2
VOCs	SW 8260B	3-40mL VOAs	14 days	HCl pH<2
Direct Inject Alcohols *ethylene glycol*	SW 8015B Mod	2-40mL VOAs	7 days	No Preservative 4°C
SVOCs, including benzyl alcohol and 2-butoxy ethanol	SW 8270C	2-1 L ambers	7 days extraction/ 40 days analysis	4°C
Petroleum Hydrocarbons	Diesel Range Organics SW 8015B Mod	3-40mL VOAs	14 days	HCl pH<2
	Gasoline Range Organics SW 8015B Mod	3-40mL VOAs	14 days	HCl pH<2
Total Organic Carbon	EPA 415.1	2-40mL VOAs amber glass	28 days	H_2SO_4 pH<2

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WTS

CHAIN OF CUSTODY RECORD

PAGE 1 OF 1

PROJECT NO.: 7

PROJECT NAME: HELSTF Groundwater Sampling

SAMPLER'S SIGNATURE: George Esqueda

DATE	TIME	SAMPLE ID	MATRIX	LAB NO.	NO. OF CONTAINERS	VOC	DRO/GRO	D.I.A	TOC	SVOC	Water Quality	Amm Nitrogen	Total Metals	Diss Metals	Diss Ions	REMARKS
12/6/06	1540	HLSF-0085-HMW-017-1206	Water	111158	19	X	X	X	X	X	X	X	X	X	X	
12/6/06	1540	HLSF-0085-TB-763-1206	Water	111159	2	X										

PROJECT INFORMATION	SAMPLES RECEIVED	1. RELINQUISHED BY: (SIGNATURE)	2. RELINQUISHED BY: (SIGNATURE)	3. RECEIVED BY LAB: (SIGNATURE)
PROJECT MANAGER: William Little	TOTAL NO. OF CONTAINERS	(PRINTED NAME) George ESQUEDA	(PRINTED NAME) Jeffrey Lane	(PRINTED NAME) Eileen Ripley
SHIPPING ID NO.: 391923556	CHAIN OF CUSTODY SEALS	RECEIVED BY: (SIGNATURE)	RECEIVED BY: (SIGNATURE)	(COMPANY) Trace Analysis
VIA: Courier 15	GOOD CONDITION/CHILLED 4°C	(TIME/DATE) 8:15am 07 Dec 06	(TIME/DATE) 9:30 12-7-07	(TIME/DATE) 12-8-06 9:00
	CONFORMS TO RECORD	SPECIAL INSTRUCTIONS / COMMENTS: PLEASE SEE ATTACHED ANALYTE LIST FOR DETAILS.		

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Analyte Table A

HELSTF Phase III RFI

Groundwater Sample Collection

Parameter	Analytical Method	Container	Min Hold Time	Preservative
Water Quality *Total Dissolved Solids* *Alkalinity, Carbonate/Bicarbonate* *Alkalinity, Hydroxide* *pH* *Conductance*	EPA 160.1 EPA 310.1 EPA 150.1 EPA 120.1	1 L Poly	48 hours	4°C
Ammonia Nitrogen	EPA 350.2	1-500mL poly	28 days	H_2SO_4 pH<2
Dissolved Ions *Bromide* *Nitrate-N* *Chloride* *Nitrite-N* *Fluoride* *Sulfate*	EPA 300.0	Take from Water Quality container	48 hrs NO3 & NO2; others 28 days	4°C
Total Metals *Cadmium* *Phosphorous* *Chromium* *Silver* *Copper* *Sodium* *Lead* *Zinc*	SW 6010B	500 mL Poly	180 days	HNO_3 pH <2
Dissolved Metals *Cadmium* *Chromium* *Silver* *Copper* *Sodium* *Lead* *Zinc*	SW 6010B	500 mL Poly Field Filtered	180 Days	HNO_3 pH <2
VOCs	SW 8260B	3-40mL VOAs	14 days	HCl pH<2
Direct Inject Alcohols *ethylene glycol*	SW 8015B Mod	2-40mL VOAs	7 days	No Preservative 4°C
SVOCs, including benzyl alcohol and 2-butoxy ethanol	SW 8270C	2-1 L ambers	7 days extraction/ 40 days analysis	4°C
Petroleum Hydrocarbons	Diesel Range Organics SW 8015B Mod	3-40mL VOAs	14 days	HCl pH<2
	Gasoline Range Organics SW 8015B Mod	3-40mL VOAs	14 days	HCl pH<2
Total Organic Carbon	EPA 415.1	2-40mL VOAs amber glass	28 days	H_2SO_4 pH<2

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CHAIN OF CUSTODY RECORD

PAGE 1 OF 1

PROJECT NO.	PROJECT NAME
7	HELSTF Groundwater Sampling

SAMPLER'S SIGNATURE: George Esqueda

DATE	TIME	SAMPLE ID	MATRIX	LAB NO.	NO. OF CONTAINERS	VOC	DRO/GRO	D.I.A	TOC	SVOC	Water Quality	Amm Nitrogen	Total Metals	Diss Metals	Diss Ions	Diss. Ag, Cd, Cr, Cu, Pb, Zn	Cl	Br/F/ NO3-NO2	REMARKS
							DG												
12/20/06	1044	HLSF-0085-HMW-036-1206	Water	112445	19	X	X	X	X	X	X	X	X	X	X		X	X	
12/20/06	1044	HLSF-0085-TB-764-1206	Water	112446	2	X													

PROJECT INFORMATION	SAMPLES RECEIVED		1. RELINQUISHED BY: (SIGNATURE)	2. RELINQUISHED BY: (SIGNATURE)	3. RECEIVED BY LAB: (SIGNATURE)
PROJECT MANAGER: William Little	TOTAL NO. OF CONTAINERS		(PRINTED NAME) George Esqueda	(PRINTED NAME) James Gutierrez	(PRINTED NAME) Queena Tripley
SHIPPING ID NO.: 3S4M 3021	CHAIN OF CUSTODY SEALS		RECEIVED BY: (SIGNATURE)	RECEIVED BY: (SIGNATURE)	(COMPANY) TRAD analytics
	GOOD CONDITION/CHILLED	4°C	(TIME/DATE) 4:00 12/20/06	(TIME/DATE) 1730 12-20-06	(TIME/DATE) 12/21/06 9:00
VIA: Courier	CONFORMS TO RECORD		SPECIAL INSTRUCTIONS/COMMENTS: PLEASE SEE ATTACHED ANALYTE LIST FOR DETAILS TS		

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Analyte Table A

HELSTF Phase III RFI

Groundwater Sample Collection

Parameter	Analytical Method	Container	Min Hold Time	Preservative
Water Quality *Total Dissolved Solids* *Alkalinity, Carbonate/Bicarbonate* *Alkalinity, Hydroxide* *pH* *Conductance*	EPA 160.1 EPA 310.1 EPA 150.1 EPA 120.1	1 L Poly	48 hours	4°C
Ammonia Nitrogen	EPA 350.2	1-500mL poly	28 days	H_2SO_4 pH<2
Dissolved Ions *Bromide* *Nitrate-N* *Chloride* *Nitrite-N* *Fluoride* *Sulfate*	EPA 300.0	Take from Water Quality container	48 hrs NO3 & NO2; others 28 days	4°C
Total Metals *Cadmium* *Phosphorous* *Chromium* *Silver* *Copper* *Sodium* *Lead* *Zinc*	SW 6010B	500 mL Poly	180 days	HNO_3 pH <2
Dissolved Metals *Cadmium* *Chromium* *Silver* *Copper* *Sodium* *Lead* *Zinc*	SW 6010B	500 mL Poly Field Filtered	180 Days	HNO_3 pH <2
VOCs	SW 8260B	3-40mL VOAs	14 days	HCl pH<2
Direct Inject Alcohols *ethylene glycol*	SW 8015B Mod	2-40mL VOAs	7 days	No Preservative 4°C
SVOCs, including benzyl alcohol and 2-butoxy ethanol	SW 8270C	2-1 L ambers	7 days extraction/ 40 days analysis	4°C
Petroleum Hydrocarbons	Diesel Range Organics SW 8015B Mod	3-40mL VOAs	14 days	HCl pH<2
	Gasoline Range Organics SW 8015B Mod	3-40mL VOAs	14 days	HCl pH<2
Total Organic Carbon	EPA 415.1	2-40mL VOAs amber glass	28 days	H_2SO_4 pH<2

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CHAIN OF CUSTODY RECORD

PAGE 1 OF 1

PROJECT NO.: 7

PROJECT NAME: HELSTF Groundwater Sampling

SAMPLER'S SIGNATURE: George Esqueda

DATE	TIME	SAMPLE ID	MATRIX	LAB NO.	NO. OF CONTAINERS	VOC	DRO/GRO	D.I.A	TOC	SVOC	Water Quality	Amm Nitrogen	Total Metals	Diss Metals	Diss Ions	Br/Cl/ 1003-1002 Cl/Sul Rad	REMARKS
							D G										
12/15/06	0915	HLSF-0085-HMW-037-1206	Water	112190	19	X	X	X	X	X	X	X	X	X	X	X X	
12/15/06	0915	HLSF-0085-TB-765-1206	Water	112191	2	X											

PROJECT INFORMATION	SAMPLES RECEIVED		1. RELINQUISHED BY: (SIGNATURE)	2. RELINQUISHED BY: (SIGNATURE)	3. RECEIVED BY LAB: (SIGNATURE)
PROJECT MANAGER: William Little	TOTAL NO. OF CONTAINERS		(PRINTED NAME) George ESQUEDA	(PRINTED NAME) James Gutierrez	(PRINTED NAME) James Taylor
SHIPPING ID NO.: 2579 3004	CHAIN OF CUSTODY SEALS		RECEIVED BY: (SIGNATURE)	RECEIVED BY: (SIGNATURE)	(COMPANY) Trace Analysis
	GOOD CONDITION/CHILLED	4°C	(TIME/DATE) 1537 12/15/06	(TIME/DATE) 1720 12-15-06	(TIME/DATE) 12/16/06 9:37am
VIA: Courier LS	CONFORMS TO RECORD	NA	SPECIAL INSTRUCTIONS/COMMENTS: PLEASE SEE ATTACHED ANALYTE LIST FOR DETAILS		LS 3879 3032

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Analyte Table A

HELSTF Phase III RFI

Groundwater Sample Collection

Parameter	Analytical Method	Container	Min Hold Time	Preservative
Water Quality *Total Dissolved Solids* *Alkalinity, Carbonate/Bicarbonate* *Alkalinity, Hydroxide* *pH* *Conductance*	EPA 160.1 EPA 310.1 EPA 150.1 EPA 120.1	1 L Poly	48 hours	4°C
Ammonia Nitrogen	EPA 350.2	1-500mL poly	28 days	H_2SO_4 pH<2
Dissolved Ions *Bromide* *Nitrate-N* *Chloride* *Nitrite-N* *Fluoride* *Sulfate*	EPA 300.0	Take from Water Quality container	48 hrs NO3 & NO2; others 28 days	4°C
Total Metals *Cadmium* *Phosphorous* *Chromium* *Silver* *Copper* *Sodium* *Lead* *Zinc*	SW 6010B	500 mL Poly	180 days	HNO_3 pH <2
Dissolved Metals *Cadmium* *Chromium* *Silver* *Copper* *Sodium* *Lead* *Zinc*	SW 6010B	500 mL Poly Field Filtered	180 Days	HNO_3 pH <2
VOCs	SW 8260B	3-40mL VOAs	14 days	HCl pH<2
Direct Inject Alcohols *ethylene glycol*	SW 8015B Mod	2-40mL VOAs	7 days	No Preservative 4°C
SVOCs, including benzyl alcohol and 2-butoxy ethanol	SW 8270C	2-1 L ambers	7 days extraction/ 40 days analysis	4°C
Petroleum Hydrocarbons	Diesel Range Organics SW 8015B Mod	3-40mL VOAs	14 days	HCl pH<2
	Gasoline Range Organics SW 8015B Mod	3-40mL VOAs	14 days	HCl pH<2
Total Organic Carbon	EPA 415.1	2-40mL VOAs amber glass	28 days	H_2SO_4 pH<2

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CHAIN OF CUSTODY RECORD

PAGE 1 OF 1

PROJECT NO.: 7

PROJECT NAME: HELSTF Groundwater Sampling

SAMPLER'S SIGNATURE: George Esqueda

DATE	TIME	SAMPLE ID	MATRIX	LAB NO.	NO. OF CONTAINERS	VOC	DRO/GRO	D.I.A	TOC	SVOC	Water Quality	Amm Nitrogen	Total Metals	Diss Metals	Diss Ions	REMARKS
							D G									
12/15/06	1100	HLSF-0085-HMW-038-1206	Water	112182	19	X	X	X	X	X	X	X	X	X	X	
12/15/06	1100	HLSF-0085-TB-766-1206	Water	112183	2	X										

PROJECT INFORMATION	SAMPLES RECEIVED		1. RELINQUISHED BY: (SIGNATURE)	2. RELINQUISHED BY: (SIGNATURE)	3. RECEIVED BY LAB: (SIGNATURE)
PROJECT MANAGER: William Little	TOTAL NO. OF CONTAINERS		(PRINTED NAME) George Esqueda	(PRINTED NAME) James Gutierrez	(PRINTED NAME) James Taylor
SHIPPING ID NO.: 3679300-1	CHAIN OF CUSTODY SEALS		RECEIVED BY: (SIGNATURE)	RECEIVED BY: (SIGNATURE)	(COMPANY) Trace Analysis
	GOOD CONDITION/CHILLED	4°C	(TIME/DATE) 1537 12/15/06	(TIME/DATE) 1720 12-15-06	(TIME/DATE) 12/16/06 9:32 am 4°C
VIA: Courier	CONFORMS TO RECORD		SPECIAL INSTRUCTIONS / COMMENTS: PLEASE SEE ATTACHED ANALYTE LIST FOR DETAILS Lonestar 3879302		

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CHAIN OF CUSTODY RECORD

PAGE 1 OF 1

PROJECT NO.: 7

PROJECT NAME: HELSTF Groundwater Sampling

SAMPLER'S SIGNATURE: George Esqueda

DATE	TIME	SAMPLE ID	MATRIX	LAB NO.	NO. OF CONTAINERS	VOC	DRO/GRO	D.I.A	TOC	SVOC	Water Quality	Amm Nitrogen	Total Metals	Diss Metals	Diss Ions	REMARKS
12/15/06	1100	HLSF-0085-HMW-03B-1206-ms/msd	Water	~~612184~~	19	X	X	X	X	X	X	X	X	X	X	
12/15/06	1100	HLSF-0085-TB-767-1206	Water	~~612185~~	2	X										

PROJECT INFORMATION	SAMPLES RECEIVED		1. RELINQUISHED BY: (SIGNATURE)	2. RELINQUISHED BY: (SIGNATURE)	3. RECEIVED BY LAB: (SIGNATURE)
PROJECT MANAGER: William Little	TOTAL NO. OF CONTAINERS		(PRINTED NAME) GEORGE ESQUEDA	(PRINTED NAME) James Gutierrez	(PRINTED NAME) James Taylor
SHIPPING ID NO.: 3879 3004	CHAIN OF CUSTODY SEALS		RECEIVED BY: (SIGNATURE)	RECEIVED BY: (SIGNATURE)	(COMPANY) Trace Analysis
	GOOD CONDITION/CHILLED	4C	(TIME/DATE) 1537 12/15/06	(TIME/DATE) 1720 12/15/06	(TIME/DATE) 9:12 am 12/16/06
VIA: Courier CS	CONFORMS TO RECORD		SPECIAL INSTRUCTIONS/COMMENTS: PLEASE SEE ATTACHED ANALYTE LIST FOR DETAILS		3879 3032

4°C

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Analyte Table A

HELSTF Phase III RFI

Groundwater Sample Collection

Parameter	Analytical Method	Container	Min Hold Time	Preservative
Water Quality *Total Dissolved Solids* *Alkalinity, Carbonate/Bicarbonate* *Alkalinity, Hydroxide* *pH* *Conductance*	EPA 160.1 EPA 310.1 EPA 150.1 EPA 120.1	1 L Poly	48 hours	4°C
Ammonia Nitrogen	EPA 350.2	1-500mL poly	28 days	H_2SO_4 pH<2
Dissolved Ions *Bromide* *Nitrate-N* *Chloride* *Nitrite-N* *Fluoride* *Sulfate*	EPA 300.0	Take from Water Quality container	48 hrs NO3 & NO2; others 28 days	4°C
Total Metals *Cadmium* *Phosphorous* *Chromium* *Silver* *Copper* *Sodium* *Lead* *Zinc*	SW 6010B	500 mL Poly	180 days	HNO_3 pH <2
Dissolved Metals *Cadmium* *Chromium* *Silver* *Copper* *Sodium* *Lead* *Zinc*	SW 6010B	500 mL Poly Field Filtered	180 Days	HNO_3 pH <2
VOCs	SW 8260B	3-40mL VOAs	14 days	HCl pH<2
Direct Inject Alcohols *ethylene glycol*	SW 8015B Mod	2-40mL VOAs	7 days	No Preservative 4°C
SVOCs, including benzyl alcohol and 2-butoxy ethanol	SW 8270C	2-1 L ambers	7 days extraction/ 40 days analysis	4°C
Petroleum Hydrocarbons	Diesel Range Organics SW 8015B Mod	3-40mL VOAs	14 days	HCl pH<2
	Gasoline Range Organics SW 8015B Mod	3-40mL VOAs	14 days	HCl pH<2
Total Organic Carbon	EPA 415.1	2-40mL VOAs amber glass	28 days	H_2SO_4 pH<2

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768

CHAIN OF CUSTODY RECORD

PAGE 1 OF 1

PROJECT NO.	PROJECT NAME
7	HELSTF Groundwater Sampling

SAMPLER'S SIGNATURE: George Esqueda

DATE	TIME	SAMPLE ID	MATRIX	LAB NO.	NO. OF CONTAINERS	VOC	DRO/GRO	D.I.A	TOC	SVOC	Water Quality	Amm Nitrogen	Total Metals	Diss Metals	Diss Ions	REMARKS
12-7-06	1520	HLSF-0085-HMW-053-1206	Water	111243	19	X*	X	X	X	X	X	X	X	X	X	
12-7-06	1520	HLSF-0085-TB-768-1206	Water	111244	2	X*										

PROJECT INFORMATION	SAMPLES RECEIVED		1. RELINQUISHED BY: (SIGNATURE)	2. RELINQUISHED BY: (SIGNATURE)	3. RECEIVED BY LAB: (SIGNATURE)
PROJECT MANAGER: William Little	TOTAL NO. OF CONTAINERS		(PRINTED NAME) GEORGE ESQUEDA	(PRINTED NAME) Jeffrey Lane	(PRINTED NAME) Deena Ripley
SHIPPING ID NO.: 39192361	CHAIN OF CUSTODY SEALS		RECEIVED BY: (SIGNATURE)	RECEIVED BY: (SIGNATURE)	(COMPANY) Trace Analysis
VIA: Courier GS	GOOD CONDITION/CHILLED	4C	(TIME/DATE) 8:30am 08Dec06	(TIME/DATE) 09:30 12-8-06	(TIME/DATE) 12-9-06 10:15
	CONFORMS TO RECORD	MA	SPECIAL INSTRUCTIONS/COMMENTS: PLEASE SEE ATTACHED ANALYTE LIST FOR DETAILS		

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Analyte Table A

HELSTF Phase III RFI

Groundwater Sample Collection

Parameter	Analytical Method	Container	Min Hold Time	Preservative
Water Quality *Total Dissolved Solids* *Alkalinity, Carbonate/Bicarbonate* *Alkalinity, Hydroxide* *pH* *Conductance*	EPA 160.1 EPA 310.1 EPA 150.1 EPA 120.1	1 L Poly	48 hours	4°C
Ammonia-Nitrogen	EPA 350.2	1-500mL poly	28 days	H_2SO_4 pH<2
Dissolved Ions *Bromide* *Nitrate-N* *Chloride* *Nitrite-N* *Fluoride* *Sulfate*	EPA 300.0	Take from Water Quality container	48 hrs NO3 & NO2; others 28 days	4°C
Total Metals *Cadmium* *Phosphorous* *Chromium* *Silver* *Copper* *Sodium* *Lead* *Zinc*	SW 6010B	500 mL Poly	180 days	HNO_3 pH <2
Dissolved Metals *Cadmium* *Chromium* *Silver* *Copper* *Sodium* *Lead* *Zinc*	SW 6010B	500 mL Poly Field Filtered	180 Days	HNO_3 pH <2
VOCs	SW 8260B	3-40mL VOAs	14 days	HCl pH<2
Direct Inject Alcohols *ethylene glycol*	SW 8015B Mod	2-40mL VOAs	7 days	No Preservative 4°C
SVOCs, including: benzyl alcohol and 2-butoxy ethanol	SW 8270C	2-1 L ambers	7 days extraction/ 40 days analysis	4°C
Petroleum Hydrocarbons	Diesel Range Organics SW 8015B Mod	3-40mL VOAs	14 days	HCl pH<2
	Gasoline Range Organics SW 8015B Mod	3-40mL VOAs	14 days	HCl pH<2
Total Organic Carbon	EPA 415.1	2-40mL VOAs amber glass	28 days	H_2SO_4 pH<2

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CHAIN OF CUSTODY RECORD

PAGE 1 OF 1

PROJECT NO.: 7

PROJECT NAME: HELSTF Groundwater Sampling

SAMPLER'S SIGNATURE:

DATE	TIME	SAMPLE ID	MATRIX	LAB NO.	NO. OF CONTAINERS	VOC	DRO/GRO	D.I.A	TOC	SVOC	Water Quality	Amm Nitrogen	Total Metals	Diss Metals	Diss Ions	PERCHLORATES NH3	REMARKS
1-12-07	0935	HLSF-0085-HMW-054 ~~1206~~ 0107	Water	114018	20	X	X	X	X	X	X	X	X	X	X	X	•
1-12-07	0935	HLSF-0085-TB-769 ~~1206~~ 0107	Water	114019	2	X											

PROJECT INFORMATION			1. RELINQUISHED BY: (SIGNATURE)	2. RELINQUISHED BY: (SIGNATURE)	3. RECEIVED BY LAB: (SIGNATURE)
PROJECT MANAGER: William Little	SAMPLES RECEIVED		(PRINTED NAME) GABRIEL GARCIA	(PRINTED NAME) Jeffrey Lane	(PRINTED NAME) Joanna Ripley
SHIPPING ID NO.: 39302595	TOTAL NO. OF CONTAINERS		RECEIVED BY: (SIGNATURE)	RECEIVED BY: (SIGNATURE)	(COMPANY) TraceAnalysis
VIA: Courier	CHAIN OF CUSTODY SEALS		(TIME/DATE) 4:50 pm 12 Jan 07	(TIME/DATE) 1710 1-12-07	(TIME/DATE) 1710 07 10
	GOOD CONDITION/CHILLED	4°C	SPECIAL INSTRUCTIONS / COMMENTS:		
	CONFORMS TO RECORD	NA	PLEASE SEE ATTACHED ANALYTE LIST FOR DETAILS ANALYTE TABLE A		

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Analyte Table A

HELSTF Phase III RFI

Groundwater Sample Collection

Parameter	Analytical Method	Container	Min Hold Time	Preservative
Water Quality *Total Dissolved Solids* *Alkalinity, Carbonate/Bicarbonate* *Alkalinity, Hydroxide* *pH* *Conductance*	EPA 160.1 EPA 310.1 EPA 150.1 EPA 120.1	1 L Poly	48 hours	4°C
Ammonia Nitrogen	EPA 350.2	1-500mL poly	28 days	H_2SO_4 pH<2
Dissolved Ions *Bromide* *Nitrate-N* *Chloride* *Nitrite-N* *Fluoride* *Sulfate*	EPA 300.0	Take from Water Quality container	48 hrs NO3 & NO2; others 28 days	4°C
Total Metals *Cadmium* *Phosphorous* *Chromium* *Silver* *Copper* *Sodium* *Lead* *Zinc*	SW 6010B	500 mL Poly	180 days	HNO_3 pH <2
Dissolved Metals *Cadmium* *Chromium* *Silver* *Copper* *Sodium* *Lead* *Zinc*	SW 6010B	500 mL Poly Field Filtered	180 Days	HNO_3 pH <2
VOCs	SW 8260B	3-40mL VOAs	14 days	HCl pH<2
Direct Inject Alcohols *ethylene glycol*	SW 8015B Mod	2-40mL VOAs	7 days	No Preservative 4°C
SVOCs, including benzyl alcohol and 2-butoxy ethanol	SW 8270C	2-1 L ambers	7 days extraction/ 40 days analysis	4°C
Petroleum Hydrocarbons	Diesel Range Organics SW 8015B Mod	3-40mL VOAs	14 days	HCl pH<2
	Gasoline Range Organics SW 8015B Mod	3-40mL VOAs	14 days	HCl pH<2
Total Organic Carbon	EPA 415.1	2-40mL VOAs amber glass	28 days	H_2SO_4 pH<2

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CHAIN OF CUSTODY RECORD

PAGE 1 OF 1

PROJECT NO.: 7

PROJECT NAME: HELSTF Groundwater Sampling

SAMPLER'S SIGNATURE:

DATE	TIME	SAMPLE ID	MATRIX	LAB NO.	NO. OF CONTAINERS	VOC	DRO/GRO	D.I.A	TOC	SVOC	Water Quality	Amm Nitrogen	Total Metals	Diss Metals	Diss Ions	PERCHLORATES	REMARKS
1-11-07	1045	HLSF-0085-HMW-055 ~~1206~~ 0107	Water	113772	20	X	X	X	X	X	X	X	X	X	X	X	NO2, NO3 ran by spec-Lubbock.
1-11-07	1045	HLSF-0085-TB-770-~~1206~~ 0107	Water	113773	2	X											

PROJECT INFORMATION	SAMPLES RECEIVED		1. RELINQUISHED BY: (SIGNATURE)	2. RELINQUISHED BY: (SIGNATURE)	3. RECEIVED BY LAB: (SIGNATURE)
PROJECT MANAGER: William Little	TOTAL NO. OF CONTAINERS		(PRINTED NAME) GABRIEL GARCIA	(PRINTED NAME) Jeffrey Lane	(PRINTED NAME) Queena Ripley
SHIPPING ID NO.: 3430251	CHAIN OF CUSTODY SEALS		RECEIVED BY: (SIGNATURE)	RECEIVED BY: (SIGNATURE)	(COMPANY) Trace Analysis
VIA: Courier	GOOD CONDITION/CHILLED	4 C	(TIME/DATE) 4:25pm 11 Jan 07	(TIME/DATE) 1745 1-11-07	(TIME/DATE) 1-12-07 9:00
	CONFORMS TO RECORD		SPECIAL INSTRUCTIONS/COMMENTS: PLEASE SEE ATTACHED ANALYTE LIST FOR DETAILS ANALYTE TABLE 4		

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Analyte Table A

HELSTF Phase III RFI

Groundwater Sample Collection

Parameter	Analytical Method	Container	Min Hold Time	Preservative
Water Quality *Total Dissolved Solids* *Alkalinity, Carbonate/Bicarbonate* *Alkalinity, Hydroxide* *pH* *Conductance*	EPA 160.1 EPA 310.1 EPA 150.1 EPA 120.1	1 L Poly	48 hours	4°C
Ammonia Nitrogen	EPA 350.2	1-500mL poly	28 days	H_2SO_4 pH<2
Dissolved Ions *Bromide* *Nitrate-N* *Chloride* *Nitrite-N* *Fluoride* *Sulfate*	EPA 300.0	Take from Water Quality container	48 hrs NO3 & NO2; others 28 days	4°C
Total Metals *Cadmium* *Phosphorous* *Chromium* *Silver* *Copper* *Sodium* *Lead* *Zinc*	SW 6010B	500 mL Poly	180 days	HNO_3 pH <2
Dissolved Metals *Cadmium* *Chromium* *Silver* *Copper* *Sodium* *Lead* *Zinc*	SW 6010B	500 mL Poly Field Filtered	180 Days	HNO_3 pH <2
VOCs	SW 8260B	3-40mL VOAs	14 days	HCl pH<2
Direct Inject Alcohols *ethylene glycol*	SW 8015B Mod	2-40mL VOAs	7 days	No Preservative 4°C
SVOCs, including benzyl alcohol and 2-butoxy ethanol	SW 8270C	2-1 L ambers	7 days extraction/ 40 days analysis	4°C
Petroleum Hydrocarbons	Diesel Range Organics SW 8015B Mod	3-40mL VOAs	14 days	HCl pH<2
	Gasoline Range Organics SW 8015B Mod	3-40mL VOAs	14 days	HCl pH<2
Total Organic Carbon	EPA 415.1	2-40mL VOAs amber glass	28 days	H_2SO_4 pH<2

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WTS

CHAIN OF CUSTODY RECORD

PAGE 1 OF 1

PROJECT NO.: 7

PROJECT NAME: HELSTF Groundwater Sampling

SAMPLER'S SIGNATURE:

DATE	TIME	SAMPLE ID	MATRIX	LAB NO.	NO. OF CONTAINERS	VOC	DRO/GRO	D.I.A.	TOC	SVOC	Water Quality	Amm Nitrogen	Total Metals	Diss Metals	Diss Ions	REMARKS
12-12-06	1300	HLSF-0085-HMW-058-1206	Water	111693	19	X	X	X	X	X	X	X	X	X	X	
12-12-06	1300	HLSF-0085-TB-771-1206	Water	111694	2	X										

PROJECT INFORMATION	SAMPLES RECEIVED		1. RELINQUISHED BY: (SIGNATURE)	2. RELINQUISHED BY: (SIGNATURE)	3. RECEIVED BY LAB: (SIGNATURE)
PROJECT MANAGER: William Little	TOTAL NO. OF CONTAINERS		(PRINTED NAME) JABREEL GALLIA	(PRINTED NAME) James Gutierrez	(PRINTED NAME) Sierra Ripley
SHIPPING ID NO.: 38792946	CHAIN OF CUSTODY SEALS		RECEIVED BY: (SIGNATURE)	RECEIVED BY: (SIGNATURE)	(COMPANY) Trace analysis
	GOOD CONDITION/CHILLED	4C	(TIME/DATE) 0915 12-13-06	(TIME/DATE) 1120 12-13-06	(TIME/DATE) 12/14/06 9:00
VIA: Courier	CONFORMS TO RECORD		SPECIAL INSTRUCTIONS / COMMENTS: PLEASE SEE ATTACHED ANALYTE LIST FOR DETAILS		

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Analyte Table A

HELSTF Phase III RFI

Groundwater Sample Collection

Parameter	Analytical Method	Container	Min Hold Time	Preservative
Water Quality *Total Dissolved Solids* *Alkalinity, Carbonate/Bicarbonate* *Alkalinity, Hydroxide* *pH* *Conductance*	EPA 160.1 EPA 310.1 EPA 150.1 EPA 120.1	1 L Poly	48 hours	4°C
Ammonia Nitrogen	EPA 350.2	1-500mL poly	28 days	H_2SO_4 pH<2
Dissolved Ions *Bromide* *Nitrate-N* *Chloride* *Nitrite-N* *Fluoride* *Sulfate*	EPA 300.0	Take from Water Quality container	48 hrs NO3 & NO2; others 28 days	4°C
Total Metals *Cadmium* *Phosphorous* *Chromium* *Silver* *Copper* *Sodium* *Lead* *Zinc*	SW 6010B	500 mL Poly	180 days	HNO_3 pH <2
Dissolved Metals *Cadmium* *Chromium* *Silver* *Copper* *Sodium* *Lead* *Zinc*	SW 6010B	500 mL Poly Field Filtered	180 Days	HNO_3 pH <2
VOCs	SW 8260B	3-40mL VOAs	14 days	HCl pH<2
Direct Inject Alcohols *ethylene glycol*	SW 8015B Mod	2-40mL VOAs	7 days	No Preservative 4°C
SVOCs, including benzyl alcohol and 2-butoxy ethanol	SW 8270C	2-1 L ambers	7 days extraction/ 40 days analysis	4°C
Petroleum Hydrocarbons	Diesel Range Organics SW 8015B Mod	3-40mL VOAs	14 days	HCl pH<2
	Gasoline Range Organics SW 8015B Mod	3-40mL VOAs	14 days	HCl pH<2
Total Organic Carbon	EPA 415.1	2-40mL VOAs amber glass	28 days	H_2SO_4 pH<2

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CHAIN OF CUSTODY RECORD

PAGE 1 OF 1

PROJECT NO.: 7

PROJECT NAME: HELSTF Groundwater Sampling

SAMPLER'S SIGNATURE: George Esqueda

DATE	TIME	SAMPLE ID	MATRIX	LAB NO.	NO. OF CONTAINERS	VOC	DRO/GRO	D.I.A.	TOC	SVOC	Water Quality	Amm Nitrogen	Total Metals	Diss Metals	Diss Ions	REMARKS
12/6/06	1110	HLSF-0085-HMW-062-1206	Water	111154	19	X*	X	X	X	X	X	X	X	X	X	
12/6/06	1110	HLSF-0085-TB-772-1206	Water	111155	2	X*										

PROJECT INFORMATION			1. RELINQUISHED BY: (SIGNATURE)	2. RELINQUISHED BY: (SIGNATURE)	3. RECEIVED BY LAB: (SIGNATURE)
PROJECT MANAGER: William Little	SAMPLES RECEIVED		(PRINTED NAME) GEORGE ESQUEDA	(PRINTED NAME) Jeffrey Lane	(PRINTED NAME) Geena Ripley
	TOTAL NO. OF CONTAINERS		RECEIVED BY: (SIGNATURE)	RECEIVED BY: (SIGNATURE)	(COMPANY) Trace Analytical
SHIPPING ID NO.: 39192356	CHAIN OF CUSTODY SEALS		(TIME/DATE) 4 deg C 8:15am 07Dec06	(TIME/DATE) 9:30 12-7-07	(TIME/DATE) 12-8-06 9:00
VIA: Courier LS	GOOD CONDITION/CHILLED		SPECIAL INSTRUCTIONS/COMMENTS: PLEASE SEE ATTACHED ANALYTE LIST FOR DETAILS		
	CONFORMS TO RECORD				

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Analyte Table A

HELSTF Phase III RFI

Groundwater Sample Collection

Parameter	Analytical Method	Container	Min Hold Time	Preservative
Water Quality *Total Dissolved Solids* *Alkalinity, Carbonate/Bicarbonate* *Alkalinity, Hydroxide* *pH* *Conductance*	EPA 160.1 EPA 310.1 EPA 150.1 EPA 120.1	1 L Poly	48 hours	4°C
Ammonia Nitrogen	EPA 350.2	1-500mL poly	28 days	H_2SO_4 pH<2
Dissolved Ions *Bromide* *Nitrate-N* *Chloride* *Nitrite-N* *Fluoride* *Sulfate*	EPA 300.0	Take from Water Quality container	48 hrs NO3 & NO2; others 28 days	4°C
Total Metals *Cadmium* *Phosphorous* *Chromium* *Silver* *Copper* *Sodium* *Lead* *Zinc*	SW 6010B	500 mL Poly	180 days	HNO_3 pH <2
Dissolved Metals *Cadmium* *Chromium* *Silver* *Copper* *Sodium* *Lead* *Zinc*	SW 6010B	500 mL Poly Field Filtered	180 Days	HNO_3 pH <2
VOCs	SW 8260B	3-40mL VOAs	14 days	HCl pH<2
Direct Inject Alcohols *ethylene glycol*	SW 8015B Mod	2-40mL VOAs	7 days	No Preservative 4°C
SVOCs, including benzyl alcohol and 2-butoxy ethanol	SW 8270C	2-1 L ambers	7 days extraction/ 40 days analysis	4°C
Petroleum Hydrocarbons	Diesel Range Organics SW 8015B Mod	3-40mL VOAs	14 days	HCl pH<2
	Gasoline Range Organics SW 8015B Mod	3-40mL VOAs	14 days	HCl pH<2
Total Organic Carbon	EPA 415.1	2-40mL VOAs amber glass	28 days	H_2SO_4 pH<2

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CHAIN OF CUSTODY RECORD

PAGE 1 OF 1

PROJECT NO.: 7

PROJECT NAME: HELSTF Groundwater Sampling

SAMPLER'S SIGNATURE:

DATE	TIME	SAMPLE ID	MATRIX	LAB NO.	NO. OF CONTAINERS	VOC	DRO/GRO	D.I.A	TOC	SVOC	Water Quality	Amm Nitrogen	Total Metals	Diss Metals	Diss Ions	Sulfate	REMARKS
12-12-06	0935	HLSF-0085-HMW-063-1206	Water	111687	19	X*	X	X	X	X	X*	X	X*	X	X	X*	
12-12-06	0935	HLSF-0085-TB-773-1206	Water	111688	2	X*											

PROJECT INFORMATION			1. RELINQUISHED BY: (SIGNATURE)	2. RELINQUISHED BY: (SIGNATURE)	3. RECEIVED BY LAB: (SIGNATURE)
PROJECT MANAGER: William Little	SAMPLES RECEIVED		(PRINTED NAME) GABRIEL GARCIA	(PRINTED NAME) James Gutierrez	(PRINTED NAME) Sheena Ripley
SHIPPING ID NO.: 3692999	TOTAL NO. OF CONTAINERS		RECEIVED BY: (SIGNATURE)	RECEIVED BY: (SIGNATURE)	(COMPANY) Trace Analysis
VIA: Courier LS	CHAIN OF CUSTODY SEALS		(TIME/DATE) 9:55 12-13-06	(TIME/DATE) 11:00 12-13-06	(TIME/DATE) 12/14/06 9:00
	GOOD CONDITION/CHILLED	4°C			
	CONFORMS TO RECORD	MA	SPECIAL INSTRUCTIONS / COMMENTS: PLEASE SEE ATTACHED ANALYTE LIST FOR DETAILS		

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Analyte Table A

HELSTF Phase III RFI

Groundwater Sample Collection

Parameter	Analytical Method	Container	Min Hold Time	Preservative
Water Quality *Total Dissolved Solids* *Alkalinity, Carbonate/Bicarbonate* *Alkalinity, Hydroxide* *pH* *Conductance*	EPA 160.1 EPA 310.1 EPA 150.1 EPA 120.1	1 L Poly	48 hours	4°C
Ammonia Nitrogen	EPA 350.2	1-500mL poly	28 days	H_2SO_4 pH<2
Dissolved Ions *Bromide* *Nitrate-N* *Chloride* *Nitrite-N* *Fluoride* *Sulfate*	EPA 300.0	Take from Water Quality container	48 hrs NO3 & NO2; others 28 days	4°C
Total Metals *Cadmium* *Phosphorous* *Chromium* *Silver* *Copper* *Sodium* *Lead* *Zinc*	SW 6010B	500 mL Poly	180 days	HNO_3 pH <2
Dissolved Metals *Cadmium* *Chromium* *Silver* *Copper* *Sodium* *Lead* *Zinc*	SW 6010B	500 mL Poly Field Filtered	180 Days	HNO_3 pH <2
VOCs	SW 8260B	3-40mL VOAs	14 days	HCl pH<2
Direct Inject Alcohols *ethylene glycol*	SW 8015B Mod	2-40mL VOAs	7 days	No Preservative 4°C
SVOCs, including benzyl alcohol and 2-butoxy ethanol	SW 8270C	2-1 L ambers	7 days extraction/ 40 days analysis	4°C
Petroleum Hydrocarbons	Diesel Range Organics SW 8015B Mod	3-40mL VOAs	14 days	HCl pH<2
	Gasoline Range Organics SW 8015B Mod	3-40mL VOAs	14 days	HCl pH<2
Total Organic Carbon	EPA 415.1	2-40mL VOAs amber glass	28 days	H_2SO_4 pH<2

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CHAIN OF CUSTODY RECORD

PAGE 1 OF 1

PROJECT NO.: 7

PROJECT NAME: HELSTF Groundwater Sampling

SAMPLER'S SIGNATURE:

DATE	TIME	SAMPLE ID	MATRIX	LAB NO.	NO. OF CONTAINERS	VOC	DRO/GRO	D.I.A	TOC	SVOC	Water Quality	Amm Nitrogen	Total Metals	Diss Metals	Diss Ions	BELLHOLATES	REMARKS
1-9-07	0959	HLSF-0085-HMW-064 ~~1200~~ 0107	Water	113421	19	X	X	X	X	X	X	X	X	X	X	X	
1-9-07	0959	HLSF-0085-TB-774 ~~1200~~ 0107	Water	113422	2	X											

PROJECT INFORMATION	SAMPLES RECEIVED		1. RELINQUISHED BY: (SIGNATURE)	2. RELINQUISHED BY: (SIGNATURE)	3. RECEIVED BY LAB: (SIGNATURE)
PROJECT MANAGER: William Little	TOTAL NO. OF CONTAINERS		(PRINTED NAME) GABRIEL GARCIA	(PRINTED NAME) Jeffrey Lane	(PRINTED NAME) Vicki Hensley
SHIPPING ID NO.: 38793008	CHAIN OF CUSTODY SEALS	4°	RECEIVED BY: (SIGNATURE)	RECEIVED BY: (SIGNATURE)	(COMPANY) Trace Analysis
	GOOD CONDITION/CHILLED	4°C	(TIME/DATE) 3:30 09 Jan 07	(TIME/DATE) 1840 1-9-07	(TIME/DATE) 8:30 1-10-07
VIA: Courier 25	CONFORMS TO RECORD		SPECIAL INSTRUCTIONS / COMMENTS: PLEASE SEE ATTACHED ANALYTE LIST FOR DETAILS ANALYTE-TABLE A		

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Analyte Table A

HELSTF Phase III RFI

Groundwater Sample Collection

Parameter	Analytical Method	Container	Min Hold Time	Preservative
Water Quality *Total Dissolved Solids* *Alkalinity, Carbonate/Bicarbonate* *Alkalinity, Hydroxide* *pH* *Conductance*	EPA 160.1 EPA 310.1 EPA 150.1 EPA 120.1	1 L Poly	48 hours	4°C
Ammonia Nitrogen	EPA 350.2	1-500mL poly	28 days	H_2SO_4 pH<2
Dissolved Ions *Bromide* *Nitrate-N* *Chloride* *Nitrite-N* *Fluoride* *Sulfate*	EPA 300.0	Take from Water Quality container	48 hrs NO3 & NO2; others 28 days	4°C
Total Metals *Cadmium* *Phosphorous* *Chromium* *Silver* *Copper* *Sodium* *Lead* *Zinc*	SW 6010B	500 mL Poly	180 days	HNO_3 pH <2
Dissolved Metals *Cadmium* *Chromium* *Silver* *Copper* *Sodium* *Lead* *Zinc*	SW 6010B	500 mL Poly Field Filtered	180 Days	HNO_3 pH <2
VOCs	SW 8260B	3-40mL VOAs	14 days	HCl pH<2
Direct Inject Alcohols *ethyleneglycol*	SW 8015B Mod	2-40mL VOAs	7 days	No Preservative 4°C
SVOCs, including benzyl alcohol and 2-butoxy ethanol	SW 8270C	2-1 L ambers	7 days extraction/ 40 days analysis	4°C
Petroleum Hydrocarbons	Diesel Range Organics SW 8015B Mod	3-40mL VOAs	14 days	HCl pH<2
	Gasoline Range Organics SW 8015B Mod	3-40mL VOAs	14 days	HCl pH<2
Total Organic Carbon	EPA 415.1	2-40mL VOAs amber glass	28 days	H_2SO_4 pH<2

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CHAIN OF CUSTODY RECORD

PAGE 1 OF 1

PROJECT NO.	PROJECT NAME
7	HELSTF Groundwater Sampling

SAMPLER'S SIGNATURE: George Esqueda

DATE	TIME	SAMPLE ID	MATRIX	LAB NO.	NO. OF CONTAINERS	VOC	DRO/GRO	D.I.A	TOC	SVOC	Water Quality	Amm Nitrogen	Total Metals	Diss Metals	Diss Ions	REMARKS
						ANALYSIS REQUESTED										
1/16/07	1432	HLSF-0085-DRW-111 ~~1206~~ 0107 GE	Water	114198	19	X	X	X	X	X	X	X	X	X	X	•
1/16/07	1432	HLSF-0085-TB-744 ~~1206~~ 0107 GE	Water	114199	2	X										

NKS

PROJECT INFORMATION		
PROJECT MANAGER: William Little	SAMPLES RECEIVED	
	TOTAL NO. OF CONTAINERS	
SHIPPING ID NO.: 3930 2000	CHAIN OF CUSTODY SEALS	
	GOOD CONDITION/CHILLED	yes
VIA: Courier GS	CONFORMS TO RECORD	NA

1. RELINQUISHED BY: (SIGNATURE)	2. RELINQUISHED BY: (SIGNATURE)	3. RECEIVED BY LAB: (SIGNATURE)
George Esqueda	Jeffrey Lane	Sierra Stipley
(PRINTED NAME) GEORGE ESQUEDA	(PRINTED NAME) Jeffrey Lane	(PRINTED NAME) Sierra Stipley
RECEIVED BY: (SIGNATURE) Jeffrey Lane	RECEIVED BY: (SIGNATURE)	(COMPANY) Traco analytical
(TIME/DATE) 7:40am 17 Jan 07	(TIME/DATE)	(TIME/DATE) 1/19/07 8:30

SPECIAL INSTRUCTIONS / COMMENTS:
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Analyte Table A

HELSTF Phase III RFI

Groundwater Sample Collection

Parameter	Analytical Method	Container	Min Hold Time	Preservative
Water Quality *Total Dissolved Solids* *Alkalinity, Carbonate/Bicarbonate* *Alkalinity, Hydroxide* *pH* *Conductance*	EPA 160.1 EPA 310.1 EPA 150.1 EPA 120.1	1 L Poly	48 hours	4°C
Ammonia Nitrogen	EPA 350.2	1-500mL poly	28 days	H_2SO_4 pH<2
Dissolved Ions *Bromide* *Nitrate-N* *Chloride* *Nitrite-N* *Fluoride* *Sulfate*	EPA 300.0	Take from Water Quality container	48 hrs NO3 & NO2; others 28 days	4°C
Total Metals *Cadmium* *Phosphorous* *Chromium* *Silver* *Copper* *Sodium* *Lead* *Zinc*	SW 6010B	500 mL Poly	180 days	HNO_3 pH <2
Dissolved Metals *Cadmium* *Chromium* *Silver* *Copper* *Sodium* *Lead* *Zinc*	SW 6010B	500 mL Poly Field Filtered	180 Days	HNO_3 pH <2
VOCs	SW 8260B	3-40mL VOAs	14 days	HCl pH<2
Direct Inject Alcohols *ethylene glycol*	SW 8015B Mod	2-40mL VOAs	7 days	No Preservative 4°C
SVOCs, including benzyl alcohol and 2-butoxy ethanol	SW 8270C	2-1 L ambers	7 days extraction/ 40 days analysis	4°C
Petroleum Hydrocarbons	Diesel Range Organics SW 8015B Mod	3-40mL VOAs	14 days	HCl pH<2
	Gasoline Range Organics SW 8015B Mod	3-40mL VOAs	14 days	HCl pH<2
Total Organic Carbon	EPA 415.1	2-40mL VOAs amber glass	28 days	H_2SO_4 pH<2

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CHAIN OF CUSTODY RECORD

PAGE 1 OF 1

PROJECT NO.: 7

PROJECT NAME: HELSTF Groundwater Sampling

SAMPLER'S SIGNATURE:

DATE	TIME	SAMPLE ID	MATRIX	LAB NO.	NO. OF CONTAINERS	VOC	DRO/GRO	D.I.A	TOC	SVOC	Water Quality	Amm Nitrogen	Total Metals	Diss Metals	Diss Ions	PERCHLORATES / NH3	REMARKS
1-11-07	0850	HLSF-0085-HMW-065-~~1206~~ 0107	Water	113774	20	X	X	X	X	X	X	X	X	X	X	X	
1-11-07	0850	HLSF-0085-TB-775-~~1206~~ 0107	Water	113775	2	X											

113774- Ran by
ND2-Spec Lubbock
ND3-Spec-Lubbock

PROJECT INFORMATION	SAMPLES RECEIVED		1. RELINQUISHED BY: (SIGNATURE)	2. RELINQUISHED BY: (SIGNATURE)	3. RECEIVED BY LAB: (SIGNATURE)
PROJECT MANAGER: William Little	TOTAL NO. OF CONTAINERS		(PRINTED NAME) Gabriel Garcia	(PRINTED NAME) Jeffrey Lane	(PRINTED NAME) Susan Ripley
SHIPPING ID NO.: 2613025911	CHAIN OF CUSTODY SEALS		RECEIVED BY: (SIGNATURE)	RECEIVED BY: (SIGNATURE)	(COMPANY) Trace Analysis
	GOOD CONDITION/CHILLED	4°C	(TIME) (DATE) 4:25pm 11 Jan 07	(TIME) (DATE) 17:45 1-11-07	(TIME) (DATE) 1-12-07 9:00
VIA: Courier	CONFORMS TO RECORD		SPECIAL INSTRUCTIONS / COMMENTS: PLEASE SEE ATTACHED ANALYTE LIST FOR DETAILS ANALYTE TABLE A		

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Analyte Table A

HELSTF Phase III RFI

Groundwater Sample Collection

Parameter	Analytical Method	Container	Min Hold Time	Preservative
Water Quality *Total Dissolved Solids* *Alkalinity, Carbonate/Bicarbonate* *Alkalinity, Hydroxide* *pH* *Conductance*	EPA 160.1 EPA 310.1 EPA 150.1 EPA 120.1	1 L Poly	48 hours	4°C
Ammonia Nitrogen	EPA 350.2	1-500mL poly	28 days	H_2SO_4 pH<2
Dissolved Ions *Bromide* *Nitrate-N* *Chloride* *Nitrite-N* *Fluoride* *Sulfate*	EPA 300.0	Take from Water Quality container	48 hrs NO3 & NO2; others 28 days	4°C
Total Metals *Cadmium* *Phosphorous* *Chromium* *Silver* *Copper* *Sodium* *Lead* *Zinc*	SW 6010B	500 mL Poly	180 days	HNO_3 pH <2
Dissolved Metals *Cadmium* *Chromium* *Silver* *Copper* *Sodium* *Lead* *Zinc*	SW 6010B	500 mL Poly Field Filtered	180 Days	HNO_3 pH <2
VOCs	SW 8260B	3-40mL VOAs	14 days	HCl pH<2
Direct Inject Alcohols *ethylene glycol*	SW 8015B Mod	2-40mL VOAs	7 days	No Preservative 4°C
SVOCs, including benzyl alcohol and 2-butoxy ethanol	SW 8270C	2-1 L ambers	7 days extraction/ 40 days analysis	4°C
Petroleum Hydrocarbons	Diesel Range Organics SW 8015B Mod	3-40mL VOAs	14 days	HCl pH<2
	Gasoline Range Organics SW 8015B Mod	3-40mL VOAs	14 days	HCl pH<2
Total Organic Carbon	EPA 415.1	2-40mL VOAs amber glass	28 days	H_2SO_4 pH<2

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CHAIN OF CUSTODY RECORD

PAGE 1 OF 1

PROJECT NO.: 7

PROJECT NAME: HELSTF Groundwater Sampling

SAMPLER'S SIGNATURE: George Esqueda

DATE	TIME	SAMPLE ID	MATRIX	LAB NO.	NO. OF CONTAINERS	VOC	DRO/GRO	D.I.A	TOC	SVOC	Water Quality	Amm Nitrogen	Total Metals	Diss Metals	Diss Ions	NO_3-NO_2 Chloride/Sulfate Br/F	REMARKS
12-12-06	0926	HLSF-0085-D RW-009-1206	Water	111691	19	X*	X	X	X	X	X	X	X	X	X	X X X	
12-12-06	0926	HLSF-0085-TB-776-1206	Water	111692	2	X*											

PROJECT INFORMATION	SAMPLES RECEIVED		1. RELINQUISHED BY: (SIGNATURE)	2. RELINQUISHED BY: (SIGNATURE)	3. RECEIVED BY LAB: (SIGNATURE)
PROJECT MANAGER: William Little	TOTAL NO. OF CONTAINERS		(PRINTED NAME) George ESQUEDA	(PRINTED NAME) James Gutierrez	(PRINTED NAME) Geena Tripley
SHIPPING ID NO.: 3579000	CHAIN OF CUSTODY SEALS		RECEIVED BY: (SIGNATURE)	RECEIVED BY: (SIGNATURE)	(COMPANY) Trace Analysis
	GOOD CONDITION/CHILLED	4°C	(TIME/DATE) 12:53 12-13-06	(TIME/DATE) 11:00 12-13-06	(TIME/DATE) 12/14/06 9:00
VIA: Courier LS	CONFORMS TO RECORD	MA	SPECIAL INSTRUCTIONS / COMMENTS: PLEASE SEE ATTACHED ANALYTE LIST FOR DETAILS		

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Analyte Table A

HELSTF Phase III RFI

Groundwater Sample Collection

Parameter	Analytical Method	Container	Min Hold Time	Preservative
Water Quality *Total Dissolved Solids* *Alkalinity, Carbonate/Bicarbonate* *Alkalinity, Hydroxide* *pH* *Conductance*	EPA 160.1 EPA 310.1 EPA 150.1 EPA 120.1	1 L Poly	48 hours	4°C
Ammonia Nitrogen	EPA 350.2	1-500mL poly	28 days	H_2SO_4 pH<2
Dissolved Ions *Bromide* *Nitrate-N* *Chloride* *Nitrite-N* *Fluoride* *Sulfate*	EPA 300.0	Take from Water Quality container	48 hrs NO3 & NO2; others 28 days	4°C
Total Metals *Cadmium* *Phosphorous* *Chromium* *Silver* *Copper* *Sodium* *Lead* *Zinc*	SW 6010B	500 mL Poly	180 days	HNO_3 pH <2
Dissolved Metals *Cadmium* *Chromium* *Silver* *Copper* *Sodium* *Lead* *Zinc*	SW 6010B	500 mL Poly Field Filtered	180 Days	HNO_3 pH <2
VOCs	SW 8260B	3-40mL VOAs	14 days	HCl pH<2
Direct Inject Alcohols *ethylene glycol*	SW 8015B Mod	2-40mL VOAs	7 days	No Preservative 4°C
SVOCs, including benzyl alcohol and 2-butoxy ethanol	SW 8270C	2-1 L ambers	7 days extraction/ 40 days analysis	4°C
Petroleum Hydrocarbons	Diesel Range Organics SW 8015B Mod	3-40mL VOAs	14 days	HCl pH<2
	Gasoline Range Organics SW 8015B Mod	3-40mL VOAs	14 days	HCl pH<2
Total Organic Carbon	EPA 415.1	2-40mL VOAs amber glass	28 days	H_2SO_4 pH<2

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CHAIN OF CUSTODY RECORD

PAGE 1 OF 1

PROJECT NO.: 7

PROJECT NAME: HELSTF Groundwater Sampling

SAMPLER'S SIGNATURE: George Esquivel

DATE	TIME	SAMPLE ID	MATRIX	LAB NO.	NO. OF CONTAINERS	VOC	DRO/GRO	D.I.A	TOC	SVOC	Water Quality	Amm Nitrogen	Total Metals	Diss Metals	Diss Ions	NO3-NO2 Cyanide/Sulfide	REMARKS
12/12/06	1320	HLSF-0085-DRW-010-1206	Water	111685	19	X	X	X	X	X	X	X	X	X	X	X X	
12/12/06	1320	HLSF-0085-TB-777-1206	Water	111686	2	X											

PROJECT INFORMATION	SAMPLES RECEIVED		1. RELINQUISHED BY: (SIGNATURE)	2. RELINQUISHED BY: (SIGNATURE)	3. RECEIVED BY LAB: (SIGNATURE)
PROJECT MANAGER: William Little	TOTAL NO. OF CONTAINERS		(PRINTED NAME) George Esqueda	(PRINTED NAME) James Gutierrez	(PRINTED NAME) Arena Ripley
SHIPPING ID NO.: 35792998	CHAIN OF CUSTODY SEALS		RECEIVED BY: (SIGNATURE)	RECEIVED BY: (SIGNATURE)	(COMPANY) Trace Analysis
	GOOD CONDITION/CHILLED	4°C	(TIME/DATE) 9:55 12-13-06	(TIME/DATE) 11:00 12-13-06	(TIME/DATE) 12/14/06 9:00
VIA: Courier	CONFORMS TO RECORD		SPECIAL INSTRUCTIONS/COMMENTS: PLEASE SEE ATTACHED ANALYTE LIST FOR DETAILS		

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Analyte Table A

HELSTF Phase III RFI

Groundwater Sample Collection

Parameter	Analytical Method	Container	Min Hold Time	Preservative
Water Quality Total Dissolved Solids Alkalinity, Carbonate/Bicarbonate Alkalinity, Hydroxide pH Conductance	EPA 160.1 EPA 310.1 EPA 150.1 EPA 120.1	1 L Poly	48 hours	4°C
Ammonia Nitrogen	EPA 350.2	1-500mL poly	28 days	H_2SO_4 pH<2
Dissolved Ions Bromide, Nitrate-N Chloride, Nitrite-N Fluoride, Sulfate	EPA 300.0	Take from Water Quality container	48 hrs NO3 & NO2; others 28 days	4°C
Total Metals Cadmium, Phosphorous Chromium, Silver Copper, Sodium Lead, Zinc	SW 6010B	500 mL Poly	180 days	HNO_3 pH <2
Dissolved Metals Cadmium Chromium, Silver Copper, Sodium Lead, Zinc	SW 6010B	500 mL Poly Field Filtered	180 Days	HNO_3 pH <2
VOCs	SW 8260B	3-40mL VOAs	14 days	HCl pH<2
Direct Inject Alcohols ethylene glycol	SW 8015B Mod	2-40mL VOAs	7 days	No Preservative 4°C
SVOCs, including benzyl alcohol and 2-butoxy ethanol	SW 8270C	2-1 L ambers	7 days extraction/ 40 days analysis	4°C
Petroleum Hydrocarbons	Diesel Range Organics SW 8015B Mod	3-40mL VOAs	14 days	HCl pH<2
	Gasoline Range Organics SW 8015B Mod	3-40mL VOAs	14 days	HCl pH<2
Total Organic Carbon	EPA 415.1	2-40mL VOAs amber glass	28 days	H_2SO_4 pH<2

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CHAIN OF CUSTODY RECORD

PAGE 1 OF 1

PROJECT NO.: 7

PROJECT NAME: HELSTF Groundwater Sampling

SAMPLER'S SIGNATURE: George Esqueda

DATE	TIME	SAMPLE ID	MATRIX	LAB NO.	NO. OF CONTAINERS	VOC	DRO/GRO	D.I.A	TOC	SVOC	Water Quality	Amm Nitrogen	Total Metals	Diss Metals	Diss Ions	Bromide/Chloride/Sulfide/Fluoride	REMARKS
12/12/06	1320	HLSF-0085-DRW-110-1206	Water	111689	19	X	X	X	X	X	X	X	X	X	X	X	
12/12/06	1320	HLSF-0085-TB-778-1206	Water	111690	2	X											

PROJECT INFORMATION	SAMPLES RECEIVED		1. RELINQUISHED BY: (SIGNATURE)	2. RELINQUISHED BY: (SIGNATURE)	3. RECEIVED BY LAB: (SIGNATURE)
PROJECT MANAGER: William Little	TOTAL NO. OF CONTAINERS		(PRINTED NAME) George Esqueda	(PRINTED NAME) James Gutierrez	(PRINTED NAME) Reena Ripley
SHIPPING ID NO.: 36792999	CHAIN OF CUSTODY SEALS		RECEIVED BY: (SIGNATURE)	RECEIVED BY: (SIGNATURE)	(COMPANY) Cradle Creek
	GOOD CONDITION/CHILLED	4°C	(TIME/DATE) 9:53 12-13-06	(TIME/DATE) 11:00 12-13-06	(TIME/DATE) 12/14/06 9:00
VIA: Courier US	CONFORMS TO RECORD	MM	SPECIAL INSTRUCTIONS/COMMENTS: PLEASE SEE ATTACHED ANALYTE LIST FOR DETAILS		

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Analyte Table A

HELSTF Phase III RFI

Groundwater Sample Collection

Parameter	Analytical Method	Container	Min Hold Time	Preservative
Water Quality *Total Dissolved Solids* *Alkalinity, Carbonate/Bicarbonate* *Alkalinity, Hydroxide* *pH* *Conductance*	EPA 160.1 EPA 310.1 EPA 150.1 EPA 120.1	1 L Poly	48 hours	4°C
Ammonia Nitrogen	EPA 350.2	1-500mL poly	28 days	H_2SO_4 pH<2
Dissolved Ions *Bromide* *Nitrate-N* *Chloride* *Nitrite-N* *Fluoride* *Sulfate*	EPA 300.0	Take from Water Quality container	48 hrs NO3 & NO2; others 28 days	4°C
Total Metals *Cadmium* *Phosphorous* *Chromium* *Silver* *Copper* *Sodium* *Lead* *Zinc*	SW 6010B	500 mL Poly	180 days	HNO_3 pH <2
Dissolved Metals *Cadmium* *Chromium* *Silver* *Copper* *Sodium* *Lead* *Zinc*	SW 6010B	500 mL Poly Field Filtered	180 Days	HNO_3 pH <2
VOCs	SW 8260B	3-40mL VOAs	14 days	HCl pH<2
Direct Inject Alcohols *ethylene glycol*	SW 8015B Mod	2-40mL VOAs	7 days	No Preservative 4°C
SVOCs, including benzyl alcohol and 2-butoxy ethanol	SW 8270C	2-1 L ambers	7 days extraction/ 40 days analysis	4°C
Petroleum Hydrocarbons	Diesel Range Organics SW 8015B Mod	3-40mL VOAs	14 days	HCl pH<2
	Gasoline Range Organics SW 8015B Mod	3-40mL VOAs	14 days	HCl pH<2
Total Organic Carbon	EPA 415.1	2-40mL VOAs amber glass	28 days	H_2SO_4 pH<2

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CHAIN OF CUSTODY RECORD

PAGE 1 OF 1

PROJECT NO.	PROJECT NAME
7	HELSTF Groundwater Sampling

SAMPLER'S SIGNATURE: George Esqueda

DATE	TIME	SAMPLE ID	MATRIX	LAB NO.	NO. OF CONTAINERS	VOC	DRO/GRO	D.I.A	TOC	SVOC	Water Quality	Amm Nitrogen	Total Metals	Diss Metals	Diss Ions	REMARKS
																NH3
1/17/07	1400	HLSF-0085-DRW-012-~~1206~~ 0107 GE	Water	114202	19	X	X	X	X	X	X	X	X	X	X	•
1/17/07	1400	HLSF-0085-TB-779-~~1206~~ 0107 GE	Water	114203	2	X										

PROJECT INFORMATION	SAMPLES RECEIVED		1. RELINQUISHED BY: (SIGNATURE)	2. RELINQUISHED BY: (SIGNATURE)	3. RECEIVED BY LAB: (SIGNATURE)
PROJECT MANAGER: William Little	TOTAL NO. OF CONTAINERS		(PRINTED NAME) George Esqueda	(PRINTED NAME) Jeffrey Lane	(PRINTED NAME) Kim Bouldin / Kimberly Bouldin
SHIPPING ID NO.: Lone Star 39302602	CHAIN OF CUSTODY SEALS		RECEIVED BY: (SIGNATURE)	RECEIVED BY: (SIGNATURE)	(COMPANY) Trace Analysis
VIA: Courier LS	GOOD CONDITION/CHILLED	4°C	(TIME/DATE) 4:10pm 17 Jan 07	(TIME/DATE) 1740 1-17-07	(TIME/DATE) 8:30 / 1/19/07
	CONFORMS TO RECORD	NA	SPECIAL INSTRUCTIONS/COMMENTS: PLEASE SEE ATTACHED ANALYTE LIST FOR DETAILS Tabel B		

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Analyte Table B

HELSTF Phase III RFI

Groundwater Sample Collection

Parameter	Analytical Method	Container	Min Hold Time	Preservative
Water Quality *Total Dissolved Solids* *Alkalinity, Carbonate/Bicarbonate* *Alkalinity, Hydroxide* *pH* *Conductance*	EPA 160.1 EPA 310.1 EPA 150.1 EPA 120.1	1 L Poly	48 hours	4°C
Ammonia Nitrogen	EPA 350.2	1-500mL poly	28 days	H_2SO_4 pH<2
Dissolved Ions *Bromide* *Nitrate-N* *Chloride* *Nitrite-N* *Fluoride* *Sulfate*	EPA 300.0	Take from Water Quality container	48 hrs NO3 & NO2; others 28 days	4°C
Total Metals RCRA 8 *copper* *phosphorus* *sodium* *zinc*	SW 6010B and [mercury] 7470A / 7471A	500 mL Poly	180 days OR 28 Days [mercury]	HNO_3 pH <2
Dissolved Metals RCRA 7 *copper* *phosphorus* *sodium* *zinc*	SW 6010B	500 mL Poly Field Filtered	180 Days	HNO_3 pH <2
VOCs	SW 8260B	3-40mL VOAs	14 days	HCl pH<2
Direct Inject Alcohols *ethylene glycol*	SW 8015B Mod	2-40mL VOAs	7 days	No Preservative 4°C
SVOCs, including benzyl alcohol and 2-butoxy ethanol	SW 8270C	2-1 L ambers	7 days extraction/ 40 days analysis	4°C
Petroleum Hydrocarbons	Diesel Range Organics SW 8015B Mod	3-40mL VOAs	14 days	HCl pH<2
	Gasoline Range Organics SW 8015B Mod	3-40mL VOAs	14 days	HCl pH<2
Total Organic Carbon	EPA 415.1	2-40mL VOAs amber glass	28 days	H_2SO_4 pH<2

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CHAIN OF CUSTODY RECORD

PAGE 1 OF 1

PROJECT NO.	PROJECT NAME
7	HELSTF Groundwater Sampling

SAMPLER'S SIGNATURE: George Esqueda

DATE	TIME	SAMPLE ID	MATRIX	LAB NO.	NO. OF CONTAINERS	VOC	DRO/GRO	D.I.A	TOC	SVOC	Water Quality	Amm Nitrogen	Total Metals	Diss Metals	Diss Ions	Cl, NO3-NO2, SO4	Br-/F-/NO3-NO2	REMARKS
							DG											
12/20/06		HLSF-0085-HMW-039-1206	Water	112447	19	X	X	X	X	X	X	X	X	X	X	X	X	
12/20/06		HLSF-0085-TB-781-1206	Water	112448	2	X												

PROJECT INFORMATION	SAMPLES RECEIVED		1. RELINQUISHED BY: (SIGNATURE)	2. RELINQUISHED BY: (SIGNATURE)	3. RECEIVED BY LAB: (SIGNATURE)
PROJECT MANAGER: William Little	TOTAL NO. OF CONTAINERS		(PRINTED NAME) GEORGE ESQUEDA	(PRINTED NAME) James Gutierrez	(PRINTED NAME) Helena Stripling
SHIPPING ID NO. 36M3021	CHAIN OF CUSTODY SEALS		RECEIVED BY: (SIGNATURE)	RECEIVED BY: (SIGNATURE)	(COMPANY) Trace analysis
	GOOD CONDITION/CHILLED	4240	(TIME/DATE) 7:00 12/20/06	(TIME/DATE) 9:30 12-20-06	(TIME/DATE) 12/21 1019
MA: ...ier LS	CONFORMS TO RECORD	BR	SPECIAL INSTRUCTIONS/COMMENTS: PLEASE SEE ATTACHED ANALYTE LIST FOR DETAILS		

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Analyte Table B

HELSTF Phase III RFI

Groundwater Sample Collection

Parameter	Analytical Method	Container	Min Hold Time	Preservative
Water Quality *Total Dissolved Solids* *Alkalinity, Carbonate/Bicarbonate* *Alkalinity, Hydroxide* *pH* *Conductance*	EPA 160.1 EPA 310.1 EPA 150.1 EPA 120.1	1 L Poly	48 hours	4°C
Ammonia Nitrogen	EPA 350.2	1-500mL poly	28 days	H_2SO_4 pH<2
Dissolved Ions *Bromide* *Nitrate-N* *Chloride* *Nitrite-N* *Fluoride* *Sulfate*	EPA 300.0	Take from Water Quality container	48 hrs NO3 & NO2; others 28 days	4°C
Total Metals RCRA 8 *copper* *phosphorus* *sodium* *zinc*	SW 6010B and [mercury] 7470A / 7471A	500 mL Poly	180 days OR 28 Days [mercury]	HNO_3 pH <2
Dissolved Metals RCRA 7 *copper* *phosphorus* *sodium* *zinc*	SW 6010B	500 mL Poly Field Filtered	180 Days	HNO_3 pH <2
VOCs	SW 8260B	3-40mL VOAs	14 days	HCl pH<2
Direct Inject Alcohols *ethylene glycol*	SW 8015B Mod	2-40mL VOAs	7 days	No Preservative 4°C
SVOCs, including benzyl alcohol and 2-butoxy ethanol	SW 8270C	2-1 L ambers	7 days extraction/ 40 days analysis	4°C
Petroleum Hydrocarbons	Diesel Range Organics SW 8015B Mod	3-40mL VOAs	14 days	HCl pH<2
	Gasoline Range Organics SW 8015B Mod	3-40mL VOAs	14 days	HCl pH<2
Total Organic Carbon	EPA 415.1	2-40mL VOAs amber glass	28 days	H_2SO_4 pH<2

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CHAIN OF CUSTODY RECORD

PAGE 1 OF 1

PROJECT NO.: 7

PROJECT NAME: HELSTF Groundwater Sampling

SAMPLER'S SIGNATURE: George Esqueda

DATE	TIME	SAMPLE ID	MATRIX	LAB NO.	NO. OF CONTAINERS	VOC	DRO/GRO	D.I.A	TOC	SVOC	Water Quality	Amm Nitrogen	Total Metals	Diss Metals	Diss Ions	Perchlorate	Br/Cl/ NO3-NO2/SO4	REMARKS
							D G											
12/14/06	1312	HLSF-0085-HMW-040-1206	Water	112184 20	19	X	X	X	X	X	X	X	X	X	X	X	X	X
					1													
12/14/06	1312	HLSF-0085-TB-782-1206	Water	112185	2	X												

PROJECT INFORMATION	SAMPLES RECEIVED		1. RELINQUISHED BY: (SIGNATURE)	2. RELINQUISHED BY: (SIGNATURE)	3. RECEIVED BY LAB: (SIGNATURE)
PROJECT MANAGER: William Little	TOTAL NO. OF CONTAINERS		(PRINTED NAME) GEORGE ESQUEDA	(PRINTED NAME) James Gutierrez	(PRINTED NAME) James Taylor
SHIPPING ID NO.: 3879380 4	CHAIN OF CUSTODY SEALS		RECEIVED BY: (SIGNATURE)	RECEIVED BY: (SIGNATURE)	(COMPANY) Trace Analysis
	GOOD CONDITION/CHILLED	4°C	(TIME/DATE) 1577 12/15/06	(TIME/DATE) 1720 12-15-06	(TIME/DATE) 12/16/06 9:32 am
VIA: Courier LS	CONFORMS TO RECORD	MA	SPECIAL INSTRUCTIONS / COMMENTS: PLEASE SEE ATTACHED ANALYTE LIST FOR DETAILS		Lone Star 3879203

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Analyte Table A

HELSTF Phase III RFI

Groundwater Sample Collection

Parameter	Analytical Method	Container	Min Hold Time	Preservative
Water Quality *Total Dissolved Solids* *Alkalinity, Carbonate/Bicarbonate* *Alkalinity, Hydroxide* *pH* *Conductance*	EPA 160.1 EPA 310.1 EPA 150.1 EPA 120.1	1 L Poly	48 hours	4°C
Ammonia Nitrogen	EPA 350.2	1-500mL poly	28 days	H_2SO_4 pH<2
Dissolved Ions *Bromide* *Nitrate-N* *Chloride* *Nitrite-N* *Fluoride* *Sulfate*	EPA 300.0	Take from Water Quality container	48 hrs NO3 & NO2; others 28 days	4°C
Total Metals *Cadmium* *Phosphorous* *Chromium* *Silver* *Copper* *Sodium* *Lead* *Zinc*	SW 6010B	500 mL Poly	180 days	HNO_3 pH <2
Dissolved Metals *Cadmium* *Chromium* *Silver* *Copper* *Sodium* *Lead* *Zinc*	SW 6010B	500 mL Poly Field Filtered	180 Days	HNO_3 pH <2
VOCs	SW 8260B	3-40mL VOAs	14 days	HCl pH<2
Direct Inject Alcohols *ethylene glycol*	SW 8015B Mod	2-40mL VOAs	7 days	No Preservative 4°C
SVOCs, including benzyl alcohol and 2-butoxy ethanol	SW 8270C	2-1 L ambers	7 days extraction/ 40 days analysis	4°C
Petroleum Hydrocarbons	Diesel Range Organics SW 8015B Mod	3-40mL VOAs	14 days	HCl pH<2
	Gasoline Range Organics SW 8015B Mod	3-40mL VOAs	14 days	HCl pH<2
Total Organic Carbon	EPA 415.1	2-40mL VOAs amber glass	28 days	H_2SO_4 pH<2

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CHAIN OF CUSTODY RECORD

PAGE 1 OF 1

PROJECT NO.: 7

PROJECT NAME: HELSTF Groundwater Sampling

SAMPLER'S SIGNATURE: George Esqueda

DATE	TIME	SAMPLE ID	MATRIX	LAB NO.	NO. OF CONTAINERS	VOC	DRO/GRO	D.I.A	TOC	SVOC	Water Quality	Amm Nitrogen	Total Metals	Diss Metals	Diss Ions	Perchlorate	Br/Fl/Nitrite Cl/NO3/Sulfate	REMARKS
12/14/06	1511	HLSF-0085-HMW-041-1206	Water	112188	20	X	X	X	X	X	X	X	X	X	X	X	X X	
12/14/06	1511	HLSF-0085-TB-783-1206	Water	12189	2	X												

PROJECT INFORMATION	SAMPLES RECEIVED		1. RELINQUISHED BY: (SIGNATURE)	2. RELINQUISHED BY: (SIGNATURE)	3. RECEIVED BY LAB: (SIGNATURE)
PROJECT MANAGER: William Little	TOTAL NO. OF CONTAINERS		(PRINTED NAME) George ESQUEDA	(PRINTED NAME) James Gutierrez	(PRINTED NAME) James Taylor
SHIPPING ID NO.: 36 743004	CHAIN OF CUSTODY SEALS		RECEIVED BY: (SIGNATURE)	RECEIVED BY: (SIGNATURE)	(COMPANY) Traceanalysis
	GOOD CONDITION/CHILLED	42	(TIME/DATE) 1537 12/15/06	(TIME/DATE) 1720 12/15-06	(TIME/DATE) 9:22 am 12/16/06
VIA: Courier	CONFORMS TO RECORD		SPECIAL INSTRUCTIONS / COMMENTS: PLEASE SEE ATTACHED ANALYTE LIST FOR DETAILS		3879 3032

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Analyte Table A

HELSTF Phase III RFI

Groundwater Sample Collection

Parameter	Analytical Method	Container	Min Hold Time	Preservative
Water Quality *Total Dissolved Solids* *Alkalinity, Carbonate/Bicarbonate* *Alkalinity, Hydroxide* *pH* *Conductance*	EPA 160.1 EPA 310.1 EPA 150.1 EPA 120.1	1 L Poly	48 hours	4°C
Ammonia Nitrogen	EPA 350.2	1-500mL poly	28 days	H_2SO_4 pH<2
Dissolved Ions *Bromide* *Nitrate-N* *Chloride* *Nitrite-N* *Fluoride* *Sulfate*	EPA 300.0	Take from Water Quality container	48 hrs NO3 & NO2; others 28 days	4°C
Total Metals *Cadmium* *Phosphorous* *Chromium* *Silver* *Copper* *Sodium* *Lead* *Zinc*	SW 6010B	500 mL Poly	180 days	HNO_3 pH <2
Dissolved Metals *Cadmium* *Chromium* *Silver* *Copper* *Sodium* *Lead* *Zinc*	SW 6010B	500 mL Poly Field Filtered	180 Days	HNO_3 pH <2
VOCs	SW 8260B	3-40mL VOAs	14 days	HCl pH<2
Direct Inject Alcohols *ethylene glycol*	SW 8015B Mod	2-40mL VOAs	7 days	No Preservative 4°C
SVOCs, including benzyl alcohol and 2-butoxy ethanol	SW 8270C	2-1 L ambers	7 days extraction/ 40 days analysis	4°C
Petroleum Hydrocarbons	Diesel Range Organics SW 8015B Mod	3-40mL VOAs	14 days	HCl pH<2
	Gasoline Range Organics SW 8015B Mod	3-40mL VOAs	14 days	HCl pH<2
Total Organic Carbon	EPA 415.1	2-40mL VOAs amber glass	28 days	H_2SO_4 pH<2

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CHAIN OF CUSTODY RECORD

PAGE 1 OF 1

PROJECT NO.	PROJECT NAME
7	HELSTF Groundwater Sampling

SAMPLER'S SIGNATURE: George Esqueda

DATE	TIME	SAMPLE ID	MATRIX	LAB NO.	NO. OF CONTAINERS	VOC	DRO/GRO	D.I.A	TOC	SVOC	Water Quality	Amm Nitrogen	Total Metals	Diss Metals	Diss Ions	REMARKS
							DG									
12/19/06	1037	HLSF-0085-HMW-043-1206	Water	112406	19	X	X	X	X	X	X	X	X	X	X	
12/19/06	1037	HLSF-0085-TB-784-1206	Water	112407	2	X										

PROJECT INFORMATION	SAMPLES RECEIVED		1. RELINQUISHED BY: (SIGNATURE)	2. RELINQUISHED BY: (SIGNATURE)	3. RECEIVED BY LAB: (SIGNATURE)
PROJECT MANAGER: William Little	TOTAL NO. OF CONTAINERS		(PRINTED NAME) George ESQUEDA	(PRINTED NAME) James Gutierrez	(PRINTED NAME) Arena Ripley
SHIPPING ID NO. 3698305	CHAIN OF CUSTODY SEALS		RECEIVED BY: (SIGNATURE)	RECEIVED BY: (SIGNATURE)	(COMPANY) Trace Analysis
	GOOD CONDITION/CHILLED	4°C	(TIME/DATE) 4:00 12/19/06	(TIME/DATE) 1735 12-19-06	(TIME/DATE) 12/21/06 9:00
VIA: Courier	CONFORMS TO RECORD		SPECIAL INSTRUCTIONS / COMMENTS: PLEASE SEE ATTACHED ANALYTE LIST FOR DETAILS		

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B

Analyte Table B

HELSTF Phase III RFI

Groundwater Sample Collection

Parameter	Analytical Method	Container	Min Hold Time	Preservative
Water Quality *Total Dissolved Solids* *Alkalinity, Carbonate/Bicarbonate* *Alkalinity, Hydroxide* *pH* *Conductance*	EPA 160.1 EPA 310.1 EPA 150.1 EPA 120.1	1 L Poly	48 hours	4°C
Ammonia Nitrogen	EPA 350.2	1-500mL poly	28 days	H_2SO_4 pH<2
Dissolved Ions *Bromide* *Nitrate-N* *Chloride* *Nitrite-N* *Fluoride* *Sulfate*	EPA 300.0	Take from Water Quality container	48 hrs NO3 & NO2; others 28 days	4°C
Total Metals RCRA 8 Hg *copper* *phosphorus* *sodium* *zinc*	SW 6010B and [mercury] 7470A / 7471A	500 mL Poly	180 days OR 28 Days [mercury]	HNO_3 pH <2
Dissolved Metals RCRA 7 *copper* *phosphorus* *sodium* *zinc*	SW 6010B	500 mL Poly Field Filtered	180 Days	HNO_3 pH <2
VOCs	SW 8260B	3-40mL VOAs	14 days	HCl pH<2
Direct Inject Alcohols *ethylene glycol*	SW 8015B Mod	2-40mL VOAs	7 days	No Preservative 4°C
SVOCs, including benzyl alcohol and 2-butoxy ethanol	SW 8270C	2-1 L ambers	7 days extraction/ 40 days analysis	4°C
Petroleum Hydrocarbons	Diesel Range Organics SW 8015B Mod	3-40mL VOAs	14 days	HCl pH<2
	Gasoline Range Organics SW 8015B Mod	3-40mL VOAs	14 days	HCl pH<2
Total Organic Carbon	EPA 415.1	2-40mL VOAs amber glass	28 days	H_2SO_4 pH<2

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WTCS

CHAIN OF CUSTODY RECORD

PAGE 1 OF 1

PROJECT NO.: 7

PROJECT NAME: HELSTF Groundwater Sampling

SAMPLER'S SIGNATURE:

DATE	TIME	SAMPLE ID	MATRIX	LAB NO.	NO. OF CONTAINERS	VOC	D.I.A.	TOC	Water Quality	Amm Nitrogen	Total Metals	Diss. Metals	Diss. Ions			REMARKS
12-7-06	1245	HLSF-0085-HMW-021-1206	Water	111245	12	X	X	X	X	X	X	X	X			
12-7-06	1245	HLSF-0085-TB-785-1206	Water	111246	2	X										

PROJECT INFORMATION	SAMPLES RECEIVED		1. RELINQUISHED BY: (SIGNATURE)	2. RELINQUISHED BY: (SIGNATURE)	3. RECEIVED BY LAB: (SIGNATURE)
PROJECT MANAGER: William Little	TOTAL NO. OF CONTAINERS		(PRINTED NAME) Gabriel Garcia	(PRINTED NAME) Jeffrey Lane	(PRINTED NAME) Reena Ripley
SHIPPING ID NO.: 3919 2361	CHAIN OF CUSTODY SEALS		RECEIVED BY: (SIGNATURE)	RECEIVED BY: (SIGNATURE)	(PRINTED NAME) Reena Ripley
VIA: Courier LS	GOOD CONDITION/COOLED	4C	(TIME/DATE) 09:20 am 08 Dec 06	(TIME/DATE) 09:30 12-8-06	(COMPANY) Trace Analysis
	CONFORMS TO RECORD	MA	SPECIAL INSTRUCTIONS/COMMENTS: PLEASE SEE ATTACHED ANALYTE LIST FOR DETAILS		(TIME/DATE) 12-9-06 10:15

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Analyte Table C

HELSTF Phase III RFI

Groundwater Sample Collection

Parameter	Analytical Method	Container	Min Hold Time	Preservative
Water Quality *Total Dissolved Solids* *Alkalinity, Carbonate/Bicarbonate* *Alkalinity, Hydroxide* *pH* *Conductance*	EPA 160.1 EPA 310.1 EPA 150.1 EPA 120.1	1 L Poly	48 hours	4°C
Ammonia Nitrogen	EPA 350.2	1-500mL poly	28 days	H_2SO_4 pH<2
Dissolved Ions *Bromide* *Nitrate-N* *Chloride* *Nitrite-N* *Fluoride* *Sulfate*	EPA 300.0	Take from Water Quality container	48 hrs NO3 & NO2; others 28 days	4°C
Total Metals *RCRA 8* ~~Hg~~ *copper* *phosphorus* *sodium* *zinc*	SW 6010B and [mercury] 7470A / 7471A	500 mL Poly	180 days OR 28 Days [mercury]	HNO_3 pH <2
Dissolved Metals *RCRA 7* ~~Hg~~ *copper* *sodium* *zinc*	SW 6010B	500 mL Poly Field Filtered	180 Days	HNO_3 pH <2
VOCs	SW 8260B	3-40mL VOAs	14 days	HCl pH<2
Direct Inject Alcohols *ethylene glycol*	SW 8015B Mod	2-40mL VOAs	7 days	No Preservative 4°C
Total Organic Carbon	EPA 415.1	2-40mL VOAs amber glass	28 days	H_2SO_4 pH<2

9/26/2006 8:27 AM

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WTS

CHAIN OF CUSTODY RECORD

PAGE 1 OF 1

PROJECT NO.: 7

PROJECT NAME: HELSTF Groundwater Sampling

SAMPLER'S SIGNATURE:

DATE	TIME	SAMPLE ID	MATRIX	LAB NO.	NO. OF CONTAINERS	VOC	D.I.A	TOC	Water Quality	Amm Nitrogen	Total Metals	Diss. Metals	Diss. Ions	NO_3-NO_2	Conductivity/Salinity	REMARKS
12-11-06	1012	HLSF-0085-HMW-023-1206	Water	111614	11	X*	X	X	X	X	X	X*	X	X*	X*	
12-11-06	1012	HLSF-0085-TB-786-1206	Water	111615	2	X*										

PROJECT INFORMATION	SAMPLES RECEIVED		1. RELINQUISHED BY: (SIGNATURE)	2. RELINQUISHED BY: (SIGNATURE)	3. RECEIVED BY LAB: (SIGNATURE)
PROJECT MANAGER: William Little	TOTAL NO. OF CONTAINERS		(PRINTED NAME) GABRIEL GALLIS	(PRINTED NAME) James Gutierrez	(PRINTED NAME) Sheena Ripley
SHIPPING ID NO.: 39192364	CHAIN OF CUSTODY SEALS		RECEIVED BY: (SIGNATURE)	RECEIVED BY: (SIGNATURE)	(COMPANY) Trace Analysis
	GOOD CONDITION/CHILLED		(TIME/DATE) 10:40 am 12-12-06	(TIME/DATE) 10:55 12-12-06	(TIME/DATE) 12/13/06 9:00
VIA: Courier	CONFORMS TO RECORD		SPECIAL INSTRUCTIONS/COMMENTS: PLEASE SEE ATTACHED ANALYTE LIST FOR DETAILS		

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Analyte Table C

HELSTF Phase III RFI

Groundwater Sample Collection

Parameter	Analytical Method	Container	Min Hold Time	Preservative
Water Quality *Total Dissolved Solids* *Alkalinity, Carbonate/Bicarbonate* *Alkalinity, Hydroxide* *pH* *Conductance*	EPA 160.1 EPA 310.1 EPA 150.1 EPA 120.1	1 L Poly	48 hours	4°C
Ammonia Nitrogen	EPA 350.2	1-500mL poly	28 days	H_2SO_4 pH<2
Dissolved Ions *Bromide* *Nitrate-N* *Chloride* *Nitrite-N* *Fluoride* *Sulfate*	EPA 300.0	Take from Water Quality container	48 hrs NO3 & NO2; others 28 days	4°C
Total Metals *RCRA 8* 45 *copper* *phosphorus* *sodium* *zinc*	SW 6010B and [mercury] 7470A / 7471A	500 mL Poly	180 days OR 28 Days [mercury]	HNO_3 pH <2
Dissolved Metals *RCRA 7* *copper* *sodium* *zinc*	SW 6010B	500 mL Poly Field Filtered	180 Days	HNO_3 pH <2
VOCs	SW 8260B	3-40mL VOAs	14 days	HCl pH<2
Direct Inject Alcohols *ethylene glycol*	SW 8015B Mod	2-40mL VOAs	7 days	No Preservative 4°C
Total Organic Carbon	EPA 415.1	2-40mL VOAs amber glass	28 days	H_2SO_4 pH<2

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CHAIN OF CUSTODY RECORD

PAGE 1 OF 1

PROJECT NO.: 7

PROJECT NAME: HELSTF Groundwater Sampling

SAMPLER'S SIGNATURE:

DATE	TIME	SAMPLE ID	MATRIX	LAB NO.	NO. OF CONTAINERS	VOC	D.I.A	TOC	Water Quality	Amm Nitrogen	Total Metals	Diss. Metals	Diss. Ions	Chloride/Sulfide		REMARKS
12-11-06	1012	HLSF-0085-HMW-123-1206	Water	111621	11	X	X	X	X	X	X	X	X	X		
12-11-06	1012	HLSF-0085-TB-787-1206	Water	111622	2	X										

ANALYSIS REQUESTED

PROJECT INFORMATION	SAMPLES RECEIVED		1. RELINQUISHED BY: (SIGNATURE)	2. RELINQUISHED BY: (SIGNATURE)	3. RECEIVED BY LAB: (SIGNATURE)
PROJECT MANAGER: William Little	TOTAL NO. OF CONTAINERS		(PRINTED NAME) GABRIEL GALLOTA	(PRINTED NAME) James Gutierrez	(PRINTED NAME) Geena Ripley
SHIPPING ID NO.: 39192364	CHAIN OF CUSTODY SEALS		RECEIVED BY: (SIGNATURE)	RECEIVED BY: (SIGNATURE)	(COMPANY) Trace Analysis
VIA: Courier LS	GOOD CONDITION/CHILLED	4°C	(TIME/DATE) 9:40 am 12-12-06	(TIME/DATE) 10:55 12-12-06	(TIME/DATE) 12/13/06 9:00
	CONFORMS TO RECORD		SPECIAL INSTRUCTIONS / COMMENTS: PLEASE SEE ATTACHED ANALYTE LIST FOR DETAILS		

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Analyte Table C

HELSTF Phase III RFI

Groundwater Sample Collection

Parameter	Analytical Method	Container	Min Hold Time	Preservative
Water Quality *Total Dissolved Solids* *Alkalinity, Carbonate/Bicarbonate* *Alkalinity, Hydroxide* *pH* *Conductance*	EPA 160.1 EPA 310.1 EPA 150.1 EPA 120.1	1 L Poly	48 hours	4°C
Ammonia Nitrogen	EPA 350.2	1-500mL poly	28 days	H_2SO_4 pH<2
Dissolved Ions *Bromide* *Nitrate-N* *Chloride* *Nitrite-N* *Fluoride* *Sulfate*	EPA 300.0	Take from Water Quality container	48 hrs NO3 & NO2; others 28 days	4°C
Total Metals *RCRA 8* Hg *copper* *phosphorus* *sodium* *zinc*	SW 6010B and [mercury] 7470A / 7471A	500 mL Poly	180 days OR 28 Days [mercury]	HNO_3 pH <2
Dissolved Metals *RCRA 7* *copper* *sodium* *zinc*	SW 6010B	500 mL Poly Field Filtered	180 Days	HNO_3 pH <2
VOCs	SW 8260B	3-40mL VOAs	14 days	HCl pH<2
Direct Inject Alcohols *ethylene glycol*	SW 8015B Mod	2-40mL VOAs	7 days	No Preservative 4°C
Total Organic Carbon	EPA 415.1	2-40mL VOAs amber glass	28 days	H_2SO_4 pH<2

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788

CHAIN OF CUSTODY RECORD

PAGE 1 OF 1

PROJECT NO.: 7

PROJECT NAME: HELSTF Groundwater Sampling

SAMPLER'S SIGNATURE: [signature]

DATE	TIME	SAMPLE ID	MATRIX	LAB NO.	NO. OF CONTAINERS	VOC	D.I.A	TOC	Water Quality	Amm Nitrogen	Total Metals	Diss. Metals	Diss. Ions			REMARKS
12-7-06	1506	HLSF-0085-HMW-024-1206	Water	111247	12	X	X	X	X	X	X	X	X			
12-7-06	1506	HLSF-0085-TB-788-1206	Water	111248	2	X										

PROJECT INFORMATION	SAMPLES RECEIVED		1. RELINQUISHED BY: (SIGNATURE)	2. RELINQUISHED BY: (SIGNATURE)	3. RECEIVED BY LAB: (SIGNATURE)
PROJECT MANAGER: William Little	TOTAL NO. OF CONTAINERS		(PRINTED NAME) GABRIEL GARCIA	(PRINTED NAME) Jeffrey Lane	(PRINTED NAME) Sheena Shipley
SHIPPING ID NO.: 39192361	CHAIN OF CUSTODY SEALS		RECEIVED BY: (SIGNATURE)	RECEIVED BY: (SIGNATURE)	(COMPANY) Trace Analysis
	GOOD CONDITION/CHILLED	4°C	(TIME/DATE) 08:20am 08Dec06	(TIME/DATE) 09:30 12-8-06	(TIME/DATE) 12-9-06 10:15
VIA: Courier	CONFORMS TO RECORD	NA	SPECIAL INSTRUCTIONS/COMMENTS: PLEASE SEE ATTACHED ANALYTE LIST FOR DETAILS		

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Analyte Table C

HELSTF Phase III RFI

Groundwater Sample Collection

Parameter	Analytical Method	Container	Min Hold Time	Preservative
Water Quality *Total Dissolved Solids* *Alkalinity, Carbonate/Bicarbonate* *Alkalinity, Hydroxide* *pH* *Conductance*	EPA 160.1 EPA 310.1 EPA 150.1 EPA 120.1	1 L Poly	48 hours	4°C
Ammonia Nitrogen	EPA 350.2	1-500mL poly	28 days	H_2SO_4 pH<2
Dissolved Ions *Bromide* *Nitrate-N* *Chloride* *Nitrite-N* *Fluoride* *Sulfate*	EPA 300.0	Take from Water Quality container	48 hrs NO3 & NO2; others 28 days	4°C
Total Metals *RCRA-8* 7 ~~Hg~~ *copper* *phosphorus* *sodium* *zinc*	SW 6010B and [mercury] 7470A / 7471A	500 mL Poly	180 days OR 28 Days [mercury]	HNO_3 pH <2
Dissolved Metals *RCRA-7* ~~Hg~~ 7 *copper* *sodium* *zinc*	SW 6010B	500 mL Poly Field Filtered	180 Days	HNO_3 pH <2
VOCs	SW 8260B	3-40mL VOAs	14 days	HCl pH<2
Direct Inject Alcohols *ethylene-glycol*	SW 8015B Mod	2-40mL VOAs	7 days	No Preservative 4°C
Total Organic Carbon	EPA 415.1	2-40mL VOAs amber glass	28 days	H_2SO_4 pH<2

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CHAIN OF CUSTODY RECORD

PAGE 1 OF 1

PROJECT NO.: 7

PROJECT NAME: HELSTF Groundwater Sampling

SAMPLER'S SIGNATURE:

DATE	TIME	SAMPLE ID	MATRIX	LAB NO.	NO. OF CONTAINERS	VOC	D.I.A.	TOC	Water Quality	Amm Nitrogen	Total Metals	Diss. Metals	Diss. Ions	NO_3-NO_2	Cloride/Sulfate	REMARKS
12-11-06	1317	HLSF-0085-HMW-057-1206	Water	111619	12	X*	X	X	X	X	X	X*	X	X	X	
12-11-06	1317	HLSF-0085-TB-789-1206	Water	111620	2	X										

PROJECT INFORMATION	SAMPLES RECEIVED	1. RELINQUISHED BY: (SIGNATURE)	2. RELINQUISHED BY: (SIGNATURE)	3. RECEIVED BY LAB: (SIGNATURE)
PROJECT MANAGER: William Little	TOTAL NO. OF CONTAINERS	(PRINTED NAME) GABRIEL GARCIA	(PRINTED NAME) James Gutierrez	(PRINTED NAME) Treena Ripley
SHIPPING ID NO.: 391923604	CHAIN OF CUSTODY SEALS	RECEIVED BY: (SIGNATURE)	RECEIVED BY: (SIGNATURE)	(COMPANY) Traco analytics
VIA: Courier LS	GOOD CONDITION/COLD 4°C	(TIME/DATE) 08:40 12-12-06	(TIME/DATE) 10:55 12-12-06	(TIME/DATE) 12/13/06 9:00
	CONFORMS TO RECORD	SPECIAL INSTRUCTIONS / COMMENTS: PLEASE SEE ATTACHED ANALYTE LIST FOR DETAILS		

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Analyte Table C

HELSTF Phase III RFI

Groundwater Sample Collection

Parameter	Analytical Method	Container	Min Hold Time	Preservative
Water Quality *Total Dissolved Solids* *Alkalinity, Carbonate/Bicarbonate* *Alkalinity, Hydroxide* *pH* *Conductance*	EPA 160.1 EPA 310.1 EPA 150.1 EPA 120.1	1 L Poly	48 hours	4°C
Ammonia Nitrogen	EPA 350.2	1-500mL poly	28 days	H_2SO_4 pH<2
Dissolved Ions *Bromide* *Nitrate-N* *Chloride* *Nitrite-N* *Fluoride* *Sulfate*	EPA 300.0	Take from Water Quality container	48 hrs NO3 & NO2; others 28 days	4°C
Total Metals *RCRA 8* Hg *copper* *phosphorus* *sodium* *zinc*	SW 6010B and [mercury] 7470A / 7471A	500 mL Poly	180 days OR 28 Days [mercury]	HNO_3 pH <2
Dissolved Metals *RCRA 7* *copper* *sodium* *zinc*	SW 6010B	500 mL Poly Field Filtered	180 Days	HNO_3 pH <2
VOCs	SW 8260B	3-40mL VOAs	14 days	HCl pH<2
Direct Inject Alcohols *ethylene glycol*	SW 8015B Mod	2-40mL VOAs	7 days	No Preservative 4°C
Total Organic Carbon	EPA 415.1	2-40mL VOAs amber glass	28 days	H_2SO_4 pH<2

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CHAIN OF CUSTODY RECORD

PAGE 1 OF 1

PROJECT NO.	PROJECT NAME
7	HELSTF Groundwater Sampling

SAMPLER'S SIGNATURE

DATE	TIME	SAMPLE ID	MATRIX	LAB NO.	NO. OF CONTAINERS	VOC	TOC	Water Quality	Total Metals	Diss. Metals						REMARKS
1-4-07	1325	HLSF-0085-HMW-007-~~1206~~ 0107	Water	113153	8	X	X	X	X	X						
1-4-07	1325	HLSF-0085-TB-790-~~1206~~ 0107	Water	113154	2	X										

PROJECT INFORMATION	SAMPLES RECEIVED		1. RELINQUISHED BY: (SIGNATURE)	2. RELINQUISHED BY: (SIGNATURE)	3. RECEIVED BY LAB: (SIGNATURE)
PROJECT MANAGER: William Little	TOTAL NO. OF CONTAINERS		(PRINTED NAME) GABRIEL GARCIA	(PRINTED NAME) Jeffrey Lane	(PRINTED NAME) Sheena Shipley
SHIPPING ID NO. 3587930009	CHAIN OF CUSTODY SEALS		RECEIVED BY: (SIGNATURE)	RECEIVED BY: (SIGNATURE)	(COMPANY) Traco Analytical
	GOOD CONDITION/CHILLED	4°C	(TIME/DATE) 1103:10 pm 04 Jan 06	(TIME/DATE) 16:26 1-4-07	(TIME/DATE) 1-5-07 9:00
VIA: Courier	CONFORMS TO RECORD		SPECIAL INSTRUCTIONS/COMMENTS: PLEASE SEE ATTACHED ANALYTE LIST FOR DETAILS		

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Analyte Table D HELSTF Phase III RFI Groundwater Sample Collection				
Parameter	Analytical Method	Container	Min Hold Time	Preservative
Water Quality *Total Dissolved Solids* *Alkalinity, Carbonate/Bicarbonate* *Alkalinity, Hydroxide* *pH* *Conductance*	EPA 160.1 EPA 310.1 EPA 150.1 EPA 120.1	1 L Poly	48 hours	4°C
Total Metals *RCRA 8 7* *phosphorus* *sodium* *zinc*	SW 6010B and [mercury] 7470A / 7471A	500 mL Poly	180 days OR 28 Days [mercury]	HNO_3 pH <2
Dissolved Metals *RCRA 7* *sodium* *zinc*	SW 6010B	500 mL Poly Field Filtered	180 Days	HNO_3 pH <2
VOCs	SW 8260B	3-40mL VOAs	14 days	HCl pH<2
Total Organic Carbon	EPA 415.1	2-40mL VOAs amber glass	28 days	H_2SO_4 pH<2

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791

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CHAIN OF CUSTODY RECORD

PAGE 1 OF 1

PROJECT NO.: 7

PROJECT NAME: HELSTF Groundwater Sampling

SAMPLER'S SIGNATURE:

DATE	TIME	SAMPLE ID	MATRIX	LAB NO.	NO. OF CONTAINERS	VOC	TOC	Water Quality	Total Metals	Diss. Metals						REMARKS
1-3-07	1335	HLSF-0085-HMW-026 ~~1206~~ 0107	Water	113087	8	X	X	X	X	X						
1-3-07	1335	HLSF-0085-TB-791-~~1206~~ 0107	Water	113088	2	X										

PROJECT INFORMATION	SAMPLES RECEIVED	1. RELINQUISHED BY: (SIGNATURE)	2. RELINQUISHED BY: (SIGNATURE)	3. RECEIVED BY LAB: (SIGNATURE)
PROJECT MANAGER: William Little	TOTAL NO. OF CONTAINERS	(PRINTED NAME) Gabriel Garcia	(PRINTED NAME) Jeffrey Lane	(PRINTED NAME) Deena Quipley
SHIPPING ID NO.: 269130	CHAIN OF CUSTODY SEALS	RECEIVED BY: (SIGNATURE)	RECEIVED BY: (SIGNATURE)	(COMPANY) Trace Analysis
VIA: Courier	GOOD CONDITION/CHILLED 4°C	(TIME/DATE) 4:00 pm 03 Jan 07	(TIME/DATE) 1700 1-3-07	(TIME/DATE) 1-4-07 11:45
	CONFORMS TO RECORD	SPECIAL INSTRUCTIONS/COMMENTS: PLEASE SEE ATTACHED ANALYTE LIST FOR DETAILS		

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Analyte Table D

HELSTF Phase III RFI

Groundwater Sample Collection

Parameter	Analytical Method	Container	Min Hold Time	Preservative
Water Quality *Total Dissolved Solids* *Alkalinity, Carbonate/Bicarbonate* *Alkalinity, Hydroxide* *pH* *Conductance*	EPA 160.1 EPA 310.1 EPA 150.1 EPA 120.1	1 L Poly	48 hours	4°C
Total Metals *RCRA 8 7* *phosphorus* *sodium* *zinc*	SW 6010B and [mercury] 7470A / 7471A	500 mL Poly	180 days OR 28 Days [mercury]	HNO_3 pH <2
Dissolved Metals *RCRA 7* *sodium* *zinc*	SW 6010B	500 mL Poly Field Filtered	180 Days	HNO_3 pH <2
VOCs	SW 8260B	3-40mL VOAs	14 days	HCl pH<2
Total Organic Carbon	EPA 415.1	2-40mL VOAs amber glass	28 days	H_2SO_4 pH<2

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4122909

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792

CHAIN OF CUSTODY RECORD

PAGE 1 OF 1

PROJECT NO.	PROJECT NAME
7	HELSTF Groundwater Sampling

SAMPLER'S SIGNATURE

DATE	TIME	SAMPLE ID	MATRIX	LAB NO.	NO. OF CONTAINERS	VOC	TOC	Water Quality	Total Metals	Diss. Metals						REMARKS
12-28-06	1045	HLSF-0085-HELSTF-001-1206	Water	112838	8	X	X	X	X	X						
12-28-06	1045	HLSF-0085-TB-792-1206	Water	112839	2	X										

PROJECT INFORMATION	SAMPLES RECEIVED	1. RELINQUISHED BY: (SIGNATURE)	2. RELINQUISHED BY: (SIGNATURE)	3. RECEIVED BY LAB: (SIGNATURE)
PROJECT MANAGER: William Little	TOTAL NO. OF CONTAINERS	(PRINTED NAME) Gabriel Gallegos	(PRINTED NAME) Jeffrey Lane	(PRINTED NAME) Sheena Shipley
SHIPPING ID NO. 35793014	CHAIN OF CUSTODY SEALS	RECEIVED BY: (SIGNATURE)	RECEIVED BY: (SIGNATURE)	(COMPANY) Trace Analysis
	GOOD CONDITION/CHILLED 4°C	(TIME/DATE) 3:45pm 28 Dec 06	(TIME/DATE) 16:47 12-28-06	(TIME/DATE) 12-29-06 9:00
VIA: Courier	CONFORMS TO RECORD	SPECIAL INSTRUCTIONS/COMMENTS: PLEASE SEE ATTACHED ANALYTE LIST FOR DETAILS		

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Analyte Table D HELSTF Phase III RFI Groundwater Sample Collection				
Parameter	Analytical Method	Container	Min Hold Time	Preservative
Water Quality ~~Total Dissolved Solids~~ Alkalinity, Carbonate/Bicarbonate Alkalinity, Hydroxide pH Conductance	EPA 160.1 EPA 310.1 EPA 150.1 EPA 120.1	1 L Poly	48 hours	4°C
Total Metals RCRA 8 H_2 phosphorus sodium zinc	SW 6010B and [mercury] 7470A / 7471A	500 mL Poly	180 days OR 28 Days [mercury]	HNO_3 pH <2
Dissolved Metals RCRA 7 sodium zinc	SW 6010B	500 mL Poly Field Filtered	180 Days	HNO_3 pH <2
VOCs	SW 8260B	3-40mL VOAs	14 days	HCl pH<2
Total Organic Carbon	EPA 415.1	2-40mL VOAs amber glass	28 days	H_2SO_4 pH<2

9/26/2006 8:28 AM

112840-41

612910

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793

CHAIN OF CUSTODY RECORD

PAGE 1 OF 1

PROJECT NO.: 7

PROJECT NAME: HELSTF Groundwater Sampling

SAMPLER'S SIGNATURE:

DATE	TIME	SAMPLE ID	MATRIX	LAB NO.	NO. OF CONTAINERS	VOC	TOC	Water Quality	Total Metals	Diss. Metals						REMARKS
12-28-06	1045	HLSF-0085-HELSTF-101-1206	Water	112840	8	X	X	X	X	X						
12-28-06	1045	HLSF-0085-TB-793-1206	Water	112841	2	X										

PROJECT INFORMATION	SAMPLES RECEIVED		1. RELINQUISHED BY: (SIGNATURE)	2. RELINQUISHED BY: (SIGNATURE)	3. RECEIVED BY LAB: (SIGNATURE)
PROJECT MANAGER: William Little	TOTAL NO. OF CONTAINERS		(PRINTED NAME) GABRIEL GARCIA	(PRINTED NAME) Jeffrey Lane	(PRINTED NAME) Sheena Shipley
SHIPPING ID NO.: 23079301	CHAIN OF CUSTODY SEALS		RECEIVED BY: (SIGNATURE)	RECEIVED BY: (SIGNATURE)	(COMPANY) Trace Analysis
VIA: Courier CS	GOOD CONDITION/COOLED	4°C	(TIME/DATE) 3:45pm 28 Dec 06	(TIME/DATE) 16:47 12-28-06	(TIME/DATE) 12/29/06 9:10
	CONFORMS TO RECORD	MA	SPECIAL INSTRUCTIONS/COMMENTS: PLEASE SEE ATTACHED ANALYTE LIST FOR DETAILS		

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Analyte Table D

HELSTF Phase III RFI

Groundwater Sample Collection

Parameter	Analytical Method	Container	Min Hold Time	Preservative
Water Quality *Total Dissolved Solids* *Alkalinity, Carbonate/Bicarbonate* *Alkalinity, Hydroxide* *pH* *Conductance*	EPA 160.1 EPA 310.1 EPA 150.1 EPA 120.1	1 L Poly	48 hours	4°C
Total Metals *RCRA 8* *phosphorus* *sodium* *zinc*	SW 6010B and [mercury] 7470A / 7471A	500 mL Poly	180 days OR 28 Days [mercury]	HNO_3 pH <2
Dissolved Metals *RCRA 7* *sodium* *zinc*	SW 6010B	500 mL Poly Field Filtered	180 Days	HNO_3 pH <2
VOCs	SW 8260B	3-40mL VOAs	14 days	HCl pH<2
Total Organic Carbon	EPA 415.1	2-40mL VOAs amber glass	28 days	H_2SO_4 pH<2

9/26/2006 8:28 AM

112449-50

612119

794 E

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WTS

CHAIN OF CUSTODY RECORD

PAGE 1 OF 1

PROJECT NO.: 7

PROJECT NAME: HELSTF Groundwater Sampling

SAMPLER'S SIGNATURE:

DATE	TIME	SAMPLE ID	MATRIX	LAB NO.	NO. OF CONTAINERS	VOC	DRO/GRO	D.I.A	TOC	Water Quality	Total Metals	Diss. Metals	Diss. Ions			REMARKS
							DG									
12-20-06	1025	HLSF-0085-HMW-029-1206	Water	112449	16	X	X	X	X	X	X	X	X			Cl, Sulfate Br, F, NO3-NO2 Total Hg
12-20-06	1025	HLSF-0085-TB-794-1206	Water	112450	2	X										

PROJECT INFORMATION	SAMPLES RECEIVED		1. RELINQUISHED BY: (SIGNATURE)	2. RELINQUISHED BY: (SIGNATURE)	3. RECEIVED BY LAB: (SIGNATURE)
PROJECT MANAGER: William Little	TOTAL NO. OF CONTAINERS		(PRINTED NAME) Gabriel Garcia	(PRINTED NAME) James Gutierrez	(PRINTED NAME) Geena Ripley
SHIPPING ID NO.: 5	CHAIN OF CUSTODY SEALS		RECEIVED BY: (SIGNATURE)	RECEIVED BY: (SIGNATURE)	(COMPANY) Hall analytical
	GOOD CONDITION/CHILLED	4°C	(TIME/DATE) 4:00 12/20/06	(TIME/DATE) 1730 12-20-06	(TIME/DATE) 12/21/06 9:00
VIA: Courier 3582300	CONFORMS TO RECORD		SPECIAL INSTRUCTIONS/COMMENTS: PLEASE SEE ATTACHED ANALYTE LIST FOR DETAILS		

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Analyte Table E HELSTF Phase III RFI Groundwater Sample Collection				
Parameter	**Analytical Method**	**Container**	**Min Hold Time**	**Preservative**
Water Quality *Total Dissolved Solids* *Alkalinity, Carbonate/Bicarbonate* *Alkalinity, Hydroxide* *pH* *Conductance*	EPA 160.1 EPA 310.1 EPA 150.1 EPA 120.1	1 L Poly	48 hours	4°C
Dissolved Ions *Bromide* *Nitrate-N* *Chloride* *Nitrite-N* *Fluoride* *Sulfate*	EPA 300.0	Take from Water Quality container	48 hrs NO3 & NO2; others 28 days	4°C
Total Metals *RCRA 8* *zinc*	SW 6010B and [mercury] 7470A / 7471A	500 mL Poly	180 days OR 28 Days [mercury]	HNO_3 pH <2
Dissolved Metals *RCRA 7* *zinc*	SW 6010B	500 mL Poly Field Filtered	180 Days	HNO_3 pH <2
VOCs	SW 8260B	3-40mL VOAs	14 days	HCl pH<2
Direct Inject Alcohols *ethylene glycol*	SW 8015B Mod	2-40mL VOAs	7 days	No Preservative 4°C
Petroleum Hydrocarbons	Diesel Range Organics SW 8015B Mod	3-40mL VOAs	14 days	HCl pH<2
	Gasoline Range Organics SW 8015B Mod	3-40mL VOAs	14 days	HCl pH<2
Total Organic Carbon	EPA 415.1	2-40mL VOAs amber glass	28 days	H_2SO_4 pH<2

9/26/2006 8:30 AM

112451-52

612120

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795 E

CHAIN OF CUSTODY RECORD

PAGE 1 OF 1

PROJECT NO.: 7

PROJECT NAME: HELSTF Groundwater Sampling

SAMPLER'S SIGNATURE:

DATE	TIME	SAMPLE ID	MATRIX	LAB NO.	NO. OF CONTAINERS	VOC	DRO/GRO	D.I.A	TOC	Water Quality	Total Metals	Diss. Metals	Diss. Ions			Cl, Sul, Fluo	Br/F/NO3-NO2	Total Cr	REMARKS
12-20-06	1025	HLSF-0085-HMW-129-1206	Water	112451	16	X	DG X	X	X	X	X	X	X			X	X	X	
12-20-06	1025	HLSF-0085-TB-795-1206	Water	112452	2	X													

PROJECT INFORMATION	SAMPLES RECEIVED	1. RELINQUISHED BY: (SIGNATURE)	2. RELINQUISHED BY: (SIGNATURE)	3. RECEIVED BY LAB: (SIGNATURE)
PROJECT MANAGER: William Little	TOTAL NO. OF CONTAINERS	(PRINTED NAME) Fabio Garcia	(PRINTED NAME) James Gutierrez	(PRINTED NAME) Queena Gurley
SHIPPING ID NO.: 3604302	CHAIN OF CUSTODY SEALS	RECEIVED BY: (SIGNATURE)	RECEIVED BY: (SIGNATURE)	(COMPANY) Trace analysis
	GOOD CONDITION/CHILLED	(TIME/DATE) 7:00 12/20/06	(TIME/DATE) 1730 12-20-06	(TIME/DATE) 12/21/06 9:00
VIA: Courier	CONFORMS TO RECORD	SPECIAL INSTRUCTIONS / COMMENTS: PLEASE SEE ATTACHED ANALYTE LIST FOR DETAILS		

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E

Analyte Table E

HELSTF Phase III RFI

Groundwater Sample Collection

Parameter	Analytical Method	Container	Min Hold Time	Preservative
Water Quality *Total Dissolved Solids* *Alkalinity, Carbonate/Bicarbonate* *Alkalinity, Hydroxide* *pH* *Conductance*	EPA 160.1 EPA 310.1 EPA 150.1 EPA 120.1	1 L Poly	48 hours	4°C
Dissolved Ions *Bromide* *Nitrate-N* *Chloride* *Nitrite-N* *Fluoride* *Sulfate*	EPA 300.0	Take from Water Quality container	48 hrs NO3 & NO2; others 28 days	4°C
Total Metals *RCRA 8* *zinc*	SW 6010B and [mercury] 7470A / 7471A	500 mL Poly	180 days OR 28 Days [mercury]	HNO_3 pH <2
Dissolved Metals *RCRA 7* *zinc*	SW 6010B	500 mL Poly Field Filtered	180 Days	HNO_3 pH <2
VOCs	SW 8260B	3-40mL VOAs	14 days	HCl pH<2
Direct Inject Alcohols *ethylene glycol*	SW 8015B Mod	2-40mL VOAs	7 days	No Preservative 4°C
Petroleum Hydrocarbons	Diesel Range Organics SW 8015B Mod	3-40mL VOAs	14 days	HCl pH<2
	Gasoline Range Organics SW 8015B Mod	3-40mL VOAs	14 days	HCl pH<2
Total Organic Carbon	EPA 415.1	2-40mL VOAs amber glass	28 days	H_2SO_4 pH<2

9/26/2006 8:30 AM

112410-11

6122107

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796

WTCS

CHAIN OF CUSTODY RECORD

PAGE 1 OF 1

PROJECT NO.: 7

PROJECT NAME: HELSTF Groundwater Sampling

SAMPLER'S SIGNATURE:

DATE	TIME	SAMPLE ID	MATRIX	LAB NO.	NO. OF CONTAINERS	VOC	DRO/GRO	D.I.A	TOC	Water Quality	Total Metals	Diss. Metals	Diss. Ions			Cl/Su	Br/F/NO3-NO2	Total Hg	REMARKS
12-19-06	1440	HLSF-0085-HMW-030-1206	Water	112410	16	X	X	X	X	X	X	X	X			X	X	X	
12-19-06	1440	HLSF-0085-TB-796-1206	Water	112411	2	X													

PROJECT INFORMATION	SAMPLES RECEIVED		1. RELINQUISHED BY: (SIGNATURE)	2. RELINQUISHED BY: (SIGNATURE)	3. RECEIVED BY LAB: (SIGNATURE)
PROJECT MANAGER: William Little	TOTAL NO. OF CONTAINERS		(PRINTED NAME) ABEL CANETA	(PRINTED NAME) James Gutierrez	(PRINTED NAME) Sheena Ripley
SHIPPING ID NO.: 38793022	CHAIN OF CUSTODY SEALS		RECEIVED BY: (SIGNATURE)	RECEIVED BY: (SIGNATURE)	(COMPANY) Trace Analysis
	GOOD CONDITION/CHILLED	4°C	(TIME/DATE) 4:00 12/19/06	(TIME/DATE) 1330 12-19-06	(TIME/DATE) 12/21/06 9:00
VIA: Courier LS	CONFORMS TO RECORD		SPECIAL INSTRUCTIONS/COMMENTS: PLEASE SEE ATTACHED ANALYTE LIST FOR DETAILS		

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Analyte Table E

HELSTF Phase III RFI

Groundwater Sample Collection

Parameter	Analytical Method	Container	Min Hold Time	Preservative
Water Quality *Total Dissolved Solids* *Alkalinity, Carbonate/Bicarbonate* *Alkalinity, Hydroxide* *pH* *Conductance*	EPA 160.1 EPA 310.1 EPA 150.1 EPA 120.1	1 L Poly	48 hours	4°C
Dissolved Ions *Bromide* *Nitrate-N* *Chloride* *Nitrite-N* *Fluoride* *Sulfate*	EPA 300.0	Take from Water Quality container	48 hrs NO3 & NO2; others 28 days	4°C
Total Metals *RCRA 8* *Hg* *zinc*	SW 6010B and [mercury] 7470A / 7471A	500 mL Poly	180 days OR 28 Days [mercury]	HNO_3 pH <2
Dissolved Metals *RCRA 7* *zinc*	SW 6010B	500 mL Poly Field Filtered	180 Days	HNO_3 pH <2
VOCs	SW 8260B	3-40mL VOAs	14 days	HCl pH<2
Direct Inject Alcohols *ethylene glycol*	SW 8015B Mod	2-40mL VOAs	7 days	No Preservative 4°C
Petroleum Hydrocarbons	Diesel Range Organics SW 8015B Mod	3-40mL VOAs	14 days	HCl pH<2
	Gasoline Range Organics SW 8015B Mod	3-40mL VOAs	14 days	HCl pH<2
Total Organic Carbon	EPA 415.1	2-40mL VOAs amber glass	28 days	H_2SO_4 pH<2

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112412-13

6122109

797

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WCS

CHAIN OF CUSTODY RECORD

PAGE 1 OF 1

PROJECT NO.: 7

PROJECT NAME: HELSTF Groundwater Sampling

SAMPLER'S SIGNATURE:

DATE	TIME	SAMPLE ID	MATRIX	LAB NO.	NO. OF CONTAINERS	VOC	DRO/GRO	D.I.A	TOC	Water Quality	Total Metals	Diss. Metals Ag, As, Ba, Cd, Cr, Pb, Se, Zn	Diss. Ions			Cl Sulfate Br/F/NO3-NO2	Total Hg	REMARKS
12-19-06	1255	HLSF-0085-HMW-031-1206	Water	112412	16	X	D X	X	X	X	X	X	X			X	X	X
12-19-06	1255	HLSF-0085-TB-797-1206	Water	112413	2	X												

PROJECT INFORMATION	SAMPLES RECEIVED		1. RELINQUISHED BY: (SIGNATURE)	2. RELINQUISHED BY: (SIGNATURE)	3. RECEIVED BY LAB: (SIGNATURE)
PROJECT MANAGER: William Little	TOTAL NO. OF CONTAINERS		(PRINTED NAME) Gabriel Ortiz	(PRINTED NAME) James Gutierrez	(PRINTED NAME) Freena Tripley
SHIPPING ID NO.: 3579 3024	CHAIN OF CUSTODY SEALS		RECEIVED BY: (SIGNATURE)	RECEIVED BY: (SIGNATURE)	(PRINTED NAME) Freena Tripley
	GOOD CONDITION/CHILLED	4°C	(TIME/DATE) 4:00 12/19/06	(TIME/DATE) 1735 12-19-06	(COMPANY) Trace Analysis
VIA: Courier	CONFORMS TO RECORD		SPECIAL INSTRUCTIONS/COMMENTS: PLEASE SEE ATTACHED ANALYTE LIST FOR DETAILS		(TIME/DATE) 12/21/06 9:00

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Analyte Table E

HELSTF Phase III RFI

Groundwater Sample Collection

Parameter	Analytical Method	Container	Min Hold Time	Preservative
Water Quality *Total Dissolved Solids* *Alkalinity, Carbonate/Bicarbonate* *Alkalinity, Hydroxide* *pH* *Conductance*	EPA 160.1 EPA 310.1 EPA 150.1 EPA 120.1	1 L Poly	48 hours	4°C
Dissolved Ions *Bromide* *Nitrate-N* *Chloride* *Nitrite-N* *Fluoride* *Sulfate*	EPA 300.0	Take from Water Quality container	48 hrs NO3 & NO2; others 28 days	4°C
Total Metals *RCRA 8* *zinc*	SW 6010B and [mercury] 7470A / 7471A	500 mL Poly	180 days OR 28 Days [mercury]	HNO_3 pH <2
Dissolved Metals *RCRA 7* *zinc*	SW 6010B	500 mL Poly Field Filtered	180 Days	HNO_3 pH <2
VOCs	SW 8260B	3-40mL VOAs	14 days	HCl pH<2
Direct Inject Alcohols *ethylene glycol*	SW 8015B Mod	2-40mL VOAs	7 days	No Preservative 4°C
Petroleum Hydrocarbons	Diesel Range Organics SW 8015B Mod	3-40mL VOAs	14 days	HCl pH<2
	Gasoline Range Organics SW 8015B Mod	3-40mL VOAs	14 days	HCl pH<2
Total Organic Carbon	EPA 415.1	2-40mL VOAs amber glass	28 days	H_2SO_4 pH<2

9/26/2006 8:30 AM

112404-5

6122104

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798

CHAIN OF CUSTODY RECORD

PAGE 1 OF 1

PROJECT NO.	PROJECT NAME
7	HELSTF Groundwater Sampling

SAMPLER'S SIGNATURE

DATE	TIME	SAMPLE ID	MATRIX	LAB NO.	NO. OF CONTAINERS	VOC	DRO/GRO	D.I.A	TOC	Water Quality	Total Metals	Diss. Metals	Diss. Ions			Sulfate	Total Hg	REMARKS
12-19-06	1030	HLSF-0085-HMW-032-1206	Water	112404	16	X	X	X	X	X	X	X	X			X	X	
12-19-06	1030	HLSF-0085-TB-798-1206	Water	112405	2	X												

PROJECT INFORMATION	SAMPLES RECEIVED		1. RELINQUISHED BY: (SIGNATURE)	2. RELINQUISHED BY: (SIGNATURE)	3. RECEIVED BY LAB: (SIGNATURE)
PROJECT MANAGER: William Little	TOTAL NO. OF CONTAINERS		(PRINTED NAME) GABRIEL GARCIA	(PRINTED NAME) James Cochran	(PRINTED NAME) Helena Ripley
SHIPPING ID NO. 2693024	CHAIN OF CUSTODY SEALS		RECEIVED BY: (SIGNATURE)	RECEIVED BY: (SIGNATURE)	(COMPANY) Trace Analysis
	GOOD CONDITION/CHILLED	Y	(TIME/DATE) 1000 12/19/06	(TIME/DATE) 1235 12-19-06	(TIME/DATE) 12/21/06 9:05
VIA: Courier	CONFORMS TO RECORD		SPECIAL INSTRUCTIONS/COMMENTS: PLEASE SEE ATTACHED ANALYTE LIST FOR DETAILS		

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Analyte Table E

HELSTF Phase III RFI

Groundwater Sample Collection

Parameter	Analytical Method	Container	Min Hold Time	Preservative
Water Quality *Total Dissolved Solids* *Alkalinity, Carbonate/Bicarbonate* *Alkalinity, Hydroxide* *pH* *Conductance*	EPA 160.1 EPA 310.1 EPA 150.1 EPA 120.1	1 L Poly	48 hours	4°C
Dissolved Ions *Bromide*, *Nitrate-N* *Chloride*, *Nitrite-N* *Fluoride*, *Sulfate*	EPA 300.0	Take from Water Quality container	48 hrs NO3 & NO2; others 28 days	4°C
Total Metals *RCRA-8* 7, Hg *zinc*	SW 6010B and [mercury] 7470A / 7471A	500 mL Poly	180 days OR 28 Days [mercury]	HNO_3 pH <2
Dissolved Metals *RCRA-7* *zinc*	SW 6010B	500 mL Poly Field Filtered	180 Days	HNO_3 pH <2
VOCs WT-5	SW 8260B	3-40mL VOAs	14 days	HCl pH<2
Direct Inject Alcohols *ethylene glycol*	SW 8015B Mod	2-40mL VOAs	7 days	No Preservative 4°C
Petroleum Hydrocarbons	Diesel Range Organics SW 8015B Mod	3-40mL VOAs	14 days	HCl pH<2
	Gasoline Range Organics SW 8015B Mod	3-40mL VOAs	14 days	HCl pH<2
Total Organic Carbon	EPA 415.1	2-40mL VOAs amber glass	28 days	H_2SO_4 pH<2

9/26/2006 8:30 AM

112842-43

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799

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CHAIN OF CUSTODY RECORD

PAGE 1 OF 1

PROJECT NO.: 7

PROJECT NAME: HELSTF Groundwater Sampling

SAMPLER'S SIGNATURE:

DATE	TIME	SAMPLE ID	MATRIX	LAB NO.	NO. OF CONTAINERS	VOC	DRO/GRO	D.I.A	TOC	Water Quality	Total Metals	Diss. Metals	Diss. Ions			REMARKS
12-28-06	1335	HLSF-0085-HMW-033-1206	Water	112842	16	X	X	X	X	X	X	X	X			
12-28-06	1335	HLSF-0085-TB-799-1206	Water	112843	2	X										

PROJECT INFORMATION	SAMPLES RECEIVED		1. RELINQUISHED BY: (SIGNATURE)	2. RELINQUISHED BY: (SIGNATURE)	3. RECEIVED BY LAB: (SIGNATURE)
PROJECT MANAGER: William Little	TOTAL NO. OF CONTAINERS		(PRINTED NAME) GABRIEL GONZALA	(PRINTED NAME) Jeffrey Lane	(PRINTED NAME) Deena Ripley
SHIPPING ID NO.: 3579304	CHAIN OF CUSTODY SEALS		RECEIVED BY: (SIGNATURE)	RECEIVED BY: (SIGNATURE)	(COMPANY) Trace Analysis
VIA: Courier	GOOD CONDITION/CHILLED	4°C	(TIME/DATE) 03:45pm 28Dec06	(TIME/DATE) 16:42 12-28-06	(TIME/DATE) 12/29/06 9:00
	CONFORMS TO RECORD	MA	SPECIAL INSTRUCTIONS/COMMENTS: PLEASE SEE ATTACHED ANALYTE LIST FOR DETAILS		

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Analyte Table E

HELSTF Phase III RFI

Groundwater Sample Collection

Parameter	Analytical Method	Container	Min Hold Time	Preservative
Water Quality *Total Dissolved Solids* *Alkalinity, Carbonate/Bicarbonate* *Alkalinity, Hydroxide* *pH* *Conductance*	EPA 160.1 EPA 310.1 EPA 150.1 EPA 120.1	1 L Poly	48 hours	4°C
Dissolved Ions •*Bromide* •*Nitrate-N* •*Chloride* •*Nitrite-N* •*Fluoride* •*Sulfate*	EPA 300.0	Take from Water Quality container	48 hrs NO3 & NO2; others 28 days	4°C
Total Metals *RCRA 8* Hg *zinc*	SW 6010B and [mercury] 7470A / 7471A	500 mL Poly	180 days OR 28 Days [mercury]	HNO_3 pH <2
Dissolved Metals *RCRA 7* *zinc*	SW 6010B	500 mL Poly Field Filtered	180 Days	HNO_3 pH <2
VOCs	SW 8260B	3-40mL VOAs	14 days	HCl pH<2
Direct Inject Alcohols *ethylene glycol*	SW 8015B Mod	2-40mL VOAs	7 days	No Preservative 4°C
Petroleum Hydrocarbons	Diesel Range Organics SW 8015B Mod	3-40mL VOAs	14 days	HCl pH<2
	Gasoline Range Organics SW 8015B Mod	3-40mL VOAs	14 days	HCl pH<2
Total Organic Carbon	EPA 415.1	2-40mL VOAs amber glass	28 days	H_2SO_4 pH<2

9/26/2006 8:30 AM

112844-45

612291 2

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800

WTS

CHAIN OF CUSTODY RECORD

PAGE 1 OF 1

PROJECT NO.: 7

PROJECT NAME: HELSTF Groundwater Sampling

SAMPLER'S SIGNATURE:

DATE	TIME	SAMPLE ID	MATRIX	LAB NO.	NO. OF CONTAINERS	VOC	DRO/GRO	D.I.A	TOC	Water Quality	Total Metals	Diss. Metals	Diss. Ions			REMARKS
12-27-06	1345	HLSF-0085-HMW-034-1206	Water	112844	16	X	X	X	X	X	X	X	X			
12-27-06	1345	HLSF-0085-TB-800-1206	Water	112845	2	X										

PROJECT INFORMATION	SAMPLES RECEIVED		1. RELINQUISHED BY: (SIGNATURE)	2. RELINQUISHED BY: (SIGNATURE)	3. RECEIVED BY LAB: (SIGNATURE)
PROJECT MANAGER: William Little	TOTAL NO. OF CONTAINERS		(PRINTED NAME) GABRIEL GARCIA	(PRINTED NAME) Jeffrey Lane	(PRINTED NAME) Sheena Ripley
SHIPPING ID NO.: 3583013	CHAIN OF CUSTODY SEALS		RECEIVED BY: (SIGNATURE)	RECEIVED BY: (SIGNATURE)	(COMPANY) Trace Analysis
	GOOD CONDITION/CHILLED	4°C	(TIME/DATE) 1:00 pm 27 Dec 06	(TIME/DATE) 1700 12-27-06	(TIME/DATE) 12/29/06 9:00
VIA: Courier	CONFORMS TO RECORD	NA	SPECIAL INSTRUCTIONS/COMMENTS: PLEASE SEE ATTACHED ANALYTE LIST FOR DETAILS		

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Analyte Table E

HELSTF Phase III RFI

Groundwater Sample Collection

Parameter	Analytical Method	Container	Min Hold Time	Preservative
Water Quality *Total Dissolved Solids* *Alkalinity, Carbonate/Bicarbonate* *Alkalinity, Hydroxide* *pH* *Conductance*	EPA 160.1 EPA 310.1 EPA 150.1 EPA 120.1	1 L Poly	48 hours	4°C
Dissolved Ions •*Bromide* •*Nitrate-N* •*Chloride* •*Nitrite-N* •*Fluoride* •*Sulfate*	EPA 300.0	Take from Water Quality container	48 hrs NO3 & NO2; others 28 days	4°C
Total Metals *RCRA 8* Hg *zinc*	SW 6010B and [mercury] 7470A / 7471A	500 mL Poly	180 days OR 28 Days [mercury]	HNO_3 pH <2
Dissolved Metals *RCRA 7* *zinc*	SW 6010B	500 mL Poly Field Filtered	180 Days	HNO_3 pH <2
VOCs	SW 8260B	3-40mL VOAs	14 days	HCl pH<2
Direct Inject Alcohols *ethylene glycol*	SW 8015B Mod	2-40mL VOAs	7 days	No Preservative 4°C
Petroleum Hydrocarbons	Diesel Range Organics SW 8015B Mod	3-40mL VOAs	14 days	HCl pH<2
	Gasoline Range Organics SW 8015B Mod	3-40mL VOAs	14 days	HCl pH<2
Total Organic Carbon	EPA 415.1	2-40mL VOAs amber glass	28 days	H_2SO_4 pH<2

9/26/2006 8:30 AM

112846-47

4122913

801

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CHAIN OF CUSTODY RECORD

PAGE 1 OF 1

PROJECT NO.: 7

PROJECT NAME: HELSTF Groundwater Sampling

SAMPLER'S SIGNATURE: [signature]

DATE	TIME	SAMPLE ID	MATRIX	LAB NO.	NO. OF CONTAINERS	VOC	DRO/GRO	D.I.A	TOC	Water Quality	Total Metals	Diss. Metals	Diss. Ions			REMARKS
12-27-06	1015	HLSF-0085-HMW-035-1206	Water	112846	16	X	X	X	X	X	X	X	X			
12-27-06	1015	HLSF-0085-TB-801-1206	Water	112847	2	X										

PROJECT INFORMATION	SAMPLES RECEIVED		1. RELINQUISHED BY: (SIGNATURE)	2. RELINQUISHED BY: (SIGNATURE)	3. RECEIVED BY LAB: (SIGNATURE)
PROJECT MANAGER: William Little	TOTAL NO. OF CONTAINERS		(PRINTED NAME) GABRIEL GALLA	(PRINTED NAME) Jeffrey Lane	(PRINTED NAME) Sheena Shipley
SHIPPING ID NO.: 356 PL 3013	CHAIN OF CUSTODY SEALS		RECEIVED BY: (SIGNATURE) [signature]	RECEIVED BY: (SIGNATURE) [signature]	(COMPANY) Trace analysis
	GOOD CONDITION/CHILLED	4°C	(TIME/DATE) 3:57pm 27 Dec 06	(TIME/DATE) 1200 12-27-06	(TIME/DATE) 12/28/06 9:00
VIA: Courier	CONFORMS TO RECORD	MJ	SPECIAL INSTRUCTIONS/COMMENTS: PLEASE SEE ATTACHED ANALYTE LIST FOR DETAILS		

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Analyte Table E

HELSTF Phase III RFI

Groundwater Sample Collection

Parameter	Analytical Method	Container	Min Hold Time	Preservative
Water Quality *Total Dissolved Solids* *Alkalinity, Carbonate/Bicarbonate* *Alkalinity, Hydroxide* *pH* *Conductance*	EPA 160.1 EPA 310.1 EPA 150.1 EPA 120.1	1 L Poly	48 hours	4°C
Dissolved Ions •*Bromide* •*Nitrate-N* •*Chloride* •*Nitrite-N* •*Fluoride* •*Sulfate*	EPA 300.0	Take from Water Quality container	48 hrs NO3 & NO2; others 28 days	4°C
Total Metals *RCRA 8* Hg *zinc*	SW 6010B and [mercury] 7470A / 7471A	500 mL Poly	180 days OR 28 Days [mercury]	HNO_3 pH <2
Dissolved Metals *RCRA 7* *zinc*	SW 6010B	500 mL Poly Field Filtered	180 Days	HNO_3 pH <2
VOCs	SW 8260B	3-40mL VOAs	14 days	HCl pH<2
Direct Inject Alcohols *ethylene glycol*	SW 8015B Mod	2-40mL VOAs	7 days	No Preservative 4°C
Petroleum Hydrocarbons	Diesel Range Organics SW 8015B Mod	3-40mL VOAs	14 days	HCl pH<2
	Gasoline Range Organics SW 8015B Mod	3-40mL VOAs	14 days	HCl pH<2
Total Organic Carbon	EPA 415.1	2-40mL VOAs amber glass	28 days	H_2SO_4 pH<2

9/26/2006 8:30 AM

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CHAIN OF CUSTODY RECORD

PAGE 1 OF 1

PROJECT NO.: 7

PROJECT NAME: HELSTF Groundwater Sampling

SAMPLER'S SIGNATURE:

DATE	TIME	SAMPLE ID	MATRIX	LAB NO.	NO. OF CONTAINERS	VOC	DRO/GRO	D.I.A	TOC	Water Quality	Total Metals	Diss. Metals	Diss. Ions	PERCHLORATES		REMARKS
1-3-07	1205	HLSF-0085-HMW-059-~~1200~~ 0107	Water	113085	17	X	X	X	X	X	X	X	X	X		
1-3-07	1205	HLSF-0085-TB-802-~~1200~~ 0107	Water	113086	2	X										

PROJECT INFORMATION	SAMPLES RECEIVED	1. RELINQUISHED BY: (SIGNATURE)	2. RELINQUISHED BY: (SIGNATURE)	3. RECEIVED BY LAB: (SIGNATURE)
PROJECT MANAGER: William Little	TOTAL NO. OF CONTAINERS	(PRINTED NAME) Gabriel Garcia	(PRINTED NAME) Jeffrey Lane	(PRINTED NAME) Sheena Ripley
SHIPPING ID NO.: 36793010	CHAIN OF CUSTODY SEALS	RECEIVED BY: (SIGNATURE)	RECEIVED BY: (SIGNATURE)	(COMPANY) Trace Analysis
VIA: Courier CS	GOOD CONDITION/CHILLED 4°C/IC	(TIME/DATE) 4:00pm 03Jan07	(TIME/DATE) 1700 1-3-07	(TIME/DATE) 1-4-07 11:45
	CONFORMS TO RECORD	SPECIAL INSTRUCTIONS/COMMENTS: PLEASE SEE ATTACHED ANALYTE LIST FOR DETAILS		Login review: KKB

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803

CHAIN OF CUSTODY RECORD

PAGE 1 OF 1

PROJECT NO.: 7

PROJECT NAME: HELSTF Groundwater Sampling

SAMPLER'S SIGNATURE:

DATE	TIME	SAMPLE ID	MATRIX	LAB NO.	NO. OF CONTAINERS	VOC	TOC	Water Quality	Total Metals	Diss. Metals	Diss. Ions					REMARKS
1-10-07	1345	HLSF-0085-HMW-009-~~1206~~ 0107	Water	113755	8	X•	X	X	X	X	X					
1-10-07	1345	HLSF-0085-TB-803-~~1206~~ 0107	Water	113756	2	X•										

PROJECT INFORMATION	SAMPLES RECEIVED		1. RELINQUISHED BY: (SIGNATURE)	2. RELINQUISHED BY: (SIGNATURE)	3. RECEIVED BY LAB: (SIGNATURE)
PROJECT MANAGER: William Little	TOTAL NO. OF CONTAINERS		(PRINTED NAME) GABRIEL GARCIA	(PRINTED NAME) Jeffrey Lane	(PRINTED NAME) Queena Shipley
SHIPPING ID NO.: 3913025000	CHAIN OF CUSTODY SEALS		RECEIVED BY: (SIGNATURE)	RECEIVED BY: (SIGNATURE)	(COMPANY) Trace Analytics
	GOOD CONDITION/CHILLED	42 hr	(TIME/DATE) 4:15 pm 10 Jan 07	(TIME/DATE) 1225 1/10/07	(TIME/DATE) 1-12-07 9:00
VIA: Courier LS	CONFORMS TO RECORD		SPECIAL INSTRUCTIONS/COMMENTS: PLEASE SEE ATTACHED ANALYTE LIST FOR DETAILS ANALYTE TABLE F		

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Analyte Table F HELSTF Phase III RFI Groundwater Sample Collection				
Parameter	Analytical Method	Container	Min Hold Time	Preservative
Water Quality *Total Dissolved Solids* *Alkalinity, Carbonate/Bicarbonate* *Alkalinity, Hydroxide* *pH* *Conductance*	EPA 160.1 EPA 310.1 EPA 150.1 EPA 120.1	1 L Poly	48 hours	4°C
Dissolved Ions *Bromide* *Nitrate-N* *Chloride* *Nitrite-N* *Fluoride* *Sulfate*	EPA 300.0	Take from Water Quality container	48 hrs NO3 & NO2; others 28 days	4°C
Total Metals *chromium* *silver* *zinc*	SW 6010B and [mercury] 7470A / 7471A	500 mL Poly	180 days OR 28 Days [mercury]	HNO_3 pH <2
Dissolved Metals *Chromium* *silver* *zinc*	SW 6010B	500 mL Poly Field Filtered	180 Days	HNO_3 pH <2
VOCs	SW 8260B	3-40mL VOAs	14 days	HCl pH<2
Total Organic Carbon	EPA 415.1	2-40mL VOAs amber glass	28 days	H_2SO_4 pH<2

9/26/2006 8:31 AM

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CHAIN OF CUSTODY RECORD

PAGE 1 OF 1

PROJECT NO.	PROJECT NAME
7	HELSTF Groundwater Sampling

SAMPLER'S SIGNATURE

DATE	TIME	SAMPLE ID	MATRIX	LAB NO.	NO. OF CONTAINERS	VOC	TOC	Water Quality	Total Metals	Diss. Metals	Diss. Ions					REMARKS
1-10-07	1035	HLSF-0085-HMW-045 ~~1206~~ 0107	Water	113757	8	X	X	X	X	X	X					
1-10-07	1035	HLSF-0085-TB-804 ~~1206~~ 0107	Water	113758	2	X										

PROJECT INFORMATION	SAMPLES RECEIVED		1. RELINQUISHED BY: (SIGNATURE)	2. RELINQUISHED BY: (SIGNATURE)	3. RECEIVED BY LAB: (SIGNATURE)
PROJECT MANAGER: William Little	TOTAL NO. OF CONTAINERS		(PRINTED NAME) GABRIEL GARCIA	(PRINTED NAME) Jeffrey Lane	(PRINTED NAME) Susana Ripley
SHIPPING ID NO. 3930255	CHAIN OF CUSTODY SEALS		RECEIVED BY: (SIGNATURE)	RECEIVED BY: (SIGNATURE)	(COMPANY) TRC Analysis
VIA: Courier LS	GOOD CONDITION/CHILLED	4°C	(TIME/DATE) 4:15pm 10Jan07	(TIME/DATE) 1725 1-10-07	(TIME/DATE) 1-10-07 9:00
	CONFORMS TO RECORD		SPECIAL INSTRUCTIONS/COMMENTS: PLEASE SEE ATTACHED ANALYTE LIST FOR DETAILS ANALYTE TABLE F		

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Analyte Table F

HELSTF Phase III RFI

Groundwater Sample Collection

Parameter	Analytical Method	Container	Min Hold Time	Preservative
Water Quality *Total Dissolved Solids* *Alkalinity, Carbonate/Bicarbonate* *Alkalinity, Hydroxide* *pH* *Conductance*	EPA 160.1 EPA 310.1 EPA 150.1 EPA 120.1	1 L Poly	48 hours	4°C
Dissolved Ions *Bromide* *Nitrate-N* *Chloride* *Nitrite-N* *Fluoride* *Sulfate*	EPA 300.0	Take from Water Quality container	48 hrs NO3 & NO2; others 28 days	4°C
Total Metals *chromium* *silver* *zinc*	SW 6010B and [mercury] 7470A / 7471A	500 mL Poly	180 days OR 28 Days [mercury]	HNO_3 pH <2
Dissolved Metals *chromium* *silver* *zinc*	SW 6010B	500 mL Poly Field Filtered	180 Days	HNO_3 pH <2
VOCs	SW 8260B	3-40mL VOAs	14 days	HCl pH<2
Total Organic Carbon	EPA 415.1	2-40mL VOAs amber glass	28 days	H_2SO_4 pH<2

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PAGE 1 OF 1

PROJECT NO.: 7

PROJECT NAME: HELSTF Groundwater Sampling

SAMPLER'S SIGNATURE:

DATE	TIME	SAMPLE ID	MATRIX	LAB NO.	NO. OF CONTAINERS	VOC	TOC	Water Quality	Total Metals	Diss. Metals	Diss. Ions					REMARKS
1-10-07	1035	HLSF-0085-HMW-145-~~1206~~ 0107	Water	113761	8	X	X	X	X	X	X					
1-10-07	1035	HLSF-0085-TB-805-~~1206~~ 0107	Water	113762	2	X										

PROJECT INFORMATION	SAMPLES RECEIVED		1. RELINQUISHED BY: (SIGNATURE)	2. RELINQUISHED BY: (SIGNATURE)	3. RECEIVED BY LAB: (SIGNATURE)
PROJECT MANAGER: William Little	TOTAL NO. OF CONTAINERS		(PRINTED NAME) Gabriel Garcia	(PRINTED NAME) Jeffrey Lane	(PRINTED NAME) Brenda Ripley
SHIPPING ID NO.: 3912026480	CHAIN OF CUSTODY SEALS		RECEIVED BY: (SIGNATURE)	RECEIVED BY: (SIGNATURE)	(COMPANY) Trace Analysis
VIA: Courier	GOOD CONDITION/COOLED	4C	(TIME/DATE) 4:15pm 10 Jan 07	(TIME/DATE) 1725 1/10/07	(TIME/DATE) 1-12-07 9:00
	CONFORMS TO RECORD		SPECIAL INSTRUCTIONS/COMMENTS: PLEASE SEE ATTACHED ANALYTE LIST FOR DETAILS ANALYTE TABLE F		

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Analyte Table F HELSTF Phase III RFI Groundwater Sample Collection				
Parameter	**Analytical Method**	**Container**	**Min Hold Time**	**Preservative**
Water Quality *Total Dissolved Solids* *Alkalinity, Carbonate/Bicarbonate* *Alkalinity, Hydroxide* *pH* *Conductance*	EPA 160.1 EPA 310.1 EPA 150.1 EPA 120.1	1 L Poly	48 hours	4°C
Dissolved Ions *Bromide* *Nitrate-N* *Chloride* *Nitrite-N* *Fluoride* *Sulfate*	EPA 300.0	Take from Water Quality container	48 hrs NO3 & NO2; others 28 days	4°C
Total Metals *chromium* *silver* *zinc*	SW 6010B and [mercury] 7470A / 7471A	500 mL Poly	180 days OR 28 Days [mercury]	HNO_3 pH <2
Dissolved Metals *chromium* *silver* *zinc*	SW 6010B	500 mL Poly Field Filtered	180 Days	HNO_3 pH <2
VOCs	SW 8260B	3-40mL VOAs	14 days	HCl pH<2
Total Organic Carbon	EPA 415.1	2-40mL VOAs amber glass	28 days	H_2SO_4 pH<2

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CHAIN OF CUSTODY RECORD

PAGE 1 OF 1

PROJECT NO.	PROJECT NAME
7	HELSTF Groundwater Sampling

SAMPLER'S SIGNATURE: [signature]

DATE	TIME	SAMPLE ID	MATRIX	LAB NO.	NO. OF CONTAINERS	VOC	TOC	Water Quality	Total Metals	Diss. Metals	Diss. Ions					REMARKS
1-10-07	0840	HLSF-0085-HMW-056-~~1206~~ D107	Water	113759	8	X	X	X	X	X	X					
1-10-07	0840	HLSF-0085-TB-806-~~1208~~ 0107	Water	113760	2	X										

PROJECT INFORMATION	SAMPLES RECEIVED		1. RELINQUISHED BY: (SIGNATURE)	2. RELINQUISHED BY: (SIGNATURE)	3. RECEIVED BY LAB: (SIGNATURE)
PROJECT MANAGER: William Little	TOTAL NO. OF CONTAINERS		(PRINTED NAME) GABRIEL GARCIA	(PRINTED NAME) Jeffrey Lane	(PRINTED NAME) Guerra Ripley
SHIPPING ID NO.: 3413025560	CHAIN OF CUSTODY SEALS		RECEIVED BY: (SIGNATURE) [signature]	RECEIVED BY: (SIGNATURE) James Ratliff	(COMPANY) Trace Analysis
	GOOD CONDITION/CHILLED	4°C	(TIME/DATE) 4:15pm 10Jan07	(TIME/DATE) 1225 1/10/07	(TIME/DATE) 1-12-07 9:00
VIA: Courier US	CONFORMS TO RECORD		SPECIAL INSTRUCTIONS/COMMENTS: PLEASE SEE ATTACHED ANALYTE LIST FOR DETAILS ANALYTE TABLE F		

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Analyte Table F HELSTF Phase III RFI Groundwater Sample Collection				
Parameter	Analytical Method	Container	Min Hold Time	Preservative
Water Quality *Total Dissolved Solids* *Alkalinity, Carbonate/Bicarbonate* *Alkalinity, Hydroxide* *pH* *Conductance*	EPA 160.1 EPA 310.1 EPA 150.1 EPA 120.1	1 L Poly	48 hours	4°C
Dissolved Ions *Bromide* *Nitrate-N* *Chloride* *Nitrite-N* *Fluoride* *Sulfate*	EPA 300.0	Take from Water Quality container	48 hrs NO3 & NO2; others 28 days	4°C
Total Metals *chromium* *silver* *zinc*	SW 6010B and [mercury] 7470A / 7471A	500 mL Poly	180 days OR 28 Days [mercury]	HNO_3 pH <2
Dissolved Metals *chromium* *silver* *zinc*	SW 6010B	500 mL Poly Field Filtered	180 Days	HNO_3 pH <2
VOCs	SW 8260B	3-40mL VOAs	14 days	HCl pH<2
Total Organic Carbon	EPA 415.1	2-40mL VOAs amber glass	28 days	H_2SO_4 pH<2

9/26/2006 8:31 AM

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CHAIN OF CUSTODY RECORD

PAGE 1 OF 1

PROJECT NO.: 7

PROJECT NAME: HELSTF Groundwater Sampling

SAMPLER'S SIGNATURE:

DATE	TIME	SAMPLE ID	MATRIX	LAB NO.	NO. OF CONTAINERS	TOC	Water Quality	Amm Nitrogen	Total Metals	Diss. Metals	Diss. Ions					REMARKS
																P/ 100ml NaO2/ Bb Cl/Br/I/Iodide Hg Cl2 (Hg) F/ 100ml-Bottle
12-15-00	1245	HLSF-0085-HMW-008-1206	Water	112194	6	X	X	X	X	X	X					X X X X
																NOTE: COLLECT DISS. IONS FROM WATER QUALITY.

PROJECT INFORMATION	SAMPLES RECEIVED		1. RELINQUISHED BY: (SIGNATURE)	2. RELINQUISHED BY: (SIGNATURE)	3. RECEIVED BY LAB: (SIGNATURE)
PROJECT MANAGER: William Little	TOTAL NO. OF CONTAINERS		(PRINTED NAME) GABRIEL GALLEGOS	(PRINTED NAME) James Gutierrez	(PRINTED NAME) James Taylor
SHIPPING ID NO.: 35913004	CHAIN OF CUSTODY SEALS		RECEIVED BY: (SIGNATURE)	RECEIVED BY: (SIGNATURE)	(COMPANY) Trace Analysis
	GOOD CONDITION/CHILLED	4.C	(TIME/DATE) 1577 12/15/06	(TIME/DATE) 1720 12-15-06	(TIME/DATE) 9:32 am 12/16/06
VIA: Courier LS	CONFORMS TO RECORD	MA	SPECIAL INSTRUCTIONS/COMMENTS: PLEASE SEE ATTACHED ANALYTE LIST FOR DETAILS LS 38793032		

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Analyte Table G HELSTF Phase III RFI Groundwater Sample Collection				
Parameter	**Analytical Method**	**Container**	**Min Hold Time**	**Preservative**
Water Quality *Total Dissolved Solids* *Alkalinity, Carbonate/Bicarbonate* *Alkalinity, Hydroxide* *pH* *Conductance*	EPA 160.1 EPA 310.1 EPA 150.1 EPA 120.1	1 L Poly	48 hours	4°C
Ammonia Nitrogen	EPA 350.2	1-500mL poly	28 days	H_2SO_4 pH<2
Dissolved Ions *Bromide* *Nitrate-N* *Chloride* *Nitrite-N* *Fluoride* *Sulfate*	EPA 300.0	Take from Water Quality container	48 hrs NO3 & NO2; others 28 days	4°C
Total Metals *RCRA 8* *copper* *phosphorus* *potassium* *sodium* *zinc*	SW 6010B and [mercury] 7470A / 7471A	500 mL Poly	180 days OR 28 Days [mercury]	HNO_3 pH <2
Dissolved Metals *RCRA 7* *copper* *potassium* *sodium* *zinc*	SW 6010B	500 mL Poly Field Filtered	180 Days	HNO_3 pH <2
Total Organic Carbon	EPA 415.1	2-40mL VOAs amber glass	28 days	H_2SO_4 pH<2

9/26/2006 8:32 AM

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808

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CHAIN OF CUSTODY RECORD

PAGE 1 OF 1

PROJECT NO.: 7

PROJECT NAME: HELSTF Groundwater Sampling

SAMPLER'S SIGNATURE:

DATE	TIME	SAMPLE ID	MATRIX	LAB NO.	NO. OF CONTAINERS	TOC	Water Quality	Amm Nitrogen	Total Metals	Diss. Metals	Diss. Ions					REMARKS
		0107														
1-4-07	1340	HLSF-0085-HMW-015 ~~1206~~	Water	113769	6	X	X	X	X	X	X					no2, no3 ran by Spec in Lubbock
																113769 for Ammonia has been cancelled per William 1-22-07 MA

PROJECT INFORMATION	SAMPLES RECEIVED		1. RELINQUISHED BY: (SIGNATURE)	2. RELINQUISHED BY: (SIGNATURE)	3. RECEIVED BY LAB: (SIGNATURE)
PROJECT MANAGER: William Little	TOTAL NO. OF CONTAINERS		(PRINTED NAME)	(PRINTED NAME) Jeffrey Lane	(PRINTED NAME)
SHIPPING ID NO.: 39302591	CHAIN OF CUSTODY SEALS		RECEIVED BY: (SIGNATURE)	RECEIVED BY: (SIGNATURE)	(COMPANY) Trace Analysis
VIA: Courier	GOOD CONDITION/COLD	4°C	(TIME/DATE) 4:25pm 11 Jan 07	(TIME/DATE) 1245 1-11-07	(TIME/DATE) 1-12-07 9:00
	CONFORMS TO RECORD		SPECIAL INSTRUCTIONS/COMMENTS: PLEASE SEE ATTACHED ANALYTE LIST FOR DETAILS ANALYTE TABLE G		

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Analyte Table G

HELSTF Phase III RFI

Groundwater Sample Collection

Parameter	Analytical Method	Container	Min Hold Time	Preservative
Water Quality *Total Dissolved Solids* *Alkalinity, Carbonate/Bicarbonate* *Alkalinity, Hydroxide* *pH* *Conductance*	EPA 160.1 EPA 310.1 EPA 150.1 EPA 120.1	1 L Poly	48 hours	4°C
~~Ammonia-Nitrogen~~	EPA 350.2	1-500mL poly	28 days	H_2SO_4 pH<2
Dissolved Ions *Bromide* *Nitrate-N* *Chloride* *Nitrite-N* *Fluoride* *Sulfate*	EPA 300.0	Take from Water Quality container	48 hrs NO3 & NO2; others 28 days	4°C
Total Metals *RCRA-8* *copper* *phosphorus* *potassium* *sodium* *zinc*	SW 6010B and [mercury] 7470A / 7471A	500 mL Poly	180 days OR 28 Days [mercury]	HNO_3 pH <2
Dissolved Metals *RCRA 7* *copper* *potassium* *sodium* *zinc*	SW 6010B	500 mL Poly Field Filtered	180 Days	HNO_3 pH <2
Total Organic Carbon	EPA 415.1	2-40mL VOAs amber glass	28 days	H_2SO_4 pH<2

9/26/2006 8:32 AM

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CHAIN OF CUSTODY RECORD

PAGE 1 OF 1

PROJECT NO.: 7

PROJECT NAME: HELSTF Groundwater Sampling

SAMPLER'S SIGNATURE:

DATE	TIME	SAMPLE ID	MATRIX	LAB NO.	NO. OF CONTAINERS	TOC	Water Quality	Amm Nitrogen	Total Metals	Diss. Metals	Diss. Ions					REMARKS
																x: Chloride/Sulfate x: Hg (Total)
12-12-06	1500	HLSF-0085-HMW-060-1206	Water	111695	6	X	X	X	X	X	X					*NOTE! TAKE DISS IONS FROM WATER QUALITY CONT.

PROJECT INFORMATION	SAMPLES RECEIVED		1. RELINQUISHED BY: (SIGNATURE)	2. RELINQUISHED BY: (SIGNATURE)	3. RECEIVED BY LAB: (SIGNATURE)
PROJECT MANAGER: William Little	TOTAL NO. OF CONTAINERS		(PRINTED NAME): GABRIEL GARCIA	(PRINTED NAME): James Gutierrez	(PRINTED NAME): Deena Ripley
SHIPPING ID NO.: 38793001	CHAIN OF CUSTODY SEALS		RECEIVED BY: (SIGNATURE)	RECEIVED BY: (SIGNATURE)	(COMPANY): Trace Analysis
	GOOD CONDITION/CHILLED	4°C	(TIME/DATE): 0953 12-13-06	(TIME/DATE): 11:00 12-13-06	(TIME/DATE): 12/14/06 9:00
VIA: Courier LS	CONFORMS TO RECORD		SPECIAL INSTRUCTIONS/COMMENTS: PLEASE SEE ATTACHED ANALYTE LIST FOR DETAILS		

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Analyte Table G HELSTF Phase III RFI Groundwater Sample Collection				
Parameter	Analytical Method	Container	Min Hold Time	Preservative
Water Quality *Total Dissolved Solids* *Alkalinity, Carbonate/Bicarbonate* *Alkalinity, Hydroxide* *pH* *Conductance*	EPA 160.1 EPA 310.1 EPA 150.1 EPA 120.1	1 L Poly	48 hours	4°C
Ammonia Nitrogen	EPA 350.2	1-500mL poly	28 days	H_2SO_4 pH<2
Dissolved Ions *Bromide* *Nitrate-N* *Chloride* *Nitrite-N* *Fluoride* *Sulfate*	EPA 300.0	Take from Water Quality container	48 hrs NO3 & NO2; others 28 days	4°C
Total Metals *RCRA 8* *copper* *phosphorus* *potassium* *sodium* *zinc*	SW 6010B and [mercury] 7470A / 7471A	500 mL Poly	180 days OR 28 Days [mercury]	HNO_3 pH <2
Dissolved Metals *RCRA 7* *copper* *potassium* *sodium* *zinc*	SW 6010B	500 mL Poly Field Filtered	180 Days	HNO_3 pH <2
Total Organic Carbon	EPA 415.1	2-40mL VOAs amber glass	28 days	H_2SO_4 pH<2

9/26/2006 8:32 AM

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PROJECT NO.: 7

PROJECT NAME: HELSTF Groundwater Sampling

SAMPLER'S SIGNATURE:

DATE	TIME	SAMPLE ID	MATRIX	LAB NO.	NO. OF CONTAINERS	TOC	Water Quality	Amm Nitrogen	Total Metals	Diss. Metals	Diss. Ions	PERCHLORATES			REMARKS
1-9-07	1315	HLSF-0085-HMW-061-~~1208~~ 0107	Water	113419	6	X	X	X	X	X	X	X			

PROJECT INFORMATION	SAMPLES RECEIVED		1. RELINQUISHED BY: (SIGNATURE)	2. RELINQUISHED BY: (SIGNATURE)	3. RECEIVED BY LAB: (SIGNATURE)
PROJECT MANAGER: William Little	TOTAL NO. OF CONTAINERS		(PRINTED NAME) GABRIEL GALLI	(PRINTED NAME) Jeffrey Lane	(PRINTED NAME) Vicki Hensley
SHIPPING ID NO.: 38793008	CHAIN OF CUSTODY SEALS		RECEIVED BY: (SIGNATURE)	RECEIVED BY: (SIGNATURE)	(COMPANY) Trace Analysis
	GOOD CONDITION/COLD	4°C	(TIME/DATE) 3:30 pm 09 Jan 07	(TIME/DATE) 1640 1-9-07	(TIME/DATE) 8:30 1-10-07
VIA: Courier	CONFORMS TO RECORD		SPECIAL INSTRUCTIONS/COMMENTS: PLEASE SEE ATTACHED ANALYTE LIST FOR DETAILS	ANALYTE TABLE	Not run NH_3 per WL

No Pres

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Analyte Table G

HELSTF Phase III RFI

Groundwater Sample Collection

Parameter	Analytical Method	Container	Min Hold Time	Preservative
Water Quality *Total Dissolved Solids* *Alkalinity, Carbonate/Bicarbonate* *Alkalinity, Hydroxide* *pH* *Conductance*	EPA 160.1 EPA 310.1 EPA 150.1 EPA 120.1	1 L Poly	48 hours	4°C
Ammonia Nitrogen	EPA 350.2	1-500mL poly	28 days	H_2SO_4 pH<2
Dissolved Ions *Bromide* *Nitrate-N* *Chloride* *Nitrite-N* *Fluoride* *Sulfate*	EPA 300.0	Take from Water Quality container	48 hrs NO3 & NO2; others 28 days	4°C
Total Metals *RCRA 8* *copper* *phosphorus* *potassium* *sodium* *zinc*	SW 6010B and [mercury] 7470A / 7471A	500 mL Poly	180 days OR 28 Days [mercury]	HNO_3 pH <2
Dissolved Metals *RCRA 7* *copper* *potassium* *sodium* *zinc*	SW 6010B	500 mL Poly Field Filtered	180 Days	HNO_3 pH <2
Total Organic Carbon	EPA 415.1	2-40mL VOAs amber glass	28 days	H_2SO_4 pH<2

9/26/2006 8:32 AM

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7011606

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812

CHAIN OF CUSTODY RECORD

PAGE 1 OF 1

PROJECT NO.	PROJECT NAME
7	HELSTF Groundwater Sampling

SAMPLER'S SIGNATURE: George Esqueda

DATE	TIME	SAMPLE ID	MATRIX	LAB NO.	NO. OF CONTAINERS	VOC	DRO/GRO	D.I.A	TOC	SVOC	Water Quality	Amm Nitrogen	Total Metals	Diss Metals	Diss Ions	REMARKS
																NH3
1/12/07	1500	HLSF-0085-EQPT-001-~~1206~~ 0107 JZ	Water	114008 ~~7011606~~	19	X	X	X	X	X	X	X	X	X	X	•
1/12/07	1500	HLSF-0085-TB-812-~~1206~~ 0107 JZ	Water	114009	2	X										

Used DEIONIZED (ASTM Type II)

PROJECT INFORMATION	SAMPLES RECEIVED		1. RELINQUISHED BY: (SIGNATURE)	2. RELINQUISHED BY: (SIGNATURE)	3. RECEIVED BY LAB: (SIGNATURE)
PROJECT MANAGER: William Little	TOTAL NO. OF CONTAINERS		(PRINTED NAME) GEORGE ESQUEDA	(PRINTED NAME) Jeffrey Lane	(PRINTED NAME) Sueann Shipley
SHIPPING ID NO. 39302594	CHAIN OF CUSTODY SEALS		RECEIVED BY: (SIGNATURE)	RECEIVED BY: (SIGNATURE)	(COMPANY) Traco Analytics
	GOOD CONDITION/CHILLED	4C/	(TIME/ DATE) 3:50 pm 12 Jan 06	(TIME/ DATE) 1710 1-12-07	(TIME/ DATE) 1/16/07 10:00
VIA: Courier	CONFORMS TO RECORD	NA	SPECIAL INSTRUCTIONS / COMMENTS: PLEASE SEE ATTACHED ANALYTE LIST FOR DETAILS Table A		

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Analyte Table A

HELSTF Phase III RFI

Groundwater Sample Collection

Parameter	Analytical Method	Container	Min Hold Time	Preservative
Water Quality *Total Dissolved Solids* *Alkalinity, Carbonate/Bicarbonate* *Alkalinity, Hydroxide* *pH* *Conductance*	EPA 160.1 EPA 310.1 EPA 150.1 EPA 120.1	1 L Poly	48 hours	4°C
Ammonia Nitrogen	EPA 350.2	1-500mL poly	28 days	H_2SO_4 pH<2
Dissolved Ions *Bromide* *Nitrate-N* *Chloride* *Nitrite-N* *Fluoride* *Sulfate*	EPA 300.0	Take from Water Quality container	48 hrs NO3 & NO2; others 28 days	4°C
Total Metals *Cadmium* *Phosphorous* *Chromium* *Silver* *Copper* *Sodium* *Lead* *Zinc*	SW 6010B	500 mL Poly	180 days	HNO_3 pH <2
Dissolved Metals *Cadmium* *Chromium* *Silver* *Copper* *Sodium* *Lead* *Zinc*	SW 6010B	500 mL Poly Field Filtered	180 Days	HNO_3 pH <2
VOCs	SW 8260B	3-40mL VOAs	14 days	HCl pH<2
Direct Inject Alcohols *ethylene glycol*	~~SW 8015B Mod~~	~~2-40mL VOAs~~	~~7 days~~	No Preservative 4°C
SVOCs, including benzyl alcohol and 2-butoxy ethanol	SW 8270C	2-1 L ambers	7 days extraction/ 40 days analysis	4°C
Petroleum Hydrocarbons	Diesel Range Organics SW 8015B Mod	3-40mL VOAs	14 days	HCl pH<2
	Gasoline Range Organics SW 8015B Mod	3-40mL VOAs	14 days	HCl pH<2
Total Organic Carbon	EPA 415.1	2-40mL VOAs amber glass	28 days	H_2SO_4 pH<2

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813

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CHAIN OF CUSTODY RECORD

PAGE 1 OF 1

PROJECT NO.	PROJECT NAME
7	HELSTF Groundwater Sampling

SAMPLER'S SIGNATURE: George Esqueda

DATE	TIME	SAMPLE ID	MATRIX	LAB NO.	NO. OF CONTAINERS	VOC	DRO/GRO	D.I.A	TOC	SVOC	Water Quality	Amm Nitrogen	Total Metals	Diss Metals	Diss Ions	REMARKS
1/18/07	1510	HLSF-0085-EQPT-002-~~1206~~ 0107 JE	Water	114287	19	X	X	X	X	X	X	X	X	X	X	
1/18/07	1510	HLSF-0085-TB-813-~~1206~~ 0107 JE	Water	114288	~~2~~ 1	X										

PROJECT INFORMATION	SAMPLES RECEIVED		1. RELINQUISHED BY: (SIGNATURE)	2. RELINQUISHED BY: (SIGNATURE)	3. RECEIVED BY LAB: (SIGNATURE)
PROJECT MANAGER: William Little	TOTAL NO. OF CONTAINERS		(PRINTED NAME) George Esqueda	(PRINTED NAME) Jeffrey Lane	(PRINTED NAME) Sheena Shipley
SHIPPING ID NO. 3938026007	CHAIN OF CUSTODY SEALS		RECEIVED BY: (SIGNATURE)	RECEIVED BY: (SIGNATURE)	(COMPANY) Trace Analysis
VIA: Courier LS	GOOD CONDITION/CHILLED	4°C	(TIME/DATE) 4:30pm 18Jan07	(TIME/DATE) 18:05 1-18-07	(TIME/DATE) 1/22/07 8:30
	CONFORMS TO RECORD		SPECIAL INSTRUCTIONS/COMMENTS: PLEASE SEE ATTACHED ANALYTE LIST FOR DETAILS Table A		

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Analyte Table A

HELSTF Phase III RFI

Groundwater Sample Collection

Parameter	Analytical Method	Container	Min Hold Time	Preservative
Water Quality *Total Dissolved Solids* *Alkalinity, Carbonate/Bicarbonate* *Alkalinity, Hydroxide* *pH* *Conductance*	EPA 160.1 EPA 310.1 EPA 150.1 EPA 120.1	1 L Poly	48 hours	4°C
Ammonia Nitrogen	EPA 350.2	1-500mL poly	28 days	H_2SO_4 pH<2
Dissolved Ions *Bromide* *Nitrate-N* *Chloride* *Nitrite-N* *Fluoride* *Sulfate*	EPA 300.0	Take from Water Quality container	48 hrs NO3 & NO2; others 28 days	4°C
Total Metals *Cadmium* *Phosphorous* *Chromium* *Silver* *Copper* *Sodium* *Lead* *Zinc*	SW 6010B	500 mL Poly	180 days	HNO_3 pH <2
Dissolved Metals *Cadmium* *Chromium* *Silver* *Copper* *Sodium* *Lead* *Zinc*	SW 6010B	500 mL Poly Field Filtered	180 Days	HNO_3 pH <2
VOCs	SW 8260B	3-40mL VOAs	14 days	HCl pH<2
Direct Inject Alcohols *ethylene glycol*	SW-8015B-Mod	2-40mL VOAs	7 days	No Preservative 4°C
SVOCs, including benzyl alcohol and 2-butoxy ethanol	SW 8270C	2-1 L ambers	7 days extraction/ 40 days analysis	4°C
Petroleum Hydrocarbons	Diesel Range Organics SW 8015B Mod	3-40mL VOAs	14 days	HCl pH<2
	Gasoline Range Organics SW 8015B Mod	3-40mL VOAs	14 days	HCl pH<2
Total Organic Carbon	EPA 415.1	2-40mL VOAs amber glass	28 days	H_2SO_4 pH<2

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CHAIN OF CUSTODY RECORD

PAGE 1 OF 1

PROJECT NO.: 7

PROJECT NAME: HELSTF Groundwater Sampling

SAMPLER'S SIGNATURE: George Esqueda

DATE	TIME	SAMPLE ID	MATRIX	LAB NO.	NO. OF CONTAINERS	VOC	DRO/GRO	D.I.A.	TOC	SVOC	Water Quality	Amm Nitrogen	Total Metals	Diss Metals	Diss Ions	REMARKS
1/17/07	1610	HLSF-0085-EQPT-004-~~1206~~ 0107	Water	114200	19	X	X	X	X	X	X	X	X	X	X	NH3 •
1/17/07	1610	HLSF-0085-TB-015-~~1206~~ 0107	Water	201	2	X										

PROJECT INFORMATION	SAMPLES RECEIVED		1. RELINQUISHED BY: (SIGNATURE)	2. RELINQUISHED BY: (SIGNATURE)	3. RECEIVED BY LAB: (SIGNATURE)
PROJECT MANAGER: William Little	TOTAL NO. OF CONTAINERS		(PRINTED NAME) George Esqueda	(PRINTED NAME) Jeffrey Lane	(PRINTED NAME) Sreena Stipley
SHIPPING ID NO.: 39302600	CHAIN OF CUSTODY SEALS		RECEIVED BY: (SIGNATURE)	RECEIVED BY: (SIGNATURE) James Rodell	(COMPANY) Traco Analytics
	GOOD CONDITION/CHILLED	4°C	(TIME/DATE) 10 pm 17 Jan 07	(TIME/DATE) 1740 1-17-07	(TIME/DATE) 1/19/07 8:30
VIA: Courier	CONFORMS TO RECORD	NA	SPECIAL INSTRUCTIONS/COMMENTS: PLEASE SEE ATTACHED ANALYTE LIST FOR DETAILS TABEL B		

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Analyte Table B HELSTF Phase III RFI Groundwater Sample Collection				
Parameter	**Analytical Method**	**Container**	**Min Hold Time**	**Preservative**
Water Quality *Total Dissolved Solids* *Alkalinity, Carbonate/Bicarbonate* *Alkalinity, Hydroxide* *pH* *Conductance*	EPA 160.1 EPA 310.1 EPA 150.1 EPA 120.1	1 L Poly	48 hours	4°C
Ammonia Nitrogen	EPA 350.2	1-500mL poly	28 days	H_2SO_4 pH<2
Dissolved Ions *Bromide* *Nitrate-N* *Chloride* *Nitrite-N* *Fluoride* *Sulfate*	EPA 300.0	Take from Water Quality container	48 hrs NO3 & NO2; others 28 days	4°C
Total Metals RCRA 8 *copper* *phosphorus* *sodium* *zinc*	SW 6010B and [mercury] 7470A / 7471A	500 mL Poly	180 days OR 28 Days [mercury]	HNO_3 pH <2
Dissolved Metals RCRA 7 *copper* *phosphorus* *sodium* *zinc*	SW 6010B	500 mL Poly Field Filtered	180 Days	HNO_3 pH <2
VOCs	SW 8260B	3-40mL VOAs	14 days	HCl pH<2
Direct Inject Alcohols *ethylene glycol*	SW 8015B Mod	2-40mL VOAs	7 days	No Preservative 4°C
SVOCs, including benzyl alcohol and 2-butoxy ethanol	SW 8270C	2-1 L ambers	7 days extraction/ 40 days analysis	4°C
Petroleum Hydrocarbons	Diesel Range Organics SW 8015B Mod	3-40mL VOAs	14 days	HCl pH<2
	Gasoline Range Organics SW 8015B Mod	3-40mL VOAs	14 days	HCl pH<2
Total Organic Carbon	EPA 415.1	2-40mL VOAs amber glass	28 days	H_2SO_4 pH<2

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817

CHAIN OF CUSTODY RECORD

PROJECT NO.: 7

PROJECT NAME: HELSTF Groundwater Sampling

SAMPLER'S SIGNATURE: George Esqueda

DATE	TIME	SAMPLE ID	MATRIX	LAB NO.	NO. OF CONTAINERS	VOC	DRO / GRO	~~DIA~~	~~TOC~~	SVOC	Water Quality	Amm. Nitrogen	Total Metals	Diss. Metals	Diss. Ions	REMARKS
1/18/07	1050	HLSF-0085-HCF-002-0107-ms/msd	WATER		18	X	X	X	X	X	X	X	X	X	X	(Lab) Extra? 3-40ml's ???
~~1/18/07~~	~~1050~~	~~HLSF-0085-TB-017-0107~~ DE	WATER		~~2~~	~~X~~	DE									
								NO DIA	NO TOC'S							
																From Lab (continued) NO TRIP BLANKS NO DIA NO TOC'S 3-40ml. ???

PROJECT INFORMATION	SAMPLES RECEIVED		1. RELINQUISHED BY: (SIGNATURE)	2. RELINQUISHED BY: (SIGNATURE)	3. RECEIVED BY LAB: (SIGNATURE)
PROJECT MANAGER: William Little	TOTAL NO. OF CONTAINERS		(PRINTED NAME) George Esqueda	(PRINTED NAME) Jeffrey Lane	(PRINTED NAME) Sharon Shipley
SHIPPING ID NO.: 3931026605	CHAIN OF CUSTODY SEALS		RECEIVED BY: (SIGNATURE)	RECEIVED BY: (SIGNATURE)	(COMPANY) Trace analysis
VIA: Courier US	GOOD CONDITION/CHILLED	4°C	(TIME/DATE) 4:30pm 18 Jan 07	(TIME/DATE) 18:05 1-18-07	(TIME/DATE) 1/22/07 8:30
	CONFORMS TO RECORD		SPECIAL INSTRUCTIONS / COMMENTS: PLEASE SEE ATTATCHED ANALYTE LIST FOR DETAILS Table A		

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Analyte Table A

HELSTF Phase III RFI

Groundwater Sample Collection

Parameter	Analytical Method	Container	Min Hold Time	Preservative
Water Quality *Total Dissolved Solids* *Alkalinity, Carbonate/Bicarbonate* *Alkalinity, Hydroxide* *pH* *Conductance*	EPA 160.1 EPA 310.1 EPA 150.1 EPA 120.1	1 L Poly	48 hours	4°C
Ammonia Nitrogen	EPA 350.2	1-500mL poly	28 days	H_2SO_4 pH<2
Dissolved Ions *Bromide* *Nitrate-N* *Chloride* *Nitrite-N* *Fluoride* *Sulfate*	EPA 300.0	Take from Water Quality container	48 hrs NO3 & NO2; others 28 days	4°C
Total Metals *Cadmium* *Phosphorous* *Chromium* *Silver* *Copper* *Sodium* *Lead* *Zinc*	SW 6010B	500 mL Poly	180 days	HNO_3 pH <2
Dissolved Metals *Cadmium* *Chromium* *Silver* *Copper* *Sodium* *Lead* *Zinc*	SW 6010B	500 mL Poly Field Filtered	180 Days	HNO_3 pH <2
VOCs	SW 8260B	3-40mL VOAs	14 days	HCl pH<2
Direct Inject Alcohols *ethylene glycol*	SW 8015B Mod	2-40mL VOAs	7 days	No Preservative 4°C
SVOCs, including benzyl alcohol and 2-butoxy ethanol	SW 8270C	2-1 L ambers	7 days extraction/ 40 days analysis	4°C
Petroleum Hydrocarbons	Diesel Range Organics SW 8015B Mod	3-40mL VOAs	14 days	HCl pH<2
	Gasoline Range Organics SW 8015B Mod	3-40mL VOAs	14 days	HCl pH<2
Total Organic Carbon	EPA 415.1	2-40mL VOAs amber glass	28 days	H_2SO_4 pH<2

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567

CHAIN OF CUSTODY RECORD

PROJECT NO.: 7

PROJECT NAME: HELSTF PHASE III SOIL SAMPLING

SAMPLER'S SIGNATURE: James Thompson

DATE	TIME	SAMPLE ID	MATRIX	LAB NO.	NO. OF CONTAINERS	Nitate-nitrite as N	Phosphorus	Hex Chrome	8 RCRA Metals	Chromium	Copper	Lead	Potassium	Sodium	Zinc	REMARKS
9-27-06	0920	HLSF-0085-SB-029-(0.5-1.0)	soil	104611	3		X	X	X				X	X	X	
9-27-06	0930	HLSF-0085-SB-030-(0.5-1.0)	soil	12	3		X	X	X				X	X	X	
9-27-06	0940	HLSF-0085-SB-031(0.5-1.0)	soil	13	3		X	X	X				X	X	X	

PROJECT INFORMATION	SAMPLES RECEIVED		1. RELINQUISHED BY: (SIGNATURE)	2. RELINQUISHED BY: (SIGNATURE)	3. RECEIVED BY LAB: (SIGNATURE)
PROJECT MANAGER: William Little	TOTAL NO. OF CONTAINERS		J. Thompson (PRINTED NAME) James Thompson	(PRINTED NAME)	Sheena Shipley (PRINTED NAME) Sheena Shipley
SHIPPING INFO.: 7928 5615 9591	CHAIN OF CUSTODY SEALS		RECEIVED BY: (SIGNATURE)	RECEIVED BY: (SIGNATURE)	COMPANY: Traco Analysis Inc
	GOOD CONDITION/CHILLED	4°C	(TIME/DATE)	(TIME/DATE)	TIME/DATE: 9-28-06 8:30
VIA: Fed Ex ~~Lab Courier~~	CONFORMS TO RECORD	TS	SPECIAL INSTRUCTIONS / COMMENTS: PLEASE SEE ATTATCHED ANALYTE LIST FOR DETAILS		

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CHAIN OF CUSTODY RECORD

PAGE 2 OF 2

PROJECT NO.: 7

PROJECT NAME: HELSTF PHASE III SOIL SAMPLING

SAMPLER'S SIGNATURE: James Thompson

DATE	TIME	SAMPLE ID	MATRIX	LAB NO.	NO. OF CONTAINERS	DIA	VOC	Benzyl Alcohol	SVOC	SRO-DRO	TOC					REMARKS
9-27-06	0920	HLSF-0085-SB-029 (0.5-1.0)	Soil	~~104614~~ 104611	3	X	X	X		X	X					
9-27-06	0930	HLSF-0085-SB-030 (0.5-1.0)	Soil	104612	3	X	X	X		X	X					
~~9-27-06~~	~~0940~~	~~HLSF-0085-SB-031~~	~~Soil~~	~~17~~												
9-27-06	0940	HLSF-0085-SB-031-(0.5-1.0)	Soil	104613 16	3	X	X	X		X	X					
9-27-06	0920	HLSF-0085-TB-567	water	18	2		X									trip blank

PROJECT INFORMATION	SAMPLES RECEIVED		1. RELINQUISHED BY: (SIGNATURE)	2. RELINQUISHED BY: (SIGNATURE)	3. RECEIVED BY LAB: (SIGNATURE)
PROJECT MANAGER: William Little	TOTAL NO. OF CONTAINERS		(PRINTED NAME) James Thompson	(PRINTED NAME)	(PRINTED NAME) Sheena Shipley
SHIPPING ID NO.: 8315 9591	CHAIN OF CUSTODY SEALS		RECEIVED BY: (SIGNATURE)	RECEIVED BY: (SIGNATURE)	(COMPANY) Trace Analysis Inc.
	GOOD CONDITION/CHILLED	4°C	(TIME/DATE)	(TIME/DATE)	(TIME/DATE) 9-28-06 8:30
	CONFORMS TO RECORD		SPECIAL INSTRUCTIONS/COMMENTS: PLEASE SEE ATTATCHED ANALYTE LIST FOR DETAILS		

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CHAIN OF CUSTODY RECORD

PROJECT NO.: 7

PROJECT NAME: HELSTF PHASE III SOIL SAMPLING

SAMPLER'S SIGNATURE: James Thompson

DATE	TIME	SAMPLE ID	MATRIX	LAB NO.	NO. OF CONTAINERS	Nitrate-nitrite as N	Phosphorus	Hex Chrome	8 RCRA Metals	Chromium	Copper	Lead	Potassium	Sodium	Zinc	REMARKS
~~9-28-06~~	~~AJ~~			~~AJ~~			~~X~~	~~X~~	~~X~~				~~X~~	~~X~~	~~X~~	
9-28-06	1115	HLSF-0085-SB-032-(0.5-1.0)	soil	104711	3		X	X	X				X	X	X	
9-28-06	1125	HLSF-0085-SB-033-(0.5-1.0)	soil	712	3		X	X	X				X	X	X	
9-28-06	1130	HLSF-0085-SB-034-(0.5-1.0)	soil	713	3		X	X	X				X	X	X	
9-28-06	1105	HLSF-0085-SB-035-(0.5-1.0)	soil	714	3		X	X	X				X	X	X	
9-28-06	1135	HLSF-0085-SB-036-(0.5-1.0)	soil	715	3		X	X	X				X	X	X	
9-28-06	1135	HLSF-0085-SB-136-(0.5-1.0)	soil	716	3		X	X	X				X	X	X	

PROJECT INFORMATION	SAMPLES RECEIVED		1. RELINQUISHED BY: (SIGNATURE)	2. RELINQUISHED BY: (SIGNATURE)	3. RECEIVED BY LAB: (SIGNATURE)
PROJECT MANAGER: William Little	TOTAL NO. OF CONTAINERS		James Thompson (PRINTED NAME)	(PRINTED NAME)	Sheena Shipley (PRINTED NAME)
SHIPPING ID NO.: 7996109563 15	CHAIN OF CUSTODY SEALS		RECEIVED BY: (SIGNATURE)	RECEIVED BY: (SIGNATURE)	Sheena Shipley (COMPANY)
VIA: Fed Ex	GOOD CONDITION/CHILLED	4°C	(TIME/DATE)	(TIME/DATE)	Traco Analytics (TIME/DATE)
~~Lab Courier~~ AJ	CONFORMS TO RECORD		SPECIAL INSTRUCTIONS / COMMENTS: PLEASE SEE ATTATCHED ANALYTE LIST FOR DETAILS		9-29-06 10:30

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CHAIN OF CUSTODY RECORD

PROJECT NO.: 7

PROJECT NAME: HELSTF PHASE III SOIL SAMPLING

SAMPLER'S SIGNATURE: James Thompson

DATE	TIME	SAMPLE ID	MATRIX	LAB NO.	NO. OF CONTAINERS	DIA	VOC	Benzyl Alcohol	SVOC	GRO-DRO	TOC					REMARKS
										GRO						
9-28-06	1115	HLSF-0085-SB-032-(0.5-1.0)	soil	104711	3	X	X	X		X	X					
9-28-06	1125	HLSF-0085-SB-033-(0.5-1.0)	soil	712	3	X	X	X		X	X					
9-28-06	1130	HLSF-0085-SB-034-(0.5-1.0)	soil	713	3	X	X	X		X	X					
9-28-06	1105	HLSF-0085-SB-035-(0.5-1.0)	soil	714	3	X	X	X		X	X					
9-28-06	1135	HLSF-0085-SB-036-(0.5-1.0)	soil	715	3	X	X	X		X	X					
9-28-06	1135	HLSF-0085-SB-136-(0.5-1.0)	soil	716	3	X	X	X		X	X					
9-28-06	1105	HLSF-0085-TB-568	water	717	2		X									trip blank

PROJECT INFORMATION	SAMPLES RECEIVED		1. RELINQUISHED BY: (SIGNATURE)	2. RELINQUISHED BY: (SIGNATURE)	3. RECEIVED BY LAB: (SIGNATURE)
PROJECT MANAGER: William Little	TOTAL NO. OF CONTAINERS		(PRINTED NAME) James Thompson	(PRINTED NAME)	(PRINTED NAME) Sheena Shipley
SHIPPING ID NO. 7996109563 45	CHAIN OF CUSTODY SEALS		RECEIVED BY: (SIGNATURE)	RECEIVED BY: (SIGNATURE)	(COMPANY) Traco Analytical Inc.
	GOOD CONDITION/CHILLED	4°C	(TIME/DATE)	(TIME/DATE)	(TIME/DATE) 9-29-06 10:30
VIA: Fed Ex ~~Lab Courier~~	CONFORMS TO RECORD		SPECIAL INSTRUCTIONS/COMMENTS: PLEASE SEE ATTATCHED ANALYTE LIST FOR DETAILS		

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571

WTS

CHAIN OF CUSTODY RECORD

PROJECT NO.: 7

PROJECT NAME: HELSTF PHASE III SOIL SAMPLING

SAMPLER'S SIGNATURE: Alejandro Ma

DATE	TIME	SAMPLE ID	MATRIX	LAB NO.	NO. OF CONTAINERS	Nitate-nitrite as N	Phosphorus	Hex Chrome	8 RCRA Metals	Chromium	Copper	Lead	Potassium	Sodium	Zinc	REMARKS
10-10-06	1405	HLSF-0085-SB-029-(10.0-10.5)	Soil	105754	3		X	X	X				X	X	X	
	1425	HLSF-0085-SB-029-(20.0-21.0)		55	3		X	X	X				X	X	X	
	1505	HLSF-0085-SB-029-(30.0-31.0)		56	3		X	X	X				X	X	X	
	1555	HLSF-0085-SB-029-(40.0-41.0)		57	3		X	X	X				X	X	X	
	1645	HLSF-0085-SB-029-(49.0-50.0)		58	3		X	X	X				X	X	X	
10-11-06	0905	HLSF-0085-SB-030-(10.0-11.0)	Soil	59	3											
	0920	HLSF-0085-SB-030-(20.0-~~21.0~~ 22.0)	45 soil	60	3											
	0920	HLSF-0085-SB-130 (20.0-22.0)	Soil	61	3											
	0950	HLSF-0085-SB-030-(30.0-31.0)		62	3											
	1030	HLSF-0085-SB-030-(40.0-41.0)		63	3											
	1125	HLSF-0085-SB-030-(49.0-50.0)		64	3											
10-11-06	1620	HLSF-0085-SB-031-(10.0-11.0)	Soil	65	3		X	X	X				X	X	X	
		HLSF-0085-TB		66	2											

PROJECT INFORMATION	SAMPLES RECEIVED		1. RELINQUISHED BY: (SIGNATURE)	2. RELINQUISHED BY: (SIGNATURE)	3. RECEIVED BY LAB: (SIGNATURE)
PROJECT MANAGER: William Little	TOTAL NO. OF CONTAINERS		(PRINTED NAME) Alejandro Martinez	(PRINTED NAME)	(PRINTED NAME) Sheena Shipley
SHIPPING ID NO.: 3579 29160	CHAIN OF CUSTODY SEALS		RECEIVED BY: (SIGNATURE)	RECEIVED BY: (SIGNATURE)	(COMPANY) Traco Analytical Inc
	GOOD CONDITION/CHILLED	4°C	(TIME/DATE) 14:38 10-12-06	(TIME/DATE) 17:00 10/12/06	(TIME/DATE) 10/13/06 8:40
VIA: ~~Fed Ex~~ ~~Lab Courier~~ LS	CONFORMS TO RECORD		SPECIAL INSTRUCTIONS / COMMENTS: PLEASE SEE ATTACHED ANALYTE LIST FOR DETAILS		

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WTS

CHAIN OF CUSTODY RECORD

PROJECT NO.: 7

PROJECT NAME: HELSTF PHASE III SOIL SAMPLING

SAMPLER'S SIGNATURE: Alejandro Martinez

DATE	TIME	SAMPLE ID	MATRIX	LAB NO.	NO. OF CONTAINERS	DIA	VOC	Benzyl Alcohol	SVOC	GRO-DRO	TOC	2-butoxy ethanol				REMARKS
10-10-06	1405	HLSF-0085-SB-029-(10.0-10.5)	soil	105754	3	X	X	X		X	X	X				
	1425	HLSF-0085-SB-029-(20.0-21.0)		55	3	X	X	X		X	X	X				
	1505	HLSF-0085-SB-029-(30.0-31.0)		56	3	X	X	X		X	X	X				
	1555	HLSF-0085-SB-029-(40.0-41.0)		57	3	X	X	X		X	X	X				
	1645	HLSF-0085-SB-029-(49.0-50.0)		58	3	X	X	X		X	X	X				
10-11-06	0905	HLSF-0085-SB-030-(10.0-11.0)	soil	59	3											
	0920	HLSF-0085-SB-030-(20.0-22.0)		60	3											
	0920	HLSF-0085-SB-130-(20.0-22.0)		61	3											
	0950	HLSF-0085-SB-030-(30.0-31.0)		62	3											
	1030	HLSF-0085-SB-030-(40.0-41.0)		63	3											
	1125	HLSF-0085-SB-030-(49.0-50.0)		64	3											
10-11-06	1620	HLSF-0085-SB-031-(10.0-11.0)	soil	65	3	X	X	X		X	X	X				
		HLSF-0085-TB	water	66	2		X									

PROJECT INFORMATION	SAMPLES RECEIVED		1. RELINQUISHED BY: (SIGNATURE)	2. RELINQUISHED BY: (SIGNATURE)	3. RECEIVED BY LAB: (SIGNATURE)
PROJECT MANAGER: William Little	TOTAL NO. OF CONTAINERS		(PRINTED NAME) Alejandro Martinez	(PRINTED NAME) James Bate	(PRINTED NAME) Sheena Shipley
SHIPPING ID NO.: 3479296	CHAIN OF CUSTODY SEALS		RECEIVED BY: (SIGNATURE)	RECEIVED BY: (SIGNATURE)	(COMPANY) Trace Analysis Inc
VIA: ~~Fed Ex~~ Lab Courier	GOOD CONDITION/CHILLED	4°C	(TIME/DATE) 14:38 10-12-06	(TIME/DATE) 17:00 10/12/06	(TIME/DATE) 10/13/06 8:40
	CONFORMS TO RECORD		SPECIAL INSTRUCTIONS/COMMENTS: PLEASE SEE ATTATCHED ANALYTE LIST FOR DETAILS		

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WTS

CHAIN OF CUSTODY RECORD

PROJECT NO.: 7

PROJECT NAME: HELSTF PHASE III SOIL SAMPLING

SAMPLER'S SIGNATURE:

DATE	TIME	SAMPLE ID	MATRIX	LAB NO.	NO. OF CONTAINERS	Nitate-nitrite as N	Phosphorus	Hex Chrome	8 RCRA Metals	Chromium	Copper	Lead	Potassium	Sodium	Zinc	REMARKS
~~10-11-06~~		~~HLSF-0085-1J~~					~~X~~	~~X~~	~~X~~				~~X~~	~~X~~	~~X~~	
10-12-06	1500	HLSF-0085-SB-031-(20.0-21.0)	soil	104081	3		X	X	X				X	X	X	
	1530	HLSF-0085-SB-031-(30.0-31.0)		82	3											
	1615	HLSF-0085-SB-031-(40.0-41.0)		83	3											
	1645	HLSF-0085-SB-031-(49.0-50.0)		84	3											

PROJECT INFORMATION	SAMPLES RECEIVED		1. RELINQUISHED BY: (SIGNATURE)	2. RELINQUISHED BY: (SIGNATURE)	3. RECEIVED BY LAB: (SIGNATURE)
PROJECT MANAGER: William Little	TOTAL NO. OF CONTAINERS		(PRINTED NAME) James Thompson	(PRINTED NAME) Jeffrey Lane	(PRINTED NAME) Susan Ripley
SHIPPING ID NO.: 3579 29169	CHAIN OF CUSTODY SEALS		RECEIVED BY: (SIGNATURE)	RECEIVED BY: (SIGNATURE)	(COMPANY) Traco Analytical Inc
	GOOD CONDITION/CHILLED	Y/N	(TIME/DATE) 4:05pm 10-12-06	(TIME/DATE) 17:20 10-16-06	(TIME/DATE) 10-18-06 8:30
VIA: Lab Courier	CONFORMS TO RECORD		SPECIAL INSTRUCTIONS / COMMENTS: PLEASE SEE ATTATCHED ANALYTE LIST FOR DETAILS		

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CHAIN OF CUSTODY RECORD

PROJECT NO.: 7

PROJECT NAME: HELSTF PHASE III SOIL SAMPLING

SAMPLER'S SIGNATURE:

DATE	TIME	SAMPLE ID	MATRIX	LAB NO.	NO. OF CONTAINERS	DIA	VOC	Benzyl Alcohol	SVOC	GRO-DRO	TOC Foc	2-butoxy ethanol				REMARKS
										6						
10-12-06	1500	HLSF-0085-SB-031-(20.0-21.0)	soil	106081	3	X	X	X		X	X	X				
	1530	HLSF-0085-SB-031-(30.0-31.0)		82	3											
	1615	HLSF-0085-SB-031-(40.0-41.0)		83	3											
	1645	HLSF-0085-SB-031-(49.0-50.0)		84	3											
		~~Trip Blank~~ 10-18	~~water~~	~~85~~	~~2~~	~~X~~	~~X~~	~~X~~				~~X~~	10-18-06			

PROJECT INFORMATION	SAMPLES RECEIVED		1. RELINQUISHED BY: (SIGNATURE)	2. RELINQUISHED BY: (SIGNATURE)	3. RECEIVED BY LAB: (SIGNATURE)
PROJECT MANAGER: William Little	TOTAL NO. OF CONTAINERS		(PRINTED NAME) James Thompson	(PRINTED NAME) Jeffrey Lane	(PRINTED NAME) Sheena Shipley
SHIPPING ID NO.: 3579 29169	CHAIN OF CUSTODY SEALS		RECEIVED BY: (SIGNATURE)	RECEIVED BY: (SIGNATURE)	(COMPANY) Traco Analysis Inc
VIA: Lab Courier LS	GOOD CONDITION/CHILLED	4°C	(TIME/DATE) 4:05 pm 16 Oct 06	(TIME/DATE) 17:20 10-16-06	(TIME/DATE) 10-18-06 8:30
	CONFORMING TO RECORD		SPECIAL INSTRUCTIONS/COMMENTS: PLEASE SEE ATTATCHED ANALYTE LIST FOR DETAILS Cancelled DIA		

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CHAIN OF CUSTODY RECORD

PROJECT NO.: 7

PROJECT NAME: HELSTF PHASE III SOIL SAMPLING

SAMPLER'S SIGNATURE: Bradley T. Davis

DATE	TIME	SAMPLE ID	MATRIX	LAB NO.	NO. OF CONTAINERS	Nitrate-nitrite as N	Phosphorus	Hex Chrome	8 RCRA Metals	Chromium	Copper	Lead	Potassium	Sodium	Zinc	REMARKS
10-12-06	1115	HLSF-0085-SB-017-(10.0-11.0)	Soil	106086	3	X	X	X	X	X	X	X	X	X	X	
10-12-06	1127	HLSF-0085-SB-017-(20.0-21.0)	Soil	87	3	X	X	X	X	X	X	X	X	X	X	
10-12-06	1143	HLSF-0085-SB-017-(30.0-31.0)	Soil	88	3	X	X	X	X	X	X	X	X	X	X	
10-12-06	1210	HLSF-0085-SB-017-(41.0-42.0)	Soil	89	3	X	X	X	X	X	X	X	X	X	X	
10-13-06	0743	HLSF-0085-SB-017-(50.0-52.0)	Soil	90	3	X	X	X	X	X	X	X	X	X	X	
10-13-06	0743	HLSF-0085-SB-017-(50.0-52.0)	Soil	91	3	X	X	X	X	X	X	X	X	X	X	

PROJECT INFORMATION	SAMPLES RECEIVED	
PROJECT MANAGER: William Little	TOTAL NO. OF CONTAINERS	
SHIPPING ID NO.: 35992969	CHAIN OF CUSTODY SEALS	
VIA: Lab Courier LS	GOOD CONDITION/CHILLED	4°C
	CONFORMS TO RECORD	

1. RELINQUISHED BY: (SIGNATURE)	2. RELINQUISHED BY: (SIGNATURE)	3. RECEIVED BY LAB: (SIGNATURE)
Bradley T. Davis	James Thompson	
(PRINTED NAME) 10-13-06 Bradley T. Davis 0745	(PRINTED NAME) James Thompson	(PRINTED NAME) JAMES RATCLIFF
RECEIVED BY: (SIGNATURE) James Thompson	RECEIVED BY: (SIGNATURE) Jeffrey Lee	(COMPANY) Trace Analysis
(TIME/DATE) 10-13-06	(TIME/DATE) 4:05pm 16 Oct 06	(TIME/DATE) 17:20 10-16-06

SPECIAL INSTRUCTIONS/COMMENTS: PLEASE SEE ATTATCHED ANALYTE LIST FOR DETAILS

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CHAIN OF CUSTODY RECORD

PROJECT NO.: 7

PROJECT NAME: HELSTF PHASE III SOIL SAMPLING

SAMPLER'S SIGNATURE: Bradley T. Davis

DATE	TIME	SAMPLE ID	MATRIX	LAB NO.	NO. OF CONTAINERS	DIA	VOC	Benzyl Alcohol	SVOC	GRO-DRO	TOC Foc	a-butoxy ethanol				REMARKS
10-12-06	1115	HLSF-0085-SB-017-(10.0-11.0)	Soil	106086	3	X	X	X	X	X	X	X				
10-12-06	1127	HLSF-0085-SB-017-(20.0-21.0)	Soil	87	3	X	X	X	X	X	X	X				
10-12-06	1143	HLSF-0085-SB-017-(30.0-31.0)	Soil	88	3	X	X	X	X	X	X	X				
10-12-06	1210	HLSF-0085-SB-017-(41.0-42.0)	Soil	89	3	X	X	X	X	X	X	X				
10-13-06	0743	HLSF-0085-SB-017-(50.0-52.0)	Soil	90	3	X	X	X	X	X	X	X				
10-13-06	0743	HLSF-0085-SB-117-(50.0-52.0)	Soil	91	3	X	X	X	X	X	X	X				
10-13-06	0743	Trip Blank 573	Water	92	2		X									

PROJECT INFORMATION	SAMPLES RECEIVED		1. RELINQUISHED BY: (SIGNATURE)	2. RELINQUISHED BY: (SIGNATURE)	3. RECEIVED BY LAB: (SIGNATURE)
PROJECT MANAGER: William Little	TOTAL NO. OF CONTAINERS		(PRINTED NAME) Bradley T. Davis 10-13-06 0745	(PRINTED NAME) James Thompson	(PRINTED NAME) James Ratcliff
SHIPPING ID NO.: 3559 2969	CHAIN OF CUSTODY SEALS		RECEIVED BY: (SIGNATURE) James Thompson	RECEIVED BY: (SIGNATURE) Jeffrey [illegible]	(COMPANY) Trace Analysis
	GOOD CONDITION/CHILLED	4°C	(TIME/DATE) 0730 10-13-06	(TIME/DATE) 4:05pm 16 Oct 06	(TIME/DATE) 17:20 10-16-06
VIA: Lab Courier LS	CONFORMS TO RECORD		SPECIAL INSTRUCTIONS / COMMENTS: PLEASE SEE ATTACHED ANALYTE LIST FOR DETAILS DIA cancelled		

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CHAIN OF CUSTODY RECORD

PROJECT NO.: 7

PROJECT NAME: HELSTF PHASE III SOIL SAMPLING

SAMPLER'S SIGNATURE: James Thompson

DATE	TIME	SAMPLE ID	MATRIX	LAB NO.	NO. OF CONTAINERS	Nitate-nitrite as N	Phosphorus	Hex Chrome	8 RCRA Metals	Chromium	Copper	Lead	Potassium	Sodium	Zinc	REMARKS
10-13-06	1035	HLSF-0085-SB-002-(10.0-10.5)	soil	106093	1	X	X	X	X		X			X	X	
	1055	HLSF-0085-SB-002-(20.0-20.5)	soil	94	1											
	1125	HLSF-0085-SB-002-(30.0-30.5)		95	1											
	1205	HLSF-0085-SB-002-(40.0-40.5)		96	1											
	1240	HLSF-0085-SB-002-(49.5-50.0)		97	1											
				0												
10-16-06	1535	HLSF-0085-SB-002-(0.5-1.0)	soil	106098	1	X	X	X	X		X			X	X	

PROJECT INFORMATION	SAMPLES RECEIVED		1. RELINQUISHED BY: (SIGNATURE)	2. RELINQUISHED BY: (SIGNATURE)	3. RECEIVED BY LAB: (SIGNATURE)
PROJECT MANAGER: William Little	TOTAL NO. OF CONTAINERS		(PRINTED NAME) James Thompson	(PRINTED NAME) Jeffrey Lane	(PRINTED NAME) Sheena Shipley
SHIPPING ID NO.: 38792969	CHAIN OF CUSTODY SEALS		RECEIVED BY: (SIGNATURE)	RECEIVED BY: (SIGNATURE)	(COMPANY) Trace analysis Inc
	GOOD CONDITION/CHILLED	4°C	(TIME/DATE) 4:05 pm 16 Oct 06	(TIME/DATE) 17:20 18-10-06	(TIME/DATE) 10-18-06 8:30
VIA: Lab Courier LS	CONFORMS TO RECORD	TS	SPECIAL INSTRUCTIONS / COMMENTS: PLEASE SEE ATTATCHED ANALYTE LIST FOR DETAILS		

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CHAIN OF CUSTODY RECORD

PROJECT NO.: 7

PROJECT NAME: HELSTF PHASE III SOIL SAMPLING

SAMPLER'S SIGNATURE: James Thompson

DATE	TIME	SAMPLE ID	MATRIX	LAB NO.	NO. OF CONTAINERS	DIA	VOC	Benzyl Alcohol	SVOC	GRO-DRO	TOC					REMARKS
10-13-06	1035	HLSF-0085-SB-002-(10.0-10.5)	Soil	106093	1						X					
	1055	HLSF-0085-SB-002-(20.0-20.5)		94	1											
	1125	HLSF-0085-SB-002-(30.0-30.5)		95	1											
	1205	HLSF-0085-SB-002-(40.0-40.5)		96	1											
	1240	HLSF-0085-SB-002-(49.5-50.0)		97	1											
				98												
10-16-06	1515	HLSF-0085-SB-002-(0.5-1.0)	Soil	106098	1						X					

PROJECT INFORMATION	SAMPLES RECEIVED		1. RELINQUISHED BY: (SIGNATURE)	2. RELINQUISHED BY: (SIGNATURE)	3. RECEIVED BY LAB: (SIGNATURE)
PROJECT MANAGER: William Little	TOTAL NO. OF CONTAINERS		(PRINTED NAME) James Thompson	(PRINTED NAME) Jeffrey Lane	(PRINTED NAME) Brenda Shipley
SHIPPING ID NO.: 35P29609	CHAIN OF CUSTODY SEALS		RECEIVED BY: (SIGNATURE)	RECEIVED BY: (SIGNATURE)	(COMPANY) Traco Analysis Inc
	GOOD CONDITION/CHILLED	4°C	(TIME/DATE) 4:05pm 16 Oct 06	(TIME/DATE) 17:20 10 Oct 06	(TIME/DATE) 10-16-06 8:30
VIA: Lab Courier CS	CONFORMS TO RECORD		SPECIAL INSTRUCTIONS/COMMENTS: PLEASE SEE ATTATCHED ANALYTE LIST FOR DETAILS		

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575

CHAIN OF CUSTODY RECORD

PROJECT NO.: 7

PROJECT NAME: HELSTF PHASE III SOIL SAMPLING

SAMPLER'S SIGNATURE: James Thompson

DATE	TIME	SAMPLE ID	MATRIX	LAB NO.	NO. OF CONTAINERS	Nitrate-nitrite as N	Phosphorus	Hex Chrome	8 RCRA Metals	Chromium	Copper	Lead	Potassium	Sodium	Zinc	REMARKS
10-17-06	~~1005~~ 0940	HLSF-0085-SB-007-(0.5-1.0)	Soil	106218	3	X		X	X							
	1005	HLSF-0085-SB-007-(10.0-11.0)		19	3											
	1020	HLSF-0085-SB-007-(20.0-21.0)		20	3											
	1100	HLSF-0085-SB-007-(30.0-31.0)		21	3											
	1125	HLSF-0085-SB-007-(40.0-41.0)		22	3											
	1200	HLSF-0085-SB-007-(49.0-50.0)		23	3											
10-17-06	1400	HLSF-0085-SB-008-(0.5-1.0)	Soil	24	3	X		X	X							
	1445	HLSF-0085-SB-008-(10.0-11.0)		25	3											
	1520	HLSF-0085-SB-008-(20.0-21.0)		26	3											
	1550	HLSF-0085-SB-008-(30.0-31.0)		27	3											
10-17-06	0940	TB-575	water	28	2											

PROJECT INFORMATION			1. RELINQUISHED BY: (SIGNATURE)	2. RELINQUISHED BY: (SIGNATURE)	3. RECEIVED BY LAB: (SIGNATURE)
PROJECT MANAGER: William Little	SAMPLES RECEIVED		James Thompson	Jeffrey Lane	Sueno Shipley
	TOTAL NO. OF CONTAINERS		(PRINTED NAME) James Thompson	(PRINTED NAME) Jeffrey Lane	(PRINTED NAME) Sueno Shipley
SHIPPING ID NO.: 36792974	CHAIN OF CUSTODY SEALS		RECEIVED BY: (SIGNATURE)	RECEIVED BY: (SIGNATURE)	(COMPANY) Trace analysis
	GOOD CONDITION/CHILLED	4°C	(TIME/DATE) 3:50 pm 18Oct06	(TIME/DATE) 1700 10.18.06	(TIME/DATE) 10-19-06 8:45
VIA: Lab Courier LS	CONFORMS TO RECORD	MA	SPECIAL INSTRUCTIONS/COMMENTS: PLEASE SEE ATTATCHED ANALYTE LIST FOR DETAILS		

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CHAIN OF CUSTODY RECORD

PROJECT NO.: 7

PROJECT NAME: HELSTF PHASE III SOIL SAMPLING

SAMPLER'S SIGNATURE: James Thompson

DATE	TIME	SAMPLE ID	MATRIX	LAB NO.	NO. OF CONTAINERS	DIA	VOC	Benzyl Alcohol	SVOC	GRO-DRO	TOC	n-butyl ethanol			REMARKS
10-17-06	0940	HLSF-0085-SB-007-(0.5-1.0)	soil	106218	3		X				X	X			
	1005	HLSF-0085-SB-007-(10.0-11.0)		19	3										
	1020	HLSF-0085-SB-007-(20.0-21.0)		20	3										
	1100	HLSF-0085-SB-007-(30.0-31.0)		21	3										
	1125	HLSF-0085-SB-007-(40.0-41.0)		22	3										
	1200	HLSF-0085-SB-007-(49.0-50.0)		23	3										
10-17-06	1400	HLSF-0085-SB-008-(0.5-1.0)	soil	24	3		X				X	X			
	1445	HLSF-0085-SB-008-(10.0-11.0)		25	3										
	1520	HLSF-0085-SB-008-(20.0-21.0)		26	3										
	1550	HLSF-0085-SB-008-(30.0-31.0)		27	3										
10-17-06	0940	TB-575	water		2		X								

PROJECT INFORMATION

PROJECT MANAGER: William Little

SHIPPING ID NO.: 36792974

VIA: Lab Courier

SAMPLES RECEIVED

TOTAL NO. OF CONTAINERS

CHAIN OF CUSTODY SEALS

GOOD CONDITION/CHILLED: 4°C

CONFORMS TO RECORD

1. RELINQUISHED BY: (SIGNATURE) James Thompson
(PRINTED NAME) James Thompson
RECEIVED BY: (SIGNATURE) Jeffrey Lane
(TIME/DATE) 3:50 pm 10/18/06

2. RELINQUISHED BY: (SIGNATURE) Jeffrey Lane
(PRINTED NAME) Jeffrey Lane
RECEIVED BY: (SIGNATURE)
(TIME/DATE) 1200 10/18/06

3. RECEIVED BY LAB: (SIGNATURE) Sheena Shipley
(PRINTED NAME) Sheena Shipley
(COMPANY) Traco Analytical
(TIME/DATE) 10-19-06 8:45

SPECIAL INSTRUCTIONS / COMMENTS:
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106625-34

4102320

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576

WTS

CHAIN OF CUSTODY RECORD

PROJECT NO.: 7

PROJECT NAME: HELSTF PHASE III SOIL SAMPLING

SAMPLER'S SIGNATURE: James Thompson

DATE	TIME	SAMPLE ID	MATRIX	LAB NO.	NO. OF CONTAINERS	Nitrate-nitrite as N	Phosphorus	Hex Chrome	8 RCRA Metals	Chromium	Copper	Lead	Potassium	Sodium	Zinc	REMARKS
10-18-06	0915	HLSF-0085-SB-008-(40.0-41.0)	Soil	106625	3	X		X	X							
10-18-06	1005	HLSF-0085-SB-008-(49.0-50.0)	Soil	26	3	X		X	X							
10-18-06	1250	HLSF-0085-SB-009-(0.5-1.0)	Soil	27	3	X		X	X							
	1320	HLSF-0085-SB-009-(10.0-11.0)		28	3											
	1345	HLSF-0085-SB-009-(20.0-21.0)		29	3											
	1415	HLSF-0085-SB-009-(30.0-31.0)		30	3											
		~~-009-(40.0-42.0)~~	4½	soil												
	1450	HLSF-0085-SB-009-(40.0-42.0)		31	3	X		X	X							
	1450	HLSF-0085-SB-109-(40.0-42.0)		32	3											
	1520	HLSF-0085-SB-009-(49.0-50.0)		33	3											
10-18-06	0915	TB-576	water	34	2											

PROJECT INFORMATION	SAMPLES RECEIVED		1. RELINQUISHED BY: (SIGNATURE)	2. RELINQUISHED BY: (SIGNATURE)	3. RECEIVED BY LAB: (SIGNATURE)
PROJECT MANAGER: William Little	TOTAL NO. OF CONTAINERS		(PRINTED NAME) J. Thompson	(PRINTED NAME) Jeffrey Lane	(PRINTED NAME) Don Simmons
SHIPPING ID NO.: 38792976	CHAIN OF CUSTODY SEALS		RECEIVED BY: (SIGNATURE)	RECEIVED BY: (SIGNATURE)	(COMPANY) Trace Analysis
VIA: LSO Lab Courier	GOOD CONDITION/CHILLED	UC	(TIME/DATE) 4:06 pm 190ct06	(TIME/DATE) 17:10 10-19-06	(TIME/DATE) 10/21/06 10:42
	CONFORMS TO RECORD		SPECIAL INSTRUCTIONS / COMMENTS: PLEASE SEE ATTATCHED ANALYTE LIST FOR DETAILS		NB

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CHAIN OF CUSTODY RECORD

PROJECT NO.: 7

PROJECT NAME: HELSTF PHASE III SOIL SAMPLING

SAMPLER'S SIGNATURE: James Thompson

DATE	TIME	SAMPLE ID	MATRIX	LAB NO.	NO. OF CONTAINERS	DIA	VOC	Benzyl Alcohol	SVOC	GRO-DRO	TOC	2-butoxyl ethanol				REMARKS
10-18-06	0915	HLSF-0085-SB-008-(40.0-41.0)	Soil	106625	3		X				X	X				
	1005	HLSF-0085-SB-008-(49.0-50.0)		26	3		X				X	X				
10-18-06	1250	HLSF-0085-SB-009-(0.5-1.0)		27	3		X				X	X				
	1320	HLSF-0085-SB-009-(10.0-11.0)		28	3											
	1345	HLSF-0085-SB-009-(20.0-21.0)		29	3											
	1415	HLSF-0085-SB-009-(30.0-31.0)		30	3											
	1450	HLSF-0085-SB-009-(40.0-42.0)	Soil	31	3		X				X	X				
	1450	HLSF-0085-SB-109-(40.0-42.0)		32	3											
	1520	HLSF-0085-SB-009-(49.0-50.0)		33	3											
10-18-06	0915	TB-576	Water	34	2		X									

PROJECT INFORMATION			1. RELINQUISHED BY: (SIGNATURE)	2. RELINQUISHED BY: (SIGNATURE)	3. RECEIVED BY LAB: (SIGNATURE)
PROJECT MANAGER: William Little	SAMPLES RECEIVED		(PRINTED NAME) J. Thompson	(PRINTED NAME) Jeffrey Lane	(PRINTED NAME) Don Simmons
	TOTAL NO. OF CONTAINERS		RECEIVED BY: (SIGNATURE)	RECEIVED BY: (SIGNATURE)	(COMPANY) Trace Analysis
SHIPPING ID NO.: 38792976	CHAIN OF CUSTODY SEALS		(TIME/DATE) 4:00 pm 19 Oct 06	(TIME/DATE) 9710 10-19-06	(TIME/DATE) 10:42 10/20/06
	GOOD CONDITION/CHILLED	4°C			
VIA: Lab Courier LGO	CONFORMS TO RECORD		SPECIAL INSTRUCTIONS / COMMENTS: PLEASE SEE ATTATCHED ANALYTE LIST FOR DETAILS		

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CHAIN OF CUSTODY RECORD

PAGE 1 OF 1

PROJECT NO.	PROJECT NAME
7	HELSTF PHASE III SOIL SAMPLING

SAMPLER'S SIGNATURE: James Thompson

DATE	TIME	SAMPLE ID	MATRIX	LAB NO.	NO. OF CONTAINERS	Nitrate-nitrite as N	Phosphorus	Hex Chrome	8 RCRA Metals	Chromium	Copper	~~Lead~~ TDC	Potassium	Sodium	Zinc	REMARKS
10-19-06	0940	HLSF-0085-SB-006-(0.5-1.0)	Soil	106730	1	X	X	X	X		X	X	X	X	X	
	0915	HLSF-0085-SB-006-(10.0-10.5)		106731 714	1											
	0930	HLSF-0085-SB-006-(20.0-20.5)		732 715	1											
	1005	HLSF-0085-SB-006-(30.0-30.5)		733 716	1											
	1030	HLSF-0085-SB-006-(40.0-40.5)		734 717	1											
	1105	HLSF-0085-SB-006-(49.5-50.0)		735 718	1											
10-19-06	1355	HLSF-0085-SB-005-(0.5-1.0)	Soil	736 719	1											
	1420	HLSF-0085-SB-005-(10.0-10.5)		737 720	1											
	1450	HLSF-0085-SB-005-(20.0-20.5)		738 721	1											
	1515	HLSF-0085-SB-005-(30.0-30.5)		739 722	1											
	1545	HLSF-0085-SB-005-(40.0-40.5)		740 723	1											
	1615	HLSF-0085-SB-005-(49.5-50.0)		741 724	1											

PROJECT INFORMATION	SAMPLES RECEIVED		1. RELINQUISHED BY: (SIGNATURE)	2. RELINQUISHED BY: (SIGNATURE)	3. RECEIVED BY LAB: (SIGNATURE)
PROJECT MANAGER: William Little	TOTAL NO. OF CONTAINERS		(PRINTED NAME) James Thompson	(PRINTED NAME) Jeffrey Lane	(PRINTED NAME) Sheena Shipley
SHIPPING ID NO.: 38792977	CHAIN OF CUSTODY SEALS		RECEIVED BY: (SIGNATURE)	RECEIVED BY: (SIGNATURE)	(COMPANY) Traco analytics
VIA: Lab Courier LS	GOOD CONDITION/CHILLED	Y/N/NA	(TIME/DATE) 4:00 pm 23 Oct 06	(TIME/DATE) 17:10 10-23-06	(TIME/DATE) 10-24-06 8:40
	CONFORMS TO RECORD		SPECIAL INSTRUCTIONS/COMMENTS: PLEASE SEE ATTATCHED ANALYTE LIST FOR DETAILS		

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CHAIN OF CUSTODY RECORD

PAGE 1 OF ~~2~~ 1

PROJECT NO.: 7

PROJECT NAME: HELSTF PHASE III SOIL SAMPLING

SAMPLER'S SIGNATURE: James Thompson

DATE	TIME	SAMPLE ID	MATRIX	LAB NO.	NO. OF CONTAINERS	Nitrate-nitrite as N	Phosphorus	Hex Chrome	8 RCRA Metals	Chromium	Copper	~~Lead~~ TOC	Potassium	Sodium	Zinc	REMARKS
10-20-06	1005	HLSF-0085-SB-004-(0.5-1.0)	Soil	106713	1	X	X	X	X		X	X	X	X	X	
	1030	HLSF-0085-SB-004-(10.0-10.5)	Soil	106714	1											
		~~(20.0-20.5)~~														
		104 ~~6~~														
	1030	HLSF-0085-SB-~~004~~ (10.0-10.5)	Soil	106715	1											
	1100	HLSF-0085-SB-004 (20.0-20.5)		106716	1											
	1125	HLSF-0085-SB-004-(30.0-30.5)		106717	1											
	1150	HLSF-0085-SB-004-(40.0-40.5)		106718	1											
	1220	HLSF-0085-SB-004-(49.5-50.0)		106719	1											
10-20-06	1400	HLSF-0085-SB-003-(0.5-1.0)	Soil	106720	1	X	X	X	X		X	X	X	X	X	
	1430	HLSF-0085-SB-003-(10.0-10.5)		106721	1											
	1455	HLSF-0085-SB-003-(20.0-20.5)		106722	1											
	1520	HLSF-0085-SB-003-(30.0-30.5)		106723	1											
	1555	HLSF-0085-SB-003-(40.0-40.5)		106724	1											
	1635	HLSF-0085-SB-003-(49.5-50.0)		106725	1											

PROJECT INFORMATION	SAMPLES RECEIVED		1. RELINQUISHED BY: (SIGNATURE)	2. RELINQUISHED BY: (SIGNATURE)	3. RECEIVED BY LAB: (SIGNATURE)
PROJECT MANAGER: William Little	TOTAL NO. OF CONTAINERS		(PRINTED NAME) James Thompson	(PRINTED NAME) Jeffrey Lane	(PRINTED NAME) Sheena Shipley
SHIPPING ID NO.: 38792977	CHAIN OF CUSTODY SEALS		RECEIVED BY: (SIGNATURE)	RECEIVED BY: (SIGNATURE)	(COMPANY) Traco Analysis
	GOOD CONDITION/CHILLED	4°C	(TIME/DATE) Rec 4:00 pm 23 Oct 06	(TIME/DATE) 17:10 10-23-06	(TIME/DATE) 10-24-06 8:40
VIA: Lab Courier LS	CONFORMS TO RECORD	MF	SPECIAL INSTRUCTIONS/COMMENTS: PLEASE SEE ATTATCHED ANALYTE LIST FOR DETAILS		

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579

CHAIN OF CUSTODY RECORD

PROJECT NO.: 7

PROJECT NAME: HELSTF PHASE III SOIL SAMPLING

SAMPLER'S SIGNATURE: James Thompson

DATE	TIME	SAMPLE ID	MATRIX	LAB NO.	NO. OF CONTAINERS	Nitate-nitrite as N	Phosphorus	Hex Chrome	8 RCRA Metals	Chromium	Copper	Lead	Potassium	Sodium	Zinc	REMARKS
10-23-06	1020	HLSF-0085-SB-035-(10.0-11.0)	Soil	106935	3		X	X	X				X	X	X	
	1040	HLSF-0085-SB-035-(20.0-21.0)		36	3											
	1105	HLSF-0085-SB-035-(30.0-31.0)		37	3											
	1135	HLSF-0085-SB-035-(40.0-41.0)		38	3											
	1215	HLSF-0085-SB-035-(49.0-50.0)		39	3											
10-23-06	1530	HLSF-0085-SB-036-(10.0-11.0)	Soil	40	3		X	X	X				X	X	X	
	1550	HLSF-0085-SB-036-(20.0-22.0)		41	3											
	1550	HLSF-0085-SB-136-(20.0-22.0)		42	3											
	1625	HLSF-0085-SB-036-(30.0-31.0)		43	3											
	1705	HLSF-0085-SB-036-(40.0-41.0)		44	3											
10-23-06	1020	HLSF-0085-TB-579	water	45	2											

PROJECT INFORMATION	SAMPLES RECEIVED		1. RELINQUISHED BY: (SIGNATURE)	2. RELINQUISHED BY: (SIGNATURE)	3. RECEIVED BY LAB: (SIGNATURE)
PROJECT MANAGER: William Little	TOTAL NO. OF CONTAINERS		(PRINTED NAME) James Thompson	(PRINTED NAME) Jeffrey Lane	(PRINTED NAME) Sheena Shipley
SHIPPING ID NO.: 35792980	CHAIN OF CUSTODY SEALS		RECEIVED BY: (SIGNATURE)	RECEIVED BY: (SIGNATURE)	(COMPANY) Trace Analysis
	GOOD CONDITION/CHILLED	4°C	(TIME/DATE) 4:00pm 24 Oct 06	(TIME/DATE) 17:10 10/24/06	(TIME/DATE) 10-26-06 8:40
VIA: Lab Courier	CONFORMS TO RECORD		SPECIAL INSTRUCTIONS / COMMENTS: PLEASE SEE ATTATCHED ANALYTE LIST FOR DETAILS		

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579

CHAIN OF CUSTODY RECORD

PROJECT NO.: 7

PROJECT NAME: HELSTF PHASE III SOIL SAMPLING

SAMPLER'S SIGNATURE: James Thompson

DATE	TIME	SAMPLE ID	MATRIX	LAB NO.	NO. OF CONTAINERS	DIA	VOC	Benzyl Alcohol	SVOC	GRO-DRO	TOC	2-butoxy ethanol				REMARKS
10-23-06	1020	HLSF-0085-SB-035-(10.0-11.0)	Soil		3	X	X	X		X	X	X				
	1040	HLSF-0085-SB-035-(20.0-21.0)			3											
	1105	HLSF-0085-SB-035-(30.0-31.0)			3											
	1135	HLSF-0085-SB-035-(40.0-41.0)			3											
	1215	HLSF-0085-SB-035-(49.0-50.0)			3											
10-23-06	1530	HLSF-0085-SB-036-(10.0-11.0)	Soil		3	X	X	X		X	X	X				
	1550	HLSF-0085-SB-036-(20.0-22.0)			3											
	1550	HLSF-0085-SB-136-(20.0-22.0)			3											
	1625	HLSF-0085-SB-036-(30.0-31.0)			3											
	1705	HLSF-0085-SB-036-(40.0-41.0)			3											
10-23-06	1020	HLSF-0085-TB-579	water		2		X									

PROJECT INFORMATION			1. RELINQUISHED BY: (SIGNATURE)	2. RELINQUISHED BY: (SIGNATURE)	3. RECEIVED BY LAB: (SIGNATURE)
PROJECT MANAGER: William Little	SAMPLES RECEIVED		(PRINTED NAME) James Thompson	(PRINTED NAME) Jeffrey Lane	(PRINTED NAME) Sheena Shipley
	TOTAL NO. OF CONTAINERS		RECEIVED BY: (SIGNATURE)	RECEIVED BY: (SIGNATURE)	(COMPANY) Traco Analytical
SHIPPING ID NO.: 3579 29180	CHAIN OF CUSTODY SEALS		(TIME/DATE) 4:00pm / 24 Oct 06	(TIME/DATE) 10/24/06 12:10	(TIME/DATE) 10/26/06 8:40
VIA: Lab Courier LS	GOOD CONDITION/CHILLED	4°C	SPECIAL INSTRUCTIONS / COMMENTS: PLEASE SEE ATTATCHED ANALYTE LIST FOR DETAILS		
	CONFORMS TO RECORD				

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580

CHAIN OF CUSTODY RECORD

PROJECT NO.: 7

PROJECT NAME: HELSTF PHASE III SOIL SAMPLING

SAMPLER'S SIGNATURE: James Thompson

DATE	TIME	SAMPLE ID	MATRIX	LAB NO.	NO. OF CONTAINERS	Nitate-nitrite as N	Phosphorus	Hex Chrome	8 RCRA Metals	Chromium	Copper	Lead	Potassium	Sodium	Zinc	REMARKS
10-24-06	0825	HLSF-0085-SB-032-(10.0-11.0)	Soil	106930	3		X	X	X				X	X	X	
	0845	HLSF-0085 SB-032-(20.0-21.0)		31	3											
	0915	HLSF-0085 SB-032-(30.0-31.0)		32	3											
	0940	HLSF-0085 SB-032-(40.0-41.0)		33	3											
	1005	HLSF-0085-SB-032-(49.0-50.0)		34	3											

ANALYSIS REQUESTED

PROJECT INFORMATION			1. RELINQUISHED BY: (SIGNATURE)	2. RELINQUISHED BY: (SIGNATURE)	3. RECEIVED BY LAB: (SIGNATURE)
PROJECT MANAGER: William Little	SAMPLES RECEIVED		James Thompson	Jeffrey Lane	Sheena Shipley
	TOTAL NO. OF CONTAINERS		(PRINTED NAME) James Thompson	(PRINTED NAME) Jeffrey Lane	(PRINTED NAME) Sheena Shipley
SHIPPING ID NO.: 3587960	CHAIN OF CUSTODY SEALS		RECEIVED BY: (SIGNATURE) Jeffrey Lane	RECEIVED BY: (SIGNATURE) James Ridlift	(COMPANY) Trace Analysis
	GOOD CONDITION/CHILLED	4C	(TIME/DATE) 4:00 pm 24 Oct 06	(TIME/DATE) 17:10 10/24/06	(TIME/DATE) 10-26-06 8:40
VIA: Lab Courier	CONFORMS TO RECORD		SPECIAL INSTRUCTIONS/COMMENTS: PLEASE SEE ATTATCHED ANALYTE LIST FOR DETAILS		

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580

CHAIN OF CUSTODY RECORD

PROJECT NO.: 7

PROJECT NAME: HELSTF PHASE III SOIL SAMPLING

SAMPLER'S SIGNATURE: James Thompson

DATE	TIME	SAMPLE ID	MATRIX	LAB NO.	NO. OF CONTAINERS	DIA	VOC	Benzyl Alcohol	SVOC	GRO-DRO	TOC	2-butoxy ethanol			REMARKS
10-24-06	0825	HLSF-0085-SB-032-(10.0-11.0)	Soil	104930	3	X	X	X		X	X	X			
	0845	HLSF-0085-SB-032-(20.0-21.0)		31	3										
	0915	HLSF-0085-SB-032-(30.0-31.0)		32	3										
	0940	HLSF-0085-SB-032-(40.0-41.0)		33	3										
	1005	HLSF-0085-SB-032-(49.0-50.0)		34	3										

PROJECT INFORMATION			1. RELINQUISHED BY: (SIGNATURE)	2. RELINQUISHED BY: (SIGNATURE)	3. RECEIVED BY LAB: (SIGNATURE)
PROJECT MANAGER: William Little	SAMPLES RECEIVED		James Thompson	Jeffrey Lane	Sheena Shipley
	TOTAL NO. OF CONTAINERS		(PRINTED NAME) James Thompson	(PRINTED NAME) Jeffrey Lane	(PRINTED NAME) Sheena Shipley
SHIPPING ID NO.: 3879 2980	CHAIN OF CUSTODY SEALS		RECEIVED BY: (SIGNATURE)	RECEIVED BY: (SIGNATURE)	(COMPANY) Traco analytics
	GOOD CONDITION/CHILLED	4°C	(TIME/DATE) 4:00 pm 24 Oct 06	(TIME/DATE) 1710 10/24/06	(TIME/DATE) 10-26-06 8:40
VIA: Lab Courier	CONFORMS TO RECORD		SPECIAL INSTRUCTIONS / COMMENTS: PLEASE SEE ATTATCHED ANALYTE LIST FOR DETAILS		

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107647-58

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581

CHAIN OF CUSTODY RECORD

PROJECT NO.: 7

PROJECT NAME: HELSTF PHASE III SOIL SAMPLING

SAMPLER'S SIGNATURE: James Thompson

DATE	TIME	SAMPLE ID	MATRIX	LAB NO.	NO. OF CONTAINERS	DIA	VOC	Benzyl Alcohol	SVOC	GRO-DRO	TOC	2-butoxy ethanol				REMARKS
10-31-06	0830	HLSF-0085-SB-034-(10.0-11.0)	Soil	107647	3	X	X	X		X	X	X				
	0850	HLSF-0085-SB-034-(20.0-21.0)		48	3											
	0920	HLSF-0085-SB-034-(30.0-31.0)		49	3											
	0955	HLSF-0085-SB-034-(40.0-41.0)		50	3											
	1035	HLSF-0085-SB-034-(49.0-50.0)		51	3											
10-31-06	1320	HLSF-0085-SB-033-(10.0-11.0)	Soil	52	3	X	X	X		X	X	X				
	1345	HLSF-0085-SB-033-(20.0-21.0)		53	3											
	1420	HLSF-0085-SB-033-(30.0-31.0)		54	3											
	1450	HLSF-0085-SB-033-(40.0-42.0)		55	3											
	1450	HLSF-0085-SB-133-(40.0-42.0)		56	3											
	1525	HLSF-0085-SB-033-(49.0-50.0)		57	3											
10-31-06	0830	HLSF-0085-TB-581	Water	58	2		X									

PROJECT INFORMATION			1. RELINQUISHED BY: (SIGNATURE)	2. RELINQUISHED BY: (SIGNATURE)	3. RECEIVED BY LAB: (SIGNATURE)
PROJECT MANAGER: William Little	SAMPLES RECEIVED		James Thompson	Jeffrey Lane	Sherrod Shipley
	TOTAL NO. OF CONTAINERS		(PRINTED NAME) James Thompson	(PRINTED NAME) Jeffrey Lane	(PRINTED NAME) Sherrod Shipley
SHIPPING ID NO.: 3592987	CHAIN OF CUSTODY SEALS		RECEIVED BY: (SIGNATURE) Jeffrey Lane	RECEIVED BY: (SIGNATURE) James Ridlaff	(COMPANY) Trace Analysis
	GOOD CONDITION/CHILLED	4°C	(TIME/DATE) 4:00pm 01 Nov 06	(TIME/DATE) 17:05 11/1/06	(TIME/DATE) 11/3/06 8:30
VIA: Lab Courier LS	CONFORMS TO RECORD		SPECIAL INSTRUCTIONS / COMMENTS: PLEASE SEE ATTATCHED ANALYTE LIST FOR DETAILS		

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WTS

CHAIN OF CUSTODY RECORD

PROJECT NO.: 7

PROJECT NAME: HELSTF PHASE III SOIL SAMPLING

SAMPLER'S SIGNATURE: James Thompson

DATE	TIME	SAMPLE ID	MATRIX	LAB NO.	NO. OF CONTAINERS	Nitrate-nitrite as N	Phosphorus	Hex Chrome	8 RCRA Metals	Chromium	Copper	Lead	Potassium	Sodium	Zinc	REMARKS
10-31-06	0830	HLSF-0085-SB-034-(10.0-11.0)	Soil	107647	3		X	X	X				X	X	X	
	0850	HLSF-0085-SB-034-(20.0-21.0)		48	3											
	0920	HLSF-0085-SB-034-(30.0-31.0)		49	3											
	0955	HLSF-0085-SB-034-(40.0-41.0)		50	3											
	1035	HLSF-0085-SB-034-(49.0-50.0)		51	3											
10-31-06	1320	HLSF-0085-SB-~~034~~ 033-(10.0-11.0)	Soil	52	3		X	X	X				X	X	X	SB-033 Correct soil boring number
	1345	HLSF-0085-SB-~~034~~ 033-(20.0-21.0)	Soil	53	3											SB-033
	1420	HLSF-0085-SB-~~034~~ 033-~~(40.0-42.0)~~ (30.0-31.0)	Soil	54	3											SB-033
	1450	HLSF-0085-SB-~~034~~ 033-(40.0-42.0)	Soil	55	3											SB-033
	1450	HLSF-0085-SB-~~134~~ 133-(40.0-42.0)	Soil	56	3											SB-133
	1525	HLSF-0085-SB-~~034~~ 033-(49.0-50.0)	Soil	57	3											SB-033
10-31-06	0830	HLSF-0085-TB-581	water	58	2											

PROJECT INFORMATION			1. RELINQUISHED BY: (SIGNATURE)	2. RELINQUISHED BY: (SIGNATURE)	3. RECEIVED BY LAB: (SIGNATURE)
PROJECT MANAGER: William Little	SAMPLES RECEIVED		James Thompson	Jeffrey Lane	Sheena Shipley
	TOTAL NO. OF CONTAINERS		(PRINTED NAME) James Thompson	(PRINTED NAME) Jeffrey Lane	(PRINTED NAME) Sheena Shipley
SHIPPING ID NO.: 3892987	CHAIN OF CUSTODY SEALS		RECEIVED BY: (SIGNATURE)	RECEIVED BY: (SIGNATURE)	(COMPANY) Trace Analysis
	GOOD CONDITION/CHILLED	4°C	(TIME/DATE) 4:00 pm 01 Nov 06	(TIME/DATE) 17:05 11/1/06	(TIME/DATE) 11/3/06 8:30
VIA: Lab Courier LG	CONFORMS TO RECORD		SPECIAL INSTRUCTIONS/COMMENTS: PLEASE SEE ATTACHED ANALYTE LIST FOR DETAILS		

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WCS

CHAIN OF CUSTODY RECORD

PROJECT NO.: 7

PROJECT NAME: HELSTF PHASE III SOIL SAMPLING

SAMPLER'S SIGNATURE: James Thompson

DATE	TIME	SAMPLE ID	MATRIX	LAB NO.	NO. OF CONTAINERS	DIA	VOC	Benzyl Alcohol	SVOC	GRO-DRO	TOC	Total metals				REMARKS
10-31-06	1110	HLSF-0085-RB-SB-034-1006	water	107660	1							X				
	1115	HLSF-0085-RB-SB-034-1006			3		X									
	1110				2	X										
	1110				2				X							
	1115				3					X						GRO
	1115				3					X						DRO
	1115				2						X					
10-31-06	1110	HLSF-0085-TB-582	water	107661	2		X									

PROJECT INFORMATION	SAMPLES RECEIVED		1. RELINQUISHED BY: (SIGNATURE)	2. RELINQUISHED BY: (SIGNATURE)	3. RECEIVED BY LAB: (SIGNATURE)
PROJECT MANAGER: William Little	TOTAL NO. OF CONTAINERS		(PRINTED NAME) James Thompson	(PRINTED NAME) Jeffrey Lane	(PRINTED NAME) Sheena Shipley
SHIPPING ID NO.: 3879 2987	CHAIN OF CUSTODY SEALS		RECEIVED BY: (SIGNATURE)	RECEIVED BY: (SIGNATURE)	(COMPANY) Trace analysis
	GOOD CONDITION/CHILLED	4°C	(TIME/DATE) 4:00pm 01Nov06	(TIME/DATE) 1205 11-1-06	(TIME/DATE) 11/3/06 8:30
VIA: Lab Courier CS	CONFORMS TO RECORD		SPECIAL INSTRUCTIONS/COMMENTS: PLEASE SEE ATTATCHED ANALYTE LIST FOR DETAILS		

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583

CHAIN OF CUSTODY RECORD

PROJECT NO.: 7

PROJECT NAME: HELSTF PHASE III SOIL SAMPLING

SAMPLER'S SIGNATURE: James Thompson

DATE	TIME	SAMPLE ID	MATRIX	LAB NO.	NO. OF CONTAINERS	Nitrate-nitrite as N	Phosphorus	Hex Chrome	8 RCRA Metals	~~Chromium~~ TOC	Copper	Lead	Potassium	Sodium	Zinc	REMARKS
11-1-06	0740	HLSF-0085-SB-001-(0.5-1.0)	soil	107951	1	X	X	X	X	X	X		X	X	X	
	0800	HLSF-0085-SB-001-(10.0-10.5)		52	1											
	0825	HLSF-0085-SB-001-(20.0-20.5)		53	1											
	0850	HLSF-0085-SB-001-(30.0-30.5)		54	1											
	0850	HLSF-0085-SB-101-(30.0-30.5)		55	1											
	0925	HLSF-0085-SB-001-(40.0-40.5)		56	1											
	1000	HLSF-0085-SB-001-(49.5-50.0)		57	1											

PROJECT INFORMATION	SAMPLES RECEIVED		1. RELINQUISHED BY: (SIGNATURE)	2. RELINQUISHED BY: (SIGNATURE)	3. RECEIVED BY LAB: (SIGNATURE)
PROJECT MANAGER: William Little	TOTAL NO. OF CONTAINERS		(PRINTED NAME) James Thompson	(PRINTED NAME) Jeffrey Lane	(PRINTED NAME) Richard W. Rigdon
SHIPPING ID NO.	CHAIN OF CUSTODY SEALS		RECEIVED BY: (SIGNATURE) Jeffrey Lane	RECEIVED BY: (SIGNATURE) James Thompson	(COMPANY) Trace Analysis
	GOOD CONDITION/CHILLED	4C	(TIME/DATE) 3:55pm 02Nov06	(TIME/DATE) 1700 11-2-06	(TIME/DATE) 10am 11/04/06
VIA: Lab Courier	CONFORMS TO RECORD		SPECIAL INSTRUCTIONS / COMMENTS: PLEASE SEE ATTACHED ANALYTE LIST FOR DETAILS		

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WTS

CHAIN OF CUSTODY RECORD

PAGE X1 OF X1

PROJECT NO.: 7

PROJECT NAME: HELSTF PHASE III SOIL SAMPLING

SAMPLER'S SIGNATURE: James Thompson

DATE	TIME	SAMPLE ID	MATRIX	LAB NO.	NO. OF CONTAINERS	~~BTA~~ Total Metals	VOC	Benzyl Alcohol	SVOC	GRO-DRO	TOC	Nitrate-Nitrite as N				REMARKS
11-1-06	1025	HLSF-0085-RB-SB-001-1106	water	107958	1	X										
					2						X					
					3		X									
					1							X				
11-1-06	1025	HLSF-0085-TB-584	water	107959	2		X									no container for Cr+6

PROJECT INFORMATION	SAMPLES RECEIVED		1. RELINQUISHED BY: (SIGNATURE)	2. RELINQUISHED BY: (SIGNATURE)	3. RECEIVED BY LAB: (SIGNATURE)
PROJECT MANAGER: William Little	TOTAL NO. OF CONTAINERS		(PRINTED NAME) James Thompson	(PRINTED NAME) Jeffrey Lane	(PRINTED NAME) Richard W. Rigdon
SHIPPING ID NO.	CHAIN OF CUSTODY SEALS		RECEIVED BY: (SIGNATURE) Jeffrey Lane	RECEIVED BY: (SIGNATURE)	(COMPANY) TraceAnalysis
	GOOD CONDITION/CHILLED	4C	(TIME/DATE) 3:55pm 02 Nov 06	(TIME/DATE) 12:00 11-2-06	(TIME/DATE) 10Am 11/04/06
VIA: Lab Courier	CONFORMS TO RECORD		SPECIAL INSTRUCTIONS / COMMENTS: PLEASE SEE ATTATCHED ANALYTE LIST FOR DETAILS	LONESTAR # 3879989	

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585

CHAIN OF CUSTODY RECORD

PAGE 1 OF 1

PROJECT NO.	PROJECT NAME
7	HELSTF PHASE III SOIL SAMPLING

SAMPLER'S SIGNATURE: James Thompson

DATE	TIME	SAMPLE ID	MATRIX	LAB NO.	NO. OF CONTAINERS	DIA	VOC	Benzyl Alcohol	SVOC	GRO-DRO	TOC	2-butoxy ethanol	Hex chrome	Chromium	Zinc	REMARKS
11-1-06	1320	HLSF-0085-SB-010-(10.0-11.0)	soil	107960	2		X			X	X	X	X	X	X	
	1340	HLSF-0085-SB-010-(20.0-22.0)		61	2											
	1340	HLSF-0085-SB-110-(20.0-22.0)		62	2											
	1415	HLSF-0085-SB-010-(30.0-31.0)		63	2											
	1445	HLSF-0085-SB-010-(40.0-41.0)		64	2											
	1535	HLSF-0085-SB-010-(49.0-50.0)		65	2											
11-1-06	1320	HLSF-0085-TB-585	water	66	2		X									

PROJECT INFORMATION	SAMPLES RECEIVED		1. RELINQUISHED BY: (SIGNATURE)	2. RELINQUISHED BY: (SIGNATURE)	3. RECEIVED FOR LAB: (SIGNATURE)
PROJECT MANAGER: William Little	TOTAL NO. OF CONTAINERS		(PRINTED NAME) James Thompson	(PRINTED NAME) Jeffrey Lane	(PRINTED NAME) Richard W. Rigdon
SHIPPING ID NO.	CHAIN OF CUSTODY SEALS		RECEIVED BY: (SIGNATURE)	RECEIVED BY: (SIGNATURE)	(COMPANY) Trace Analysis
	GOOD CONDITION/CHILLED	4°C	(TIME/DATE) 3:55pm 02Nov06	(TIME/DATE) 1200 11/2/06	(TIME/DATE) 10Am 11/04/06
VIA: Lab Courier	CONFORMS TO RECORD		SPECIAL INSTRUCTIONS/COMMENTS: PLEASE SEE ATTATCHED ANALYTE LIST FOR DETAILS	LONE STAR # 38792989	

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WES

CHAIN OF CUSTODY RECORD

PROJECT NO.: 7

PROJECT NAME: HELSTF PHASE III SOIL SAMPLING

SAMPLER'S SIGNATURE: James Thompson

DATE	TIME	SAMPLE ID	MATRIX	LAB NO.	NO. OF CONTAINERS	Nitate-nitrite as N	Phosphorus	Hex Chrome	8 RCRA Metals	Chromium	Copper	Lead	Potassium	Sodium	Zinc	REMARKS
11-2-06	0820	HLSF-0085-SB-015-(10.0-11.0)	soil	108028	3	X	X	X		X		X		X	X	
	0840	HLSF-0085-SB-015-(20.0-21.0)		29	3											PID-70.3 ppm VOC
	0925	HLSF-0085-SB-015-(30.0-31.0)		30	3											
	1015	HLSF-0085-SB-015-(40.0-41.0)		31	2											
	1100	HLSF-0085-SB-015-(49.0-50.0)		32	3											
11-2-06	1330	HLSF-0085-SB-018-(10.0-11.0)	soil	33	3		X	X		X		X		X	X	
	1400	HLSF-0085-SB-018-(20.0-21.0)		34	3											PID-94.1 ppm VOC
	1430	HLSF-0085-SB-018-(30.0-31.0)		35	3											
	1500	HLSF-0085-SB-018-(40.0-41.0)		36	3											PID-40.5 ppm VOC
	1530	HLSF-0085-SB-018-(~~49~~ 49.0-50.0)		37	2											
11-2-06	0900	HLSF-0085-TB-5860	water	38	2											

PROJECT INFORMATION	SAMPLES RECEIVED		1. RELINQUISHED BY: (SIGNATURE)	2. RELINQUISHED BY: (SIGNATURE)	3. RECEIVED BY LAB: (SIGNATURE)
PROJECT MANAGER: William Little	TOTAL NO. OF CONTAINERS		(PRINTED NAME) James Thompson	(PRINTED NAME) Jeffrey Lane	(PRINTED NAME) Vicki Hinsley
SHIPPING ID NO.: US 38792990	CHAIN OF CUSTODY SEALS		RECEIVED BY: (SIGNATURE) Jeffrey Lane	RECEIVED BY: (SIGNATURE) James Thompson	(COMPANY) Trace Analysis
	GOOD CONDITION/CHILLED	4°C	(TIME/DATE) 4:00pm 03Nov06	(TIME/DATE) 17:10 11-3-06	(TIME/DATE) 8:30 11-7-06
VIA: Lab Courier	CONFORMS TO RECORD	BK	SPECIAL INSTRUCTIONS/COMMENTS: PLEASE SEE ATTATCHED ANALYTE LIST FOR DETAILS		

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CHAIN OF CUSTODY RECORD

PROJECT NO.: 7

PROJECT NAME: HELSTF PHASE III SOIL SAMPLING

SAMPLER'S SIGNATURE: James Thompson

DATE	TIME	SAMPLE ID	MATRIX	LAB NO.	NO. OF CONTAINERS	DIA	VOC	Benzyl Alcohol	SVOC	GRO-DRO	TOC	2-butoxy ethanol				REMARKS
11-2-06	0820	HLSF-0085-SB-015-(10.0-11.0)	Soil	108028	3	X	X	X	X	X	X	X				
	0840	HLSF-0085-SB-015-(20.0-21.0)		29	3	X										PID-70.3 ppm VOC
	0925	HLSF-0085-SB-015-(30.0-31.0)		30	3	X										
	1015	HLSF-0085-SB-015-(40.0-41.0)		31	2											Note - No DIA sample
	1100	HLSF-0085-SB-015-(49.0-50.0)		32	3	X										
11-2-06	1330	HLSF-0085-SB-018-(10.0-11.0)	Soil	33	3	X	X	X	X	X	X	X				
	1400	HLSF-0085-SB-018-(20.0-21.0)		34	3	X										PID-94.1 ppm VOC
	1430	HLSF-0085-SB-018-(30.0-31.0)		35	3	X										
	1500	HLSF-0085-SB-018-(40.0-41.0)		36	3	X										PID-40.5 ppm VOC
	1530	HLSF-0085-SB-018-(49.0-50.0)		37	2											Note - No DIA sample
11-2-06	0900	HLSF-0085-TB-586	water	108038	2		X									

PROJECT INFORMATION	SAMPLES RECEIVED		1. RELINQUISHED BY: (SIGNATURE)	2. RELINQUISHED BY: (SIGNATURE)	3. RECEIVED BY LAB: (SIGNATURE)
PROJECT MANAGER: William Little	TOTAL NO. OF CONTAINERS		(PRINTED NAME) James Thompson	(PRINTED NAME) Jeffrey Lane	(PRINTED NAME) Vicki Hensley
SHIPPING ID NO.: US 38792990	CHAIN OF CUSTODY SEALS		RECEIVED BY: (SIGNATURE)	RECEIVED BY: (SIGNATURE)	(COMPANY) Peace Analysis
	GOOD CONDITION/CHILLED	4C	(TIME/DATE) 4:00pm 03Nov06	(TIME/DATE) 17:10 11-3-06	(TIME/DATE) 8:30 11-7-06
VIA: Lab Courier 4°	CONFORMS TO RECORD	BB	SPECIAL INSTRUCTIONS / COMMENTS: PLEASE SEE ATTATCHED ANALYTE LIST FOR DETAILS		

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CHAIN OF CUSTODY RECORD

PROJECT NO.: 7

PROJECT NAME: HELSTF PHASE III SOIL SAMPLING

SAMPLER'S SIGNATURE: James Thompson

DATE	TIME	SAMPLE ID	MATRIX	LAB NO.	NO. OF CONTAINERS	DIA	VOC	Benzyl Alcohol	SVOC	GRO-DRO	TOC	2-butoxy ethanol				REMARKS
11-3-06	0815	HLSF-0085-SB-022-(10.0-11.0)	soil	108180	3	X	X	X	X	X	X	X				
	0835	HLSF-0085-SB-022-(20.0-22.0)		81	3	X										
	0835	HLSF-0085-SB-122-(20.0-22.0)		82	2											No DIA sample
	0855	HLSF-0085-SB-022-(31.0-32.0)		83	3	X										
	0920	HLSF-0085-SB-022-(40.0-41.0)		84	3	X										
	0940	HLSF-0085-SB-022-(49.0-50.0)		85	2											No DIA sample
11-3-06	1305	HLSF-0085-SB-025-(10.0-11.0)	soil	86	3	X	X	X	X	X	X	X				
	1320	HLSF-0085-SB-025-(20.0-22.0)		87	3											
	1350	HLSF-0085-SB-025-(30.0-31.0)		88	3											
	1415	HLSF-0085-SB-025-(40.0-41.0)		89	3											
11-3-06	0815	HLSF-0085-TB-587	water	90	2		X									

PROJECT INFORMATION	SAMPLES RECEIVED		1. RELINQUISHED BY: (SIGNATURE)	2. RELINQUISHED BY: (SIGNATURE)	3. RECEIVED BY LAB: (SIGNATURE)
PROJECT MANAGER: William Little	TOTAL NO. OF CONTAINERS		(PRINTED NAME) James Thompson	(PRINTED NAME) Jeffrey Lane	(PRINTED NAME) Queena Gripley
SHIPPING ID NO.: 36M3057	CHAIN OF CUSTODY SEALS		RECEIVED BY: (SIGNATURE)	RECEIVED BY: (SIGNATURE)	(COMPANY) Trace Analysis
	GOOD CONDITION/CHILLED	4°C	(TIME/DATE) 4:20pm 06Nov06	(TIME/DATE) 17:26 11/6/06	(TIME/DATE) 11/6/06 8:30
VIA: Lab Courier	CONFORMS TO RECORD		SPECIAL INSTRUCTIONS / COMMENTS: PLEASE SEE ATTATCHED ANALYTE LIST FOR DETAILS		

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CHAIN OF CUSTODY RECORD

PROJECT NO.: 7

PROJECT NAME: HELSTF PHASE III SOIL SAMPLING

SAMPLER'S SIGNATURE: James Thompson

DATE	TIME	SAMPLE ID	MATRIX	LAB NO.	NO. OF CONTAINERS	Nitrate-nitrite as N	Phosphorus	Hex Chrome	8 RCRA Metals	Chromium	Copper	Lead	Potassium	Sodium	Zinc	REMARKS
11-3-06	0815	HLSF-0085-SB-022-(10.0-11.0)	soil	108180	3	X	X	X	X		X			X	X	
	0835	HLSF-0085-SB-022-(20.0-21.0)		81	3											
	0835	HLSF-0085-SB-122-(20.0-22.0)		82	2											
	0855	HLSF-0085-SB-022-(31.0-32.0)		83	3											
	0920	HLSF-0085-SB-022-(40.0-41.0)		84	3											
	0940	HLSF-0085-SB-022-(49.0-50.0)		85	2											
11-3-06	1305	HLSF-0085-SB-0225-(10.0-11.0)	soil	86	3	X	X	X	X		X			X	X	
	1320	HLSF-0085-SB-0225-(20.0-21.0)		87	3											
	1350	HLSF-0085-SB-0225-(30.0-31.0)		88	3											
	1415	HLSF-0085-SB-0225-(40.0-41.0)		89	3											
11-3-06	0815	HLSF-0085-TB-587	water	90	2											

PROJECT INFORMATION	SAMPLES RECEIVED		1. RELINQUISHED BY: (SIGNATURE)	2. RELINQUISHED BY: (SIGNATURE)	3. RECEIVED BY LAB: (SIGNATURE)
PROJECT MANAGER: William Little	TOTAL NO. OF CONTAINERS		(PRINTED NAME) James Thompson	(PRINTED NAME) Jeffrey Lane	(PRINTED NAME) Arena Quigley
SHIPPING ID NO.: 3B 193053	CHAIN OF CUSTODY SEALS		RECEIVED BY: (SIGNATURE)	RECEIVED BY: (SIGNATURE)	(COMPANY) Trace Analysis
	GOOD CONDITION/CHILLED	4 C	(TIME/DATE) 14:20 pm 06 Nov 06	(TIME/DATE) 17:26 11-6-06	(TIME/DATE) 11/6/06 5:30
VIA: Lab Courier	CONFORMS TO RECORD	PR	SPECIAL INSTRUCTIONS/COMMENTS: PLEASE SEE ATTATCHED ANALYTE LIST FOR DETAILS		

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CHAIN OF CUSTODY RECORD

PROJECT NO.: 7

PROJECT NAME: HELSTF PHASE III SOIL SAMPLING

SAMPLER'S SIGNATURE: James Thompson

DATE	TIME	SAMPLE ID	MATRIX	LAB NO.	NO. OF CONTAINERS	Nitate-nitrite as N	Phosphorus	Hex Chrome	8 RCRA Metals	Chromium	Copper	Lead	Potassium	Sodium	Zinc	REMARKS
11-06-06	0905	HLSF-0085-SB-026-(10.0-11.0)	soil	108191	3	X	X	X	X		X			X	X	
	0930	HLSF-0085-SB-026-(20.0-21.0)		92	3											
	0950	HLSF-0085-SB-026-(30.0-32.0)		93	3											
	0950	HLSF-0085-SB-126-(30.0-32.0)		94	2											
	1010	HLSF-0085-SB-026-(40.0-41.0)		95	3											
	1040	HLSF-0085-SB-026-(49.0-50.0)		96	3											
11-06-06	1325	HLSF-0085-SB-024-(10.0-11.0)	soil	97	3	X	X	X	X		X			X	X	
	1340	HLSF-0085-SB-024-(20.0-21.0)		98	3											
	1405	HLSF-0085-SB-024-(30.0-31.0)		99	3											
	1425	HLSF-0085-SB-024-(40.0-41.0)		200	3											
	1440	HLSF-0085-SB-024-(49.0-50.0)		01	3											
11-06-06	0850	HLSF-0085-TB-588	water	02	2											

PROJECT INFORMATION	SAMPLES RECEIVED		1. RELINQUISHED BY: (SIGNATURE)	2. RELINQUISHED BY: (SIGNATURE)	3. RECEIVED BY LAB: (SIGNATURE)
PROJECT MANAGER: William Little	TOTAL NO. OF CONTAINERS		(PRINTED NAME) James Thompson	(PRINTED NAME) Jeffrey Lane	(PRINTED NAME) Sheena Gripley
SHIPPING ID NO.: 45	CHAIN OF CUSTODY SEALS		RECEIVED BY: (SIGNATURE)	RECEIVED BY: (SIGNATURE)	COMPANY: Trace Analysis
	GOOD CONDITION/CHILLED	4°C	(TIME) (DATE) 2:00pm 07 Nov 06	(TIME) (DATE) 15:35 11-7-06	(TIME) (DATE) 11/8/06 8:30
VIA: Lab Courier 258-2992	CONFORMS TO RECORD	MA	SPECIAL INSTRUCTIONS / COMMENTS: PLEASE SEE ATTATCHED ANALYTE LIST FOR DETAILS		

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CHAIN OF CUSTODY RECORD

PROJECT NO.: 7

PROJECT NAME: HELSTF PHASE III SOIL SAMPLING

SAMPLER'S SIGNATURE: James Thompson

DATE	TIME	SAMPLE ID	MATRIX	LAB NO.	NO. OF CONTAINERS	DIA	VOC	Benzyl Alcohol	SVOC	GRO-DRO	TOC	2-butoxyl ethanol			REMARKS
11-06-06	0905	HLSF-0085-SB-026-(10.0-11.0)	Soil	108191	3	X	X	X	X	X	X	X			
	0930	HLSF-0085-SB-026-(20.0-21.0)		92	3	X									
	0950	HLSF-0085-SB-026-(30.0-32.0)		93	3	X									
	0950	HLSF-0085-SB-126-(30.0-32.0)		94	2										Note: No DIA sample!!!
	1010	HLSF-0085-SB-026-(40.0-41.0)		95	3	X									
	1040	HLSF-0085-SB-026-(49.0-50.0)		96	3	X									
11-06-06	1325	HLSF-0085-SB-024-(10.0-11.0)	Soil	97	3	X	X	X	X	X	X	X			
	1340	HLSF-0085-SB-024-(20.0-21.0)		98	3										
	1405	HLSF-0085-SB-024-(30.0-31.0)		99	3										
	1425	HLSF-0085-SB-024-(40.0-41.0)		200	3										
	1440	HLSF-0085-SB-024-(49.0-50.0)		01	3										
11-06-06		HLSF-0085-TB-588	water	02	2		X								

PROJECT INFORMATION	SAMPLES RECEIVED		1. RELINQUISHED BY: (SIGNATURE)	2. RELINQUISHED BY: (SIGNATURE)	3. RECEIVED BY LAB: (SIGNATURE)
PROJECT MANAGER: William Little	TOTAL NO. OF CONTAINERS		(PRINTED NAME) James Thompson	(PRINTED NAME) Jeffrey Lane	(PRINTED NAME) Sueena Shipley
SHIPPING ID NO.: 15	CHAIN OF CUSTODY SEALS		RECEIVED BY: (SIGNATURE)	RECEIVED BY: (SIGNATURE)	(COMPANY) Trace analysis
	GOOD CONDITION/CHILLED	Y	(TIME/DATE) 02:00 pm 07Nov06	(TIME/DATE) 15535 11-7-06	(TIME/DATE) 11/8/06 8:[illegible]
VIA: Lab Courier 38[illegible]2	CONFORMS TO RECORD	NA	SPECIAL INSTRUCTIONS/COMMENTS: PLEASE SEE ATTATCHED ANALYTE LIST FOR DETAILS		

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WTS

CHAIN OF CUSTODY RECORD

PROJECT NO.: 7

PROJECT NAME: HELSTF PHASE III SOIL SAMPLING

SAMPLER'S SIGNATURE: James Thompson

DATE	TIME	SAMPLE ID	MATRIX	LAB NO.	NO. OF CONTAINERS	Nitate-nitrite as N	Phosphorus	Hex Chrome	8 RCRA Metals	Chromium	Copper	Lead	Potassium	Sodium	Zinc	REMARKS
11-6-06	1525	HLSF-0085-RB-SB-024-1106	water	108203	2											
	1525				~~3~~ 2											broken in shipment
	1525				3											
	1525				3											
	1525				2											
	1530				2											
	1530				1	X										
	1530				1		X		X	X	X			X	X	
11-06-06	1600	HLSF-0085-FB-1106	water	108204	2	X										
	1600				1		X		X	X	X	X		X	X	
	1600				3											
	1605				2											
	1600				2											
	1600				3											
	1600				3											
	1605				2											
11-06-06	1520	HLSF-0085-TB-589	water	108205	2	no sample										

PROJECT INFORMATION			1. RELINQUISHED BY: (SIGNATURE)	2. RELINQUISHED BY: (SIGNATURE)	3. RECEIVED BY LAB: (SIGNATURE)
PROJECT MANAGER: William Little	SAMPLES RECEIVED		James Thompson	Jeffrey Lane	Sheena Shipley
	TOTAL NO. OF CONTAINERS		(PRINTED NAME) James Thompson	(PRINTED NAME) Jeffrey Lane	(PRINTED NAME) Sheena Shipley
SHIPPING ID NO.: 5	CHAIN OF CUSTODY SEALS		RECEIVED BY: (SIGNATURE)	RECEIVED BY: (SIGNATURE)	(COMPANY) Trace Analytics
	GOOD CONDITION/CHILLED	Y 4°C	(TIME/DATE) 12:10pm 07 Nov 06	(TIME/DATE) 15:35 11-7-06	(TIME/DATE) 11/8/06 8:30
VIA: Lab Courier 2609350	CONFORMS TO RECORD	NA	SPECIAL INSTRUCTIONS/COMMENTS: PLEASE SEE ATTACHED ANALYTE LIST FOR DETAILS		

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589

CHAIN OF CUSTODY RECORD

PROJECT NO.: 7

PROJECT NAME: HELSTF PHASE III SOIL SAMPLING

SAMPLER'S SIGNATURE: James Thompson

DATE	TIME	SAMPLE ID	MATRIX	LAB NO.	NO. OF CONTAINERS	DIA	VOC	Benzyl Alcohol	SVOC	GRO-DRO	TOC	2-butoxy ethanol	Water Quality TDS, Alk			REMARKS
11-6-06	1525	HLSF-0085-RB-SB-024-1106	water	108203	2	X										
	1525				3		X									
	1525				3					X						
	1525				3					X						
	1525				2						X					
	1530				2			X	X			X				
	1530				1											
	1530				1											
11-06-06	1600	HLSF-0085-FB-1106	water	108204	2								X			
	1600				1											
	1600				3		X									
	1605				2	X										
	1600				2			X	X			X				
	1600				3					X						
	1600				3					X						
	1605				2						X					
11-06-06	1520	HLSF-0085-TB-589	water	108205	2		X									

PROJECT INFORMATION

PROJECT MANAGER: William Little

SHIPPING ID NO.: 15

VIA: Lab Courier 2508305

SAMPLES RECEIVED	
TOTAL NO. OF CONTAINERS	
CHAIN OF CUSTODY SEALS	
GOOD CONDITION/CHILLED	Y 4C
CONFORMS TO RECORD	Mt

1. RELINQUISHED BY: (SIGNATURE) James Thompson
(PRINTED NAME) James Thompson
RECEIVED BY: (SIGNATURE) Jeffrey Lane
(TIME/DATE) 12:10pm 07Nov06

2. RELINQUISHED BY: (SIGNATURE) Jeffrey Lane
(PRINTED NAME) Jeffrey Lane
RECEIVED BY: (SIGNATURE) [illegible]
(TIME/DATE) 15:35 11-3-06

3. RECEIVED BY LAB: (SIGNATURE) Sheena Stripley
(PRINTED NAME) Sheena Stripley
(COMPANY) Trace analysis
(TIME/DATE) 11/5/06 8:30

SPECIAL INSTRUCTIONS/COMMENTS:
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108381-94

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590

WTS

CHAIN OF CUSTODY RECORD

PROJECT NO.: 7

PROJECT NAME: HELSTF PHASE III SOIL SAMPLING

SAMPLER'S SIGNATURE: James Thompson

DATE	TIME	SAMPLE ID	MATRIX	LAB NO.	NO. OF CONTAINERS	Nitate-nitrite as N	Phosphorus	Hex Chrome	8 RCRA Metals	Chromium	Copper	Lead	Potassium	Sodium	Zinc	REMARKS
11-07-06	0825	HLSF-0085-SB-023-(10.0-11.0)	Soil	108381	3	X	X	X	X		X			X	X	
	0850	HLSF-0085-SB-023-(20.0-21.0)		82	3											
	0915	HLSF-0085-SB-023-(30.0-31.0)		83	3											
	0935	HLSF-0085-SB-023-(40.0-41.0)		84	3											
	1000	HLSF-0085-SB-023-(49.0-50.0)		85	3											
				86												
11-07-06	1340	HLSF-0085-SB-027-(10.0-12.0)	Soil	86	2	X	X	X	X		X			X	X	
	1340	HLSF-0085-SB-127-(10.0-12.0)		87	2	X	X	X	X		X			X	X	
	1350	HLSF-0085-SB-027-(15.0-16.0)		88	1											
	1355	HLSF-0085-SB-027-(20.0-21.0)		89	3	X	X	X	X		X			X	X	
	1420	HLSF-0085-SB-027-(30.0-31.0)		90	3											
	1440	HLSF-0085-SB-027-(40.0-41.0)		91	3											
	1505	HLSF-0085-SB-027-(49.0-50.0)		92	3	X	X	X	X		X			X	X	
	1350	HLSF-0085-SB-127-(15.0-16.0)		93	1											
11-07-06	0830	HLSF-0085-TB-590	water	94	2											

PROJECT INFORMATION	SAMPLES RECEIVED		1. RELINQUISHED BY: (SIGNATURE)	2. RELINQUISHED BY: (SIGNATURE)	3. RECEIVED BY LAB: (SIGNATURE)
PROJECT MANAGER: William Little	TOTAL NO. OF CONTAINERS		(PRINTED NAME) James Thompson	(PRINTED NAME) Jeffrey Lane	(PRINTED NAME) Geena Ripley
SHIPPING ID NO.: 3593050	CHAIN OF CUSTODY SEALS		RECEIVED BY: (SIGNATURE)	RECEIVED BY: (SIGNATURE)	(COMPANY)
	GOOD CONDITION/CHILLED	4°C	(TIME/DATE) 1:25 pm 08 Nov 06	(TIME/DATE) 14:30 11/8/06	(TIME/DATE) 11/9/06 9:10
VIA: Lab Courier	CONFORMS TO RECORD		SPECIAL INSTRUCTIONS / COMMENTS: PLEASE SEE ATTATCHED ANALYTE LIST FOR DETAILS		

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CHAIN OF CUSTODY RECORD

PROJECT NO.: 7

PROJECT NAME: HELSTF PHASE III SOIL SAMPLING

SAMPLER'S SIGNATURE: James Thompson

DATE	TIME	SAMPLE ID	MATRIX	LAB NO.	NO. OF CONTAINERS	DIA	VOC	Benzyl Alcohol	SVOC	GRO-DRO	TOC	2-butoxy ethanol				REMARKS
11-07-06	0825	HLSF-0085-SB-023-(10.0-11.0)	Soil	108381	3	X	X	X	X	X	X	X				
	0850	HLSF-0085-SB-023-(20.0-21.0)		82	3											
	0915	HLSF-0085-SB-023-(30.0-31.0)		83	3											
	0935	HLSF-0085-SB-023-(40.0-41.0)		84	3											
	1000	HLSF-0085-SB-023-(49.0-50.0)		85	3											
11-07-06	1340	HLSF-0085-SB-027-(10.0-12.0)	Soil	86			X	X	X	X	X	X				
	1340	HLSF-0085-SB-127-(10.0-12.0)		87												
	1350	HLSF-0085-SB-027-(15.0-16.0)		88		X										
	1355	HLSF-0085-SB-027-(20.0-21.0)		89												
	1420	HLSF-0085-SB-027-(30.0-31.0)		90												
	1440	HLSF-0085-SB-027-(40.0-41.0)		91												
	1505	HLSF-0085-SB-027-(49.0-50.0)		92			X	X	X	X	X	X				
	1350	HLSF-0085-SB-127-(15.0-16.0)		93		X										
11-07-06	0830	HLSF-0085-TB-590	water	94	2		X									

PROJECT INFORMATION	SAMPLES RECEIVED	1. RELINQUISHED BY: (SIGNATURE)	2. RELINQUISHED BY: (SIGNATURE)	3. RECEIVED BY LAB: (SIGNATURE)
PROJECT MANAGER: William Little	TOTAL NO. OF CONTAINERS	(PRINTED NAME) James Thompson	(PRINTED NAME) Jeffrey Lane	(PRINTED NAME) Arena Quigley
SHIPPING ID NO.: 3678052	CHAIN OF CUSTODY SEALS	RECEIVED BY: (SIGNATURE)	RECEIVED BY: (SIGNATURE)	(COMPANY) Trace Analysis
	GOOD CONDITION/CHILLED 4C	(TIME/DATE) 1:25 pm 08Nov06	(TIME/DATE) 14:30 11-8-06	(TIME/DATE) 11/9/06 9:00
VIA: Lab Courier	CONFORMS TO RECORD	SPECIAL INSTRUCTIONS/COMMENTS: PLEASE SEE ATTATCHED ANALYTE LIST FOR DETAILS		

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CHAIN OF CUSTODY RECORD

PAGE 1 OF 2

PROJECT NO.: 7

PROJECT NAME: HELSTF PHASE III SOIL SAMPLING

SAMPLER'S SIGNATURE: James Thompson

DATE	TIME	SAMPLE ID	MATRIX	LAB NO.	NO. OF CONTAINERS	Nitate-nitrite as N	Phosphorus	Hex Chrome	8 RCRA Metals	Chromium	Copper	Lead	Potassium	Sodium	Zinc	REMARKS
~~11-07-06~~		~~HLSF-0085-RB-SB-027-1106~~	~~water~~			~~X~~	~~X~~		~~X~~		~~X~~			~~X~~	~~X~~	
11-07-06	1540	HLSF-0085-RB-SB-027-1106	water	108379	1	X										
	1540				1		X		X		X			X	X	
	1535				3											
	1535				2											
	1540				2											
	1535				3											
	1535				3											
	1535				2											
11-07-06	1530	HLSF-0085-TB-591	water	108380	2											

PROJECT INFORMATION	SAMPLES RECEIVED		1. RELINQUISHED BY: (SIGNATURE)	2. RELINQUISHED BY: (SIGNATURE)	3. RECEIVED BY LAB: (SIGNATURE)
PROJECT MANAGER: William Little	TOTAL NO. OF CONTAINERS		(PRINTED NAME) James Thompson	(PRINTED NAME) Jeffrey Lanz	(PRINTED NAME) Sheena Shipley
SHIPPING ID NO.: 3573049	CHAIN OF CUSTODY SEALS		RECEIVED BY: (SIGNATURE) Jeffrey Lanz	RECEIVED BY: (SIGNATURE) Jan Ritchey	(COMPANY) Trace Analysis
	GOOD CONDITION/CHILLED	4C	(TIME/DATE) 1:25pm 08Nov06	(TIME/DATE) 14:30 11-8-06	(TIME/DATE) 11/9/06 @ 9:00
VIA: Lab Courier CS	CONFORMS TO RECORD		SPECIAL INSTRUCTIONS/COMMENTS: PLEASE SEE ATTATCHED ANALYTE LIST FOR DETAILS		

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CHAIN OF CUSTODY RECORD

PROJECT NO.: 7

PROJECT NAME: HELSTF PHASE III SOIL SAMPLING

SAMPLER'S SIGNATURE: James Thompson

DATE	TIME	SAMPLE ID	MATRIX	LAB NO.	NO. OF CONTAINERS	DIA	VOC	Benzyl Alcohol	SVOC	GRO-DRO	TOC	2-butoxy ethanol				REMARKS
11-07-06	1540	HLSF-0085-RB-SB-027-1106	water	108379	1											
	1540				1											
	1535				3		X									
	1535				2	X										
	1540				2			X	X			X				
	1535				3					X						
	1535				3					X						
	1535				2						X					
11-07-06	1530	HLSF-0085-TB-591	water	108380	2		X									

PROJECT INFORMATION	SAMPLES RECEIVED		1. RELINQUISHED BY: (SIGNATURE)	2. RELINQUISHED BY: (SIGNATURE)	3. RECEIVED BY LAB: (SIGNATURE)
PROJECT MANAGER: William Little	TOTAL NO. OF CONTAINERS		(PRINTED NAME) James Thompson	(PRINTED NAME) Jeffrey Lane	(PRINTED NAME) Sueena Quipley
SHIPPING ID NO.: 3592 3049	CHAIN OF CUSTODY SEALS		RECEIVED BY: (SIGNATURE) Jeffrey Lane	RECEIVED BY: (SIGNATURE) James R Clay	(COMPANY) Trace Analysis
	GOOD CONDITION/CHILLED	4°C	(TIME/DATE) 1:25pm 08 Nov 06	(TIME/DATE) 14:30 11-8-06	(TIME/DATE) 11/9/06 9:00
VIA: Lab Courier	CONFORMS TO RECORD		SPECIAL INSTRUCTIONS / COMMENTS: PLEASE SEE ATTATCHED ANALYTE LIST FOR DETAILS		

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CHAIN OF CUSTODY RECORD

PROJECT NO.: 7

PROJECT NAME: HELSTF PHASE III SOIL SAMPLING

SAMPLER'S SIGNATURE: James Thompson

DATE	TIME	SAMPLE ID	MATRIX	LAB NO.	NO. OF CONTAINERS	Nitrate-nitrite as N	Phosphorus	Hex Chrome	8 RCRA Metals	Chromium	Copper	Lead	Potassium	Sodium	Zinc	REMARKS
11-13-06	0950	HLSF-0085-SB-028-(15.0-16.0)	Soil	109088	3	X	X	X	X		X			X	X	
	1000	HLSF-0085-SB-028-(20.0-21.0)		89	3											
	1020	HLSF-0085-SB-028-(30.0-31.0)		90	3											
	1055	HLSF-0085-SB-028-(40.0-41.0)		91	3											
	1125	HLSF-0085-SB-028-(49.0-50.0)		92	3											
11-13-06	1405	HLSF-0085-SB-019-(10.0-11.0)	Soil	93	3	X	X	X		X		X		X	X	
	1420	HLSF-0085-SB-019-(20.0-22.0)		94	2											
	1420	HLSF-0085-SB-119-(20.0-22.0)		95	2											
	1430	HLSF-0085-SB-019-(25.0-26.0)		96	1											Do not run per WL
	1430	HLSF-0085-SB-119-(25.0-26.0)		97	1											Do not run per WL
	1445	HLSF-0085-SB-019-(30.0-31.0)		98	3											
	1455	HLSF-0085-SB-019-(36.0-37.0)		99	1											Do not run per WL
	1510	HLSF-0085-SB-019-(40.0-41.0)		100	3											
	1540	HLSF-0085-SB-019-(49.0-50.0)		01	3											
11-13-06	0845	HLSF-0085-TB-592	water	02	2											

PROJECT INFORMATION	SAMPLES RECEIVED		1. RELINQUISHED BY: (SIGNATURE)	2. RELINQUISHED BY: (SIGNATURE)	3. RECEIVED BY LAB: (SIGNATURE)
PROJECT MANAGER: William Little	TOTAL NO. OF CONTAINERS		(PRINTED NAME) James Thompson	(PRINTED NAME) Jeffrey Lane	(PRINTED NAME) Deena Shipley
SHIPPING ID NO.: 3579 3047	CHAIN OF CUSTODY SEALS		RECEIVED BY: (SIGNATURE) Jeffrey Lane	RECEIVED BY: (SIGNATURE) James Edelst	(COMPANY) Trace analysis
	GOOD CONDITION/CHILLED	4°C	(TIME/DATE) 03:50 pm 14 Nov 06	(TIME/DATE) 16:55 11/14/06	(TIME/DATE) 11/16/06 9:20
VIA: Lab Courier	CONFORMS TO RECORD	NA	SPECIAL INSTRUCTIONS/COMMENTS: PLEASE SEE ATTACHED ANALYTE LIST FOR DETAILS		

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592

WTS

CHAIN OF CUSTODY RECORD

PROJECT NO.: 7

PROJECT NAME: HELSTF PHASE III SOIL SAMPLING

SAMPLER'S SIGNATURE: James Thompson

DATE	TIME	SAMPLE ID	MATRIX	LAB NO.	NO. OF CONTAINERS	DIA	VOC	Benzyl Alcohol	SVOC	GRO-DRO	TOC	2-butoxy ethanol			REMARKS
11-13-06	0950	HLSF-0085-SB-028-(15.0-16.0)	Soil	109088	3	X	X	X	X	X	X	X			
	1000	HLSF-0085-SB-028-(20.0-21.0)		89	3										
	1020	HLSF-0085-SB-028-(30.0-31.0)		90	3										
	1055	HLSF-0085-SB-028-(40.0-41.0)		91	3										
	1125	HLSF-0085-SB-028-(49.0-50.0)		92	3										
11-13-06	1405	HLSF-0085-SB-019-(10.0-11.0)	Soil	93	3	X	X	X	X	X	X	X			
	1420	HLSF-0085-SB-019-(20.0-22.0)		94	2		X	X	X	X	X	X			PID - 36.6 ppm VOC
	1420	HLSF-0085-SB-119-(20.0-22.0)		95	2		X	X	X	X	X	X			PID - 36.6 ppm VOC
	1430	HLSF-0085-SB-019-(25.0-26.0)		96	1	X									
	1430	HLSF-0085-SB-119-(25.0-26.0)		97	1	X									
	1445	HLSF-0085-SB-019-(30.0-31.0)		98	3	X	X	X	X	X	X	X			PID - 13.6 ppm VOC
	1455	HLSF-0085-SB-019-(36.0-37.0)		99	1		X			X					PID - 57.2 ppm VOC
	1510	HLSF-0085-SB-019-(40.0-41.0)		100	3	X	X	X	X	X	X	X			
	1540	HLSF-0085-SB-019-(49.0-50.0)		01	3	X	X	X	X	X	X	X			
11-13-06	0845	HLSF-0085-TB-592	water	02	2		X								

PROJECT INFORMATION	SAMPLES RECEIVED		1. RELINQUISHED BY: (SIGNATURE)	2. RELINQUISHED BY: (SIGNATURE)	3. RECEIVED BY LAB: (SIGNATURE)
PROJECT MANAGER: William Little	TOTAL NO. OF CONTAINERS		(PRINTED NAME) James Thompson	(PRINTED NAME) Jeffrey Lane	(PRINTED NAME) Deena Ridley
SHIPPING ID NO.: 3879304-2	CHAIN OF CUSTODY SEALS		RECEIVED BY: (SIGNATURE)	RECEIVED BY: (SIGNATURE)	(COMPANY) Trace analysis
	GOOD CONDITION/CHILLED	4C	(TIME/DATE) 3:50 pm 14Nov06	(TIME/DATE) 16:55 11/14/06	(TIME/DATE) 11/16/06 9:00
VIA: Lab Courier	CONFORMS TO RECORD	NA	SPECIAL INSTRUCTIONS/COMMENTS: PLEASE SEE ATTATCHED ANALYTE LIST FOR DETAILS		

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CHAIN OF CUSTODY RECORD

PROJECT NO.: 7

PROJECT NAME: HELSTF PHASE III SOIL SAMPLING

SAMPLER'S SIGNATURE: James Thompson

DATE	TIME	SAMPLE ID	MATRIX	LAB NO.	NO. OF CONTAINERS	Nitrate-nitrite as N	Phosphorus	Hex Chrome	8 RCRA Metals	Chromium	Copper	Lead	Potassium	Sodium	Zinc	REMARKS
11-13-06	~~1205~~ 1210	HLSF-0085-RB-SB-028-1106	water	109076	1		X		X	X	X			X	X	
	1210				1	X										
	1205				3											
	1205				2											
	1210				2											
	1205				3											
	1205				3											
	1205				2											
11-13-06	1610	HLSF-0085-RB-SB-019-1106	water	109077	1		X			X		X		X	X	
	1610				1	X										
	1605				3											
	1605				2											
	1610				2											
	1605				3											
	1605			109078	3											
	1605			~~190~~	2											
11-13-06	1155	HLSF-0085-TB-593	water	~~109077~~	2											

PROJECT INFORMATION	SAMPLES RECEIVED		1. RELINQUISHED BY: (SIGNATURE)	2. RELINQUISHED BY: (SIGNATURE)	3. RECEIVED BY LAB: (SIGNATURE)
PROJECT MANAGER: William Little	TOTAL NO. OF CONTAINERS		(PRINTED NAME) James Thompson	(PRINTED NAME) Jeffrey Lane	(PRINTED NAME) Sheena Shipley
SHIPPING ID NO.: 3579304 23	CHAIN OF CUSTODY SEALS		RECEIVED BY: (SIGNATURE) Jeffrey Lane	RECEIVED BY: (SIGNATURE) James Thompson	(COMPANY) Trace Analytics
	GOOD CONDITION/CHILLED	4°C	(TIME/DATE) 1403:50 pm 14 Nov 06	(TIME/DATE) 16:55 11/14/06	(TIME/DATE) 11/16/06 9:00
VIA: Lab Courier LS	CONFORMS TO RECORD		SPECIAL INSTRUCTIONS / COMMENTS: PLEASE SEE ATTATCHED ANALYTE LIST FOR DETAILS		

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WTS

CHAIN OF CUSTODY RECORD

PROJECT NO.: 7

PROJECT NAME: HELSTF PHASE III SOIL SAMPLING

SAMPLER'S SIGNATURE: James Thompson

DATE	TIME	SAMPLE ID	MATRIX	LAB NO.	NO. OF CONTAINERS	DIA	VOC	Benzyl Alcohol	SVOC	GRO-DRO	TOC	2-butoxy ethanol				REMARKS
11-13-06	1210	HLSF-0085-RB-SB-028-1106	water	109076	1											
	1210				1											
	1205				3		X									
	1205				2	X										
	1210				2			X	X			X				
	1205				3					X						
	1205				3					X						
	1205				2						X					
11-13-06	1610	HLSF-0085-RB-SB-019-1106	water	109077	1											
	1610				1											
	1605				3		X									
	1605				2	X										
	1610				2			X	X			X				
	1605				3					X						
	1605				3					X						
	1605				2						X					
11-13-06	1155	HLSF-0085-TB-593	water	109078	2		X									

PROJECT INFORMATION	SAMPLES RECEIVED		1. RELINQUISHED BY: (SIGNATURE)	2. RELINQUISHED BY: (SIGNATURE)	3. RECEIVED BY LAB: (SIGNATURE)
PROJECT MANAGER: William Little	TOTAL NO. OF CONTAINERS		(PRINTED NAME) James Thompson	(PRINTED NAME) Jeffrey Lane	(PRINTED NAME) Sheena Ripley
SHIPPING ID NO.: 3879 3043	CHAIN OF CUSTODY SEALS		RECEIVED BY: (SIGNATURE)	RECEIVED BY: (SIGNATURE)	(COMPANY) TRACE Analysis
VIA: Lab Courier LS	GOOD CONDITION/CHILLED	4C	(TIME/DATE) 3:50 pm 14Nov06	(TIME/DATE) 16:55 11/14/06	(TIME/DATE) 11/16/06 9:00
	CONFORMS TO RECORD	MK	SPECIAL INSTRUCTIONS/COMMENTS: PLEASE SEE ATTATCHED ANALYTE LIST FOR DETAILS		

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CHAIN OF CUSTODY RECORD

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PAGE X 1 OF 2

PROJECT NO.	PROJECT NAME
7	HELSTF PHASE III SOIL SAMPLING

SAMPLER'S SIGNATURE: James Thompson

DATE	TIME	SAMPLE ID	MATRIX	LAB NO.	NO. OF CONTAINERS	DIA	VOC	Benzyl Alcohol	SVOC	GRO-DRO	TOC	2-butoxy ethanol	RCRA 8			REMARKS
11-14-06	0840	HLSF-0085-SB-037-(10.0-11.0)	Soil	109300	2		X			X		X	X			
	0905	HLSF-0085-SB-037-(20.0-21.0)		301	2											
	0930	HLSF-0085-SB-037-(30.0-31.0)		302	2											
	0950	HLSF-0085-SB-037-(40.0-41.0)		303	2											
	1020	HLSF-0085-SB-037-(49.0-50.0)		304	2											
11-14-06	1250	HLSF-0085-SB-039-(10.0-11.0)	Soil	305	2		X			X		X	X			
	1305	HLSF-0085-SB-039-(20.0-21.0)		306	2											
	1330	HLSF-0085-SB-039-(30.0-31.0)		307	2											
	1350	HLSF-0085-SB-039-(40.0-41.0)		308	2											
	1410	HLSF-0085-SB-039-(49.0-50.0)		309	2											
AJ ~~11-14-06~~	~~1555~~															
	~~1620~~															
11-14-06	1540	HLSF-0085-SB-038-(10.0-11.0)	Soil	310	2		X			X		X	X			
	1555	HLSF-0085-SB-038-(20.0-21.0)		311	2											
	1620	HLSF-0085-SB-038-(30.0-32.0)		312	2											
	1620	HLSF-0085-SB-138-(30.0-32.0)		313	2		X			X		X	X			
11-14-06	0830	HLSF-0085-TB-594	water	109314	2		X									

PROJECT INFORMATION	SAMPLES RECEIVED	1. RELINQUISHED BY: (SIGNATURE)	2. RELINQUISHED BY: (SIGNATURE)	3. RECEIVED BY LAB: (SIGNATURE)
PROJECT MANAGER: William Little	TOTAL NO. OF CONTAINERS	James Thompson (PRINTED NAME)	Jeffrey Lane (PRINTED NAME)	Gloria Ripley (PRINTED NAME)
SHIPPING ID NO.: 2589036	CHAIN OF CUSTODY SEALS	RECEIVED BY: (SIGNATURE)	RECEIVED BY: (SIGNATURE)	Gloria Ripley (COMPANY)
	GOOD CONDITION/CHILLED 4°C	(TIME/DATE) 4:40 pm 15 Nov 06	(TIME/DATE) 17:35 11-15-06	Traco Analysis (TIME/DATE) 11/17/06 9:00
VIA: Lab Courier LS	CONFORMS TO RECORD	SPECIAL INSTRUCTIONS/COMMENTS: PLEASE SEE ATTATCHED ANALYTE LIST FOR DETAILS		

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CHAIN OF CUSTODY RECORD

PAGE 1 X OF 2

PROJECT NO.	PROJECT NAME
7	HELSTF PHASE III SOIL SAMPLING

SAMPLER'S SIGNATURE: James Thompson

DATE	TIME	SAMPLE ID	MATRIX	LAB NO.	NO. OF CONTAINERS	DIA	VOC	Benzyl Alcohol	SVOC	GRO-DRO	TOC	2-butoxy ethanol	RCRA 8			REMARKS
11-14-06	1440	HLSF-0085-RB-SB-039-1106	water	109298	1								X			
	1440				3		X									
	1440				2				X			X				Only 2-butoxy ethanol
	1435				3					X						
	1435				3					X						
11-14-06	1430	HLSF-0085-TB-595	water	109299	2		X									

PROJECT INFORMATION	SAMPLES RECEIVED		1. RELINQUISHED BY: (SIGNATURE)	2. RELINQUISHED BY: (SIGNATURE)	3. RECEIVED BY LAB: (SIGNATURE)
PROJECT MANAGER: William Little	TOTAL NO. OF CONTAINERS		(PRINTED NAME) James Thompson	(PRINTED NAME) Jeffrey Lane	(PRINTED NAME) Sheena Ripley
SHIPPING ID NO. 3879 3036	CHAIN OF CUSTODY SEALS		RECEIVED BY: (SIGNATURE)	RECEIVED BY: (SIGNATURE)	(COMPANY)
	GOOD CONDITION/CHILLED	Y/N	(TIME/DATE) 4:40pm 5 Nov 06	(TIME/DATE) 1735 11-15-06	(TIME/DATE) 11/17/06 8:5
VIA: Lab Courier LS	CONFORMS TO RECORD		SPECIAL INSTRUCTIONS / COMMENTS: PLEASE SEE ATTATCHED ANALYTE LIST FOR DETAILS		

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CHAIN OF CUSTODY RECORD

PROJECT NO.: 7

PROJECT NAME: HELSTF PHASE III SOIL SAMPLING

SAMPLER'S SIGNATURE: James Thompson

DATE	TIME	SAMPLE ID	MATRIX	LAB NO.	NO. OF CONTAINERS	Nitrate-nitrite as N	Phosphorus	Hex Chrome	8 RCRA Metals	Chromium	Copper	Lead	Potassium	Sodium	Zinc	Semi-Vol.	REMARKS
11-15-06	0835	HLSF-0085-SB-038-(40.0-41.0)	Soil	109398	2				X Hg							•	
)	0905	HLSF-0085-SB-038-(49.0-50.0)	)	99	2				X							•	
11-15-06	1020	HLSF-0085-SB-020-(10.0-11.0)	Soil	400	3	X	X	X		X		X		X	X	•	
	1040	HLSF-0085-SB-020-(20.0-21.0)		01	3											•	
	1100	HLSF-0085-SB-020-(30.0-31.0)		02	3											•	
	1125	HLSF-0085-SB-020-(40.0-41.0)		03	3											•	
	1300	HLSF-0085-SB-020-(49.0-50.0)		04	3											•	
11-15-06	1415	HLSF-0085-SB-021-(10.0-11.0)	Soil	05	3											•	
	1430	HLSF-0085-SB-021-(20.0-21.0)		06	3											•	
	1500	HLSF-0085-SB-021-(30.0-31.0)		07	3											•	
	1530	HLSF-0085-SB-021-(40.0-41.0)		08	3											•	
	1550	HLSF-0085-SB-021-(49.0-50.0)		09	3											•	
11-15-06	0810	HLSF-0085-TB-596	water	10	2												

PROJECT INFORMATION	SAMPLES RECEIVED		1. RELINQUISHED BY: (SIGNATURE)	2. RELINQUISHED BY: (SIGNATURE)	3. RECEIVED BY LAB: (SIGNATURE)
PROJECT MANAGER: William Little	TOTAL NO. OF CONTAINERS		(PRINTED NAME) James Thompson	(PRINTED NAME) Jeffrey Lane	(PRINTED NAME) Jennifer Schmidt
SHIPPING ID NO.	CHAIN OF CUSTODY SEALS		RECEIVED BY: (SIGNATURE)	RECEIVED BY: (SIGNATURE) James Ratcliff	(COMPANY) Trace Analysis
	GOOD CONDITION/COLD	4°C	(TIME/DATE) 4:05pm 16Nov06	(TIME/DATE) 17:16 11-16-06	(TIME/DATE) 11/18/06 0930
VIA: Lab Courier	CONFORMS TO RECORD		SPECIAL INSTRUCTIONS/COMMENTS: PLEASE SEE ATTATCHED ANALYTE LIST FOR DETAILS	3°	Lone Star # 38793037

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CHAIN OF CUSTODY RECORD

PROJECT NO.: 7

PROJECT NAME: HELSTF PHASE III SOIL SAMPLING

SAMPLER'S SIGNATURE: James Thompson

DATE	TIME	SAMPLE ID	MATRIX	LAB NO.	NO. OF CONTAINERS	DIA	VOC	Benzyl Alcohol	SVOC	GRO-DRO	TOC	2-butoxyl ethanol				REMARKS
11-15-06	0835	HLSF-0085-SB-038-(48.0-49.0)	Soil	109398	2		X			X		X				
〃	0905	HLSF-0085-SB-038-(49.0-50.0)	〃	99	2		X			X		X				
11-15-06	1020	HLSF-0085-SB-020-(10.0-11.0)	Soil	100	3	X	X	X	X	X	X	X				
	1040	HLSF-0085-SB-020-(20.0-21.0)		01	3											
	1100	HLSF-0085-SB-020-(30.0-31.0)		02	3											
	1125	HLSF-0085-SB-020-(40.0-41.0)		03	3											
	1300	HLSF-0085-SB-020-(49.0-50.0)		04	3											
11-15-06	1415	HLSF-0085-SB-021-(10.0-11.0)	Soil	05	3											
	1430	HLSF-0085-SB-021-(20.0-21.0)		06	3											
	1500	HLSF-0085-SB-021-(30.0-31.0)		07	3											
	1530	HLSF-0085-SB-021-(40.0-41.0)		08	3											
	1550	HLSF-0085-SB-021-(49.0-50.0)		09	3											
11-15-06	0810	HLSF-0085-TB-596		10	2		X									

PROJECT INFORMATION	SAMPLES RECEIVED	1. RELINQUISHED BY: (SIGNATURE)	2. RELINQUISHED BY: (SIGNATURE)	3. RECEIVED BY LAB: (SIGNATURE)
PROJECT MANAGER: William Little	TOTAL NO. OF CONTAINERS	(PRINTED NAME) James Thompson	(PRINTED NAME) Jeffrey Lane	(PRINTED NAME) Jennifer Schmidt
SHIPPING ID NO.	CHAIN OF CUSTODY SEALS	RECEIVED BY: (SIGNATURE)	RECEIVED BY: (SIGNATURE)	(COMPANY) Trace Analysis
	GOOD CONDITION/COOLED	(TIME/DATE) 4:05pm 16Nov06	(TIME/DATE) 17:16 11-16-06	(TIME/DATE) 11/18/06 0930
VIA: Lab Courier	CONFORMS TO RECORD	SPECIAL INSTRUCTIONS/COMMENTS: PLEASE SEE ATTATCHED ANALYTE LIST FOR DETAILS	3°	Lone Star #38793037

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WES

CHAIN OF CUSTODY RECORD

PROJECT NO.: 7

PROJECT NAME: HELSTF PHASE III SOIL SAMPLING

SAMPLER'S SIGNATURE: James Thompson

DATE	TIME	SAMPLE ID	MATRIX	LAB NO.	NO. OF CONTAINERS	DIA	VOC	Benzyl Alcohol	SVOC	GRO-DRO	TOC	n-butoxy ethanol				REMARKS
11-15-06	0935	HLSF-0085-RB-SB-038-1106	water	109395	1											
	0935				2							X				
	0930				3		X									
	0930				3					X						
	0930				3					X						
11-15-06	1335	HLSF-0085-RB-SB-020-1106	water	109396	1											
	1335				1											
	1335				2			X	X			X				
	1330				3		X									
	1330				3					X						
	1330				3					X						
	1330				2						X					
	1330				2	X										
11-15-06	0925	HLSF-0085-TB-597	water	109397	2		X									

PROJECT INFORMATION	SAMPLES RECEIVED		1. RELINQUISHED BY: (SIGNATURE)	2. RELINQUISHED BY: (SIGNATURE)	3. RECEIVED BY LAB: (SIGNATURE)
PROJECT MANAGER: William Little	TOTAL NO. OF CONTAINERS		(PRINTED NAME) James Thompson	(PRINTED NAME) Jeffrey Lane	(PRINTED NAME) Jennifer Schmidt
SHIPPING ID NO.: 3879303C	CHAIN OF CUSTODY SEALS		RECEIVED BY: (SIGNATURE)	RECEIVED BY: (SIGNATURE)	(COMPANY) Trace Analysis
	GOOD CONDITION/COOLED	4°C	(TIME/DATE) 4:05pm 16 Nov 06	(TIME/DATE) 17:16 11-16-06	(TIME/DATE) 11/18/06 0930
VIA: Lab Courier	CONFORMS TO RECORD		SPECIAL INSTRUCTIONS/COMMENTS: PLEASE SEE ATTATCHED ANALYTE LIST FOR DETAILS		Lone Star #3879303C

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CHAIN OF CUSTODY RECORD

PROJECT NO.: 7

PROJECT NAME: HELSTF PHASE III SOIL SAMPLING

SAMPLER'S SIGNATURE: James Thompson

DATE	TIME	SAMPLE ID	MATRIX	LAB NO.	NO. OF CONTAINERS	Nitrate-nitrite as N	Phosphorus	Hex Chrome	8 RCRA Metals	Chromium	Copper	Lead	Potassium	Sodium	Zinc	REMARKS
11-15-06	0935	HLSF-0085-RB-SB-038-1106	water	109395	1				X							
	0935				2											
	0930				3											
	0930				3											
	0930				3											
11-15-06	1335	HLSF-0085-RB-SB-020-1106	water	109396	1		X			X		X		X	X	
	1335				1	X										
	1335				2											
	AJ ~~1330~~ 1330				3											
	1330				3											
	1330				3											
	1330				2											
	1330				2											
11-15-06	0925	HLSF-0085-TB-597	water	109397	2											

PROJECT INFORMATION	SAMPLES RECEIVED		1. RELINQUISHED BY: (SIGNATURE)	2. RELINQUISHED BY: (SIGNATURE)	3. RECEIVED BY LAB: (SIGNATURE)
PROJECT MANAGER: William Little	TOTAL NO. OF CONTAINERS		(PRINTED NAME) James Thompson	(PRINTED NAME) Jeffrey Lane	(PRINTED NAME) Jennifer Schmidt
SHIPPING ID NO.	CHAIN OF CUSTODY SEALS		RECEIVED BY: (SIGNATURE)	RECEIVED BY: (SIGNATURE)	(COMPANY) Trace Analysis
	GOOD CONDITION/CHILLED	4°C	(TIME/DATE) 4:05 pm 16 Nov 06	(TIME/DATE) 17:16 11-16-06 3°	(TIME/DATE) 11/18/06 0930 Lone Star #38793036
VIA: Lab Courier	CONFORMS TO RECORD		SPECIAL INSTRUCTIONS / COMMENTS: PLEASE SEE ATTATCHED ANALYTE LIST FOR DETAILS		

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CHAIN OF CUSTODY RECORD

PROJECT NO.: 7

PROJECT NAME: HELSTF PHASE III SOIL SAMPLING

SAMPLER'S SIGNATURE: James Thompson

DATE	TIME	SAMPLE ID	MATRIX	LAB NO.	NO. OF CONTAINERS	Nitrate-nitrite as N	Phosphorus	Hex Chrome	8 RCRA Metals	Chromium	Copper	Lead	Potassium	Sodium	Zinc	REMARKS
11-16-06	0845	HLSF-0085-SB-013-(10.0-11.0)	Soil	109577	3		X	X		X		X		X	X	
	0900	HLSF-0085-SB-013-(20.0-21.0)		78	3											
	0925	HLSF-0085-SB-013-(30.0-31.0)		79	3											
	0955	HLSF-0085-SB-013-(40.0-41.0)		80	3											
	1025	HLSF-0085-SB-013-(49.0-50.0)		81	3											
11-16-06	1315	HLSF-0085-SB-011-(10.0-11.0)	Soil	82	3	X	X	X		X		X		X	X	
	1335	HLSF-0085-SB-011-(20.0-21.0)		83	3											
	1355	HLSF-0085-SB-011-(30.0-32.0)		84	2											
	1355	HLSF-0085-SB-111-(30.0-32.0)		85	2											
	1415	HLSF-0085-SB-011-(40.0-42.0)		86	3											
	1415	HLSF-0085-SB-111-(40.0-42.0)		87	1											DIA only
	1435	HLSF-0085-SB-011-(49.0-50.0)		88	3	X	X	X		X		X		X	X	
11-16-06	1550	HLSF-0085-SB-016-(10.0-11.0)	Soil	89	3		X	X		X		X		X	X	
	1605	HLSF-0085-SB-016-(20.0-21.0)		90	3		X	X		X		X		X	X	
11-16-06	0840	HLSF-0085-TB-598	water	91	2											

PROJECT INFORMATION	SAMPLES RECEIVED	1. RELINQUISHED BY: (SIGNATURE)	2. RELINQUISHED BY: (SIGNATURE)	3. RECEIVED BY LAB: (SIGNATURE)
PROJECT MANAGER: William Little	TOTAL NO. OF CONTAINERS	(PRINTED NAME) James Thompson	(PRINTED NAME) Jeffrey Lane	(PRINTED NAME) Sheena Shipley
SHIPPING BILL: 3883034	CHAIN OF CUSTODY SEALS	RECEIVED BY: (SIGNATURE)	RECEIVED BY: (SIGNATURE)	(COMPANY) Trace Analysis
	GOOD CONDITION/CHILLED	(TIME/DATE) 4:20pm 17 Nov 06	(TIME/DATE) 1730 11-17-06	(TIME/DATE) 11/21/06 9:00
VIA: Lab Courier LS	CONFORMS TO RECORD	SPECIAL INSTRUCTIONS / COMMENTS: PLEASE SEE ATTATCHED ANALYTE LIST FOR DETAILS		

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WTCS

CHAIN OF CUSTODY RECORD

PROJECT NO.: 7

PROJECT NAME: HELSTF PHASE III SOIL SAMPLING

SAMPLER'S SIGNATURE: James Thompson

DATE	TIME	SAMPLE ID	MATRIX	LAB NO.	NO. OF CONTAINERS	DIA	VOC	Benzyl Alcohol	SVOC	GRO-DRO	TOC	2-butoxy ethanol			REMARKS
11-16-06	0845	HLSF-0085-SB-013-(10.0-11.0)	Soil	109577	3	X	X	X	X	X	X	X			
	0900	HLSF-0085-SB-013-(20.0-21.0)		78	3										PID - 84.7 ppm VOC
	0925	HLSF-0085-SB-013-(30.0-31.0)		79	3										
	0955	HLSF-0085-SB-013-(40.0-41.0)		80	3										PID - 60.6 ppm VOC
	1025	HLSF-0085-SB-013-(49.0-50.0)		81	3										
11-16-05	1315	HLSF-0085-SB-011-(10.0-11.0)	Soil	82	3	X	X	X	X	X	X	X			
	1335	HLSF-0085-SB-011-(20.0-21.0)		83	3	X									
	1355	HLSF-0085-SB-011-(30.0-32.0)		84	2										PID - 43.6 ppm VOC
	1355	HLSF-0085-SB-111-(30.0-32.0)		85	2										PID - 43.6 ppm VOC
	1415	HLSF-0085-SB-011-(40.0-42.0)		86	3	X	X	X	X	X	X	X	Hot		PID - ~~43.6~~ ppm VOC 348 ppm
	1415	HLSF-0085-SB-111-(40.0-42.0)		87	1	X									DIA only
	1435	HLSF-0085-SB-011-(~~10.0-11.0~~)(49.0-50.0)	Soil	88	3	X	X	X	X	X	X	X			
11-16-06	1550	HLSF-0085-SB-016-(10.0-11.0)	Soil	89	3	X	X	X	X	X	X	X			
	1605	HLSF-0085-SB-016-(20.0-21.0)		90	3	X	X	X	X	X	X	X			
11-16-06	0840	HLSF-0085-TB-598	water	91	2		X								

PROJECT INFORMATION	SAMPLES RECEIVED		1. RELINQUISHED BY: (SIGNATURE)	2. RELINQUISHED BY: (SIGNATURE)	3. RECEIVED BY LAB: (SIGNATURE)
PROJECT MANAGER: William Little	TOTAL NO. OF CONTAINERS		(PRINTED NAME) James Thompson	(PRINTED NAME) Jeffrey Lane	(PRINTED NAME) Sheena Shipley
SHIPPING ID NO.: 38 P3034	CHAIN OF CUSTODY SEALS		RECEIVED BY: (SIGNATURE)	RECEIVED BY: (SIGNATURE)	(COMPANY) Trace analysis
	GOOD CONDITION/COOLED	4°C	(TIME/DATE) 4:20pm 17 Nov 06	(TIME/DATE) 17:30 11-17-06	(TIME/DATE) 11/21/06 9:00
VIA: Lab Courier CS	CONFORMS TO RECORD		SPECIAL INSTRUCTIONS/COMMENTS: PLEASE SEE ATTATCHED ANALYTE LIST FOR DETAILS		

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CHAIN OF CUSTODY RECORD

PROJECT NO.: 7

PROJECT NAME: HELSTF PHASE III SOIL SAMPLING

SAMPLER'S SIGNATURE: James Thompson

DATE	TIME	SAMPLE ID	MATRIX	LAB NO.	NO. OF CONTAINERS	Nitate-nitrite as N	Phosphorus	Hex Chrome	8 RCRA Metals	Chromium	Copper	Lead	Potassium	Sodium	Zinc	REMARKS
11-16-06	1055	~~HSF~~ HLSF-0085-RB-SB-013-1106	water	109568	1		X			X		X		X	X	
	1050				3											
	1050				2											
	1045				2											
	1050				3											
	1050				3											
	1050				2											
11-16-06	1505	HLSF-0085-RB-SB-011-1106	water	109569	1		X			X		X		X	X	
	1500				3											
	1500				2											
	1505				2											
	1500				3											
	1500				3											
	1505				2											
	1505				1	X										
11-16-06	1040	HLSF-0085-TB-599	water	109570	2											

PROJECT INFORMATION	SAMPLES RECEIVED		1. RELINQUISHED BY: (SIGNATURE)	2. RELINQUISHED BY: (SIGNATURE)	3. RECEIVED BY LAB: (SIGNATURE)
PROJECT MANAGER: William Little	TOTAL NO. OF CONTAINERS		(PRINTED NAME) James Thompson	(PRINTED NAME) Jeffrey Lane	(PRINTED NAME) Vicki Hensley
SHIPPING ID NO.: 40 JB 3879303 4	CHAIN OF CUSTODY SEALS		RECEIVED BY: (SIGNATURE)	RECEIVED BY: (SIGNATURE)	(COMPANY) Race Analysis
	GOOD CONDITION/CHILLED	4C	(TIME/DATE) 4:20 pm 17 Nov 06	(TIME/DATE) 17:30 11-17-06	(TIME/DATE) ~~11-10-0~~ 9:00 11-21-06
VIA: Lab Courier	CONFORMS TO RECORD	MK	SPECIAL INSTRUCTIONS / COMMENTS: PLEASE SEE ATTATCHED ANALYTE LIST FOR DETAILS		

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599

CHAIN OF CUSTODY RECORD

PROJECT NO.: 7

PROJECT NAME: HELSTF PHASE III SOIL SAMPLING

SAMPLER'S SIGNATURE: James Thompson

DATE	TIME	SAMPLE ID	MATRIX	LAB NO.	NO. OF CONTAINERS	DIA	VOC	Benzyl Alcohol	SVOC	GRO-DRO	TOC	2-butoxy ethanol			REMARKS
11-16-06	1055	HLSF-0085-RB-SB-013-1106	water	109568	1					D					
	1050				3		X								
	1050				2	X									
	1045				2			X	X			X			
	1050				3					X					
	1050				3					X					
	1050				2						X				
11-16-06	1505	HLSF-0085-RB-SB-011-1106	water	109569	1										
	1500				3		X								
	1500				2	X									
	1505				2			X	X			X			
	1500				3					X					
	1500				3					X					
	1505				2						X				
	1505				1										
11-16-06	1040	HLSF-0085-TB-599	water	109570	2		X								

PROJECT INFORMATION	SAMPLES RECEIVED		1. RELINQUISHED BY: (SIGNATURE)	2. RELINQUISHED BY: (SIGNATURE)	3. RECEIVED BY LAB: (SIGNATURE)
PROJECT MANAGER: William Little	TOTAL NO. OF CONTAINERS		(PRINTED NAME) James Thompson	(PRINTED NAME) Jeffrey Lane	(PRINTED NAME) Vicki Hinsley
SHIPPING ID NO.: LS 38793034	CHAIN OF CUSTODY SEALS		RECEIVED BY: (SIGNATURE)	RECEIVED BY: (SIGNATURE)	(COMPANY) Trace Analysis
	GOOD CONDITION/CHILLED	4C	(TIME/DATE) 4:20pm 17Nov06	(TIME/DATE) 1730 11-17-06	(TIME/DATE) 9:00 11-21-06
VIA: Lab Courier	CONFORMS TO RECORD	MA	SPECIAL INSTRUCTIONS/COMMENTS: PLEASE SEE ATTATCHED ANALYTE LIST FOR DETAILS		

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CHAIN OF CUSTODY RECORD

PROJECT NO.: 7

PROJECT NAME: HELSTF PHASE III SOIL SAMPLING

SAMPLER'S SIGNATURE: James Thompson

DATE	TIME	SAMPLE ID	MATRIX	LAB NO.	NO. OF CONTAINERS	Nitrate-nitrite as N	Phosphorus	Hex Chrome	8 RCRA Metals	Chromium	Copper	Lead	Potassium	Sodium	Zinc	REMARKS
11-17-06	0905	HLSF-0085-SB-016-(30.0-31.0)	soil	109675	3		X	X		X		X		X	X	
	0930	HLSF-0085-SB-016-(40.0-41.0)		676	2		X	X		X		X		X	X	
	0945	HLSF-0085-SB-016-(45.0-46.0)		677	1											
	1000	HLSF-0085-SB-016-(49.0-50.0)		678	3		X	X		X		X		X	X	
11-17-06	1100	HLSF-0085-SB-014-(10.0-12.0)	soil	679	2		X	X		X		X		X	X	
	1100	HLSF-0085-SB-114-(10.0-12.0)		680 ~~700~~	2											
	1115	HLSF-0085-SB-014-(20.0-22.0)		681 ~~701~~	3		X	X		X		X		X	X	
	1115	HLSF-0085-SB-114-(20.0-22.0)		682 ~~702~~	1											
	1140	HLSF-0085-SB-014-(30.0-31.0)		683 ~~703~~	2		X	X		X		X		X	X	
	1330	HLSF-0085-SB-014-(40.0-41.0)		684 ~~704~~	2		X	X		X		X		X	X	
	1345	HLSF-0085-SB-014-(45.0-46.0)		685 ~~705~~	1											
	1405	HLSF-0085-SB-014-(49.0-50.0)		686 ~~706~~	3		X	X		X		X		X	X	
11-17-06	0830	HLSF-0085-TB-600	water	~~109709~~ 109687	2											

PROJECT INFORMATION	SAMPLES RECEIVED		1. RELINQUISHED BY: (SIGNATURE)	2. RELINQUISHED BY: (SIGNATURE)	3. RECEIVED BY LAB: (SIGNATURE)
PROJECT MANAGER: William Little	TOTAL NO. OF CONTAINERS		(PRINTED NAME) James Thompson	(PRINTED NAME) Jeffrey Lane	(PRINTED NAME) Rhonda Shipley
SHIPPING ID NO.: 29192342	CHAIN OF CUSTODY SEALS		RECEIVED BY: (SIGNATURE)	RECEIVED BY: (SIGNATURE)	(COMPANY) Trace Analysis
	GOOD CONDITION/CHILLED	4°C	(TIME) (DATE) 14:35pm 20 Nov 06	(TIME) (DATE) 1740 11-20-06	(TIME) (DATE) 11/22/06 8:30
VIA: Lab Courier	CONFORMS TO RECORD		SPECIAL INSTRUCTIONS / COMMENTS: PLEASE SEE ATTATCHED ANALYTE LIST FOR DETAILS		

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CHAIN OF CUSTODY RECORD

PROJECT NO.	PROJECT NAME
7	HELSTF PHASE III SOIL SAMPLING

SAMPLER'S SIGNATURE: James Thompson

DATE	TIME	SAMPLE ID	MATRIX	LAB NO.	NO. OF CONTAINERS	DIA	VOC	Benzyl Alcohol	SVOC	GRO-DRO	TOC					REMARKS
11-17-06	0905	HLSF-0085-SB-016-(30.0-31.0)	Soil	109675	3	X	X	X	X	X	X					
	0930	HLSF-0085-SB-016-(40.0-41.0)		676	2		X	X	X	X	X					
	0945	HLSF-0085-SB-016-(45.0-46.0)		677	1	X										DIA only.
	1000	HLSF-0085-SB-016-(49.0-50.0)		678	3	X	X	X	X	X	X					
11-17-06	1100	HLSF-0085-SB-014-(10.0-12.0)	Soil	679	2		X	X	X	X	X					
	1100	HLSF-0085-SB-114-(10.0-12.0)		680	2		X	X	X	X	X					
	1115	HLSF-0085-SB-014-(20.0-22.0)		681	3	X	X	X	X	X	X			Hot		PID - 205 ppm VOC
	1115	HLSF-0085-SB-114-(20.0-22.0)		682	1	X								Hot		DIA only
	1140	HLSF-0085-SB-014-(30.0-31.0)		683	2		X	X	X	X	X					
	1330	HLSF-0085-SB-014-(40.0-41.0)		684	2		X	X	X	X	X					
	1345	HLSF-0085-SB-014-(45.0-46.0)		685	1	X										DIA only.
	1405	HLSF-0085-SB-014-(49.0-50.0)		686	3	X	X	X	X	X	X					
11-17-06	0830	HLSF-0085-TB-600	water	109687	2		X									

PROJECT INFORMATION	SAMPLES RECEIVED		1. RELINQUISHED BY: (SIGNATURE)	2. RELINQUISHED BY: (SIGNATURE)	3. RECEIVED BY LAB: (SIGNATURE)
PROJECT MANAGER: William Little	TOTAL NO. OF CONTAINERS		(PRINTED NAME) James Thompson	(PRINTED NAME) Jeffrey Lane	(PRINTED NAME) Queena Ripley
SHIPPING ID NO. 3919 2342	CHAIN OF CUSTODY SEALS		RECEIVED BY: (SIGNATURE)	RECEIVED BY: (SIGNATURE)	(COMPANY) Trace Analysis
	GOOD CONDITION/CHILLED	4°C	(TIME/DATE) 4:35 pm 20 Nov 06	(TIME/DATE) 1740 11-20-06	(TIME/DATE) 11/22/06 8:30
VIA: Lab Courier LS	CONFORMS TO RECORD		SPECIAL INSTRUCTIONS/COMMENTS: PLEASE SEE ATTATCHED ANALYTE LIST FOR DETAILS		

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APPENDIX F

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ATTACHMENT A

SCREENING-LEVEL ECOLOGICAL RISK ASSESSMENT
SCOPING ASSESSMENT
SITE ASSESSMENT CHECKLIST

SWMUs 27-30
Sanitary Treatment System

NEW MEXICO ENVIRONMENT DEPARTMENT

SITE ASSESSMENT CHECKLIST

I. SITE LOCATION

1. Site Name: SWMUs 27-30 Sanitary Treatment System
   US EPA I.D. Number: NM2750211235
   Location: High Energy Laser Systems Test Facility
   County: Otero
   City: WSMR State: NM

2. Latitude: 32.6317 Longitude: 106.3302

3. Attach site maps, including a topographical map, a diagram which illustrates the layout of the facility (e.g., site boundaries, structures, etc.), and maps showing all habitat areas identified in Section III of the checklist. Also, include maps which illustrate known release areas, sampling locations, and any other important features, if available.

II. SITE CHARACTERIZATION

1. Indicate the approximate area of the site (i.e., acres or sq. ft) 2 acres
2. Provide an approximate breakdown of the land uses on the site:

_____% Heavy Industrial	____ % Light Industrial	_____% Urban
_____% Residential	_____% Rural	_____% Agricultural[b]
_____% Recreational[a]	_____% Undisturbed	100 % Other[c]

[a]For recreational areas, please describe the usage of the area (e.g., park, playing field, etc.):
_____

[b]For agricultural areas, please list the crops and/or livestock which are present:
_____

[c]For areas designated as "other", please describe the usage of the area:
The HELSTF Facility is a Department of Defense test facility. This site is a sanitary treatment system for the HELSTF Facility.

3. Provide an approximate breakdown of the land uses in the area surrounding the site. Indicate the radius (in miles) of the area described: 3,200 square miles

_____% Heavy Industrial	_____% Light Industrial	_____% Urban
_____% Residential	_____% Rural	_____% Agricultural[b]
_____% Recreational[a]	_____% Undisturbed	100 % Other [c]

[a]For recreational areas, please describe the usage of the area (e.g., park, playing field, golf course, etc.):
_____

[b]For agricultural areas, please list the crops and/or livestock which are present:
_____

[c]For areas designated as "other", please describe the usage of the area:
The HELSTF test facility is contained within 3,200 square miles of the White Sands Missile Range which is used for testing weapon systems for the Department of Defense.

4. Describe reasonable and likely future land and/or water use(s) at the site.
The HELSTF Facility is likely to remain a Department of Defense test facility for the foreseeable future. The regional ground water at the site has greater than 10,000 mg/l total dissolved solids and will not likely be used for drinking water in the foreseeable future. Regional water away from the test facility may be used for construction purposes.

The sanitary treatment system has been replaced by a new lagoon system as of June 2007. SWMUs 27-30 will be allowed to dry out. Disposition of SWMUs 27-30 has yet to be determined.

5. Describe the historical uses of the site. Include information on chemical releases that may have occurred as a result of previous land uses. For each chemical release, provide information on the form of the chemical released (i.e., solid, liquid, vapor) and the known or suspected causes or mechanism of the release (i.e., spills, leaks, material disposal, dumping, explosion, etc.).

The sanitary treatment system initially consisted of an unlined sewage lagoon built with an earthen berm in 1962. The site is currently referred to as the MAR Waste Stabilization Pond SWMU 148). The stabilization pond[2] was replaced by a polyethylene lined, two cell, total evaporation lagoon in 1981 (Photograph 6-5). It was constructed of an earthen berm and had a

[2] The 1988 RFA (and subsequent reports) indicates that two unlined sewage lagoons with earthen berms built in 1962 were demolished and replaced by the current impoundments in the same location. Review of the MAR and HELSTF history including aerial photographs reveals that no unlined lagoons were previously located where the existing lagoons are. The MAR waste stabilization pond was located 200 feet north west of SWMU 27 and is most likely what the RFA was referring to.

total operating volume of approximately 1.3 million gallons. They are now referred to as SWMUs 27 and 28. The two additional sewage lagoons became operational in 1984 (Photograph 6-6). They are now known as SWMUs 29 and 30. The waste water is aerated by subsurface injection aeration pumps and sequentially treated in each of the four Hypalon-lined lagoons (A.T. Kearney, Inc., 1988). The liquid is spray aerated in the last lagoon (SWMU 30). The treatment system began receiving excess water in late 1984 and threatened overloading the lagoons. The State granted the use of the domestic wastewater for soil compaction during road and site construction at the HELSTF site on September 12, 1984 to alleviate the increased load. The State also granted permission to discharge 15,000 gallons per day to the Dry Pond for 120 days on October 25, 1984.

6. If any movement of soil has taken place at the site, describe the degree of the disturbance. Indicate the likely source of any disturbances (e.g., erosion, agricultural, mining, industrial activities, removals, etc.) and estimate when these events occurred.

No soil has been moved at the site since the original construction of the sewage lagoons.

7. Describe the current uses of the site. Include information on recent (previous 5 years) disturbances or chemical releases that have occurred. For each chemical release, provide information on the form of the chemical released and the causes or mechanism of the release.

The site is currently used as a sanitary treatment system for HELSTF. The lagoons have been replaced as of June 2007. Disposition of SWMUs 27-30 has yet to be determined.

A release of chromated water occurred at Test Cell 1 on June 12, 1986 (Teasdale, 1986). The release was eventually pumped from trenches outside of the DI water room into the sewage lagoons. The concentration of chromium in the lagoons was later measured as 1.6 ppm. The 1988 RFA by A.T. Kearney, Inc. suggests that excavated soil from this release was deposited in the construction landfills (SWMUs 38 and 39). Another release of chromated water occurred at Test Cell 1 on January 13, 1987 (Teasdale, 1987). It reportedly entered a dry well outside of the test cell. Sodium sulfite was used to neutralize the solution. The dry well was pumped and the contents placed inside the chemical waste tanks (SWMUs 31 and 32). The report did not indicate whether chromated water had entered the sewage treatment system. However later correspondence indicated that the drainage system and adjacent fluid trenches were modified as a result (Hayslett, 1988).

8. Identify the location or suspected location of chemical releases at the site. Provide an estimate of the distance between these locations and the areas identified in Section III.

The presence of a localized perched zone beneath the lagoons suggests that the single Hypalon liner may be leaking. The presence of trees that have grown through the liners, and tears have been observed suggest that the liners installed in SWMUs 27 through 30 have been compromised.

9. Identify the suspected contaminants of concern (COCs) at the site. If known, include the maximum contaminant levels. Please indicate the source of data cited (e.g., RFI, confirmatory sampling, etc.).

Based on the Phase III RFI, the contaminants of concern in the upper perched aquifer at the site is chromium (2.04 mg/l), 1.1-dichloroethene (5.43 mg/l), Fluoride (11.2 mg/l), and nitrate (162 mg/l).

10. Identify the media (e.g., soil (surface or subsurface), surface water, air, groundwater) which are known or suspected to contain COCs. _____
Perched ground water and surface water in the sewage lagoon.

11. Indicate the approximate depth to groundwater (in feet below ground surface [(bgs)].
Average depth to the regional ground water table at HELSTF is 71-73 ft below ground surface. The perched ground water is approximately 12-20 ft bgs.

12. Indicate the direction of groundwater flow (e.g., north, southeast, etc.)
The direction of regional ground water flow at HELSTF is to the south-east.

III. HABITAT EVALUATION

III.A Wetland Habitats

Are any wetland[3] areas such as marshes or swamps on or adjacent to the site?

☐ Yes X No

If yes, indicate the wetland area on the attached site map and answer the following questions regarding the wetland area. If more than one wetland area is present on or adjacent to the site, make additional copies of the following questions and fill out for each individual wetland area. Distinguish between wetland areas by using names or other designations (such as location), and clearly identify each area on the site map. Also, obtain and attach a National Wetlands Inventory Map (or maps) to illustrate each wetland area.

Identify the sources of the observations and information (e.g., National Wetland Inventory, Federal or State Agency, USGS topographic maps) used to make the determination that wetland areas are or are not present.

Site visit by wildlife biologist and USGS topographic maps.

If no wetland areas are present, proceed to Section III.B.

III.B Aquatic Habitats

III.B.1 Non-Flowing Aquatic Features

Are any non-flowing aquatic features (such as ponds or lakes) located at or adjacent to the site?

☐ Yes X No

If yes, indicate the aquatic feature on the attached site map and answer the following questions regarding the non-flowing aquatic features. If more than one non-flowing aquatic feature is present on or adjacent to the site, make additional copies of the following questions and fill out for each individual aquatic feature. Distinguish between aquatic features by using names or other designations, and clearly identify each area on the site map.

If no, proceed to Section III.B.2.

3Wetlands are defined in 40 CFR §232.2 as " Areas inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and that under normal circumstances does support, a prevalence of vegetation typically adapted for life in saturated soil conditions." Examples of typical wetlands plants include: cattails, cordgrass, willows and cypress trees. National wetland inventory maps may be available at http:\\nwi.fws.gov. Additional information on wetland delineation criteria is also available from the Army Corps of Engineers.

III.B.2 Flowing Aquatic Features

Are any flowing aquatic features (such as streams or rivers) located at or adjacent to the site?

☐ Yes X No

If yes, indicate the aquatic feature on the attached site map and answer the following questions regarding the flowing aquatic features. If more than one flowing aquatic feature is present on or adjacent to the site, make additional copies of the following questions and fill out for each individual aquatic feature. Distinguish between aquatic features by using names or other designations, and clearly identify each area on the site map

If no, proceed to Section III.C.

III.C Terrestrial Habitats

III.C.1 Wooded

Are any wooded areas on or adjacent to the site? ☐ Yes X No

If yes, indicate the wooded area on the attached site map and answer the following questions. If more than one wooded area is present on or adjacent to the site, make additional copies of the following questions and fill out for each individual wooded area. Distinguish between wooded areas by using names or other designations, and clearly identify each area on the site map.

If no, proceed to Section III.C.2.

III.C.2 Shrub/Scrub

Are any shrub/scrub areas on or adjacent to the site? ☐ Yes X No

If yes, indicate the shrub/scrub area on the attached site map and answer the following questions. If more than one shrub/scrub area is present on or adjacent to the site, make additional copies of the following questions and fill out for each individual shrub/scrub area. Distinguish between shrub/scrub areas, using names or other designations, and clearly identify each area on the site map.

If no, proceed to Section III.C.3.

III.C.3 Grassland

Are any grassland areas on or adjacent to the site? ☐ Yes X No

If yes, indicate the grassland area on the attached site map and answer the following questions. If more than one grassland area is present on or adjacent to the site, make additional copies of the following questions and fill out for each individual grassland area.

Distinguish between grassland areas by using names or other designations, and clearly identify each area on the site map.

If no, proceed to Section III.C.4.

III.C.4 Desert

Are any desert areas on or adjacent to the site? X Yes ☐ No

If yes, indicate the desert area on the attached site map and answer the following questions. If more than one desert area is present on or adjacent to the site, make additional copies of the following questions and fill out for each individual desert area. Distinguish between desert areas by using names or other designations, and clearly identify each area on the site map.

If no, proceed to Section III.C.5.

Desert Area Questions

X Onsite X Offsite

Name or Designation: Chihuahuan Desert

1. Estimate the approximate size of the desert area (in acres or sq. ft.).

This site including WSMR is contained within tens of thousands of acres of the Chihuahuan Desert.

2. Describe the desert area (e.g., presence or absence of vegetation, vegetation types, presence/size of rocks, sand, etc.)

Vegetation specifically at HELSTF is primarily dominated by four-winged saltbush and gyp moonpod (*Acleisanthes lanceolata*) with scattered wolfberry (*Lycium berlandieri*). The entire area is located within gyp dome habitat and is currently covered with an extensive coat of cryptogrammic crust. No threatened or endangered species of plants are known or expected to occupy the habitat present at the sites.

The surface soil at HELSTF is dominated by silt to sand sized gypsum grains. Beneath the surface, alternating layers of sand and clay are present reflecting past deposition within a lacustrine environment.

3. Animals observed in the desert area or suspected to be present based on indirect evidence or file material:

- x Birds
- x Mammals
- x Reptiles (e.g., snakes, lizards)
- ❑ Amphibians (e.g., toads, salamanders)

Specify species, if known:

Faunal associations with this habitat type reflect the vegetative cover available and are not nearly as diverse in species associations as more varied vegetation types within WSMR. Invertebrates and reptiles comprise the largest faunal groups associated with the sites. Ants (*Formicidae*), termites (*termitidae*), darkling beetles (*Tenebrionidae*), and wolf spiders (*Lycocidae*) provide a large food base for collared lizards (*Crotaphytus collaris*), leopard lizards (Gambelia wislizenii) and side blotch lizards (*Uta stansburiana*). A few snake species commonly inhabit the area including plains blackhead snakes (*Tantilla nigriceps*), coachwhips (*Masticophis flagellum*), and prairie rattlesnakes (*Crotalus viridis*). Avians common to the area include cactus wrens (*Campylorhynchus brunneicapillus*), loggerhead shrikes (*Lanius ludovicianus*) and, in the summer months, Swainson's hawks (*Buteo swainsoni*). Species of small mammals that utilize this habitat include kangaroo rats (*Dipodomys sp.*), deer mice (*Peromyscus maniculatus*), and pocket mice (*Perognathus* and *Chaetodipus* sp.). Larger mammals include desert cottontail rabbits (*Sylvilagus audubonii*), blacktail jackrabbits (*Lepus californicus*), and gemsbok (*Oryx gazella*). No threatened or endangered species of animals are known to or expected to occupy the habitat present at the site.

III.C.5 Other

1. Are there any other terrestrial communities or habitats on or adjacent to the site which was not previously described?

   ☐ Yes X No

   If yes, indicate the "other" area(s) on the attached site map and describe the area(s) below. Distinguish between onsite and offsite areas. If no, proceed to Section III.D.

   _____
   _____
   _____
   _____
   _____
   _____

III.D Sensitive Environments and Receptors

1. Do any other potentially sensitive environmental areas[4] exist adjacent to or within 0.5 miles of the site? If yes, list these areas and provide the source(s) of information used to identify sensitive areas. *Do not answer "no" without confirmation from the U.S. Fish and Wildlife Service and appropriate State of New Mexico division.*

_____

3 Areas that provide unique and often protected habitat for wildlife species. These areas are typically used during critical life stages such as breeding, hatching, rearing of young and overwintering. Refer to **Table 1** at the end of this document for examples of sensitive environments.

Habitat present is not considered rare or sensitive by any of the regulating or management agencies including the USFWS, NMDGF, and WSMR Directorate of Environment and Safety. No species of vegetation or animals that are considered rare or listed as threatened or endangered are known or expected in this habitat.

2. Are any areas on or near (i.e., within 0.5 miles) the site which are owned or used by local tribes? If yes, describe. *Contact the Tribal Liason in the Office of the Secretary (505)827-2855 to obtain this information.*

No.

Does the site serve or potentially serve as a habitat, foraging area, or refuge by rare, threatened, endangered, candidate and/or proposed species (plants or animals), or any otherwise protected species? If yes, identify species. *This information should be obtained from the U.S. Fish and Wildlife Service and appropriate State of New Mexico division.*

No. The latest lists of State and Federal species of concern, candidate, threatened, and endangered species were consulted. Resource experts familiar with the sites confirmed that none of these species utilize the habitats at or adjacent to the Site.

3. Is the site potentially used as a breeding, roosting or feeding area by migratory bird species? If yes, identify which species.

Yes. There are hundreds of species of migrating birds that may potentially roost or feed at or near the Site. Several species of birds may nest near the Site including Say's phoebe and mourning dove.

4. Is the site used by any ecologically[5], recreationally, or commercially important species? If yes, explain.

The HELSTF site is frequented by recreationally important species (hunted) such as Oryx, mule deer, and quail. However, the SWMU 27-30 site is fenced. Large mammals would not be expected to enter the site.

---

5 Ecologically important species include populations of species which provide a critical (i.e., not replaceable) food resource for higher organisms and whose function as such would not be replaced by more tolerant species; or perform a critical ecological function (such as organic matter decomposition) and whose functions will not be replaced by other species. Ecologically important species include pest and opportunistic species that populate an area if they serve as a food source for other species, but do not include domesticated animals (e.g., pets and livestock) or plants/animals whose existence is maintained by continuous human interventions (e.g., fish hatcheries, agricultural crops, etc.,)

IV. EXPOSURE PATHWAY EVALUATION

1. Do existing data provide sufficient information on the nature, rate, and extent of contamination at the site?

   x Yes
   ❑ No
   ❑ Uncertain

   Please provide an explanation for your answer:_____
   Contamination at the site is fully detailed in the HELSTF Phase III RFI report to which this SLERA is attached.

2. Do existing data provide sufficient information on the nature, rate, and extent of contamination in offsite affected areas?

   ❑ Yes
   ❑ No
   ❑ Uncertain
   x No offsite contamination

   Please provide an explanation for your answer:_____

   Contamination present at the HELSTF is currently confined to the immediate area of HELSTF. Down gradient monitoring wells contained within WSMR boundaries show no evidence of contaminant migration.

3. Do existing data address potential migration pathways of contaminants at the site?

   x Yes
   ❑ No
   ❑ Uncertain

   Please provide an explanation for your answer:_____

   No soil contamination exists, however, a perched water bearing zone that is greater than 10 ft bgs is associated with this SWMU.

4. Do existing data address potential migration pathways of contaminants in offsite affected areas?

- ❑ Yes
- ❑ No
- ❑ Uncertain
- x No offsite contamination

Please provide an explanation for your answer:_____

Contamination present at the HELSTF is currently confined to the immediate area of HELSTF. Down gradient monitoring wells contained within WSMR boundaries show no evidence of contaminant migration.

5. Are there visible indications of stressed habitats or receptors on or near (i.e., within 0.5 miles) the site that may be the result of a chemical release? If yes, explain. Attach photographs if available.

No.

6. Is the location of the contamination such that receptors might be reasonably expected to come into contact with it? For soil, this means contamination in the soil 0 to 5 feet below ground surface (bgs). If yes, explain.

The contaminant of concern, chromium, has been detected in the lagoon water during sampling events for the discharge permit. Receptors could come in contact with the surface water in the lagoon.

7. Are receptors located in or using habitats where chemicals exist in air, soil, sediment or surface water? If yes, explain.

Receptors have been identified at the surface water of the lagoon.

8. Could chemicals reach receptors via groundwater? Can chemicals leach or dissolve to groundwater? Are chemicals mobile in groundwater? Does groundwater discharge into receptor habitats? If yes, explain.

The depth to the regional ground water at the site is 71-73 ft bgs. It is not expected that receptors could reach the ground water on site. No ground water discharges from the HELSTF Site. The perched water zone is greater than 10 ft bgs and there are no known discharges to receptor habitats from the perched water.

9. Could chemicals reach receptors through runoff or erosion? Answer the following questions:

What is the approximate distance from the contaminated area to the nearest watercourse or arroyo?

- ❑ 0 feet (i.e., contamination has reached a watercourse or arroyo)
- ❑ 1-10 feet
- ❑ 11-20 feet
- ❑ 21-50 feet
- ❑ 51-100 feet
- ❑ 101-200 feet
- ❑ > 200 feet
- ❑ > 500 feet
- x > 1000 feet

What is the slope of the ground in the contaminated area?

- x 0-10%
- ❑ 10-30%
- ❑ > 30%

What is the approximate amount of ground and canopy vegetative cover in the contaminated area?

- x < 25%
- ❑ 25-75%
- ❑ > 75%

Is there visible evidence of erosion (e.g., a rill or gully) in or near the contaminated area?

- ❑ Yes
- x No
- ❑ Do not know

Do any structures, pavement, or natural drainage features direct run-on flow (i.e., surface flows originating upstream or uphill from the area of concern) into the contaminated area?

- ❑ Yes
- x No
- ❑ Do not know

10. Could chemicals reach receptors through the dispersion of contaminants in air (e.g., volatilization, vapors, fugitive dust)? If yes, explain.

<u>It is not expected that contaminants will disperse through these methods.</u>

11. Could chemicals reach receptors through migration of non-aqueous phase liquids (NAPLs)? Is a NAPL present at the site that might be migrating towards receptors or habitats? Could NAPL discharge contact receptors or their habitat?

    NAPL is not present beneath this site.

12. Could receptors be impacted by external irradiation at the site? Are gamma emitting radionuclides present at the site? Is the radionuclide contamination buried or at the surface?
    No.

PHOTOGRAPHIC DOCUMENTATION

During the site visit(s), photographs should be taken to document the current conditions at the site and to support the information entered in the checklist. For example, photographs may be used to document the following:

- The nature, quality, and distribution of vegetation at the site
- Receptors or evidence of receptors
- Potentially important ecological features, such as ponds and drainage ditches
- Potential exposure pathways
- Any evidence of contamination or impact

The following space may be used to record photo subjects.

There are four open sewage lagoons located within the HELSTF developed area. These lagoons attract a wide array of wildlife, including terrestrial mammals and birds including waterfowl and shorebirds. Some aquatic vegetation, mainly cat tails (*Typha latifolia*) is growing in the lagoons. A pathway may exist at this site to animals that drink from or feed on amimals living in the lagoons. A SLERA was completed for this site and is attached to this Appendix. Based on the SLERA Checklist, exclusion should be denied for further ecological assessment at this time.

SUMMARY OF OBSERVATIONS AND SITE SETTING

Include information on significant source areas and migration pathways that are likely to constitute complete exposure pathways.

This site including WSMR is contained within tens of thousands of acres of the Chihuahuan Desert. Vegetation specifically at HELSTF is primarily dominated by four-winged saltbush and gyp moonpod (*Acleisanthes lanceolata*) with scattered wolfberry (*Lycium berlandieri*). The entire area is located within gyp dome habitat and is currently covered with an extensive coat of cryptogrammic crust. No threatened or endangered species of plants are known or expected to occupy the habitat present at the sites.

The surface soil at HELSTF is dominated by silt to sand sized gypsum grains. Beneath the surface, alternating layers of sand and clay are present reflecting past deposition within a lacustrine environment.

The depth to the regional ground water at the site is 71-73 ft bgs. It is not expected that receptors could reach the ground water on site. No ground water discharges from the HELSTF Site. The perched water zone is greater than 10 ft bgs and there are no known discharges to receptor habitats from the perched water.

The contaminants of concern, have been detected in the lagoon water (discharge monitoring) and upper perched ground water during the Phase III RFI. Receptors could come in contact with the surface water in the lagoon and potentially the upper perched water through root contact.

Based on the Phase III RFI, the contaminants of concern in the upper perched aquifer at the site is chromium (2.04 mg/l), 1.1-dichloroethene (5.43 mg/l), Fluoride (11.2 mg/l), and nitrate (162 mg/l).

Checklist Completed by___Bradley Davis_____

Affiliation_____White Sands Technical Services_____

Author Assisted by___Doug Burkett and William Little_____

Date_____

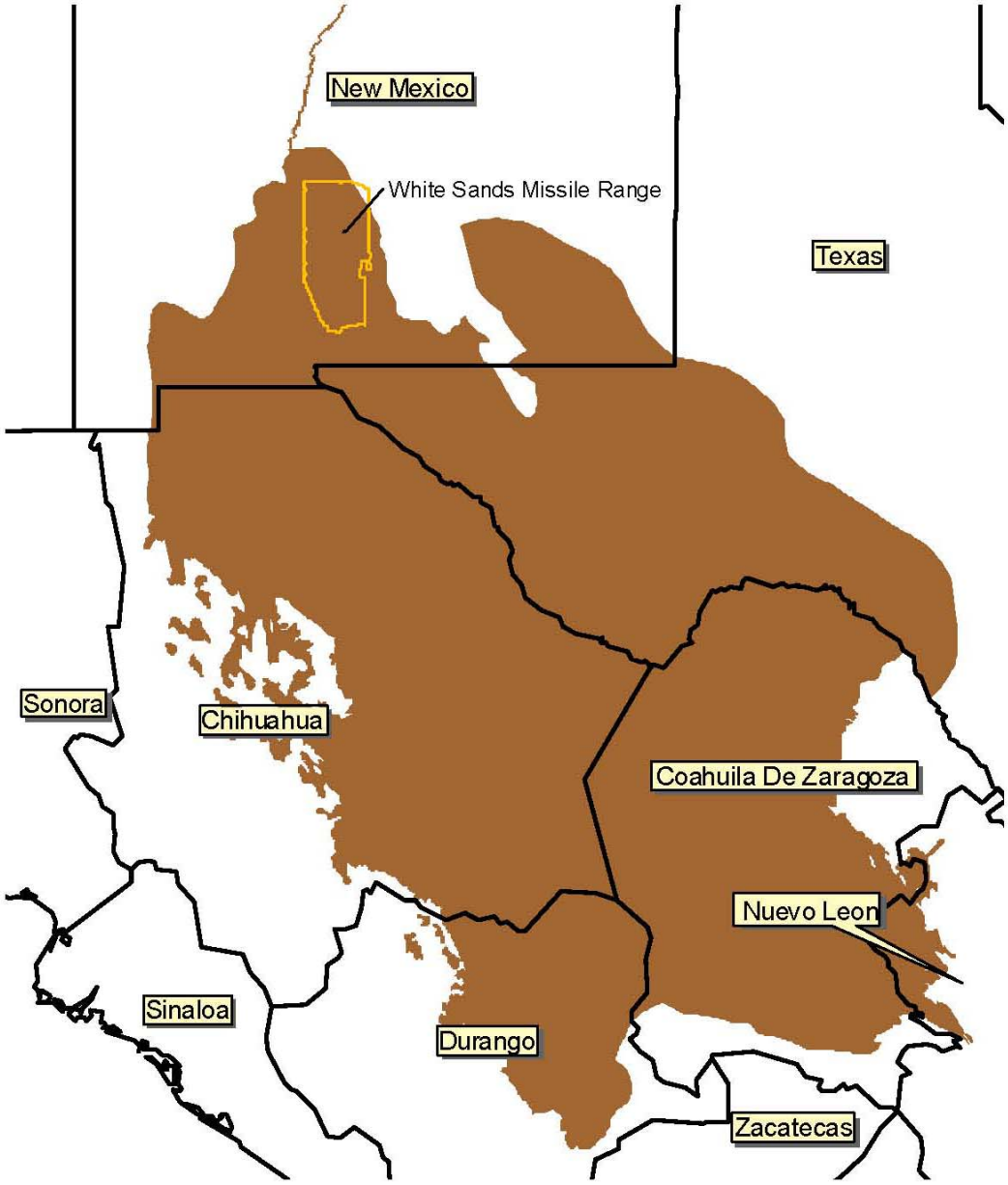


Figure 2.1 WSMR within the Chihuahuan Desert Ecoregion

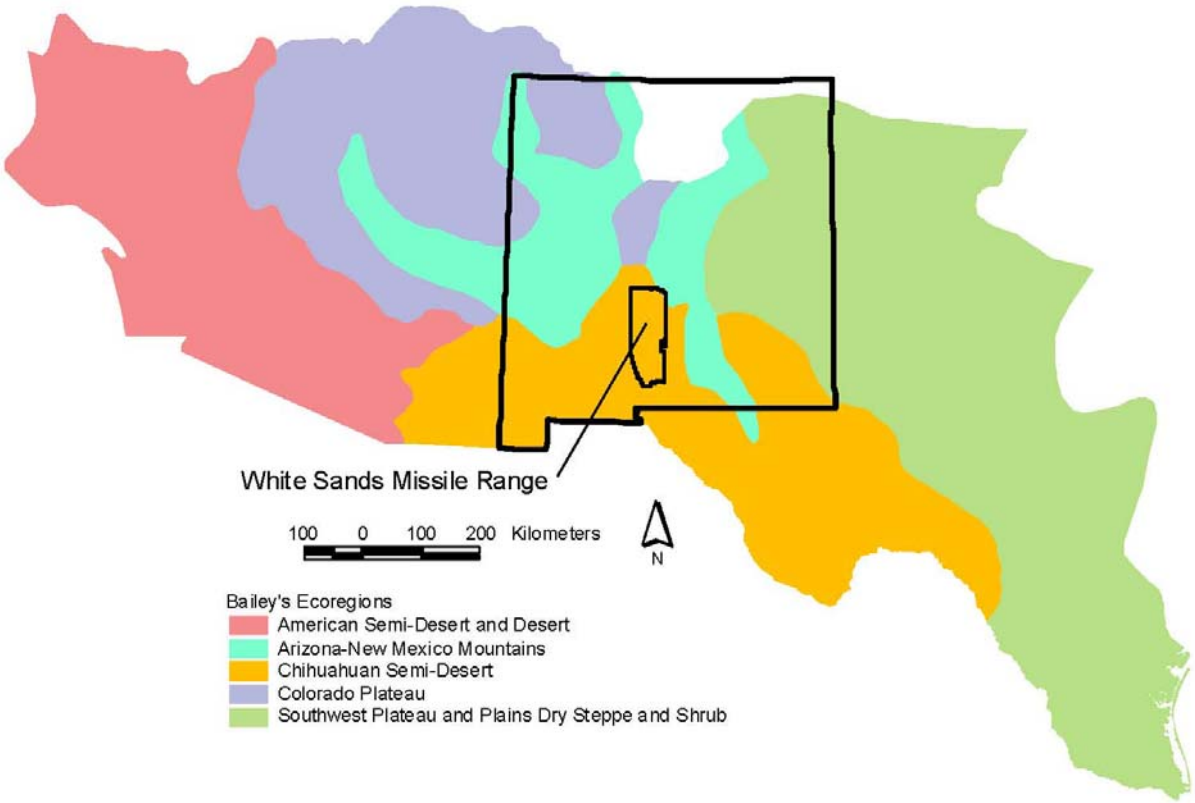


Figure 6.1. Chihuahuan Semi-desert Ecoregion and adjacent ecoregions (Bailey et al. 1994)

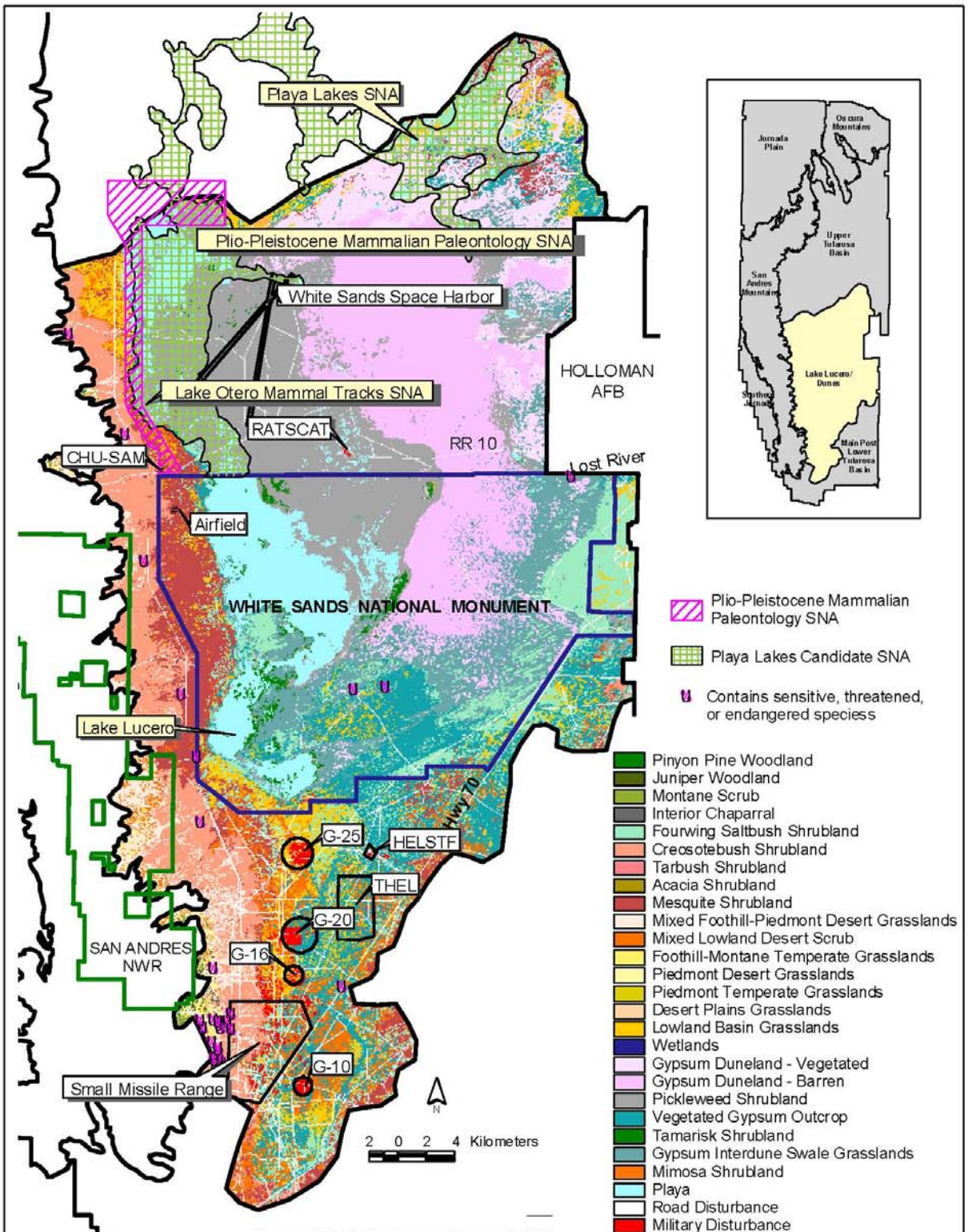


Figure 7.15 Lake Lucero/Dunes EMU

TABLE 1
EXAMPLES OF SENSITIVE ENVIRONMENTS

National Parks and National Monuments

Designated or Administratively Proposed Federal Wilderness Areas

National Preserves

National or State Wildlife Refuges

National Lakeshore Recreational Areas

Federal land designated for protection of natural ecosystems

State land designated for wildlife or game management

State designated Natural Areas

Federal or state designated Scenic or Wild River

All areas that provide or could potentially provide critical habitat[1] for state and federally listed Threatened or Endangered Species, those species that are currently petitioned for listing, and species designated by other agencies as sensitive or species of concern

All areas that provide or could potentially provide habitat for state protected species as defined in the Wildlife Code, Chapter 17 of the New Mexico Statutes

All areas that provide or could potentially provide habitat for migratory birds as protected by the Migratory Bird Treaty Act (16 U.S.C. §§ 703-712)

All areas that provide or could potentially provide habitat for bald eagles and golden eagles as protected by the Bald and Golden Eagle Protection Act (16 U.S.C. 668-668d)

All areas that provide or could potentially provide habitat for song birds as protected by the State of New Mexico statute (New Mexico Statute, 1978, Chapter 17, Game and Fish, 17-2-13)

---

1 Critical habitats are defined by the Endangered Species Act (50 CFR §424.02(d)) as:

1) Specific areas within the geographical area currently occupied by a species, at the time it is listed in accordance with the Act, on which are found those physical or biological features (I) essential to the conservation of the species and (ii) that may require special management considerations or protection, and
2) Specific areas outside the geographical area occupied by a species at the time it is listed upon a determination by the Secretary [of Interior] that such areas are essential for the conservation of the species.

All areas that provide or could potentially provide habitat for hawks, vultures and owls as protected by the State of New Mexico statute (New Mexico Statute, 1978, Chapter 17, Game and Fish, 17-2-14)

All areas that provide or could potentially provide habitat for horned toads and Bullfrogs as protected by the State of New Mexico statute (New Mexico Statute, 1978, Chapter 17, Game and Fish, 17-2-15 and 16, resp.)

All perennial waters (e.g., rivers, lakes, playas, sloughs, ponds, etc)

All ephemeral drainage (e.g., arroyos, puddles/pools, intermittent streams, etc) that provide significant wildlife habitat or that could potentially transport contaminants off site to areas that provide wildlife habitat

All riparian habitats

All perennial and ephemeral wetlands (not limited to jurisdictional wetlands)

All areas that are potentially important breeding, staging, and overwintering habitats as well as other habitats important for the survival of animals during critical periods of their life cycle.

ATTACHMENT B

ECOLOGICAL SITE EXCLUSION CRITERIA CHECKLIST AND DECISION TREE

1. NEW MEXICO ECOLOGICAL EXCLUSION CRITERIA CHECKLIST

The following questions are designed to be used in conjunction with the Ecological Exclusion Criteria Decision Tree (Figure 1). After answering each question, refer to the Decision Tree to determine the appropriate next step. In some cases, questions will be omitted as the user is directed to another section as indicated by the flow diagram in the Decision Tree. For example, if the user answers "yes" to Question 1 of Section I, he or she is directed to proceed to Section II.

I. Habitat

In the following questions, "affected property" refers to all property on which a release has occurred or is believed to have occurred, including off-site areas where contamination may have occurred or migrated.

1. Are any of the below-listed sensitive environments at, adjacent to, or in the locality[1] of the affected property? **No.**

   - National Park or National Monument
   - Designated or administratively proposed Federal Wilderness Area
   - National Preserve
   - National or State Wildlife Refuge
   - Federal or State land designated for wildlife or game management
   - State designated Natural Areas
   - All areas that are owned or used by local tribes
   - All areas that are potentially important breeding, staging, and overwintering habitats as well as other habitats important for the survival of animals during critical periods of their life cycle
   - All areas that provide or could potentially provide habitat for state and federally listed Threatened or Endangered Species, those species that are currently petitioned for listing, and species designated by other agencies as sensitive or species of concern
   - All areas that provide or could potentially provide habitat for state protected species as defined in the Wildlife Code, Chapter 17 of the New Mexico Statutes
   - All areas that provide or could potentially provide habitat for migratory birds as protected by the Migratory Bird Treaty Act (16 U.S.C. §§ 703-712)

---

1 *Locality* of the site refers to any area where an ecological receptor is likely to contact site-related chemicals. The locality of the site considers the likelihood of contamination migrating over time and places the site in the context of its general surrounding. Therefore, the locality is typically larger than the site and the areas adjacent to the site.

- All areas that provide or could potentially provide habitat for bald eagles and golden eagles as protected by the Bald and Golden Eagle Protection Act (16 U.S.C. 668-668d)
- All areas that provide or could potentially provide habitat for song birds as protected by the state of New Mexico statute (New Mexico Statute, 1978, Chapter 17, Game and Fish, 17-2-13)
- All areas that provide or could potentially provide habitat for hawks, vultures and owls as protected by the state of New Mexico statute (New Mexico Statute, 1978, Chapter 17, Game and Fish, 17-2-14)
- All areas that provide or could potentially provide habitat for horned toads and bullfrogs as protected by the state of New Mexico statute (New Mexico Statute, 1978, Chapter 17, Game and Fish, 17-2-15 and 16, respectively)

2. Does the affected property contain land areas which were not listed in Question 1, but could be considered viable ecological habitat? The following are examples (but not a complete listing) of viable ecological habitats: **Yes.**

- Wooded areas
- Shrub/scrub vegetated areas
- Open fields (prairie)
- Other grassy areas
- Desert areas
- Any other areas which support wildlife and/or vegetation, excluding areas which support only opportunistic species (such as house mice, Norway rats, pigeons, etc.) that do not serve as prey to species in adjacent habitats.

The following features are not considered ecologically viable:

- Pavement
- Buildings
- Paved areas of roadways
- Paved/concrete equipment storage pads
- Paved manufacturing or process areas
- Other non-natural surface cover or structure

3. Does the affected property contain any perennial or ephemeral aquatic features which were not listed in Question 1? **No.**

II. Receptors

1. Is any part of the affected property used for habitat, foraging area, or refuge by any rare, threatened, or endangered species (plant *or* animal), or otherwise protected species (e.g., raptors, migratory birds)? **No.**

2. Is any part of the affected property used for habitat, foraging area, or refuge by any species used as a recreational (e.g., game animals) and/or commercial resource? **Yes.**

3. Is any part of the affected property used for habitat, foraging area, or refuge by any plant or animal species? This includes plants considered "weeds" and opportunistic insect and animal species (such as cockroaches and rats) if they are used as a food source for other species in the area. **Yes.**

III. Exposure Pathways

1. Could receptors be impacted by contaminants via direct contact?

   Is a receptor located in or using an area where it could contact contaminated air, soil[3], or surface water? **Yes.**

For Questions 2 and 3, note that one must answer "yes" to all three bullets in order to be directed to the "exclusion denied" box of the decision tree. This is because answering "no" to one of the questions in the bullet list indicates that a complete exposure pathway is not present. For example, in Question 2, if the chemical cannot leach or dissolve to groundwater (bullet 1), there is no chance of ecological receptors being exposed to the chemical through contact with contaminated groundwater. Similarly, the responses to the questions in Question 4 determine whether a complete pathway exists for exposure to NAPL.

2. Could receptors contact contaminants via groundwater?
   - Can the chemical leach or dissolve to groundwater[4]? **Yes.**
   - Can groundwater mobilize the chemical? **Yes.**
   - Could (does) contaminated groundwater discharge into known or potential receptor habitats? **No.**

3. Could receptors contact contaminants via runoff (i.e., surface water and/or suspended sediment) or erosion by water or wind?
   - Are chemicals present in surface soils? **No.**
   - Can the chemical be leached from or eroded with surface soils? **No.**
   - Is there a receptor habitat located downgradient of the leached/eroded surface soil? **No.**

---

3 For soil, this means contamination less than 5 feet below ground surface (bgs).

4 Information on the environmental fate of specific chemicals can be found on the Internet at *http://www.epa.gov/opptintr/chemfact/* or at a local library in published copies of the *Hazardous Substances Data Bank*.

4. Could receptors contact contaminants via migration of non-aqueous phase liquids (NAPL)? **No.**

- Is NAPL present at the site? **No.**
- Is NAPL migrating toward potential receptors or habitats? **No.**
- Could NAPL discharge impact receptors or habitats? **No.**

Figure 1 -Ecological Exclusion Criteria Decision Tree

(Refer to corresponding checklist for the full text of each question)

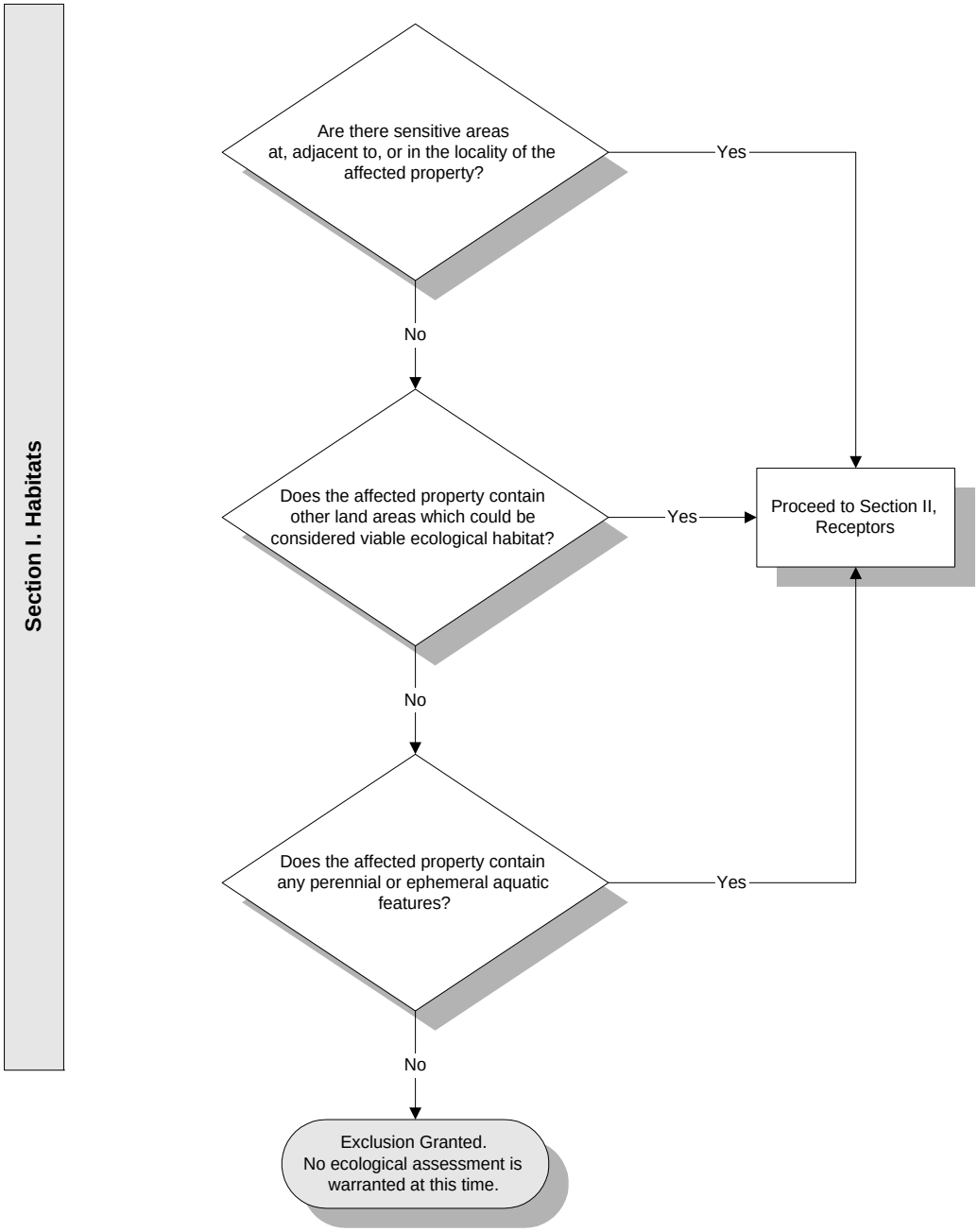


Figure 1 - Exclusion Criteria Decision Tree (continued)

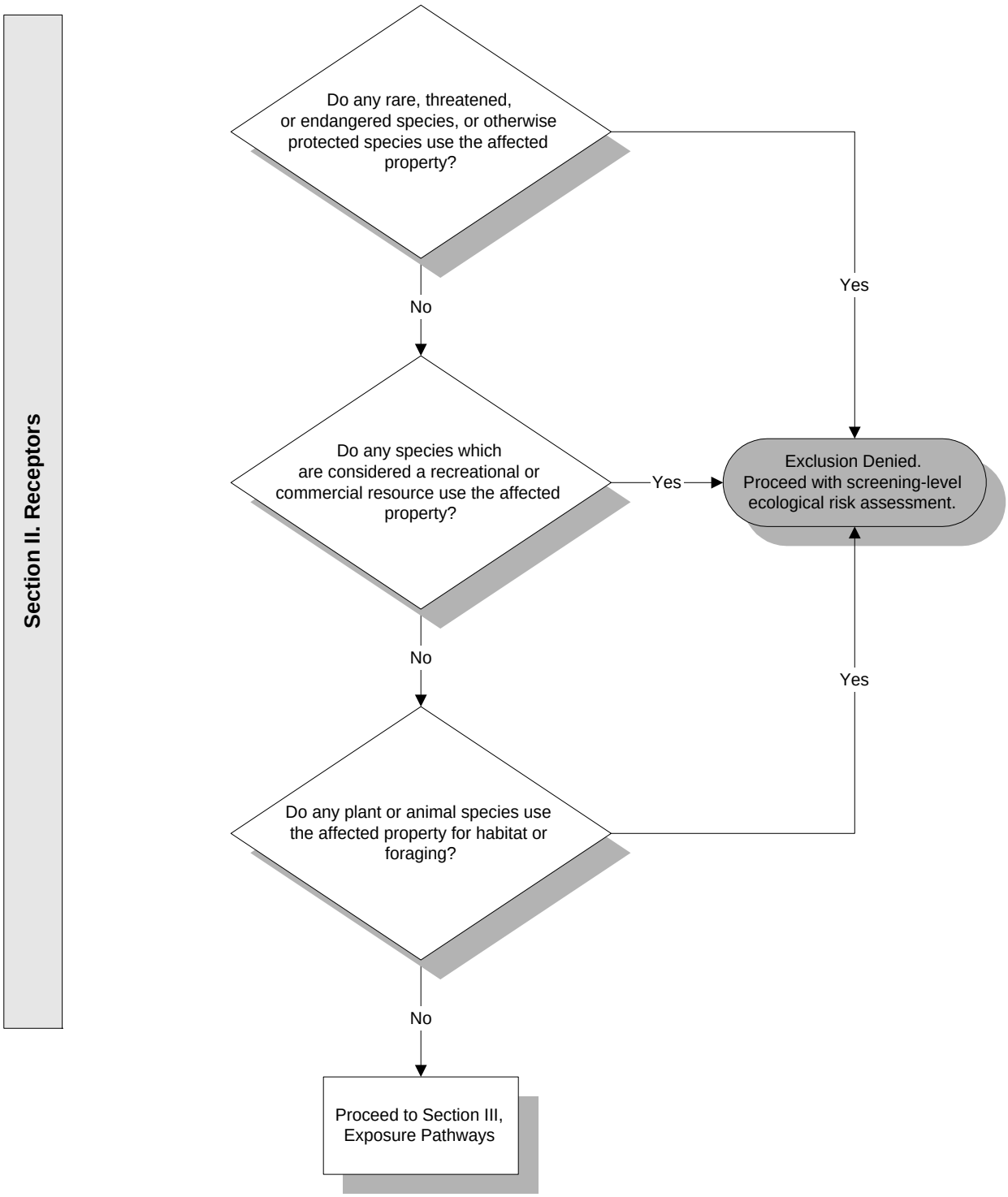
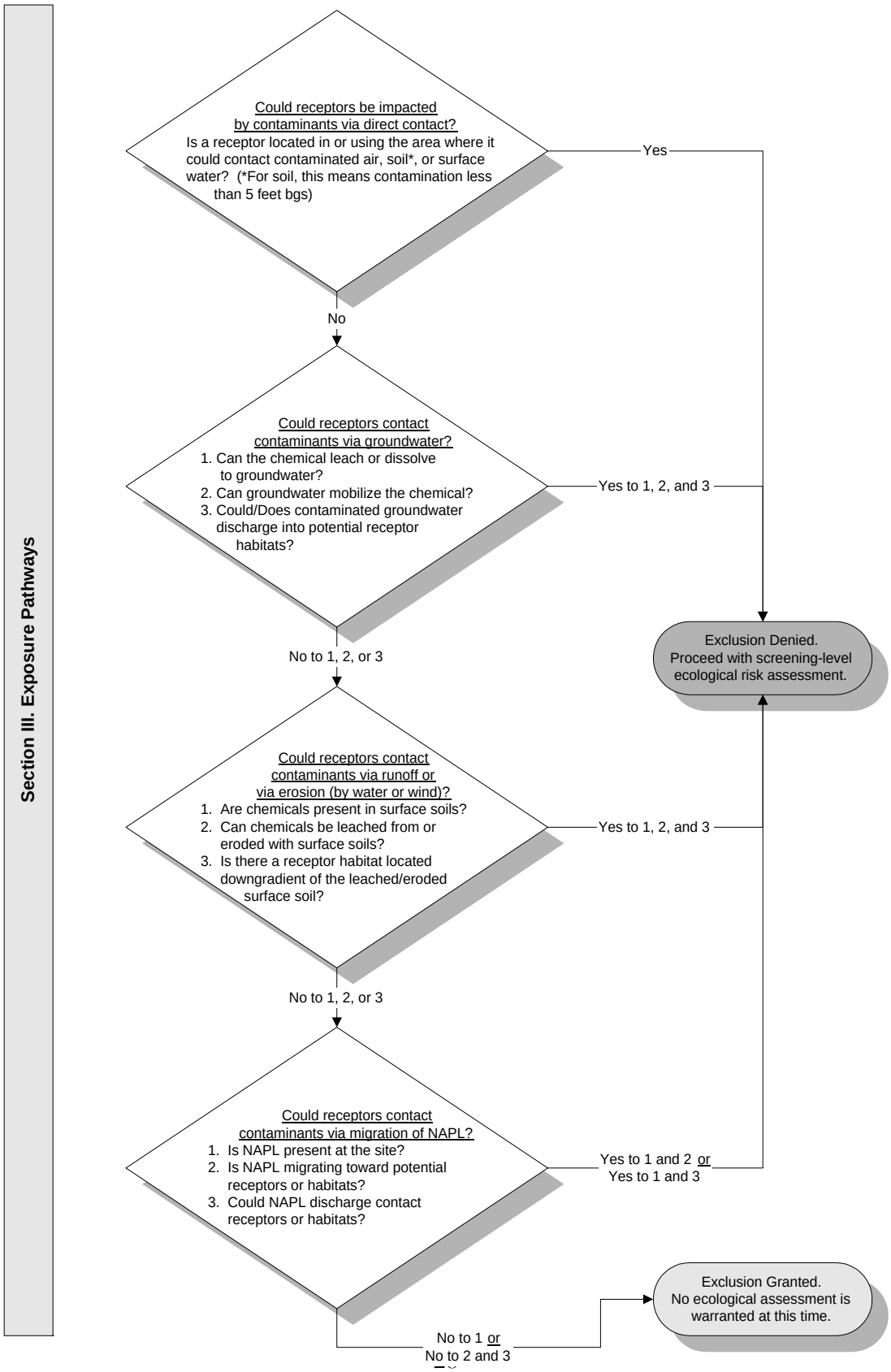


Figure 1 - Exclusion Criteria Decision Tree (continued



ATTACHMENT A

SCREENING-LEVEL ECOLOGICAL RISK ASSESSMENT
SCOPING ASSESSMENT
SITE ASSESSMENT CHECKLIST

SWMU 31-32

Chemical Waste Tanks

NEW MEXICO ENVIRONMENT DEPARTMENT

SITE ASSESSMENT CHECKLIST

I. SITE LOCATION

1. Site Name: SWMU 31-32 Chemical Waste Tanks
   US EPA I.D. Number: NM2750211235
   Location: High Energy Laser Systems Test Facility
   County: Otero
   City: WSMR State: NM

2. Latitude: 32.6311 Longitude: 106.3315

3. Attach site maps, including a topographical map, a diagram which illustrates the layout of the facility (e.g., site boundaries, structures, etc.), and maps showing all habitat areas identified in Section III of the checklist. Also, include maps which illustrate known release areas, sampling locations, and any other important features, if available.

II. SITE CHARACTERIZATION

1. Indicate the approximate area of the site (i.e., acres or sq. ft) 0.25 acres
2. Provide an approximate breakdown of the land uses on the site:

_____% Heavy Industrial	_____% Light Industrial	_____% Urban
_____% Residential	_____% Rural	_____% Agricultural[b]
_____% Recreational[a]	_____% Undisturbed	100 % Other[c]

[a]For recreational areas, please describe the usage of the area (e.g., park, playing field, etc.):
_____

[b]For agricultural areas, please list the crops and/or livestock which are present:
_____

[c]For areas designated as "other", please describe the usage of the area:
The HELSTF Facility is a Department of Defense test facility.

3. Provide an approximate breakdown of the land uses in the area surrounding the site. Indicate the radius (in miles) of the area described: 3,200 square miles

_____% Heavy Industrial	_____% Light Industrial	_____% Urban
_____% Residential	_____% Rural	_____% Agricultural[b]
_____% Recreational[a]	_____% Undisturbed	100 % Other [c]

[a]For recreational areas, please describe the usage of the area (e.g., park, playing field, golf course, etc.):
_____

[b]For agricultural areas, please list the crops and/or livestock which are present:
_____

[c]For areas designated as "other", please describe the usage of the area:
The HELSTF test facility is contained within 3,200 square miles of the White Sands Missile Range which is used for testing weapon systems for the Department of Defense.

4. Describe reasonable and likely future land and/or water use(s) at the site.
The HELSTF Facility is likely to remain a Department of Defense test facility for the foreseeable future. The regional ground water at the site has greater than 10,000 mg/l total dissolved solids and will not likely be used for drinking water in the foreseeable future. Regional water away from the test facility may be used for construction purposes.

5. Describe the historical uses of the site. Include information on chemical releases that may have occurred as a result of previous land uses. For each chemical release, provide information on the form of the chemical released (i.e., solid, liquid, vapor) and the known or suspected causes or mechanism of the release (i.e., spills, leaks, material disposal, dumping, explosion, etc.).
_____

The cleaning facility was originally constructed in 1982 with a single walled drain line for transferring waste from a sump (SWMU 142) to a 2,100 gallon tank (SWMU 24) on the outside of the building. After the facility began operations in 1983 it quickly became apparent that the tank volume would be inadequate for handling the volume of waste produced. The facility decided to construct a hazardous waste treatment tank system. The chemical waste tanks would be used for containment and evaporative treatment of chromated de-ionized water and hazardous waste generated at the HELSTF Cleaning Facility. The design included a double walled drain line (1,000 feet in length) to carry the wastewater from the Cleaning Facility sump to the chemical waste tanks. The drain line consisted of a 3-inch diameter reinforced thermosetting resin (RTRP) service pipe encased by a 6-inch diameter RTRP secondary containment pipe. Construction was completed in April 1985 and included identical side-by-side tanks located near the sanitary treatment system lagoons. The tanks were above grade and were constructed of reinforced concrete. Each had an industrial grade 45 mil Hypalon liner with a leak detection system and was covered by a 6-inch layer of ballast sand.

The west tank (SWMU 31) was first used for storage and treatment of hazardous waste in late 1985. The east tank (SWMU 32) was never used according to facility records and reports. The west tank received other wastes which were dumped directly into the top of it, including chromate wastes, Low Power Chemical Laser scrubbing water, chemistry lab wastes and potassium hydroxide waste.

Shortly after installation, the leak detection ports for both tanks (one of which was empty) began to contain a measurable amount of liquid. The concentration of chromium in the ports was significantly lower than that measured in the tank, however. The tanks also had about 13 inches of liquid in each port. The west chemical waste tank had 40 inches of liquid and a concentration of chromium of 26.13 mg/L. The east tank was empty. The suggestion was made by HELSTF that water in the tank ports was from either concrete hydration or groundwater intrusion (Hayslett, 1987).

A double walled drain line was tied into the existing line at the HCF when the HELSTF Chemistry Laboratory was moved into the HCF annex about 1988 or 1989. The line was used to carry small quantities of various chemical reagents from floor and sink drains to the chemical waste tanks. Use of the tanks was halted in August 1989 when Freon 11 and 1,1,1-TCA were discovered in a leak detection port. The west tank was emptied on October 17, 1989. The tanks were decontaminated and demolished in February 1992 according to an approved closure plan (ASI, 1992). During demolition of the tank it was discovered that the Hypalon liner had been compromised.

6. If any movement of soil has taken place at the site, describe the degree of the disturbance. Indicate the likely source of any disturbances (e.g., erosion, agricultural, mining, industrial activities, removals, etc.) and estimate when these events occurred.
   No.

7. Describe the current uses of the site. Include information on recent (previous 5 years) disturbances or chemical releases that have occurred. For each chemical release, provide information on the form of the chemical released and the causes or mechanism of the release.
   The site is currently unused.

   Samples of the fluid in the leak detection ports in August 1989 on the tank containment indicated the presence of 1,1-TCA, Freon 11 and chromium. It was unknown at the time if contaminants reached the ground surface.

8. Identify the location or suspected location of chemical releases at the site. Provide an estimate of the distance between these locations and the areas identified in Section III.

   There was a potential release to the soil surface at the site.

9. Identify the suspected contaminants of concern (COCs) at the site. If known, include the maximum contaminant levels. Please indicate the source of data cited (e.g., RFI, confirmatory sampling, etc.).
   Based on results of the Phase III RFI soil sampling event conducted in October 2006, only chromium was detected of the suspected contaminants. Chromium was detected at a highest concentration of 3.18 mg/kg at a depth of less than 5 ft bgs. No VOCs or SVOCs were detected.

10. Identify the media (e.g., soil (surface or subsurface), surface water, air, groundwater) which are known or suspected to contain COCs. _____
Surface soil.

11. Indicate the approximate depth to groundwater (in feet below ground surface [(bgs)].
Avergae depth to the regional ground water table at HELSTF is 71-73 ft below ground surface. A perched ground water zone is present at approximately 12-20 ft bgs which is associated with the Sanitary Treatment System (SWMU 27-30).

12. Indicate the direction of groundwater flow (e.g., north, southeast, etc.)
The direction of regional ground water flow at HELSTF is to the south-east.

III. HABITAT EVALUATION

III.A Wetland Habitats

Are any wetland[2] areas such as marshes or swamps on or adjacent to the site?

☐ Yes X No

If yes, indicate the wetland area on the attached site map and answer the following questions regarding the wetland area. If more than one wetland area is present on or adjacent to the site, make additional copies of the following questions and fill out for each individual wetland area. Distinguish between wetland areas by using names or other designations (such as location), and clearly identify each area on the site map. Also, obtain and attach a National Wetlands Inventory Map (or maps) to illustrate each wetland area.

Identify the sources of the observations and information (e.g., National Wetland Inventory, Federal or State Agency, USGS topographic maps) used to make the determination that wetland areas are or are not present.

Site visit by wildlife biologist and USGS topographic maps.

If no wetland areas are present, proceed to Section III.B.

III.B Aquatic Habitats

III.B.1 Non-Flowing Aquatic Features

Are any non-flowing aquatic features (such as ponds or lakes) located at or adjacent to the site?

☐ Yes X No

2Wetlands are defined in 40 CFR §232.2 as " Areas inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and that under normal circumstances does support, a prevalence of vegetation typically adapted for life in saturated soil conditions." Examples of typical wetlands plants include: cattails, cordgrass, willows and cypress trees. National wetland inventory maps may be available at http:\\nwi.fws.gov. Additional information on wetland delineation criteria is also available from the Army Corps of Engineers.

If yes, indicate the aquatic feature on the attached site map and answer the following questions regarding the non-flowing aquatic features. If more than one non-flowing aquatic feature is present on or adjacent to the site, make additional copies of the following questions and fill out for each individual aquatic feature. Distinguish between aquatic features by using names or other designations, and clearly identify each area on the site map.

If no, proceed to Section III.B.2.

III.B.2 Flowing Aquatic Features

Are any flowing aquatic features (such as streams or rivers) located at or adjacent to the site?

☐ Yes X No

If yes, indicate the aquatic feature on the attached site map and answer the following questions regarding the flowing aquatic features. If more than one flowing aquatic feature is present on or adjacent to the site, make additional copies of the following questions and fill out for each individual aquatic feature. Distinguish between aquatic features by using names or other designations, and clearly identify each area on the site map

If no, proceed to Section III.C.

III.C Terrestrial Habitats

III.C.1 Wooded

Are any wooded areas on or adjacent to the site? ☐ Yes X No

If yes, indicate the wooded area on the attached site map and answer the following questions. If more than one wooded area is present on or adjacent to the site, make additional copies of the following questions and fill out for each individual wooded area. Distinguish between wooded areas by using names or other designations, and clearly identify each area on the site map.

If no, proceed to Section III.C.2.

III.C.2 Shrub/Scrub

Are any shrub/scrub areas on or adjacent to the site? ☐ Yes X No

If yes, indicate the shrub/scrub area on the attached site map and answer the following questions. If more than one shrub/scrub area is present on or adjacent to the site, make additional copies of the following questions and fill out for each individual shrub/scrub area. Distinguish between shrub/scrub areas, using names or other designations, and clearly identify each area on the site map.

If no, proceed to Section III.C.3.

III.C.3 Grassland

Are any grassland areas on or adjacent to the site? ☐ Yes X No

If yes, indicate the grassland area on the attached site map and answer the following questions. If more than one grassland area is present on or adjacent to the site, make additional copies of the following questions and fill out for each individual grassland area. Distinguish between grassland areas by using names or other designations, and clearly identify each area on the site map.

If no, proceed to Section III.C.4.

III.C.4 Desert

Are any desert areas on or adjacent to the site? X Yes ☐ No

If yes, indicate the desert area on the attached site map and answer the following questions. If more than one desert area is present on or adjacent to the site, make additional copies of the following questions and fill out for each individual desert area. Distinguish between desert areas by using names or other designations, and clearly identify each area on the site map.

If no, proceed to Section III.C.5.

Desert Area Questions

X Onsite X Offsite

Name or Designation: Chihuahuan Desert

1. Estimate the approximate size of the desert area (in acres or sq. ft.).

This site including WSMR is contained within tens of thousands of acres of the Chihuahuan Desert.

2. Describe the desert area (e.g., presence or absence of vegetation, vegetation types, presence/size of rocks, sand, etc.)

Vegetation specifically at HELSTF is primarily dominated by four-winged saltbush and gyp moonpod (*Acleisanthes lanceolata*) with scattered wolfberry (*Lycium berlandieri*). The entire area is located within gyp dome habitat and is currently covered with an extensive coat of cryptogrammic crust. No threatened or endangered species of plants are known or expected to occupy the habitat present at the sites.

The surface soil at HELSTF is dominated by silt to sand sized gypsum grains. Beneath the surface, alternating layers of sand and clay are present reflecting past deposition within a lacustrine environment.

3. Animals observed in the desert area or suspected to be present based on indirect evidence or file material:

x Birds
x Mammals
x Reptiles (e.g., snakes, lizards)
❑ Amphibians (e.g., toads, salamanders)

Specify species, if known:

Faunal associations with this habitat type reflect the vegetative cover available and are not nearly as diverse in species associations as more varied vegetation types within WSMR. Invertebrates and reptiles comprise the largest faunal groups associated with the sites. Ants (*Formicidae*), termites (*termitidae*), darkling beetles (*Tenebrionidae*), and wolf spiders (*Lycocidae*) provide a large food base for collared lizards (*Crotaphytus collaris*), leopard lizards (Gambelia wislizenii) and side blotch lizards (*Uta stansburiana*). A few snake species commonly inhabit the area including plains blackhead snakes (*Tantilla nigriceps*), coachwhips (*Masticophis flagellum*), and prairie rattlesnakes (*Crotalus viridis*). Avians common to the area include cactus wrens (*Campylorhynchus brunneicapillus*), loggerhead shrikes (*Lanius ludovicianus*) and, in the summer months, Swainson's hawks (*Buteo swainsoni*). Species of small mammals that utilize this habitat include kangaroo rats (*Dipodomys sp.*), deer mice (*Peromyscus maniculatus*), and pocket mice (*Perognathus* and *Chaetodipus* sp.). Larger mammals include desert cottontail rabbits (*Sylvilagus auduboni*), blacktail jackrabbits (*Lepus californicus*), and gemsbok (*Oryx gazella*). No threatened or endangered species of animals are known to or expected to occupy the habitat present at the site.

III.C.5 Other

1. Are there any other terrestrial communities or habitats on or adjacent to the site which were not previously described?

☐ Yes X No

If yes, indicate the "other" area(s) on the attached site map and describe the area(s) below. Distinguish between onsite and offsite areas. If no, proceed to Section III.D.

_____
_____
_____
_____
_____
_____
_____
_____
_____

III.D Sensitive Environments and Receptors

1. Do any other potentially sensitive environmental areas[3] exist adjacent to or within 0.5 miles of the site? If yes, list these areas and provide the source(s) of information used to identify sensitive areas. *Do not answer "no" without confirmation from the U.S. Fish and Wildlife Service and appropriate State of New Mexico division.*

Habitat present is not considered rare or sensitive by any of the regulating or management agencies including the USFWS, NMDGF, and WSMR Directorate of Environment and Safety. No species of vegetation or animals that are considered rare or listed as threatened or endangered are known or expected in this habitat.

2. Are any areas on or near (i.e., within 0.5 miles) the site which are owned or used by local tribes? If yes, describe. *Contact the Tribal Liason in the Office of the Secretary (505)827-2855 to obtain this information.*

No.

Does the site serve or potentially serve as a habitat, foraging area, or refuge by rare, threatened, endangered, candidate and/or proposed species (plants or animals), or any otherwise protected species? If yes, identify species. *This information should be obtained from the U.S. Fish and Wildlife Service and appropriate State of New Mexico division.*

No. The latest lists of State and Federal species of concern, candidate, threatened, and endangered species were consulted. Resource experts familiar with the sites confirmed that none of these species utilize the habitats at or adjacent to the Site.

3. Is the site potentially used as a breeding, roosting or feeding area by migratory bird species? If yes, identify which species.

Yes. There are hundreds of species of migrating birds that may potentially roost or feed at or near the Site. Several species of birds may nest near the Site including Say's phoebe and mourning dove.

4. Is the site used by any ecologically[4], recreationally, or commercially important species? If yes, explain.

---

3 Areas that provide unique and often protected habitat for wildlife species. These areas are typically used during critical life stages such as breeding, hatching, rearing of young and over wintering. Refer to **Table 1** at the end of this document for examples of sensitive environments.

4 Ecologically important species include populations of species which provide a critical (i.e., not replaceable) food resource for higher organisms and whose function as such would not be replaced by more tolerant species; or perform a critical ecological function (such as organic matter decomposition) and whose functions will not be replaced by other species. Ecologically important species include pest and opportunistic species that populate an area if they serve as a food source for other species, but do not include domesticated animals (e.g., pets and livestock) or plants/animals whose existence is maintained by continuous human interventions (e.g., fish hatcheries, agricultural crops, etc.,)

The HELSTF site is frequented by recreationally important species (hunted) such as Oryx, mule deer, and quail. However, this SWMU is located within a fenced area where we would not expect the larger mammals.

IV. EXPOSURE PATHWAY EVALUATION

1. Do existing data provide sufficient information on the nature, rate, and extent of contamination at the site?

   x Yes
   ❑ No
   ❑ Uncertain

   Please provide an explanation for your answer:_____

   Contamination at the site is fully detailed in the HELSTF Phase III RFI report to which this SLERA is attached.

2. Do existing data provide sufficient information on the nature, rate, and extent of contamination in offsite affected areas?

   ❑ Yes
   ❑ No
   ❑ Uncertain
   x No offsite contamination

   Please provide an explanation for your answer:_____

   Contamination present at the HELSTF is currently confined to the immediate area of HELSTF. Down gradient monitoring wells contained within WSMR boundaries show no evidence of contaminant migration.

3. Do existing data address potential migration pathways of contaminants at the site?

   x Yes
   ❑ No
   ❑ Uncertain

   Please provide an explanation for your answer:_____
   The contaminant of concern was detected in surface soil.

4. Do existing data address potential migration pathways of contaminants in offsite affected areas?

- ❑ Yes
- ❑ No
- ❑ Uncertain
- x No offsite contamination

Please provide an explanation for your answer:_____
_____
_____
_____
_____

5. Are there visible indications of stressed habitats or receptors on or near (i.e., within 0.5 miles) the site that may be the result of a chemical release? If yes, explain. Attach photographs if available.

_____

No.

6. Is the location of the contamination such that receptors might be reasonably expected to come into contact with it? For soil, this means contamination in the soil 0 to 5 feet below ground surface (bgs). If yes, explain.

The contaminant of concern was detected in surface soil.

7. Are receptors located in or using habitats where chemicals exist in air, soil, sediment or surface water? If yes, explain.

Yes. Receptors could potentially come in contact with the surface soil on site.

8. Could chemicals reach receptors via groundwater? Can chemicals leach or dissolve to groundwater? Are chemicals mobile in groundwater? Does groundwater discharge into receptor habitats? If yes, explain.

The depth to the regional ground water at the site is 71-73 ft bgs. It is not expected that receptors could reach the ground water on site. No ground water discharges from the HELSTF Site.

9. Could chemicals reach receptors through runoff or erosion? Answer the following questions:

What is the approximate distance from the contaminated area to the nearest watercourse or arroyo?

- ❑ 0 feet (i.e., contamination has reached a watercourse or arroyo)
- ❑ 1-10 feet
- ❑ 11-20 feet
- ❑ 21-50 feet
- ❑ 51-100 feet

- ❑ 101-200 feet
- ❑ > 200 feet
- ❑ > 500 feet
- x > 1000 feet

What is the slope of the ground in the contaminated area?

- x 0-10%
- ❑ 10-30%
- ❑ > 30%

What is the approximate amount of ground and canopy vegetative cover in the contaminated area?

- x < 25%
- ❑ 25-75%
- ❑ > 75%

Is there visible evidence of erosion (e.g., a rill or gully) in or near the contaminated area?

- ❑ Yes
- x No
- ❑ Do not know

Do any structures, pavement, or natural drainage features direct run-on flow (i.e., surface flows originating upstream or uphill from the area of concern) into the contaminated area?

- ❑ Yes
- x No
- ❑ Do not know

10. Could chemicals reach receptors through the dispersion of contaminants in air (e.g., volatilization, vapors, fugitive dust)? If yes, explain.

Yes. The Contaminant of Concern, chromium, is present in the surface soil.

11. Could chemicals reach receptors through migration of non-aqueous phase liquids (NAPLs)? Is a NAPL present at the site that might be migrating towards receptors or habitats? Could NAPL discharge contact receptors or their habitat?

No NAPLs are present.

12. Could receptors be impacted by external irradiation at the site? Are gamma emitting radionuclides present at the site? Is the radionuclide contamination buried or at the surface?
No.

PHOTOGRAPHIC DOCUMENTATION

During the site visit(s), photographs should be taken to document the current conditions at the site and to support the information entered in the checklist. For example, photographs may be used to document the following:

- The nature, quality, and distribution of vegetation at the site
- Receptors or evidence of receptors
- Potentially important ecological features, such as ponds and drainage ditches
- Potential exposure pathways
- Any evidence of contamination or impact

The following space may be used to record photo subjects.

These two sites are storage sites that historically held chemical waste. They are currently dry open earthen tanks with sparse vegetation including a few saltcedar (*Tamarix ramosissima*), and narrow-leaf peppergrass (*Lepidium alyssoides*). A SLERA was completed for this site and is attached to this Appendix. Based on the SLERA Checklist, exclusion should be granted/denied for further ecological assessment at this time.

SUMMARY OF OBSERVATIONS AND SITE SETTING

Include information on significant source areas and migration pathways that are likely to constitute complete exposure pathways.

This site including WSMR is contained within tens of thousands of acres of the Chihuahuan Desert. Vegetation specifically at HELSTF is primarily dominated by four-winged saltbush and gyp moonpod (*Acleisanthes lanceolata*) with scattered wolfberry (*Lycium berlandieri*). The entire area is located within gyp dome habitat and is currently covered with an extensive coat of cryptogrammic crust. No threatened or endangered species of plants are known or expected to occupy the habitat present at the sites.

The surface soil at HELSTF is dominated by silt to sand sized gypsum grains. Beneath the surface, alternating layers of sand and clay are present reflecting past deposition within a lacustrine environment.

Based on results of the Phase III RFI soil sampling event conducted in October 2006, only chromium was detected of the suspected contaminants. Chromium was detected at a highest concentration of 3.18 mg/kg at a depth of less than 5 ft bgs. No VOCs or SVOCs were detected.

Due to the COC concentration in the surface soil, it is expected that potential receptors could come in contact, therefore pathways to exposure are complete.

Checklist Completed by Bradley Davis

Affiliation White Sands Technical Services

Author Assisted by Doug Burkett and William Little

Date

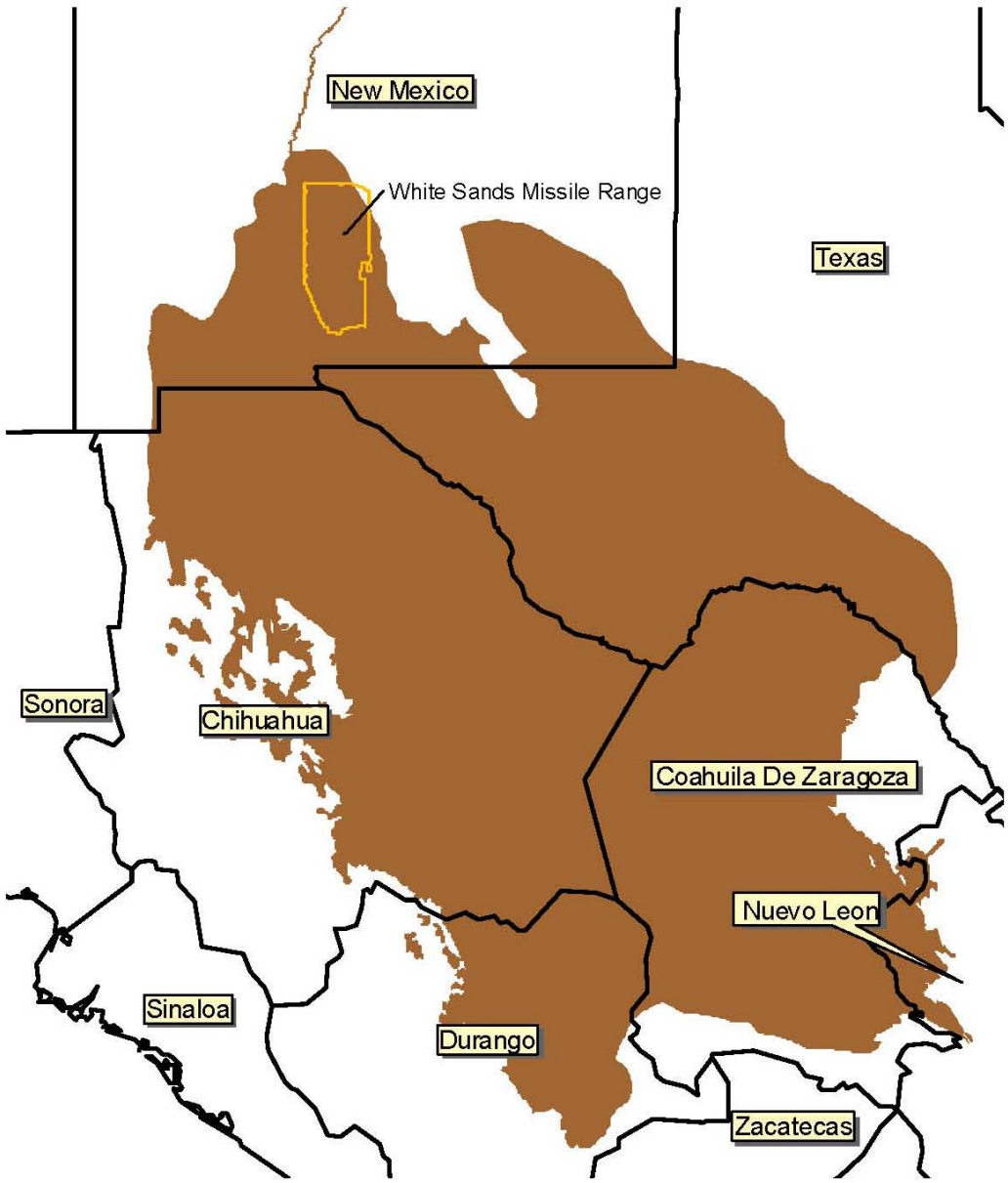


Figure 2.1 WSMR within the Chihuahuan Desert Ecoregion

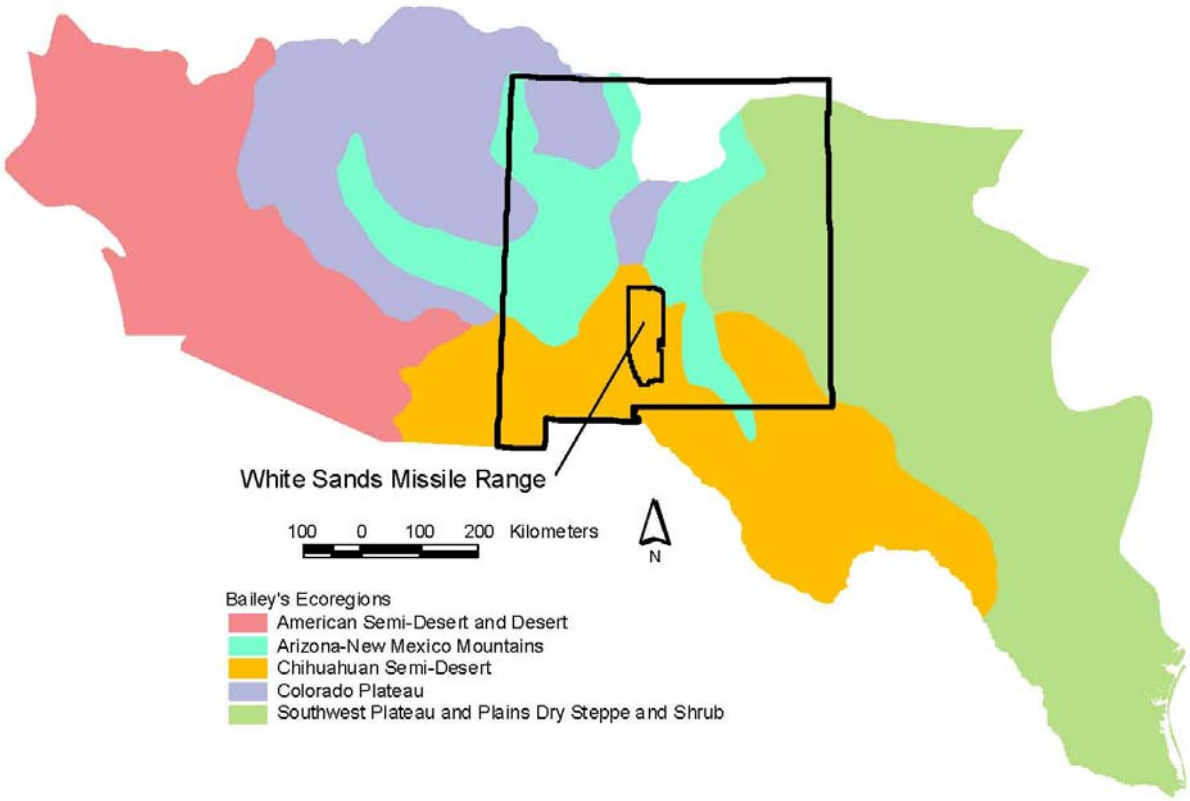


Figure 6.1. Chihuahuan Semi-desert Ecoregion and adjacent ecoregions (Bailey et al. 1994)

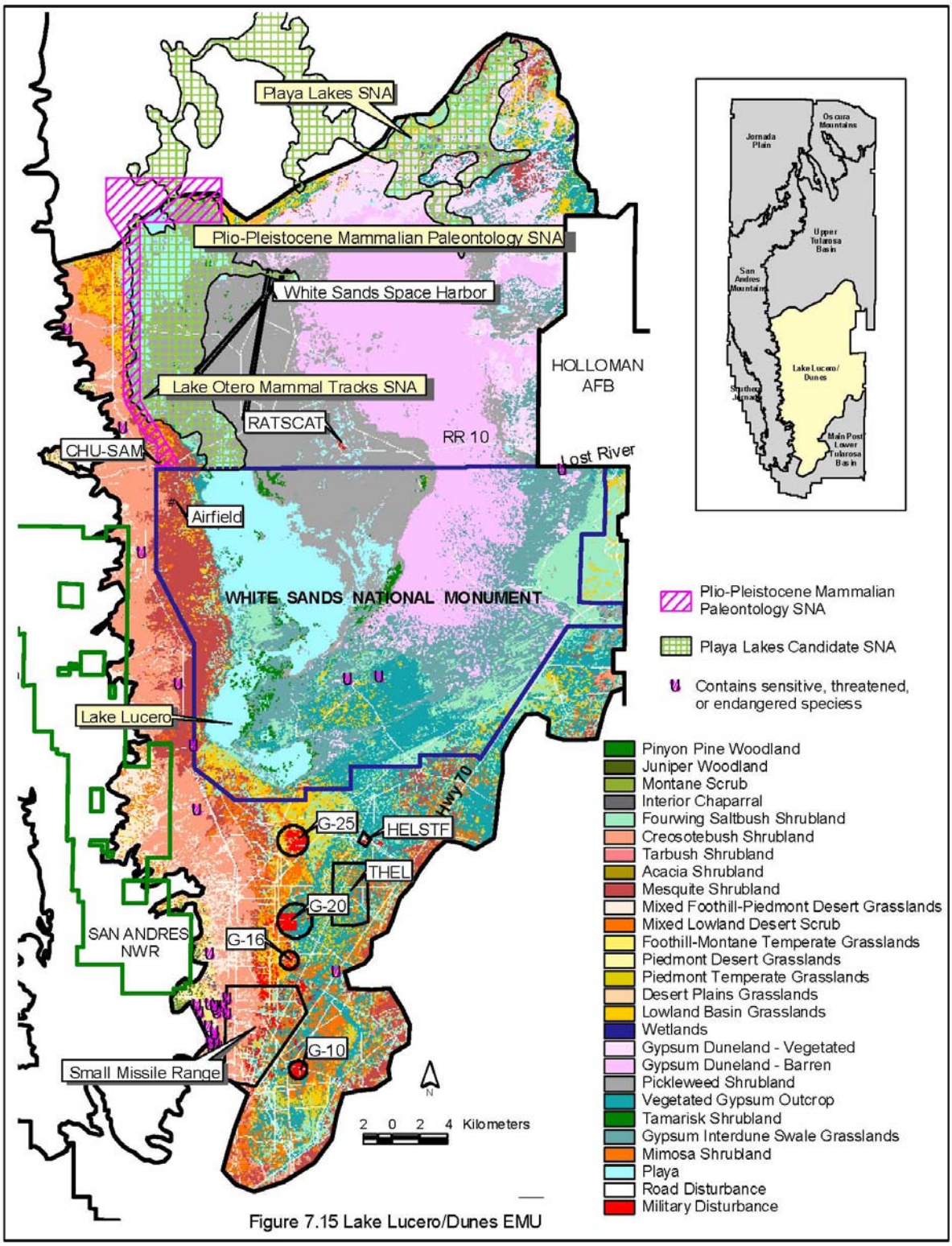


Figure 7.15 Lake Lucero/Dunes EMU

TABLE 1
EXAMPLES OF SENSITIVE ENVIRONMENTS

National Parks and National Monuments

Designated or Administratively Proposed Federal Wilderness Areas

National Preserves

National or State Wildlife Refuges

National Lakeshore Recreational Areas

Federal land designated for protection of natural ecosystems

State land designated for wildlife or game management

State designated Natural Areas

Federal or state designated Scenic or Wild River

All areas that provide or could potentially provide critical habitat[1] for state and federally listed Threatened or Endangered Species, those species that are currently petitioned for listing, and species designated by other agencies as sensitive or species of concern

All areas that provide or could potentially provide habitat for state protected species as defined in the Wildlife Code, Chapter 17 of the New Mexico Statutes

All areas that provide or could potentially provide habitat for migratory birds as protected by the Migratory Bird Treaty Act (16 U.S.C. §§ 703-712)

All areas that provide or could potentially provide habitat for bald eagles and golden eagles as protected by the Bald and Golden Eagle Protection Act (16 U.S.C. 668-668d)

All areas that provide or could potentially provide habitat for song birds as protected by the State of New Mexico statute (New Mexico Statute, 1978, Chapter 17, Game and Fish, 17-2-13)

---

1 Critical habitats are defined by the Endangered Species Act (50 CFR §424.02(d)) as:

1) Specific areas within the geographical area currently occupied by a species, at the time it is listed in accordance with the Act, on which are found those physical or biological features (I) essential to the conservation of the species and (ii) that may require special management considerations or protection, and
2) Specific areas outside the geographical area occupied by a species at the time it is listed upon a determination by the Secretary [of Interior] that such areas are essential for the conservation of the species.

All areas that provide or could potentially provide habitat for hawks, vultures and owls as protected by the State of New Mexico statute (New Mexico Statute, 1978, Chapter 17, Game and Fish, 17-2-14)

All areas that provide or could potentially provide habitat for horned toads and Bullfrogs as protected by the State of New Mexico statute (New Mexico Statute, 1978, Chapter 17, Game and Fish, 17-2-15 and 16, resp.)

All perennial waters (e.g., rivers, lakes, playas, sloughs, ponds, etc)

All ephemeral drainage (e.g., arroyos, puddles/pools, intermittent streams, etc) that provide significant wildlife habitat or that could potentially transport contaminants off site to areas that provide wildlife habitat

All riparian habitats

All perennial and ephemeral wetlands (not limited to jurisdictional wetlands)

All areas that are potentially important breeding, staging, and overwintering habitats as well as other habitats important for the survival of animals during critical periods of their life cycle.

ATTACHMENT B

ECOLOGICAL SITE EXCLUSION CRITERIA CHECKLIST AND DECISION TREE

1. NEW MEXICO ECOLOGICAL EXCLUSION CRITERIA CHECKLIST

The following questions are designed to be used in conjunction with the Ecological Exclusion Criteria Decision Tree (Figure 1). After answering each question, refer to the Decision Tree to determine the appropriate next step. In some cases, questions will be omitted as the user is directed to another section as indicated by the flow diagram in the Decision Tree. For example, if the user answers "yes" to Question 1 of Section I, he or she is directed to proceed to Section II.

I. Habitat

In the following questions, "affected property" refers to all property on which a release has occurred or is believed to have occurred, including off-site areas where contamination may have occurred or migrated.

1. Are any of the below-listed sensitive environments at, adjacent to, or in the locality[1] of the affected property? **No.**

- National Park or National Monument
- Designated or administratively proposed Federal Wilderness Area
- National Preserve
- National or State Wildlife Refuge
- Federal or State land designated for wildlife or game management
- State designated Natural Areas
- All areas that are owned or used by local tribes
- All areas that are potentially important breeding, staging, and overwintering habitats as well as other habitats important for the survival of animals during critical periods of their life cycle
- All areas that provide or could potentially provide habitat for state and federally listed Threatened or Endangered Species, those species that are currently petitioned for listing, and species designated by other agencies as sensitive or species of concern
- All areas that provide or could potentially provide habitat for state protected species as defined in the Wildlife Code, Chapter 17 of the New Mexico Statutes
- All areas that provide or could potentially provide habitat for migratory birds as protected by the Migratory Bird Treaty Act (16 U.S.C. §§ 703-712)
- All areas that provide or could potentially provide habitat for bald eagles and golden eagles as protected by the Bald and Golden Eagle Protection Act (16 U.S.C. 668-668d)

---

1 *Locality* of the site refers to any area where an ecological receptor is likely to contact site-related chemicals. The locality of the site considers the likelihood of contamination migrating over time and places the site in the context of its general surrounding. Therefore, the locality is typically larger than the site and the areas adjacent to the site.

- All areas that provide or could potentially provide habitat for song birds as protected by the state of New Mexico statute (New Mexico Statute, 1978, Chapter 17, Game and Fish, 17-2-13)
- All areas that provide or could potentially provide habitat for hawks, vultures and owls as protected by the state of New Mexico statute (New Mexico Statute, 1978, Chapter 17, Game and Fish, 17-2-14)
- All areas that provide or could potentially provide habitat for horned toads and bullfrogs as protected by the state of New Mexico statute (New Mexico Statute, 1978, Chapter 17, Game and Fish, 17-2-15 and 16, respectively)

2. Does the affected property contain land areas which were not listed in Question 1, but could be considered viable ecological habitat? The following are examples (but not a complete listing) of viable ecological habitats: **Yes.**

- Wooded areas
- Shrub/scrub vegetated areas
- Open fields (prairie)
- Other grassy areas
- Desert areas
- Any other areas which support wildlife and/or vegetation, excluding areas which support only opportunistic species (such as house mice, Norway rats, pigeons, etc.) that do not serve as prey to species in adjacent habitats.

The following features are not considered ecologically viable:

- Pavement
- Buildings
- Paved areas of roadways
- Paved/concrete equipment storage pads
- Paved manufacturing or process areas
- Other non-natural surface cover or structure

3. Does the affected property contain any perennial or ephemeral aquatic features which were not listed in Question 1? **No.**

II. Receptors

1. Is any part of the affected property used for habitat, foraging area, or refuge by any rare, threatened, or endangered species (plant *or* animal), or otherwise protected species (e.g., raptors, migratory birds)? **No.**

2. Is any part of the affected property used for habitat, foraging area, or refuge by any species used as a recreational (e.g., game animals) and/or commercial resource? **No.**

3. Is any part of the affected property used for habitat, foraging area, or refuge by any plant or animal species? This includes plants considered "weeds" and opportunistic insect and animal species (such as cockroaches and rats) if they are used as a food source for other species in the area. **Yes.**

III. Exposure Pathways

1. Could receptors be impacted by contaminants via direct contact? **Yes.**

   Is a receptor located in or using an area where it could contact contaminated air, soil[3], or surface water?

For Questions 2 and 3, note that one must answer "yes" to all three bullets in order to be directed to the "exclusion denied" box of the decision tree. This is because answering "no" to one of the questions in the bullet list indicates that a complete exposure pathway is not present. For example, in Question 2, if the chemical cannot leach or dissolve to groundwater (bullet 1), there is no chance of ecological receptors being exposed to the chemical through contact with contaminated groundwater. Similarly, the responses to the questions in Question 4 determine whether a complete pathway exists for exposure to NAPL.

2. Could receptors contact contaminants via groundwater?
   - Can the chemical leach or dissolve to groundwater[4]? **Yes.**
   - Can groundwater mobilize the chemical? **Yes.**
   - Could (does) contaminated groundwater discharge into known or potential receptor habitats? **No.**

3. Could receptors contact contaminants via runoff (i.e., surface water and/or suspended sediment) or erosion by water or wind?
   - Are chemicals present in surface soils? **Yes.**
   - Can the chemical be leached from or eroded with surface soils? **Yes.**
   - Is there a receptor habitat located downgradient of the leached/eroded surface soil? **No.**

4. Could receptors contact contaminants via migration of non-aqueous phase liquids (NAPL)?
   - Is NAPL present at the site? **No.**
   - Is NAPL migrating toward potential receptors or habitats?
   - Could NAPL discharge impact receptors or habitats?

---

3 For soil, this means contamination less than 5 feet below ground surface (bgs).

4 Information on the environmental fate of specific chemicals can be found on the Internet at *http://www.epa.gov/opptintr/chemfact/* or at a local library in published copies of the *Hazardous Substances Data Bank*.

Figure 1 -Ecological Exclusion Criteria Decision Tree

(Refer to corresponding checklist for the full text of each question)

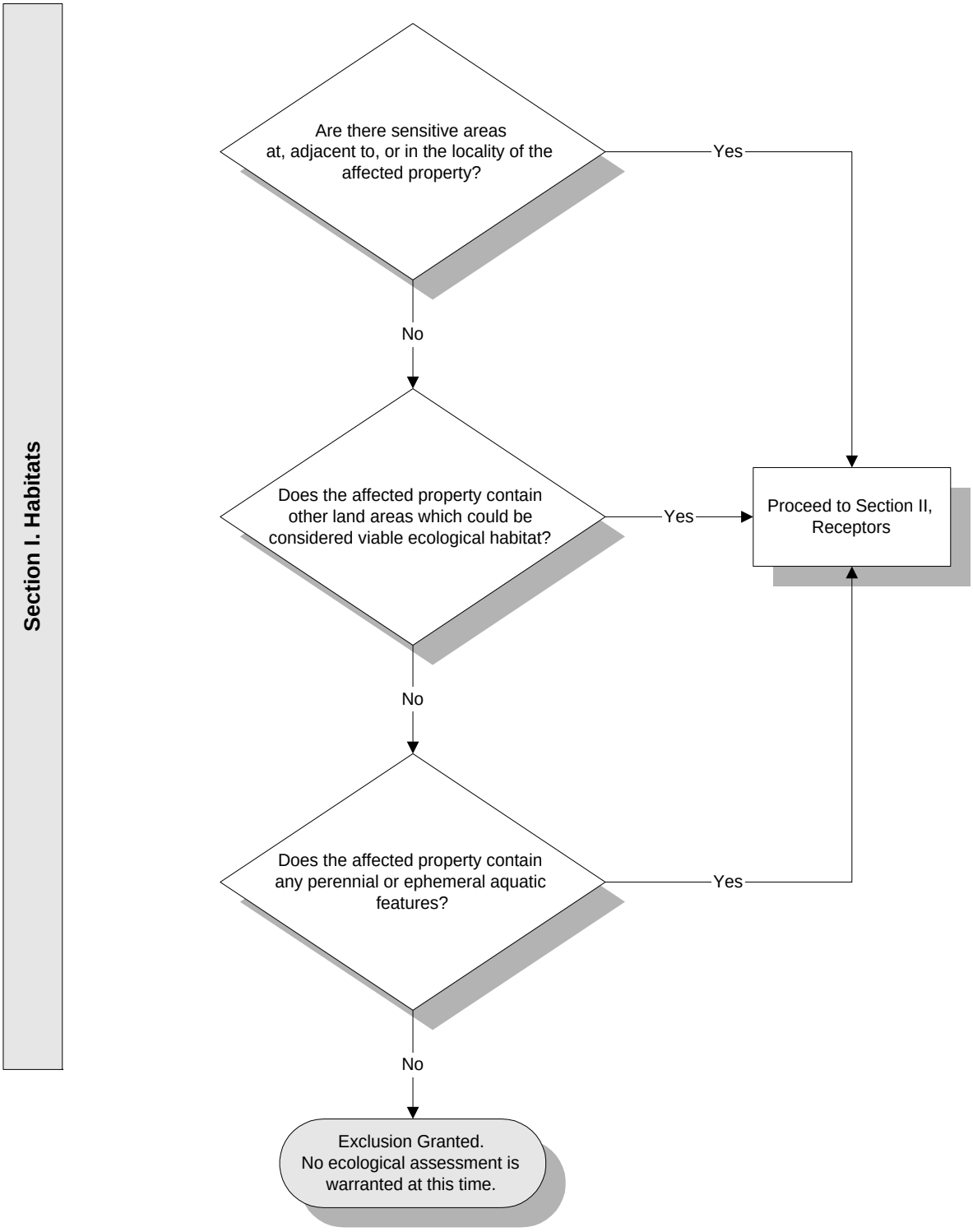


Figure 1 - Exclusion Criteria Decision Tree (continued)

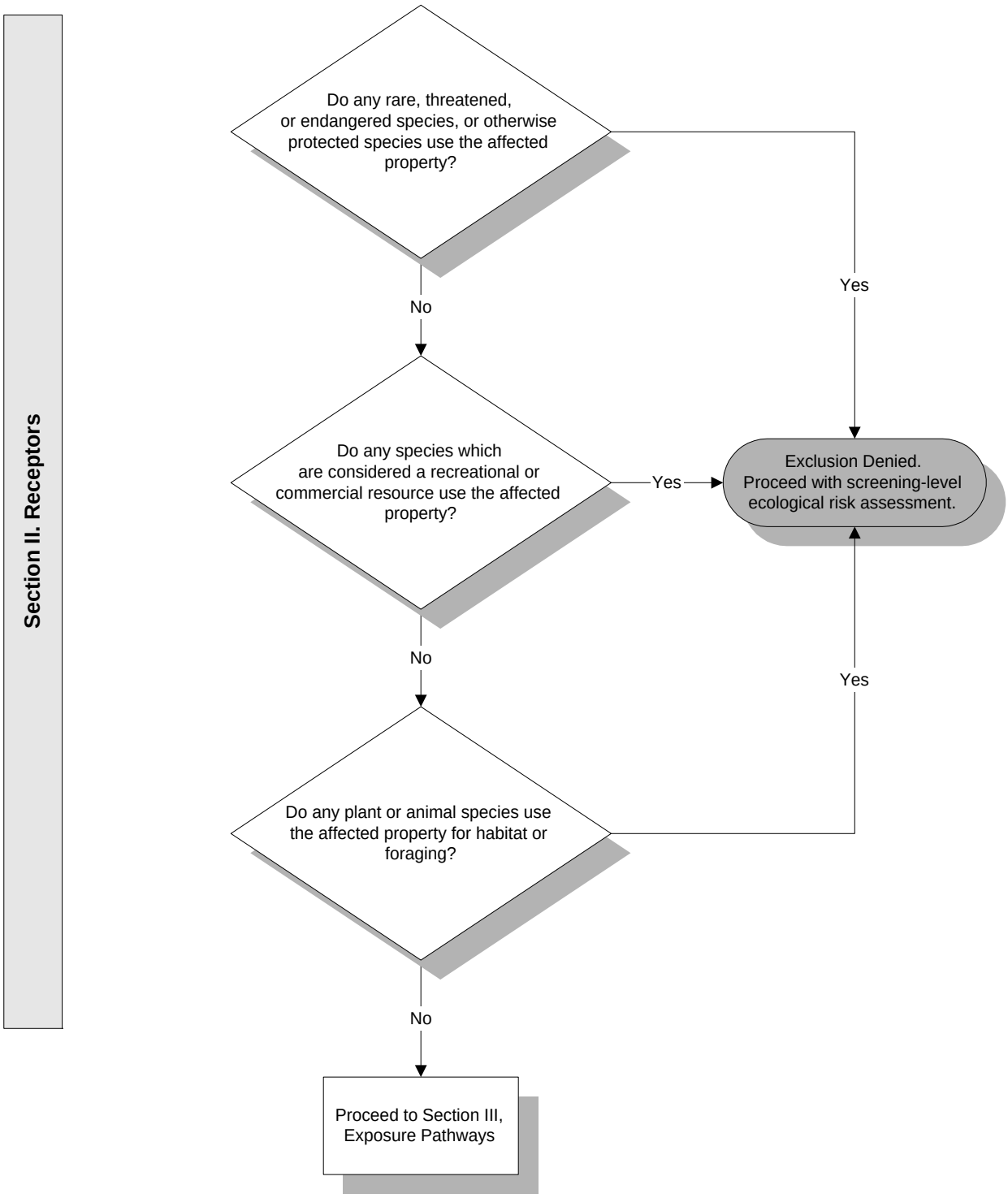
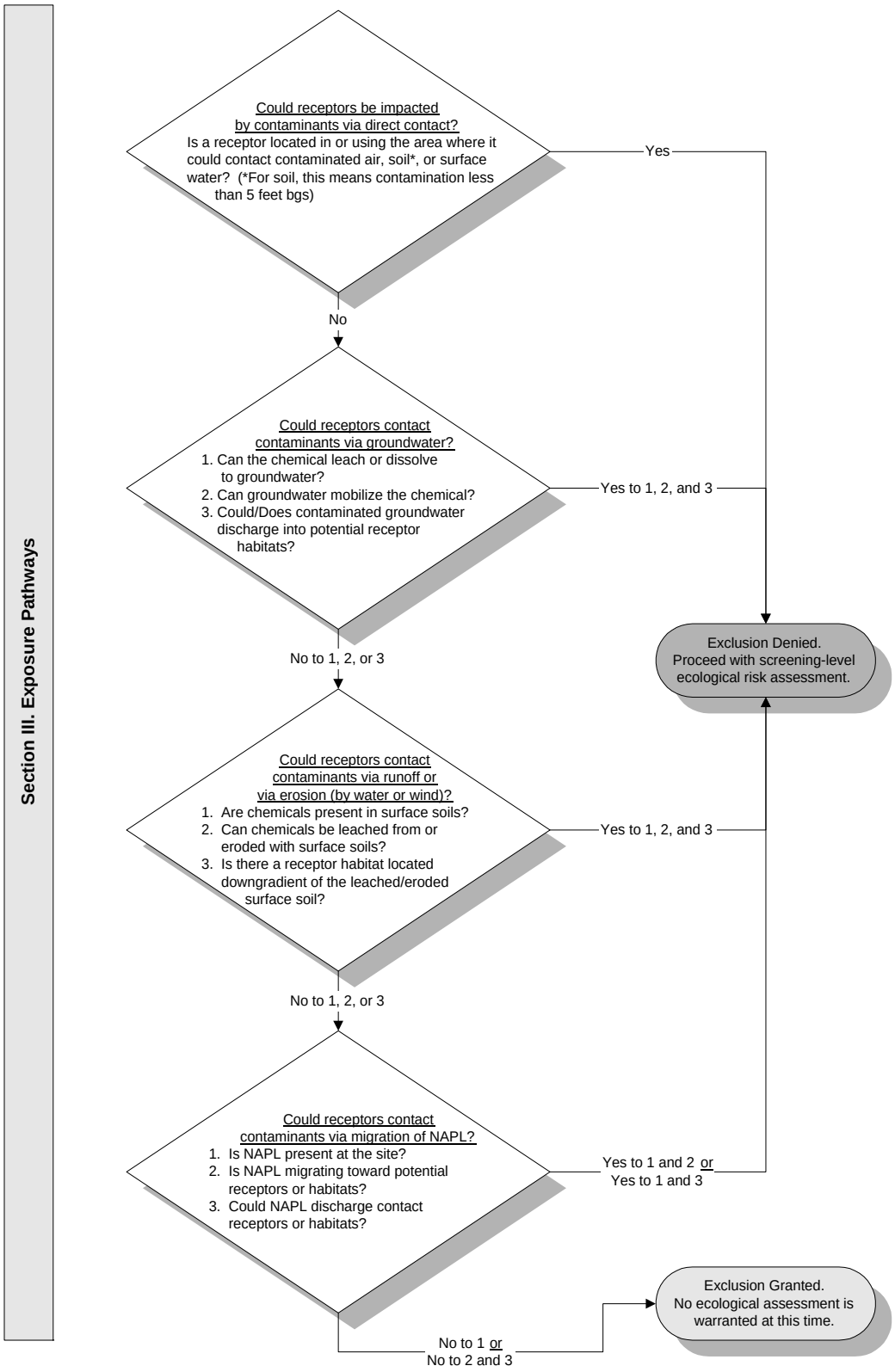


Figure 1 - Exclusion Criteria Decision Tree (continued)



ATTACHMENT A

SCREENING-LEVEL ECOLOGICAL RISK ASSESSMENT
SCOPING ASSESSMENT
SITE ASSESSMENT CHECKLIST

SWMUs 35-36

Ethylene Glycol Tanks

NEW MEXICO ENVIRONMENT DEPARTMENT

SITE ASSESSMENT CHECKLIST

I. SITE LOCATION

1. Site Name: SWMU 35-36 Ethylene Glycol Tanks
   US EPA I.D. Number: NM2750211235
   Location: High Energy Laser Systems Test Facility
   County: Otero
   City: WSMR State: NM

2. Latitude: 32.631 Longitude: 106.331

3. Attach site maps, including a topographical map, a diagram which illustrates the layout of the facility (e.g., site boundaries, structures, etc.), and maps showing all habitat areas identified in Section III of the checklist. Also, include maps which illustrate known release areas, sampling locations, and any other important features, if available.

II. SITE CHARACTERIZATION

1. Indicate the approximate area of the site (i.e., acres or sq. ft) less than ¼ acre
2. Provide an approximate breakdown of the land uses on the site:

_____% Heavy Industrial	_____% Light Industrial	_____% Urban
_____% Residential	_____% Rural	_____% Agricultural[b]
_____% Recreational[a]	_____% Undisturbed	100 % Other[c]

[a]For recreational areas, please describe the usage of the area (e.g., park, playing field, etc.):
_____

[b]For agricultural areas, please list the crops and/or livestock which are present:
_____

[c]For areas designated as "other", please describe the usage of the area:
The HELSTF Facility is a Department of Defense test facility.

12Wetlands are defined in 40 CFR §232.2 as " Areas inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and that under normal circumstances does support, a prevalence of vegetation typically adapted for life in saturated soil conditions." Examples of typical wetlands plants include: cattails, cordgrass, willows and cypress trees. National wetland inventory maps may be available at http:\\nwi.fws.gov. Additional information on wetland delineation criteria is also available from the Army Corps of Engineers.

3. Provide an approximate breakdown of the land uses in the area surrounding the site. Indicate the radius (in miles) of the area described: 3,200 square miles

_____% Heavy Industrial	_____% Light Industrial	_____% Urban
_____% Residential	_____% Rural	_____% Agricultural[b]
_____% Recreational[a]	_____% Undisturbed	100 % Other [c]

[a]For recreational areas, please describe the usage of the area (e.g., park, playing field, golf course, etc.):
_____

[b]For agricultural areas, please list the crops and/or livestock which are present:
_____

[c]For areas designated as "other", please describe the usage of the area:
The HELSTF test facility is contained within 3,200 square miles of the White Sands Missile Range which is used for testing weapon systems for the Department of Defense.

4. Describe reasonable and likely future land and/or water use(s) at the site.
The HELSTF Facility is likely to remain a Department of Defense test facility for the foreseeable future. The regional ground water at the site has greater than 10,000 mg/l total dissolved solids and will not likely be used for drinking water in the foreseeable future. Regional water away from the test facility may be used for construction purposes.

5. Describe the historical uses of the site. Include information on chemical releases that may have occurred as a result of previous land uses. For each chemical release, provide information on the form of the chemical released (i.e., solid, liquid, vapor) and the known or suspected causes or mechanism of the release (i.e., spills, leaks, material disposal, dumping, explosion, etc.).
_____

The ethylene glycol tanks were portable units constructed of steel and less than 500 gallons in capacity. During the visual site inspection for the 1988 RFA, one of the tanks was located west of the chemical waste tanks (SWMUs 31 and 32) while the other was south of the sanitary treatment system (SWMU 30). The tanks were filled when the compressor system at HELSTF developed a problem and ethylene glycol had to be removed. This reportedly only happened once. The tanks were disposed of in 1989 thru the Holloman Air Force Defense Reutilization Marketing Organization (DRMO). The 1988 RCRA Facility Assessment reported that there was no history of a release discovered from these two tanks.

6. If any movement of soil has taken place at the site, describe the degree of the disturbance. Indicate the likely source of any disturbances (e.g., erosion, agricultural, mining, industrial activities, removals, etc.) and estimate when these events occurred.

No soil movement has occurred at the site.

7. Describe the current uses of the site. Include information on recent (previous 5 years) disturbances or chemical releases that have occurred. For each chemical release, provide information on the form of the chemical released and the causes or mechanism of the release.

This site is currently unused.

8. Identify the location or suspected location of chemical releases at the site. Provide an estimate of the distance between these locations and the areas identified in Section III.

There are no known releases from this site.

9. Identify the suspected contaminants of concern (COCs) at the site. If known, include the maximum contaminant levels. Please indicate the source of data cited (e.g., RFI, confirmatory sampling, etc.).

There are no contaminants of concern associated with this SWMU. The tanks were removed and disposed in 1989. No releases were reported.

10. Identify the media (e.g., soil (surface or subsurface), surface water, air, groundwater) which are known or suspected to contain COCs.

There were no releases from this SWMU.

11. Indicate the approximate depth to groundwater (in feet below ground surface [(bgs)].

Average depth to the regional ground water table at HELSTF is 71-73 ft below ground surface.

12. Indicate the direction of groundwater flow (e.g., north, southeast, etc.)
The direction of regional ground water flow at HELSTF is to the south-east.

III. HABITAT EVALUATION

III.A Wetland Habitats

Are any wetland[2] areas such as marshes or swamps on or adjacent to the site?

☐ Yes X No

If yes, indicate the wetland area on the attached site map and answer the following questions regarding the wetland area. If more than one wetland area is present on or adjacent to the site, make additional copies of the following questions and fill out for each individual wetland area. Distinguish between wetland areas by using names or other designations (such as location), and clearly identify each area on the site map. Also, obtain and attach a National Wetlands Inventory Map (or maps) to illustrate each wetland area.

Identify the sources of the observations and information (e.g., National Wetland Inventory, Federal or State Agency, USGS topographic maps) used to make the determination that wetland areas are or are not present.

Site visit by wildlife biologist and USGS topographic maps.

If no wetland areas are present, proceed to Section III.B.

III.B Aquatic Habitats

III.B.1 Non-Flowing Aquatic Features

Are any non-flowing aquatic features (such as ponds or lakes) located at or adjacent to the site?

☐ Yes X No

If yes, indicate the aquatic feature on the attached site map and answer the following questions regarding the non-flowing aquatic features. If more than one non-flowing aquatic feature is present on or adjacent to the site, make additional copies of the following questions and fill out for each individual aquatic feature. Distinguish between aquatic features by using names or other designations, and clearly identify each area on the site map.

If no, proceed to Section III.B.2.

III.B.2 Flowing Aquatic Features

Are any flowing aquatic features (such as streams or rivers) located at or adjacent to the site?

☐ Yes X No

If yes, indicate the aquatic feature on the attached site map and answer the following questions regarding the flowing aquatic features. If more than one flowing aquatic feature is present on or adjacent to the site, make additional copies of the following questions and fill out for each individual aquatic feature. Distinguish between aquatic features by using names or other designations, and clearly identify each area on the site map

If no, proceed to Section III.C.

III.C Terrestrial Habitats

III.C.1 Wooded

Are any wooded areas on or adjacent to the site? ☐ Yes X No

If yes, indicate the wooded area on the attached site map and answer the following questions. If more than one wooded area is present on or adjacent to the site, make additional copies of the following questions and fill out for each individual wooded area. Distinguish between wooded areas by using names or other designations, and clearly identify each area on the site map.

If no, proceed to Section III.C.2.

III.C.2 Shrub/Scrub

Are any shrub/scrub areas on or adjacent to the site? ☐ Yes X No

If yes, indicate the shrub/scrub area on the attached site map and answer the following questions. If more than one shrub/scrub area is present on or adjacent to the site, make additional copies of the following questions and fill out for each individual shrub/scrub area. Distinguish between shrub/scrub areas, using names or other designations, and clearly identify each area on the site map.

If no, proceed to Section III.C.3.

III.C.3 Grassland

Are any grassland areas on or adjacent to the site? ☐ Yes X No

If yes, indicate the grassland area on the attached site map and answer the following questions. If more than one grassland area is present on or adjacent to the site, make additional copies of the following questions and fill out for each individual grassland area. Distinguish between grassland areas by using names or other designations, and clearly identify each area on the site map.

If no, proceed to Section III.C.4.

III.C.4 Desert

Are any desert areas on or adjacent to the site? X Yes ☐ No

If yes, indicate the desert area on the attached site map and answer the following questions. If more than one desert area is present on or adjacent to the site, make additional copies of the following questions and fill out for each individual desert area. Distinguish between desert areas by using names or other designations, and clearly identify each area on the site map.

If no, proceed to Section III.C.5.

Desert Area Questions

X Onsite X Offsite

Name or Designation: Chihuahuan Desert

1. Estimate the approximate size of the desert area (in acres or sq. ft.). This site including WSMR is contained within tens of thousands of acres of the Chihuahuan Desert.

2. Describe the desert area (e.g., presence or absence of vegetation, vegetation types, presence/size of rocks, sand, etc.)

Vegetation specifically at HELSTF is primarily dominated by four-winged saltbush and gyp moonpod (*Acleisanthes lanceolata*) with scattered wolfberry (*Lycium berlandieri*). The entire area is located within gyp dome habitat and is currently covered with an extensive coat of cryptogrammic crust. No threatened or endangered species of plants are known or expected to occupy the habitat present at the sites.

The surface soil at HELSTF is dominated by silt to sand sized gypsum grains. Beneath the surface, alternating layers of sand and clay are present reflecting past deposition within a lacustrine environment.

3. Animals observed in the desert area or suspected to be present based on indirect evidence or file material:

x Birds
x Mammals
x Reptiles (e.g., snakes, lizards)
❑ Amphibians (e.g., toads, salamanders)

Specify species, if known:

Faunal associations with this habitat type reflect the vegetative cover available and are not nearly as diverse in species associations as more varied vegetation types within WSMR. Invertebrates and reptiles comprise the largest faunal groups associated with the sites. Ants (*Formicidae*), termites (*termitidae*), darkling beetles (*Tenebrionidae*), and wolf spiders (*Lycocidae*) provide a large food base for collared lizards (*Crotaphytus collaris*), leopard lizards (Gambelia wislizenii) and side blotch lizards (*Uta stansburiana*). A few snake species commonly inhabit the area including plains blackhead snakes (*Tantilla nigriceps*), coachwhips (*Masticophis flagellum*), and prairie rattlesnakes (*Crotalus viridis*). Avians common to the area include cactus wrens (*Campylorhynchus brunneicapillus*), loggerhead shrikes (*Lanius ludovicianus*) and, in the summer months, Swainson's hawks (*Buteo swainsoni*). Species of small mammals that utilize this habitat include kangaroo rats (*Dipodomys sp.*), deer mice (*Peromyscus maniculatus*), and pocket mice (*Perognathus* and *Chaetodipus* sp.). Larger mammals include desert cottontail rabbits (*Sylvilagus auduboni*), blacktail jackrabbits (*Lepus californicus*), and gemsbok (*Oryx gazella*). No threatened or endangered species of animals are known to or expected to occupy the habitat present at the site.

III.C.5 Other

1. Are there any other terrestrial communities or habitats on or adjacent to the site which was not previously described?

☐ Yes X No

If yes, indicate the "other" area(s) on the attached site map and describe the area(s) below. Distinguish between onsite and offsite areas. If no, proceed to Section III.D.

_____
_____
_____
_____
_____
_____
_____
_____
_____

III.D Sensitive Environments and Receptors

1. Do any other potentially sensitive environmental areas[3] exist adjacent to or within 0.5 miles of the site? If yes, list these areas and provide the source(s) of information used to identify sensitive areas. *Do not answer "no" without confirmation from the U.S. Fish and Wildlife Service and appropriate State of New Mexico division.*

Habitat present is not considered rare or sensitive by any of the regulating or management agencies including the USFWS, NMDGF, and WSMR Directorate of Environment and Safety. No species of vegetation or animals that are considered rare or listed as threatened or endangered are known or expected in this habitat.

2. Are any areas on or near (i.e., within 0.5 miles) the site which are owned or used by local tribes? If yes, describe. *Contact the Tribal Liason in the Office of the Secretary (505)827-2855 to obtain this information.*

No.

Does the site serve or potentially serve as a habitat, foraging area, or refuge by rare, threatened, endangered, candidate and/or proposed species (plants or animals), or any otherwise protected species? If yes, identify species. *This information should be obtained from the U.S. Fish and Wildlife Service and appropriate State of New Mexico division.*

No. The latest lists of State and Federal species of concern, candidate, threatened, and endangered species were consulted. Resource experts familiar with the sites confirmed that none of these species utilize the habitats at or adjacent to the Site.

3 Areas that provide unique and often protected habitat for wildlife species. These areas are typically used during critical life stages such as breeding, hatching, rearing of young and overwintering. Refer to **Table 1** at the end of this document for examples of sensitive environments.

3. Is the site potentially used as a breeding, roosting or feeding area by migratory bird species? If yes, identify which species.

Yes. There are hundreds of species of migrating birds that may potentially roost or feed at or near the Site. Several species of birds may nest near the Site including Say's phoebe and mourning dove.

4. Is the site used by any ecologically[4], recreationally, or commercially important species? If yes, explain.

The HELSTF site is frequented by recreationally important species (hunted) such as Oryx, mule deer, and quail. However, this site is contained within a fenced area where large mammals are not expected.

IV. EXPOSURE PATHWAY EVALUATION

1. Do existing data provide sufficient information on the nature, rate, and extent of contamination at the site?

   x Yes
   ❑ No
   ❑ Uncertain

   Please provide an explanation for your answer:

   No contamination has been reported from this site. A release from the tanks did not occur.

2. Do existing data provide sufficient information on the nature, rate, and extent of contamination in offsite affected areas?

   ❑ Yes
   ❑ No
   ❑ Uncertain
   x No offsite contamination

   Please provide an explanation for your answer:
   Contamination present at the HELSTF is currently confined to the immediate area of HELSTF. Down gradient monitoring wells contained within WSMR boundaries show no evidence of contaminant migration.

---

4 Ecologically important species include populations of species which provide a critical (i.e., not replaceable) food resource for higher organisms and whose function as such would not be replaced by more tolerant species; or perform a critical ecological function (such as organic matter decomposition) and whose functions will not be replaced by other species. Ecologically important species include pest and opportunistic species that populate an area if they serve as a food source for other species, but do not include domesticated animals (e.g., pets and livestock) or plants/animals whose existence is maintained by continuous human interventions (e.g., fish hatcheries, agricultural crops, etc.,)

3. Do existing data address potential migration pathways of contaminants at the site?

x Yes
❑ No
❑ Uncertain

Please provide an explanation for your answer:_____

There is no source of contamination at this site.

4. Do existing data address potential migration pathways of contaminants in offsite affected areas?

❑ Yes
❑ No
❑ Uncertain
x No offsite contamination

Please provide an explanation for your answer:_____

There is no contamination associated with this site.

5. Are there visible indications of stressed habitats or receptors on or near (i.e., within 0.5 miles) the site that may be the result of a chemical release? If yes, explain. Attach photographs if available.

No.

6. Is the location of the contamination such that receptors might be reasonably expected to come into contact with it? For soil, this means contamination in the soil 0 to 5 feet below ground surface (bgs). If yes, explain.

There is no contamination associated with this site.

7. Are receptors located in or using habitats where chemicals exist in air, soil, sediment or surface water? If yes, explain.

There is no contamination associated with this site.

8. Could chemicals reach receptors via groundwater? Can chemicals leach or dissolve to groundwater? Are chemicals mobile in groundwater? Does groundwater discharge into receptor habitats? If yes, explain.

There is no contamination associated with this site.

9. Could chemicals reach receptors through runoff or erosion? Answer the following questions:

What is the approximate distance from the contaminated area to the nearest watercourse or arroyo?

- ❑ 0 feet (i.e., contamination has reached a watercourse or arroyo)
- ❑ 1-10 feet
- ❑ 11-20 feet
- ❑ 21-50 feet
- ❑ 51-100 feet
- ❑ 101-200 feet
- ❑ > 200 feet
- ❑ > 500 feet
- x > 1000 feet

What is the slope of the ground in the contaminated area?

- x 0-10%
- ❑ 10-30%
- ❑ > 30%

What is the approximate amount of ground and canopy vegetative cover in the contaminated area?

- x < 25%
- ❑ 25-75%
- ❑ > 75%

Is there visible evidence of erosion (e.g., a rill or gully) in or near the contaminated area?

- ❑ Yes
- x No
- ❑ Do not know

Do any structures, pavement, or natural drainage features direct run-on flow (i.e., surface flows originating upstream or uphill from the area of concern) into the contaminated area?

- ❑ Yes
- x No
- ❑ Do not know

10. Could chemicals reach receptors through the dispersion of contaminants in air (e.g., volatilization, vapors, fugitive dust)? If yes, explain.

<u>There is no contamination associated with this site.</u>

11. Could chemicals reach receptors through migration of non-aqueous phase liquids (NAPLs)? Is a NAPL present at the site that might be migrating towards receptors or habitats? Could NAPL discharge contact receptors or their habitat?

No NAPLs are associated with this site.

12. Could receptors be impacted by external irradiation at the site? Are gamma emitting radionuclides present at the site? Is the radionuclide contamination buried or at the surface?

No.

PHOTOGRAPHIC DOCUMENTATION

During the site visit(s), photographs should be taken to document the current conditions at the site and to support the information entered in the checklist. For example, photographs may be used to document the following:

- The nature, quality, and distribution of vegetation at the site
- Receptors or evidence of receptors
- Potentially important ecological features, such as ponds and drainage ditches
- Potential exposure pathways
- Any evidence of contamination or impact

The following space may be used to record photo subjects.

These two SWMU's are now an open raised berm with a two-track over the top indicating periodical vehicular traffic. No contaminants are known from this site and there is no expected pathway to organisms.

SUMMARY OF OBSERVATIONS AND SITE SETTING

Include information on significant source areas and migration pathways that are likely to constitute complete exposure pathways.

This site including WSMR is contained within tens of thousands of acres of the Chihuahuan Desert. Vegetation specifically at HELSTF is primarily dominated by four-winged saltbush and gyp moonpod (*Acleisanthes lanceolata*) with scattered wolfberry (*Lycium berlandieri*). The entire area is located within gyp dome habitat and is currently covered with an extensive coat of cryptogrammic crust. No threatened or endangered species of plants are known or expected to occupy the habitat present at the sites.

The surface soil at HELSTF is dominated by silt to sand sized gypsum grains. Beneath the surface, alternating layers of sand and clay are present reflecting past deposition within a lacustrine environment.

There are no contaminants of concern associated with this SWMU. The tanks were removed and disposed in 1989. No releases were reported.

Checklist Completed by Bradley Davis

Affiliation White Sands Technical Services

Author Assisted by Doug Burkett and William Little

Date

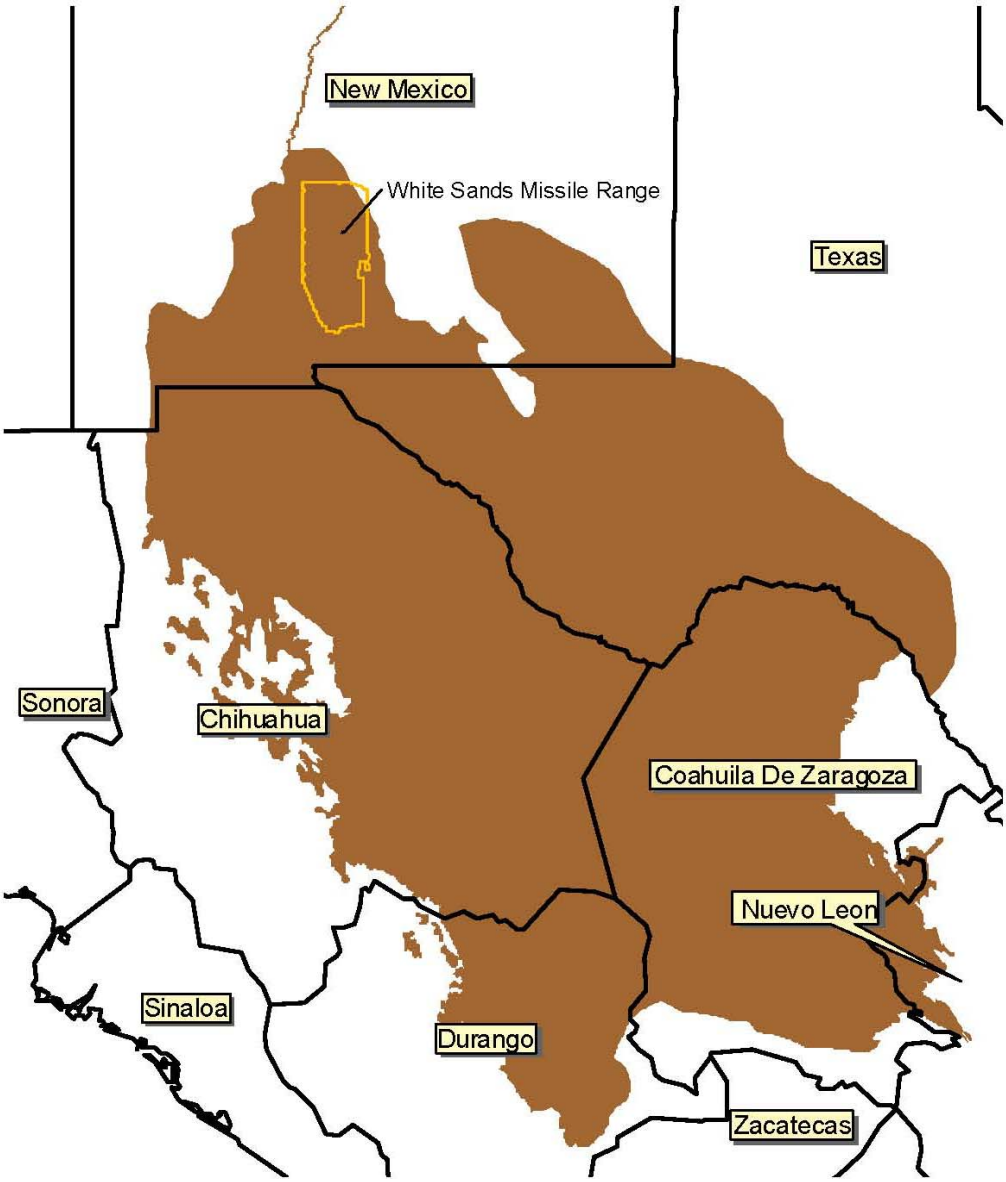


Figure 2.1 WSMR within the Chihuahuan Desert Ecoregion

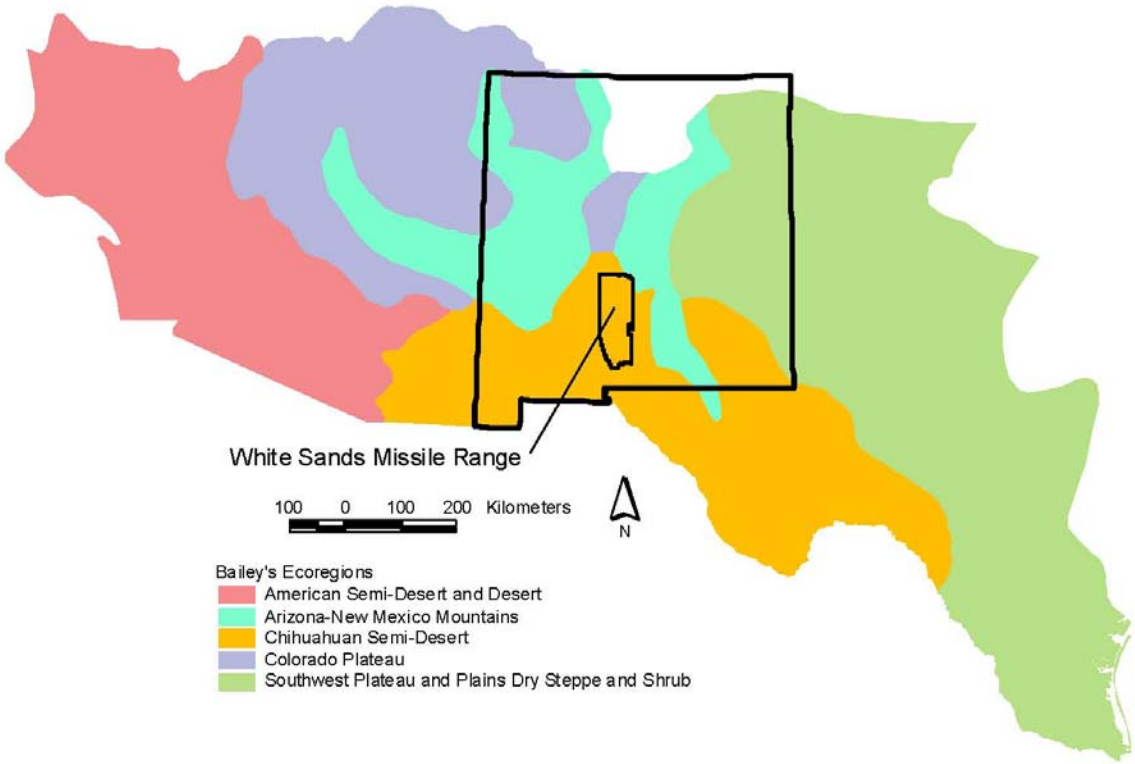


Figure 6.1. Chihuahuan Semi-desert Ecoregion and adjacent ecoregions (Bailey et al. 1994)

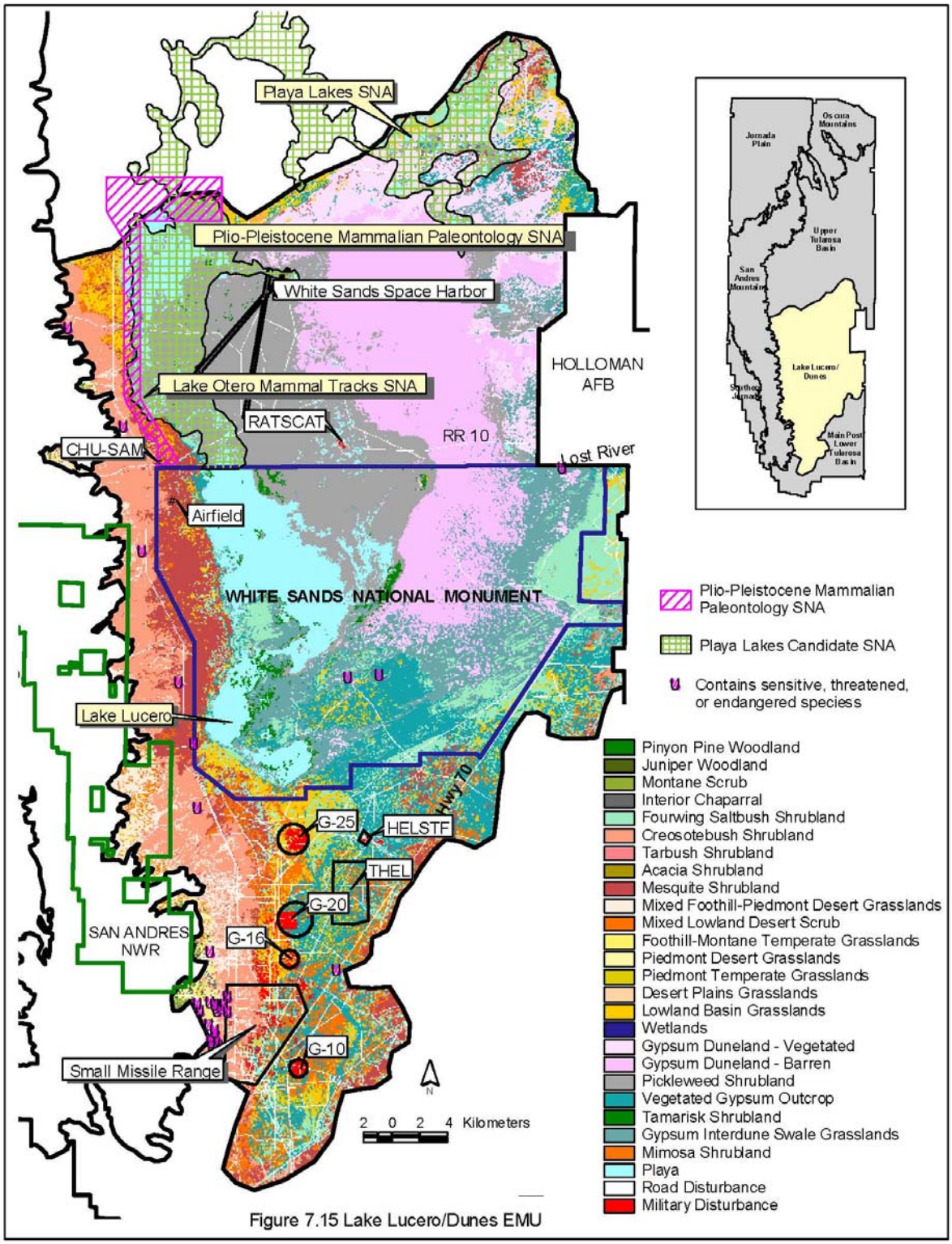


Figure 7.15 Lake Lucero/Dunes EMU

TABLE 1
EXAMPLES OF SENSITIVE ENVIRONMENTS

National Parks and National Monuments

Designated or Administratively Proposed Federal Wilderness Areas

National Preserves

National or State Wildlife Refuges

National Lakeshore Recreational Areas

Federal land designated for protection of natural ecosystems

State land designated for wildlife or game management

State designated Natural Areas

Federal or state designated Scenic or Wild River

All areas that provide or could potentially provide critical habitat[1] for state and federally listed Threatened or Endangered Species, those species that are currently petitioned for listing, and species designated by other agencies as sensitive or species of concern

All areas that provide or could potentially provide habitat for state protected species as defined in the Wildlife Code, Chapter 17 of the New Mexico Statutes

All areas that provide or could potentially provide habitat for migratory birds as protected by the Migratory Bird Treaty Act (16 U.S.C. §§ 703-712)

All areas that provide or could potentially provide habitat for bald eagles and golden eagles as protected by the Bald and Golden Eagle Protection Act (16 U.S.C. 668-668d)

All areas that provide or could potentially provide habitat for song birds as protected by the State of New Mexico statute (New Mexico Statute, 1978, Chapter 17, Game and Fish, 17-2-13)

---

1 Critical habitats are defined by the Endangered Species Act (50 CFR §424.02(d)) as:

1) Specific areas within the geographical area currently occupied by a species, at the time it is listed in accordance with the Act, on which are found those physical or biological features (I) essential to the conservation of the species and (ii) that may require special management considerations or protection, and
2) Specific areas outside the geographical area occupied by a species at the time it is listed upon a determination by the Secretary [of Interior] that such areas are essential for the conservation of the species.

All areas that provide or could potentially provide habitat for hawks, vultures and owls as protected by the State of New Mexico statute (New Mexico Statute, 1978, Chapter 17, Game and Fish, 17-2-14)

All areas that provide or could potentially provide habitat for horned toads and Bullfrogs as protected by the State of New Mexico statute (New Mexico Statute, 1978, Chapter 17, Game and Fish, 17-2-15 and 16, resp.)

All perennial waters (e.g., rivers, lakes, playas, sloughs, ponds, etc)

All ephemeral drainage (e.g., arroyos, puddles/pools, intermittent streams, etc) that provide significant wildlife habitat or that could potentially transport contaminants off site to areas that provide wildlife habitat

All riparian habitats

All perennial and ephemeral wetlands (not limited to jurisdictional wetlands)

All areas that are potentially important breeding, staging, and overwintering habitats as well as other habitats important for the survival of animals during critical periods of their life cycle.

ATTACHMENT B

ECOLOGICAL SITE EXCLUSION CRITERIA CHECKLIST AND DECISION TREE

1. NEW MEXICO ECOLOGICAL EXCLUSION CRITERIA CHECKLIST

The following questions are designed to be used in conjunction with the Ecological Exclusion Criteria Decision Tree (Figure 1). After answering each question, refer to the Decision Tree to determine the appropriate next step. In some cases, questions will be omitted as the user is directed to another section as indicated by the flow diagram in the Decision Tree. For example, if the user answers "yes" to Question 1 of Section I, he or she is directed to proceed to Section II.

I. Habitat

In the following questions, "affected property" refers to all property on which a release has occurred or is believed to have occurred, including off-site areas where contamination may have occurred or migrated.

1. Are any of the below-listed sensitive environments at, adjacent to, or in the locality[1] of the affected property? **No.**

   - National Park or National Monument
   - Designated or administratively proposed Federal Wilderness Area
   - National Preserve
   - National or State Wildlife Refuge
   - Federal or State land designated for wildlife or game management
   - State designated Natural Areas
   - All areas that are owned or used by local tribes
   - All areas that are potentially important breeding, staging, and overwintering habitats as well as other habitats important for the survival of animals during critical periods of their life cycle
   - All areas that provide or could potentially provide habitat for state and federally listed Threatened or Endangered Species, those species that are currently petitioned for listing, and species designated by other agencies as sensitive or species of concern
   - All areas that provide or could potentially provide habitat for state protected species as defined in the Wildlife Code, Chapter 17 of the New Mexico Statutes
   - All areas that provide or could potentially provide habitat for migratory birds as protected by the Migratory Bird Treaty Act (16 U.S.C. §§ 703-712)
   - All areas that provide or could potentially provide habitat for bald eagles and golden eagles as protected by the Bald and Golden Eagle Protection Act (16 U.S.C. 668-668d)

---

1 *Locality* of the site refers to any area where an ecological receptor is likely to contact site-related chemicals. The locality of the site considers the likelihood of contamination migrating over time and places the site in the context of its general surrounding. Therefore, the locality is typically larger than the site and the areas adjacent to the site.

- All areas that provide or could potentially provide habitat for song birds as protected by the state of New Mexico statute (New Mexico Statute, 1978, Chapter 17, Game and Fish, 17-2-13)
- All areas that provide or could potentially provide habitat for hawks, vultures and owls as protected by the state of New Mexico statute (New Mexico Statute, 1978, Chapter 17, Game and Fish, 17-2-14)
- All areas that provide or could potentially provide habitat for horned toads and bullfrogs as protected by the state of New Mexico statute (New Mexico Statute, 1978, Chapter 17, Game and Fish, 17-2-15 and 16, respectively)

2. Does the affected property contain land areas which were not listed in Question 1, but could be considered viable ecological habitat? The following are examples (but not a complete listing) of viable ecological habitats: **Yes.**

- Wooded areas
- Shrub/scrub vegetated areas
- Open fields (prairie)
- Other grassy areas
- Desert areas
- Any other areas which support wildlife and/or vegetation, excluding areas which support only opportunistic species (such as house mice, Norway rats, pigeons, etc.) that do not serve as prey to species in adjacent habitats.

The following features are not considered ecologically viable:

- Pavement
- Buildings
- Paved areas of roadways
- Paved/concrete equipment storage pads
- Paved manufacturing or process areas
- Other non-natural surface cover or structure

3. Does the affected property contain any perennial or ephemeral aquatic features which were not listed in Question 1? **No.**

II. Receptors

1. Is any part of the affected property used for habitat, foraging area, or refuge by any rare, threatened, or endangered species (plant *or* animal), or otherwise protected species (e.g., raptors, migratory birds)? **No.**

2. Is any part of the affected property used for habitat, foraging area, or refuge by any species used as a recreational (e.g., game animals) and/or commercial resource? **No.**

3. Is any part of the affected property used for habitat, foraging area, or refuge by any plant or animal species? This includes plants considered "weeds" and opportunistic insect and animal species (such as cockroaches and rats) if they are used as a food source for other species in the area. **Yes.**

III. Exposure Pathways

1. Could receptors be impacted by contaminants via direct contact? **No.**

   Is a receptor located in or using an area where it could contact contaminated air, soil[3], or surface water? **No.**

For Questions 2 and 3, note that one must answer "yes" to all three bullets in order to be directed to the "exclusion denied" box of the decision tree. This is because answering "no" to one of the questions in the bullet list indicates that a complete exposure pathway is not present. For example, in Question 2, if the chemical cannot leach or dissolve to groundwater (bullet 1), there is no chance of ecological receptors being exposed to the chemical through contact with contaminated groundwater. Similarly, the responses to the questions in Question 4 determine whether a complete pathway exists for exposure to NAPL.

2. Could receptors contact contaminants via groundwater?
   - Can the chemical leach or dissolve to groundwater[4]? **No.**
   - Can groundwater mobilize the chemical? **No.**
   - Could (does) contaminated groundwater discharge into known or potential receptor habitats? **No.**

3. Could receptors contact contaminants via runoff (i.e., surface water and/or suspended sediment) or erosion by water or wind? **No.**
   - Are chemicals present in surface soils? **No.**
   - Can the chemical be leached from or eroded with surface soils? **No.**
   - Is there a receptor habitat located downgradient of the leached/eroded surface soil? **No.**

4. Could receptors contact contaminants via migration of non-aqueous phase liquids (NAPL)?
   - Is NAPL present at the site? **No.**
   - Is NAPL migrating toward potential receptors or habitats? **No.**
   - Could NAPL discharge impact receptors or habitats? **No.**

---

3 For soil, this means contamination less than 5 feet below ground surface (bgs).
4 Information on the environmental fate of specific chemicals can be found on the Internet at *http://www.epa.gov/opptintr/chemfact/* or at a local library in published copies of the *Hazardous Substances Data Bank*.

Figure 1 -Ecological Exclusion Criteria Decision Tree

(Refer to corresponding checklist for the full text of each question)

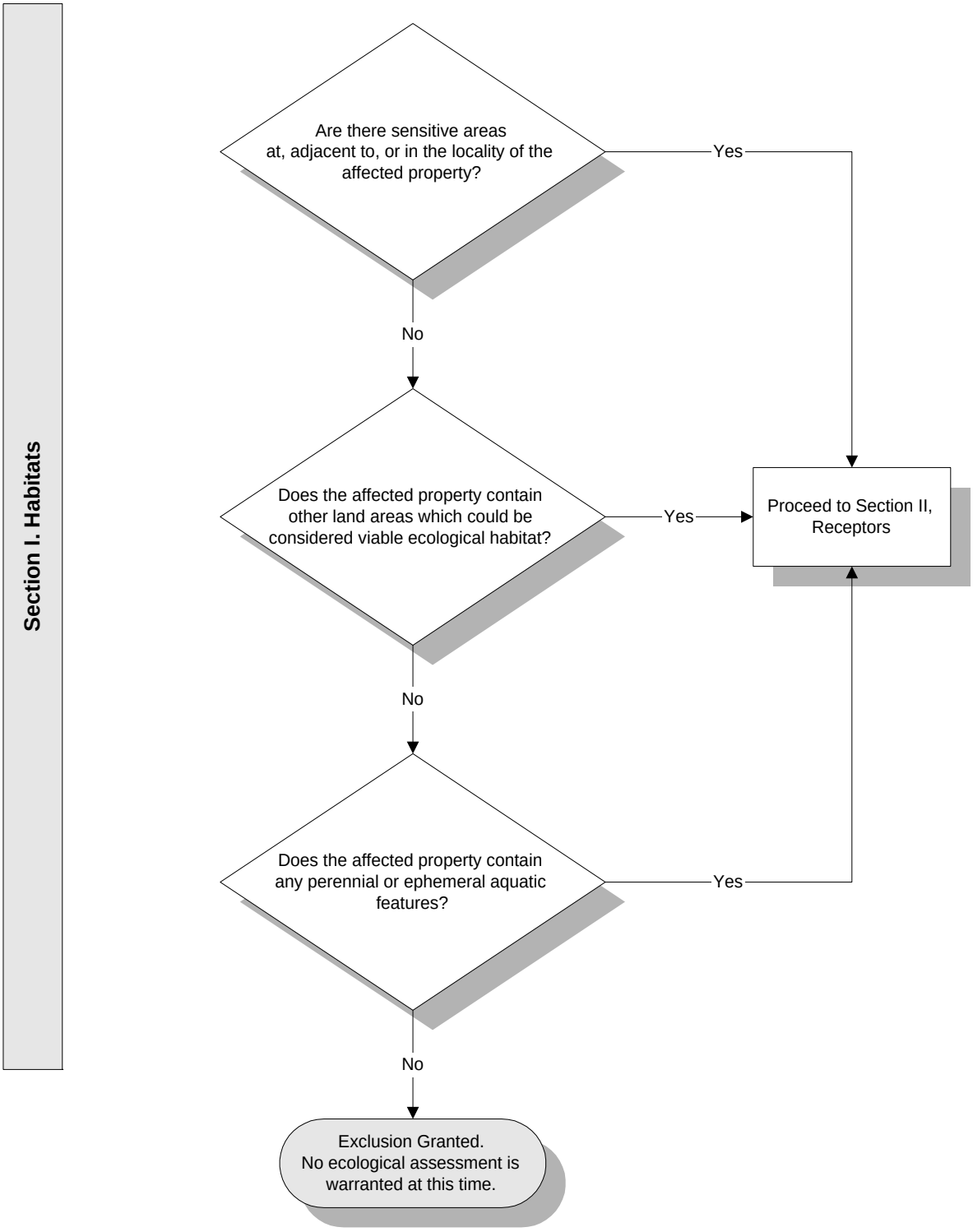


Figure 1 - Exclusion Criteria Decision Tree (continued)

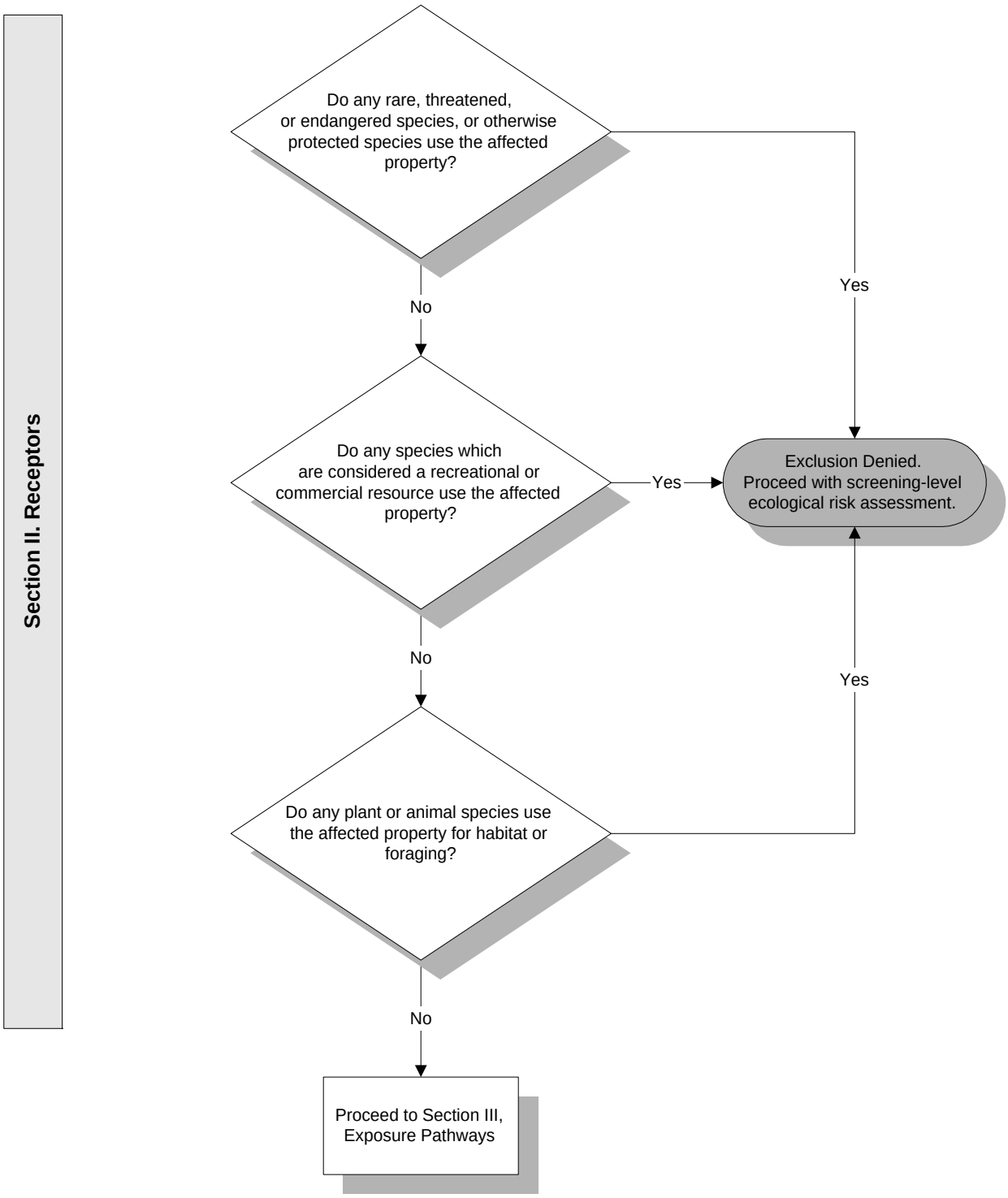
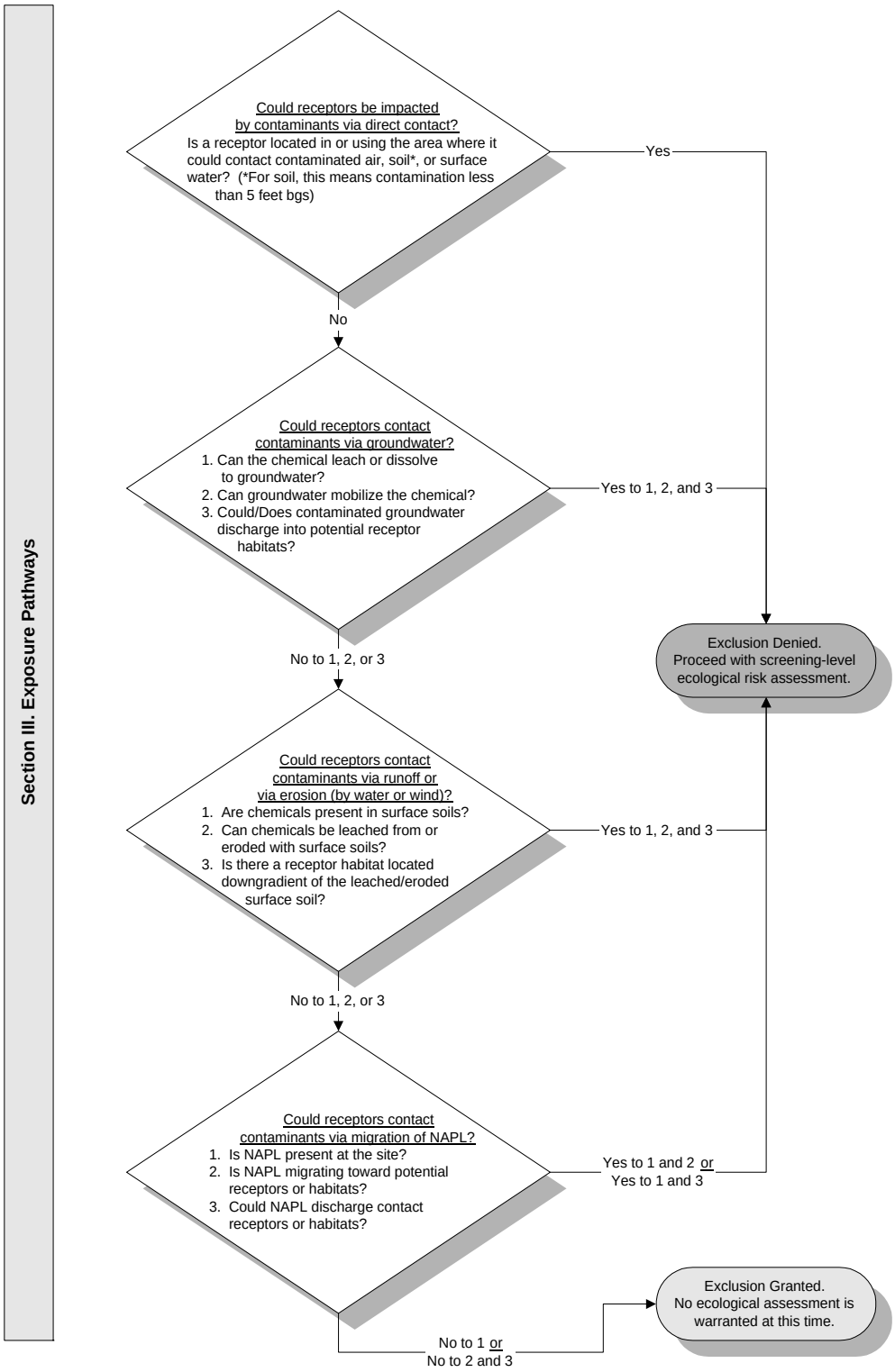


Figure 1 - Exclusion Criteria Decision Tree (continued)



ATTACHMENT A

SCREENING-LEVEL ECOLOGICAL RISK ASSESSMENT
SCOPING ASSESSMENT
SITE ASSESSMENT CHECKLIST

NEW MEXICO ENVIRONMENT DEPARTMENT
SITE ASSESSMENT CHECKLIST

I. SITE LOCATION

1. Site Name: SWMUs 38-39 Construction Landfills
   US EPA I.D. Number: NM2750211235
   Location: High Energy Laser Systems Test Facility
   County: Otero
   City: WSMR State: NM

2. Latitude: 32.6340 Longitude: 106.3283

3. Attach site maps, including a topographical map, a diagram which illustrates the layout of the facility (e.g., site boundaries, structures, etc.), and maps showing all habitat areas identified in Section III of the checklist. Also, include maps which illustrate known release areas, sampling locations, and any other important features, if available.

II. SITE CHARACTERIZATION

1. Indicate the approximate area of the site (i.e., acres or sq. ft) _____
2. Provide an approximate breakdown of the land uses on the site:

_____% Heavy Industrial	_____% Light Industrial	_____% Urban
_____% Residential	_____% Rural	_____% Agricultural[b]
_____% Recreational[a]	_____% Undisturbed	100 % Other[c]

[a]For recreational areas, please describe the usage of the area (e.g., park, playing field, etc.):
_____

[b]For agricultural areas, please list the crops and/or livestock which are present:
_____

[c]For areas designated as "other", please describe the usage of the area:
The HELSTF Facility is a Department of Defense test facility.

3. Provide an approximate breakdown of the land uses in the area surrounding the site. Indicate the radius (in miles) of the area described: 3,200 square miles

_____% Heavy Industrial	_____% Light Industrial	_____% Urban
_____% Residential	_____% Rural	_____% Agricultural[b]
_____% Recreational[a]	_____% Undisturbed	100 % Other [c]

[a]For recreational areas, please describe the usage of the area (e.g., park, playing field, golf course, etc.):
_____

[b]For agricultural areas, please list the crops and/or livestock which are present:
_____

[c]For areas designated as "other", please describe the usage of the area:
The HELSTF test facility is contained within 3,200 square miles of the White Sands Missile Range which is used for testing weapon systems for the Department of Defense.

4. Describe reasonable and likely future land and/or water use(s) at the site.
The HELSTF Facility is likely to remain a Department of Defense test facility for the foreseeable future. The regional ground water at the site has greater than 10,000 mg/l total dissolved solids and will not likely be used for drinking water in the foreseeable future. Regional water away from the test facility may be used for construction purposes.

5. Describe the historical uses of the site. Include information on chemical releases that may have occurred as a result of previous land uses. For each chemical release, provide information on the form of the chemical released (i.e., solid, liquid, vapor) and the known or suspected causes or mechanism of the release (i.e., spills, leaks, material disposal, dumping, explosion, etc.).

The Construction Landfills are located east of the LSTC building in a flat grassland area. There were three separate locations at HELSTF suspected to have received solid waste. Both of the RFAs conducted in 1988 indicated that the landfill may have been used as early as the 1960s. The 1990 report by USAEHA indicated that they were used from the early 1980s until 1990. Review of aerial photographs and other project documents supports their assertion. The construction landfills were most likely confined to the area currently designated as such. The borrow pit was probably not used for disposal. Types of wastes reportedly buried in the landfill include wood, piping material, paper, and insulation. The 1988 RFA by A.T. Kearney, Inc. suggests that excavated soil from a June 12, 1986 release of chromated water at Test Cell 1 was deposited in the construction landfills. The release was described in greater detail in the description of the sanitary treatment system (SWMUs 27 thru 30). The release was described in greater detail in the description of the sanitary treatment system (SWMUs 27 thru 30).

A release report from August 23, 1988 indicates that a spill of low power chemical laser (LPCL) oil into the soil near the LPCL Pump House was excavated and deposited in the landfill (Gallegos, 1988). It was estimated that the excavated soil contained 50 gallons of this non-hazardous substance. No drainage management controls have been utilized at the landfills.

6. If any movement of soil has taken place at the site, describe the degree of the disturbance. Indicate the likely source of any disturbances (e.g., erosion, agricultural, mining, industrial activities, removals, etc.) and estimate when these events occurred.

No movement of soil has occurred at the site.

7. Describe the current uses of the site. Include information on recent (previous 5 years) disturbances or chemical releases that have occurred. For each chemical release, provide information on the form of the chemical released and the causes or mechanism of the release.

The site is no loner used as a landfill. Periodic ground water monitoring is currently the only activity occurring on site. No new releases in the past 5 years have occurred.

8. Identify the location or suspected location of chemical releases at the site. Provide an estimate of the distance between these locations and the areas identified in Section III.

The lower perched groundwater zone under SWMUs 38 and 39, monitored by HMW-31 and HMW-33, appears to be impacted [as evidenced by detections of chromium, 1,1-dichloroethene and trichloroethene. There is the potential that SWMU 144 discharge point is the source of the contamination.

9. Identify the suspected contaminants of concern (COCs) at the site. If known, include the maximum contaminant levels. Please indicate the source of data cited (e.g., RFI, confirmatory sampling, etc.).

Suspected contaminants of concern in the ground water include chromium, 1,1-dichloroethene, and trichloroethene. TPH was detected in the soil at 4 ft bgs during the phase II RFI at only one sample location. Arsenic was detected during the Phase II RFI in a four ft bgs sample at a highest concentration of 17.5 mg/kg.

Identify the media (e.g., soil (surface or subsurface), surface water, air, groundwater) which are known or suspected to contain COCs.

COCs detected in the lower perched ground water zone approximately 42 ft below ground surface. Arsenic detected in soil at 4 ft bgs.

10. Indicate the approximate depth to groundwater (in feet below ground surface [(bgs)].

Average depth to the regional ground water table at HELSTF is 71-73 ft below ground surface. The lower perched ground water table at SWMUs 38-39 is at approximately 42 ft bgs.

11. Indicate the direction of groundwater flow (e.g., north, southeast, etc.)
The direction of regional ground water flow at HELSTF is to the south-east.

III. HABITAT EVALUATION

III.A Wetland Habitats

Are any wetland[2] areas such as marshes or swamps on or adjacent to the site?

☐ Yes X No

If yes, indicate the wetland area on the attached site map and answer the following questions regarding the wetland area. If more than one wetland area is present on or adjacent to the site, make additional copies of the following questions and fill out for each individual wetland area. Distinguish between wetland areas by using names or other designations (such as location), and clearly identify each area on the site map. Also, obtain and attach a National Wetlands Inventory Map (or maps) to illustrate each wetland area.

Identify the sources of the observations and information (e.g., National Wetland Inventory, Federal or State Agency, USGS topographic maps) used to make the determination that wetland areas are or are not present.

Site visit by wildlife biologist and USGS topographic maps.

If no wetland areas are present, proceed to Section III.B.

III.B Aquatic Habitats

III.B.1 Non-Flowing Aquatic Features

Are any non-flowing aquatic features (such as ponds or lakes) located at or adjacent to the site?

☐ Yes X No

If yes, indicate the aquatic feature on the attached site map and answer the following questions regarding the non-flowing aquatic features. If more than one non-flowing aquatic feature is present on or adjacent to the site, make additional copies of the following questions and fill out for each individual aquatic feature. Distinguish between aquatic features by using names or other designations, and clearly identify each area on the site map.

If no, proceed to Section III.B.2.

2Wetlands are defined in 40 CFR §232.2 as " Areas inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and that under normal circumstances does support, a prevalence of vegetation typically adapted for life in saturated soil conditions." Examples of typical wetlands plants include: cattails, cordgrass, willows and cypress trees. National wetland inventory maps may be available at http:\\nwi.fws.gov. Additional information on wetland delineation criteria is also available from the Army Corps of Engineers.

III.B.2 Flowing Aquatic Features

Are any flowing aquatic features (such as streams or rivers) located at or adjacent to the site?

☐ Yes X No

If yes, indicate the aquatic feature on the attached site map and answer the following questions regarding the flowing aquatic features. If more than one flowing aquatic feature is present on or adjacent to the site, make additional copies of the following questions and fill out for each individual aquatic feature. Distinguish between aquatic features by using names or other designations, and clearly identify each area on the site map

If no, proceed to Section III.C.

III.C Terrestrial Habitats

III.C.1 Wooded

Are any wooded areas on or adjacent to the site? ☐ Yes X No

If yes, indicate the wooded area on the attached site map and answer the following questions. If more than one wooded area is present on or adjacent to the site, make additional copies of the following questions and fill out for each individual wooded area. Distinguish between wooded areas by using names or other designations, and clearly identify each area on the site map.

If no, proceed to Section III.C.2.

III.C.2 Shrub/Scrub

Are any shrub/scrub areas on or adjacent to the site? ☐ Yes X No

If yes, indicate the shrub/scrub area on the attached site map and answer the following questions. If more than one shrub/scrub area is present on or adjacent to the site, make additional copies of the following questions and fill out for each individual shrub/scrub area. Distinguish between shrub/scrub areas, using names or other designations, and clearly identify each area on the site map.

If no, proceed to Section III.C.3.

III.C.3 Grassland

Are any grassland areas on or adjacent to the site? ☐ Yes X No

If yes, indicate the grassland area on the attached site map and answer the following questions. If more than one grassland area is present on or adjacent to the site, make additional copies of the following questions and fill out for each individual grassland area. Distinguish between grassland areas by using names or other designations, and clearly identify each area on the site map.

If no, proceed to Section III.C.4.

III.C.4 Desert

Are any desert areas on or adjacent to the site? X Yes ☐ No

If yes, indicate the desert area on the attached site map and answer the following questions. If more than one desert area is present on or adjacent to the site, make additional copies of the following questions and fill out for each individual desert area. Distinguish between desert areas by using names or other designations, and clearly identify each area on the site map.

If no, proceed to Section III.C.5.

Desert Area Questions

X Onsite X Offsite

Name or Designation: Chihuahuan Desert

1. Estimate the approximate size of the desert area (in acres or sq. ft.).

This site including WSMR is contained within tens of thousands of acres of the Chihuahuan Desert.

2. Describe the desert area (e.g., presence or absence of vegetation, vegetation types, presence/size of rocks, sand, etc.)

Vegetation specifically at HELSTF is primarily dominated by four-winged saltbush and gyp moonpod (*Acleisanthes lanceolata*) with scattered wolfberry (*Lycium berlandieri*). The entire area is located within gyp dome habitat and is currently covered with an extensive coat of cryptogrammic crust. No threatened or endangered species of plants are known or expected to occupy the habitat present at the sites.

The surface soil at HELSTF is dominated by silt to sand sized gypsum grains. Beneath the surface, alternating layers of sand and clay are present reflecting past deposition within a lacustrine environment.

3. Animals observed in the desert area or suspected to be present based on indirect evidence or file material:

x Birds
x Mammals
x Reptiles (e.g., snakes, lizards)
❑ Amphibians (e.g., toads, salamanders)

Specify species, if known:

Faunal associations with this habitat type reflect the vegetative cover available and are not nearly as diverse in species associations as more varied vegetation types within WSMR. Invertebrates and reptiles comprise the largest faunal groups associated with the sites. Ants (*Formicidae*), termites (*termitidae*), darkling beetles (*Tenebrionidae*), and wolf spiders (*Lycocidae*) provide a large food base for collared lizards (*Crotaphytus collaris*), leopard lizards (Gambelia wislizenii) and side blotch lizards (*Uta stansburiana*). A few snake species commonly inhabit the area including plains blackhead snakes (*Tantilla nigriceps*), coachwhips (*Masticophis flagellum*), and prairie rattlesnakes (*Crotalus viridis*). Avians common to the area include cactus wrens (*Campylorhynchus brunneicapillus*), loggerhead shrikes (*Lanius ludovicianus*) and, in the summer months, Swainson's hawks (*Buteo swainsoni*). Species of small mammals that utilize this habitat include kangaroo rats (*Dipodomys sp.*), deer mice (*Peromyscus maniculatus*), and pocket mice (*Perognathus* and *Chaetodipus* sp.). Larger mammals include desert cottontail rabbits (*Sylvilagus auduboni*), blacktail jackrabbits (*Lepus californicus*), and gemsbok (*Oryx gazella*). No threatened or endangered species of animals are known to or expected to occupy the habitat present at the site.

III.C.5 Other

1. Are there any other terrestrial communities or habitats on or adjacent to the site which were not previously described?

☐ Yes X No

If yes, indicate the "other" area(s) on the attached site map and describe the area(s) below. Distinguish between onsite and offsite areas. If no, proceed to Section III.D.

III.D Sensitive Environments and Receptors

1. Do any other potentially sensitive environmental areas[3] exist adjacent to or within 0.5 miles of the site? If yes, list these areas and provide the source(s) of information used to identify sensitive areas. *Do not answer "no" without confirmation from the U.S. Fish and Wildlife Service and appropriate State of New Mexico division.*

Habitat present is not considered rare or sensitive by any of the regulating or management agencies including the USFWS, NMDGF, and WSMR Directorate of Environment and Safety. No species of vegetation or animals that are considered rare or listed as threatened or endangered are known or expected in this habitat.

2. Are any areas on or near (i.e., within 0.5 miles) the site which are owned or used by local tribes? If yes, describe. *Contact the Tribal Liason in the Office of the Secretary (505)827-2855 to obtain this information.*

No.

Does the site serve or potentially serve as a habitat, foraging area, or refuge by rare, threatened, endangered, candidate and/or proposed species (plants or animals), or any otherwise protected species? If yes, identify species. *This information should be obtained from the U.S. Fish and Wildlife Service and appropriate State of New Mexico division.*

No. The latest lists of State and Federal species of concern, candidate, threatened, and endangered species were consulted. Resource experts familiar with the sites confirmed that none of these species utilize the habitats at or adjacent to the Site.

3. Is the site potentially used as a breeding, roosting or feeding area by migratory bird species? If yes, identify which species.

Yes. There are hundreds of species of migrating birds that may potentially roost or feed at or near the Site. Several species of birds may nest near the Site including Say's phoebe and mourning dove.

4. Is the site used by any ecologically[4], recreationally, or commercially important species? If yes, explain.

The site is frequented by recreationally important species (hunted) such as Oryx, mule deer, and quail.

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3 Areas that provide unique and often protected habitat for wildlife species. These areas are typically used during critical life stages such as breeding, hatching, rearing of young and over wintering. Refer to **Table 1** at the end of this document for examples of sensitive environments.

4 Ecologically important species include populations of species which provide a critical (i.e., not replaceable) food resource for higher organisms and whose function as such would not be replaced by more tolerant species; or perform a critical ecological function (such as organic matter decomposition) and whose functions will not be replaced by other species. Ecologically important species include pest and opportunistic species that populate an area if they serve as a food source for other species, but do not include domesticated animals (e.g., pets and livestock) or plants/animals whose existence is maintained by continuous human interventions (e.g., fish hatcheries, agricultural crops, etc.,)

IV. EXPOSURE PATHWAY EVALUATION

1. Do existing data provide sufficient information on the nature, rate, and extent of contamination at the site?

   x Yes
   ❑ No
   ❑ Uncertain

   Please provide an explanation for your answer:

   Current data suggests that contamination is confined to the lower perched ground water aquifer beneath the landfill site.

2. Do existing data provide sufficient information on the nature, rate, and extent of contamination in offsite affected areas?

   ❑ Yes
   ❑ No
   ❑ Uncertain
   x No offsite contamination

   Please provide an explanation for your answer:

   Contamination present at the HELSTF is currently confined to the immediate area of HELSTF. Down gradient monitoring wells contained within WSMR boundaries show no evidence of contaminant migration.

3. Do existing data address potential migration pathways of contaminants at the site?

   x Yes
   ❑ No
   ❑ Uncertain

   Please provide an explanation for your answer:_____

   There are no pathways to contamination in the lower perched aquifer. Depth to the aquifer is approximately 42 ft bgs. A potential pathway exists for contact with arsenic in soil at the site.

4. Do existing data address potential migration pathways of contaminants in offsite affected areas?

   ❑ Yes
   ❑ No
   ❑ Uncertain
   x No offsite contamination

Please provide an explanation for your answer:

Contamination present at the HELSTF is currently confined to the immediate area of HELSTF. Down gradient monitoring wells contained within WSMR boundaries show no evidence of contaminant migration.

5. Are there visible indications of stressed habitats or receptors on or near (i.e., within 0.5 miles) the site that may be the result of a chemical release? If yes, explain. Attach photographs if available.

No.

6. Is the location of the contamination such that receptors might be reasonably expected to come into contact with it? For soil, this means contamination in the soil 0 to 5 feet below ground surface (bgs). If yes, explain.

The potential exists for soil contact. Arsenic was detected at a highest concentrations of 17.5 mg/kg at 4 ft bgs.

7. Are receptors located in or using habitats where chemicals exist in air, soil, sediment or surface water? If yes, explain.

Receptors a potentially living in locations where they can come in contact with arsenic in the soil.

8. Could chemicals reach receptors via groundwater? Can chemicals leach or dissolve to groundwater? Are chemicals mobile in groundwater? Does groundwater discharge into receptor habitats? If yes, explain.

Chemical contaminants are in the perched water aquifer at approximately 42 ft bgs. Ground water does not discharge into receptor habitats. It is not expected that chemicals could reach receptors via ground water.

9. Could chemicals reach receptors through runoff or erosion? Answer the following questions:

What is the approximate distance from the contaminated area to the nearest watercourse or arroyo?

- ❑ 0 feet (i.e., contamination has reached a watercourse or arroyo)
- ❑ 1-10 feet
- ❑ 11-20 feet
- ❑ 21-50 feet
- ❑ 51-100 feet
- ❑ 101-200 feet
- ❑ > 200 feet
- ❑ > 500 feet
- x > 1000 feet

What is the slope of the ground in the contaminated area?

- x 0-10%
- ❑ 10-30%
- ❑ > 30%

What is the approximate amount of ground and canopy vegetative cover in the contaminated area?

- x < 25%
- ❑ 25-75%
- ❑ > 75%

Is there visible evidence of erosion (e.g., a rill or gully) in or near the contaminated area?

- ❑ Yes
- x No
- ❑ Do not know

Do any structures, pavement, or natural drainage features direct run-on flow (i.e., surface flows originating upstream or uphill from the area of concern) into the contaminated area?

- ❑ Yes
- x No
- ❑ Do not know

10. Could chemicals reach receptors through the dispersion of contaminants in air (e.g., volatilization, vapors, fugitive dust)? If yes, explain.

    It is possible that the arsenic could reach receptors via fugitive dust.

11. Could chemicals reach receptors through migration of non-aqueous phase liquids (NAPLs)? Is a NAPL present at the site that might be migrating towards receptors or habitats? Could NAPL discharge contact receptors or their habitat?

    NAPL is not present beneath the landfill.

12. Could receptors be impacted by external irradiation at the site? Are gamma emitting radionuclides present at the site? Is the radionuclide contamination buried or at the surface?

    No.

PHOTOGRAPHIC DOCUMENTATION

During the site visit(s), photographs should be taken to document the current conditions at the site and to support the information entered in the checklist. For example, photographs may be used to document the following:

- The nature, quality, and distribution of vegetation at the site
- Receptors or evidence of receptors
- Potentially important ecological features, such as ponds and drainage ditches
- Potential exposure pathways
- Any evidence of contamination or impact

The following space may be used to record photo subjects.

SWMUs 38-39 are located several hundred meters southeast of the main HELSTF developed area. Vegetation is typical of that growing in disturbed areas and is currently comprised primarily of bare ground with scattered four-wing saltbush (*Atriplex canescens*) and a mixture of dropseed grasses including alkali sacaton (*Sporobolus airoides*), and sand dropseed (*S. cryptandris*). No contaminants are known from this site and there is no expected pathway to organisms.

SUMMARY OF OBSERVATIONS AND SITE SETTING

Include information on significant source areas and migration pathways that are likely to constitute complete exposure pathways.

This site including WSMR is contained within tens of thousands of acres of the Chihuahuan Desert. Vegetation specifically at HELSTF is primarily dominated by four-winged saltbush and gyp moonpod (*Acleisanthes lanceolata*) with scattered wolfberry (*Lycium berlandieri*). The entire area is located within gyp dome habitat and is currently covered with an extensive coat of cryptogrammic crust. No threatened or endangered species of plants are known or expected to occupy the habitat present at the sites. The surface soil at HELSTF is dominated by silt to sand sized gypsum grains. Beneath the surface, alternating layers of sand and clay are present reflecting past deposition within a lacustrine environment.

Contaminants of concern are located in soil and the lower perched ground water table at the site. There are no suspected complete exposure pathways to ground water at the site. Chemical contaminants are in the perched water aquifer at approximately 42 ft bgs. Ground water does not discharge into receptor habitats. It is not expected that chemicals could reach receptors via ground water. A complete exposure pathway to soil (arsenic) is present on site. The potential exists for soil contact. Arsenic was detected at a highest concentration of 17.5 mg/kg at 4 ft bgs during the Phase II RFI. A complete exposure pathway to soil exists for arsenic.

Checklist Completed by Bradley Davis

Affiliation White Sands Technical Services

Author Assisted by Doug Burkett and William Little

Date

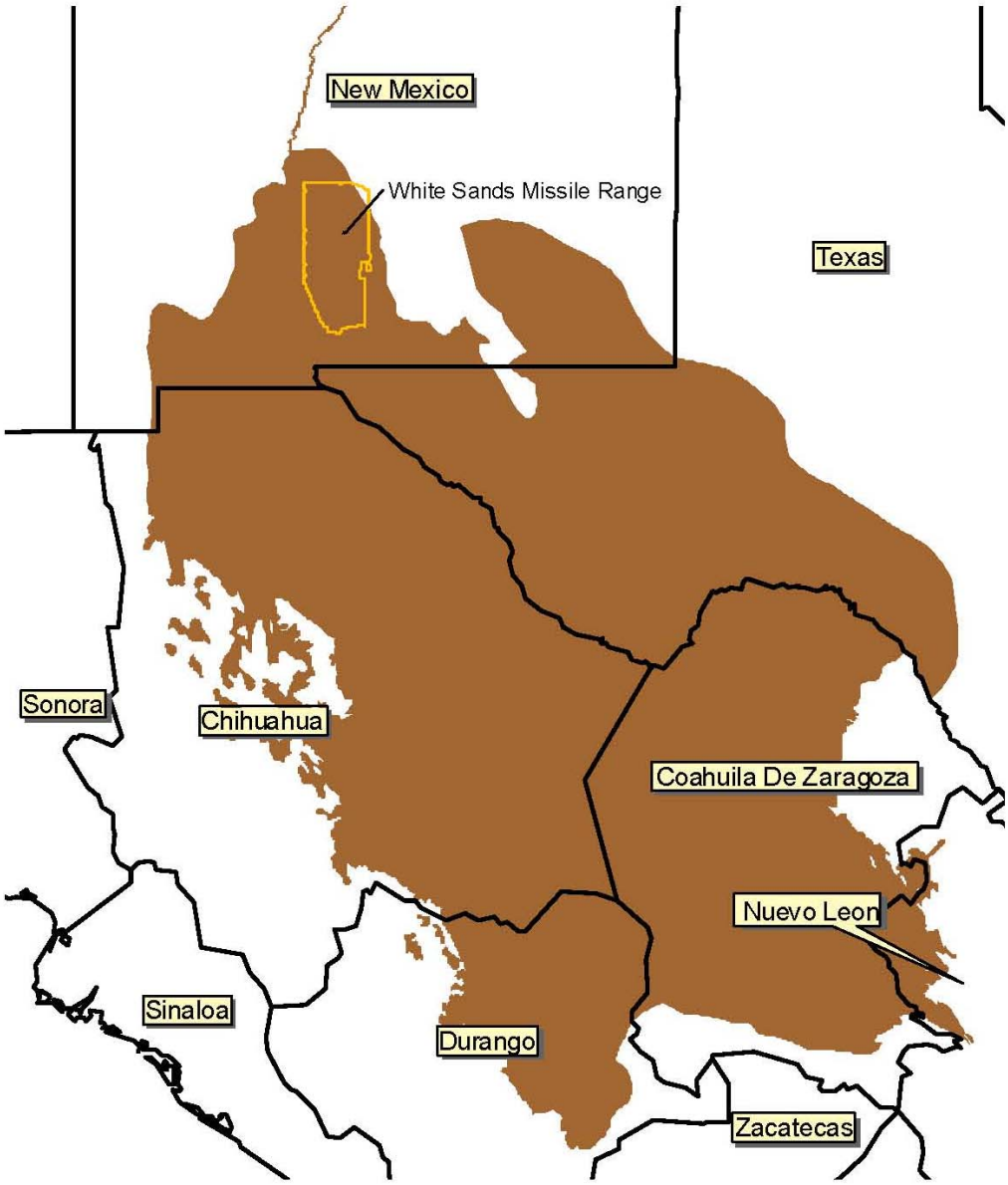

Figure 2.1 WSMR within the Chihuahuan Desert Ecoregion

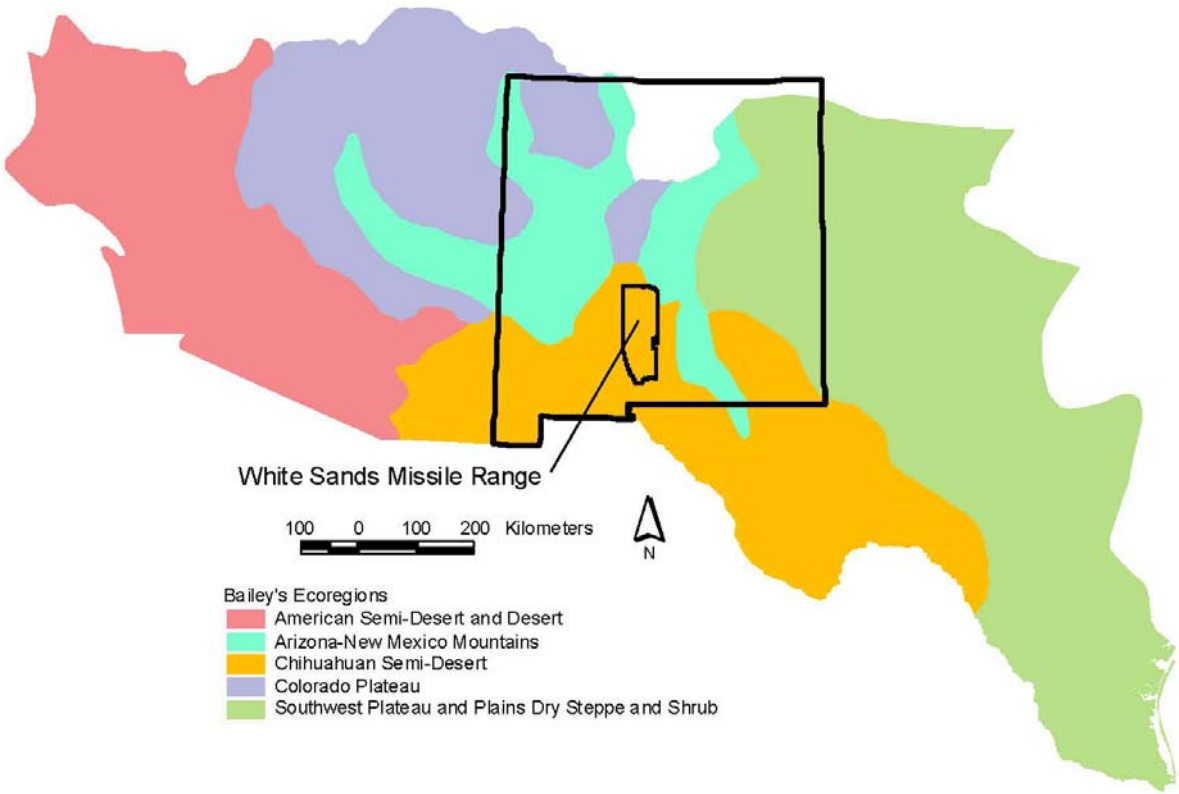

Figure 6.1. Chihuahuan Semi-desert Ecoregion and adjacent ecoregions (Bailey et al. 1994)

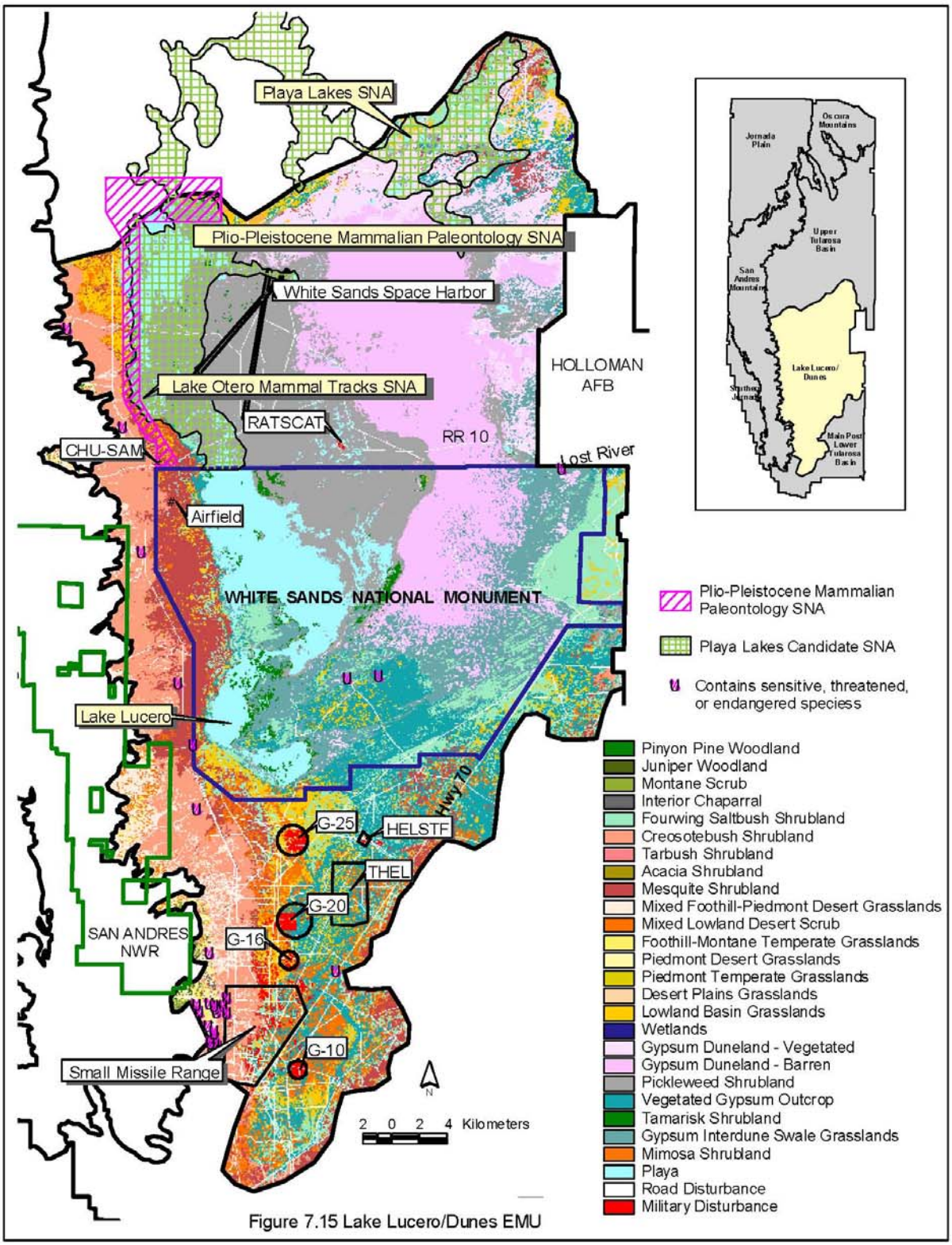

Figure 7.15 Lake Lucero/Dunes EMU

TABLE 1
EXAMPLES OF SENSITIVE ENVIRONMENTS

National Parks and National Monuments

Designated or Administratively Proposed Federal Wilderness Areas

National Preserves

National or State Wildlife Refuges

National Lakeshore Recreational Areas

Federal land designated for protection of natural ecosystems

State land designated for wildlife or game management

State designated Natural Areas

Federal or state designated Scenic or Wild River

All areas that provide or could potentially provide critical habitat[1] for state and federally listed Threatened or Endangered Species, those species that are currently petitioned for listing, and species designated by other agencies as sensitive or species of concern

All areas that provide or could potentially provide habitat for state protected species as defined in the Wildlife Code, Chapter 17 of the New Mexico Statutes

All areas that provide or could potentially provide habitat for migratory birds as protected by the Migratory Bird Treaty Act (16 U.S.C. §§ 703-712)

All areas that provide or could potentially provide habitat for bald eagles and golden eagles as protected by the Bald and Golden Eagle Protection Act (16 U.S.C. 668-668d)

All areas that provide or could potentially provide habitat for song birds as protected by the State of New Mexico statute (New Mexico Statute, 1978, Chapter 17, Game and Fish, 17-2-13)

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1 Critical habitats are defined by the Endangered Species Act (50 CFR §424.02(d)) as:

1) Specific areas within the geographical area currently occupied by a species, at the time it is listed in accordance with the Act, on which are found those physical or biological features (I) essential to the conservation of the species and (ii) that may require special management considerations or protection, and
2) Specific areas outside the geographical area occupied by a species at the time it is listed upon a determination by the Secretary [of Interior] that such areas are essential for the conservation of the species.

All areas that provide or could potentially provide habitat for hawks, vultures and owls as protected by the State of New Mexico statute (New Mexico Statute, 1978, Chapter 17, Game and Fish, 17-2-14)

All areas that provide or could potentially provide habitat for horned toads and Bullfrogs as protected by the State of New Mexico statute (New Mexico Statute, 1978, Chapter 17, Game and Fish, 17-2-15 and 16, resp.)

All perennial waters (e.g., rivers, lakes, playas, sloughs, ponds, etc)

All ephemeral drainage (e.g., arroyos, puddles/pools, intermittent streams, etc) that provide significant wildlife habitat or that could potentially transport contaminants off site to areas that provide wildlife habitat

All riparian habitats

All perennial and ephemeral wetlands (not limited to jurisdictional wetlands)

All areas that are potentially important breeding, staging, and overwintering habitats as well as other habitats important for the survival of animals during critical periods of their life cycle.

ATTACHMENT B

ECOLOGICAL SITE EXCLUSION CRITERIA CHECKLIST AND DECISION TREE

1. NEW MEXICO ECOLOGICAL EXCLUSION CRITERIA CHECKLIST

The following questions are designed to be used in conjunction with the Ecological Exclusion Criteria Decision Tree (Figure 1). After answering each question, refer to the Decision Tree to determine the appropriate next step. In some cases, questions will be omitted as the user is directed to another section as indicated by the flow diagram in the Decision Tree. For example, if the user answers "yes" to Question 1 of Section I, he or she is directed to proceed to Section II.

I. Habitat

In the following questions, "affected property" refers to all property on which a release has occurred or is believed to have occurred, including off-site areas where contamination may have occurred or migrated.

1. Are any of the below-listed sensitive environments at, adjacent to, or in the locality[1] of the affected property? **No.**

- National Park or National Monument
- Designated or administratively proposed Federal Wilderness Area
- National Preserve
- National or State Wildlife Refuge
- Federal or State land designated for wildlife or game management
- State designated Natural Areas
- All areas that are owned or used by local tribes
- All areas that are potentially important breeding, staging, and overwintering habitats as well as other habitats important for the survival of animals during critical periods of their life cycle
- All areas that provide or could potentially provide habitat for state and federally listed Threatened or Endangered Species, those species that are currently petitioned for listing, and species designated by other agencies as sensitive or species of concern
- All areas that provide or could potentially provide habitat for state protected species as defined in the Wildlife Code, Chapter 17 of the New Mexico Statutes
- All areas that provide or could potentially provide habitat for migratory birds as protected by the Migratory Bird Treaty Act (16 U.S.C. §§ 703-712)
- All areas that provide or could potentially provide habitat for bald eagles and golden eagles as protected by the Bald and Golden Eagle Protection Act (16 U.S.C. 668-668d)

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1 *Locality* of the site refers to any area where an ecological receptor is likely to contact site-related chemicals. The locality of the site considers the likelihood of contamination migrating over time and places the site in the context of its general surrounding. Therefore, the locality is typically larger than the site and the areas adjacent to the site.

- All areas that provide or could potentially provide habitat for song birds as protected by the state of New Mexico statute (New Mexico Statute, 1978, Chapter 17, Game and Fish, 17-2-13)
- All areas that provide or could potentially provide habitat for hawks, vultures and owls as protected by the state of New Mexico statute (New Mexico Statute, 1978, Chapter 17, Game and Fish, 17-2-14)
- All areas that provide or could potentially provide habitat for horned toads and bullfrogs as protected by the state of New Mexico statute (New Mexico Statute, 1978, Chapter 17, Game and Fish, 17-2-15 and 16, respectively)

2. Does the affected property contain land areas which were not listed in Question 1, but could be considered viable ecological habitat? The following are examples (but not a complete listing) of viable ecological habitats: **Yes.**

- Wooded areas
- Shrub/scrub vegetated areas
- Open fields (prairie)
- Other grassy areas
- Desert areas
- Any other areas which support wildlife and/or vegetation, excluding areas which support only opportunistic species (such as house mice, Norway rats, pigeons, etc.) that do not serve as prey to species in adjacent habitats.

The following features are not considered ecologically viable:

- Pavement
- Buildings
- Paved areas of roadways
- Paved/concrete equipment storage pads
- Paved manufacturing or process areas
- Other non-natural surface cover or structure

3. Does the affected property contain any perennial or ephemeral aquatic features which were not listed in Question 1? **No.**

II. Receptors

1. Is any part of the affected property used for habitat, foraging area, or refuge by any rare, threatened, or endangered species (plant *or* animal), or otherwise protected species (e.g., raptors, migratory birds)? **No.**

2. Is any part of the affected property used for habitat, foraging area, or refuge by any species used as a recreational (e.g., game animals) and/or commercial resource? **Yes.**

3. Is any part of the affected property used for habitat, foraging area, or refuge by any plant or animal species? This includes plants considered "weeds" and opportunistic insect and animal species (such as cockroaches and rats) if they are used as a food source for other species in the area. **Yes.**

III. Exposure Pathways

1. Could receptors be impacted by contaminants via direct contact?

   Is a receptor located in or using an area where it could contact contaminated air, soil[3], or surface water? **Yes.**

For Questions 2 and 3, note that one must answer "yes" to all three bullets in order to be directed to the "exclusion denied" box of the decision tree. This is because answering "no" to one of the questions in the bullet list indicates that a complete exposure pathway is not present. For example, in Question 2, if the chemical cannot leach or dissolve to groundwater (bullet 1), there is no chance of ecological receptors being exposed to the chemical through contact with contaminated groundwater. Similarly, the responses to the questions in Question 4 determine whether a complete pathway exists for exposure to NAPL.

2. Could receptors contact contaminants via groundwater?
   - Can the chemical leach or dissolve to groundwater[4]? **Yes.**
   - Can groundwater mobilize the chemical? **Yes.**
   - Could (does) contaminated groundwater discharge into known or potential receptor habitats? **No.**

3. Could receptors contact contaminants via runoff (i.e., surface water and/or suspended sediment) or erosion by water or wind?
   - Are chemicals present in surface soils? **No.**
   - Can the chemical be leached from or eroded with surface soils? **No.**
   - Is there a receptor habitat located downgradient of the leached/eroded surface soil? **No.**

4. Could receptors contact contaminants via migration of non-aqueous phase liquids (NAPL)?
   - Is NAPL present at the site? **No.**
   - Is NAPL migrating toward potential receptors or habitats? **No.**
   - Could NAPL discharge impact receptors or habitats? **No.**

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3 For soil, this means contamination less than 5 feet below ground surface (bgs).
4 Information on the environmental fate of specific chemicals can be found on the Internet at *http://www.epa.gov/opptintr/chemfact/* or at a local library in published copies of the *Hazardous Substances Data Bank*.

Figure 1 -Ecological Exclusion Criteria Decision Tree

(Refer to corresponding checklist for the full text of each question)

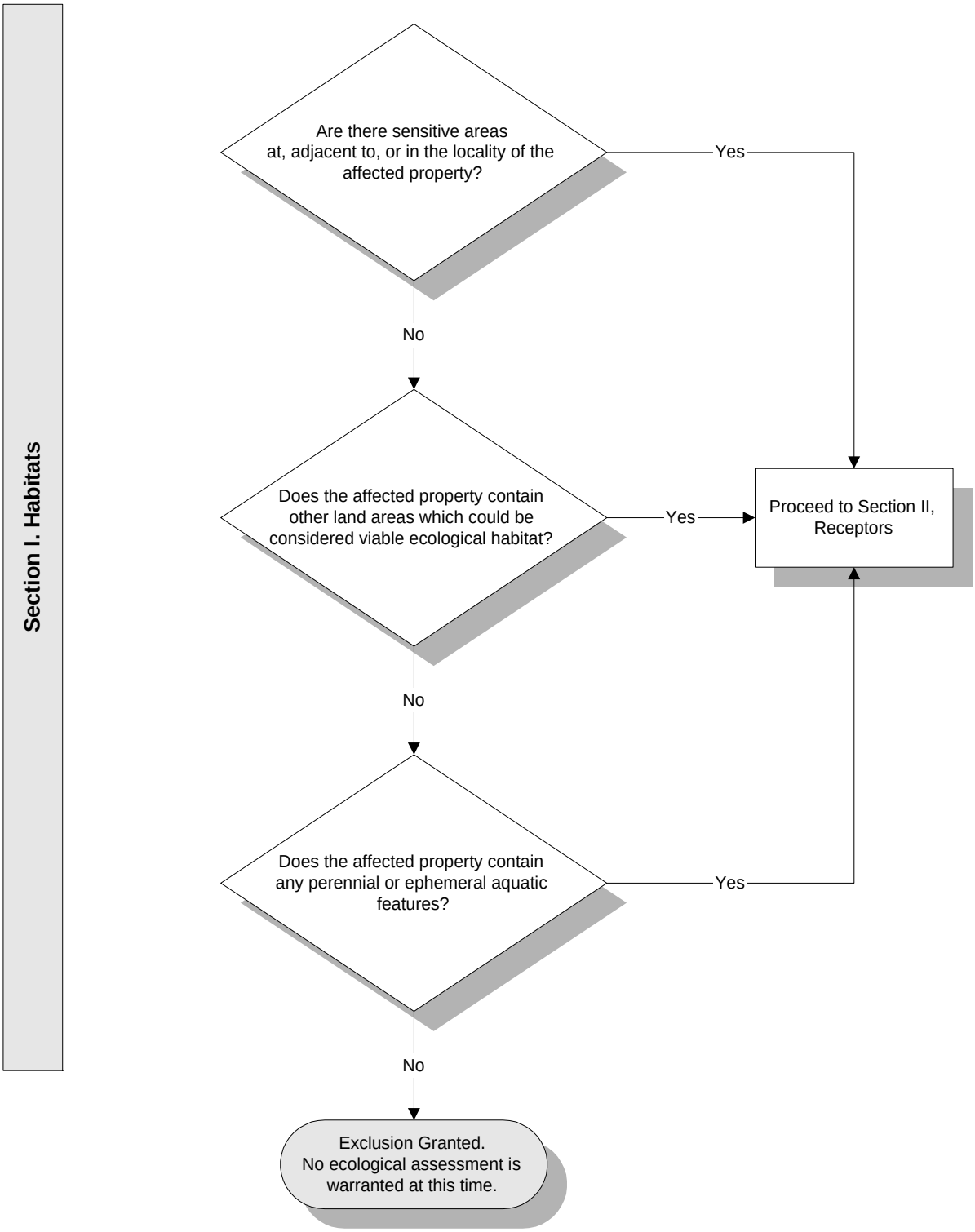


Figure 1 - Exclusion Criteria Decision Tree (continued)

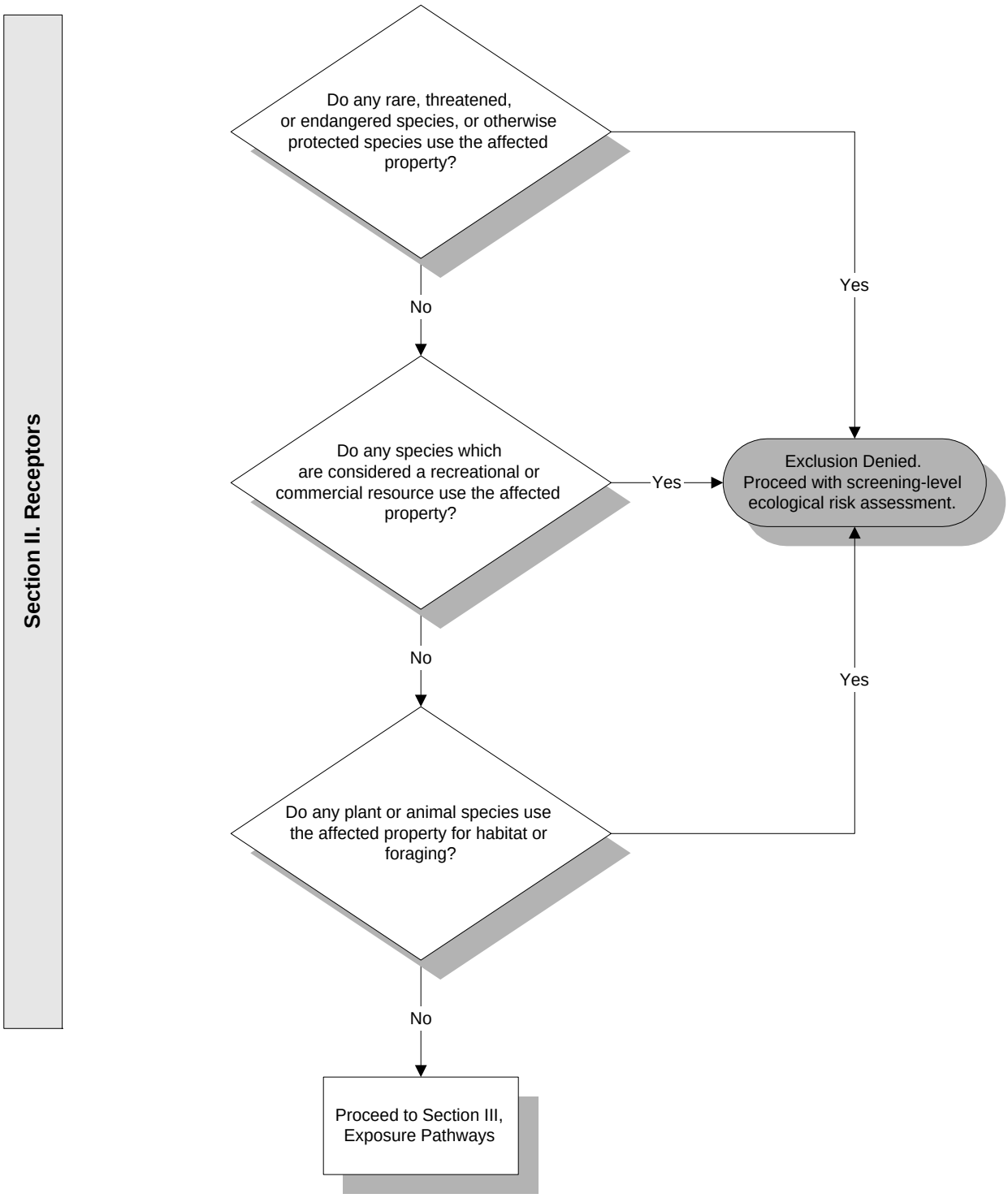
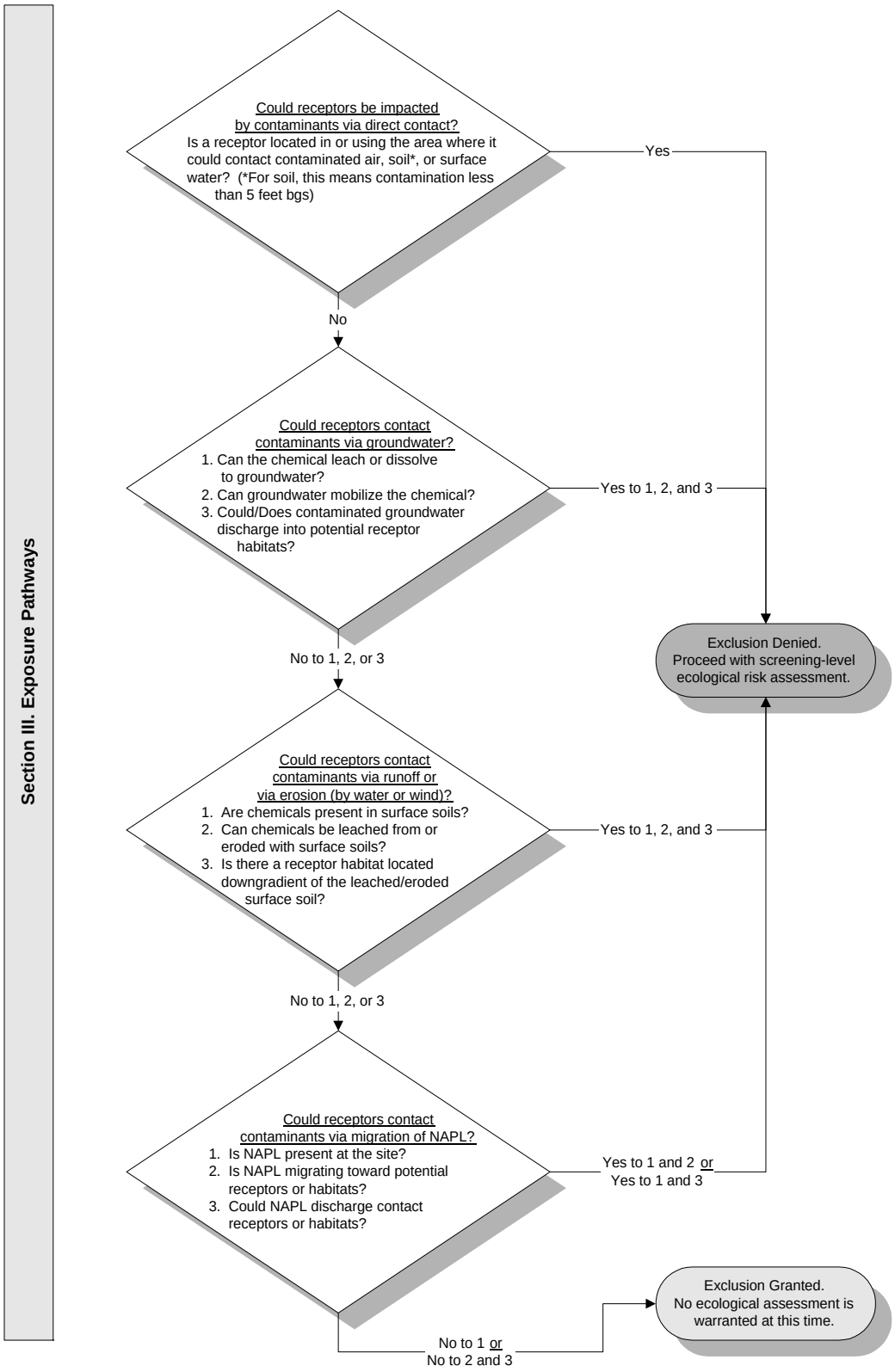


Figure 1 - Exclusion Criteria Decision Tree (continued)



ATTACHMENT A

SCREENING-LEVEL ECOLOGICAL RISK ASSESSMENT
SCOPING ASSESSMENT
SITE ASSESSMENT CHECKLIST

NEW MEXICO ENVIRONMENT DEPARTMENT

SITE ASSESSMENT CHECKLIST

I. SITE LOCATION

1. Site Name: SWMU 144 LSTC Wastewater Discharge Point
   US EPA I.D. Number: NM2750211235
   Location: High Energy Laser Systems Test Facility
   County: Otero
   City: WSMR State: NM

2. Latitude: 32.6344 Longitude: 106.3294

3. Attach site maps, including a topographical map, a diagram which illustrates the layout of the facility (e.g., site boundaries, structures, etc.), and maps showing all habitat areas identified in Section III of the checklist. Also, include maps which illustrate known release areas, sampling locations, and any other important features, if available.

II. SITE CHARACTERIZATION

1. Indicate the approximate area of the site (i.e., acres or sq. ft) less than ¼ acre
2. Provide an approximate breakdown of the land uses on the site:

_____% Heavy Industrial	_____% Light Industrial	_____% Urban
_____% Residential	_____% Rural	_____% Agricultural[b]
_____% Recreational[a]	_____% Undisturbed	100 % Other[c]

[a]For recreational areas, please describe the usage of the area (e.g., park, playing field, etc.):
_____

[b]For agricultural areas, please list the crops and/or livestock which are present:
_____

[c]For areas designated as "other", please describe the usage of the area:

The HELSTF Facility is a Department of Defense test facility.

3. Provide an approximate breakdown of the land uses in the area surrounding the site. Indicate the radius (in miles) of the area described: 3,200 square miles

_____% Heavy Industrial	_____% Light Industrial	_____% Urban
_____% Residential	_____% Rural	_____% Agricultural[b]
_____% Recreational[a]	_____% Undisturbed	100 % Other [c]

[a]For recreational areas, please describe the usage of the area (e.g., park, playing field, golf course, etc.):
_____

[b]For agricultural areas, please list the crops and/or livestock which are present:
_____

[c]For areas designated as "other", please describe the usage of the area:
The HELSTF test facility is contained within 3,200 square miles of the White Sands Missile Range which is used for testing weapon systems for the Department of Defense.

4. Describe reasonable and likely future land and/or water use(s) at the site.
The HELSTF Facility is likely to remain a Department of Defense test facility for the foreseeable future. The regional ground water at the site has greater than 10,000 mg/l total dissolved solids and will not likely be used for drinking water in the foreseeable future. Regional water away from the test facility may be used for construction purposes.

5. Describe the historical uses of the site. Include information on chemical releases that may have occurred as a result of previous land uses. For each chemical release, provide information on the form of the chemical released (i.e., solid, liquid, vapor) and the known or suspected causes or mechanism of the release (i.e., spills, leaks, material disposal, dumping, explosion, etc.).
The LSTC Wastewater Discharge Point (also referred to colloquially as the Oryx Pit) is a rock-filled irregularly shaped pit surrounded by thick brush. It had been used since the 1960's for accepting discharge from the Laser System Test Center (LSTC) building (formerly the MAR building). As part of the original construction, a sump and discharge pump were installed in the basement of Bldg. 26129 to collect and eject chiller coil condensate, water drained periodically from the building fire sprinkler system, and blowdown from the cooling tower water treatment system.

6. If any movement of soil has taken place at the site, describe the degree of the disturbance. Indicate the likely source of any disturbances (e.g., erosion, agricultural, mining, industrial activities, removals, etc.) and estimate when these events occurred.

No movement of soil has occurred.

7. Describe the current uses of the site. Include information on recent (previous 5 years) disturbances or chemical releases that have occurred. For each chemical release, provide information on the form of the chemical released and the causes or mechanism of the release.

A sump and discharge pump were installed in the basement of Bldg. 26129 to collect and eject chiller coil condensate, water drained periodically from the building fire sprinkler system, and blowdown from the cooling tower water treatment system. Acetone was detected in soil sampled during the drilling of HMW07. The concentration was highest (18 mg/kg) in the uppermost sample (10 ft bgs). The level decreased with depth until 25 feet bgs where it was no longer detected. The bulk parameter, Total recoverable petroleum hydrocarbons (TRPH), was also detected (80 mg/kg) at 10 ft bgs. TRPH was not detected at any other depth. No other VOCs were detected in the soil. Elevated levels of arsenic, chromium and silver were detected in soil samples taken during drilling of the monitoring wells HMW-26, 27 and 28. Lead was more pervasive in the soil but was highest in HMW28. All detections were at depth (10 ft bgs or deeper).

The lower perched groundwater zone has been impacted by low levels of volatile organic compounds (acetone, carbon tetrachloride, chloroform, Freon, trichloroethylene and 1,1,1-trichloroethane), and metals (including hexavalent chromium and arsenic).

8. Identify the location or suspected location of chemical releases at the site. Provide an estimate of the distance between these locations and the areas identified in Section III.

Wastewater was discharged to the location of the SWMU 144 site and infiltrated the ground surface. This location, as all of HELSTF is contained within the Chihuahuan Desert.

9. Identify the suspected contaminants of concern (COCs) at the site. If known, include the maximum contaminant levels. Please indicate the source of data cited (e.g., RFI, confirmatory sampling, etc.).

The lower perched groundwater zone has been impacted by low levels of volatile organic compounds (acetone, carbon tetrachloride, chloroform, Freon, trichloroethylene and 1,1,1-trichloroethane), and metals (including hexavalent chromium and arsenic). Soil detections of potential contaminants is greater than 10 ft bgs.

10. Identify the media (e.g., soil (surface or subsurface), surface water, air, groundwater) which are known or suspected to contain COCs.

The lower perched aquifer at the site contains COCs.

11. Indicate the approximate depth to groundwater (in feet below ground surface [(bgs)].

Avergae depth to the regional ground water table at HELSTF is 71-73 ft below ground surface. Depth to the lower perched aquifer at the site is approximately 37 ft bgs.

12. Indicate the direction of groundwater flow (e.g., north, southeast, etc.)

The direction of regional ground water flow at HELSTF is to the south-east.

III. HABITAT EVALUATION

III.A Wetland Habitats

Are any wetland[2] areas such as marshes or swamps on or adjacent to the site?

☐ Yes X No

If yes, indicate the wetland area on the attached site map and answer the following questions regarding the wetland area. If more than one wetland area is present on or adjacent to the site, make additional copies of the following questions and fill out for each individual wetland area. Distinguish between wetland areas by using names or other designations (such as location), and clearly identify each area on the site map. Also, obtain and attach a National Wetlands Inventory Map (or maps) to illustrate each wetland area.

Identify the sources of the observations and information (e.g., National Wetland Inventory, Federal or State Agency, USGS topographic maps) used to make the determination that wetland areas are or are not present.

Site visit by wildlife biologist and USGS topographic maps.

If no wetland areas are present, proceed to Section III.B.

III.B Aquatic Habitats

III.B.1 Non-Flowing Aquatic Features

Are any non-flowing aquatic features (such as ponds or lakes) located at or adjacent to the site?

☐ Yes X No

If yes, indicate the aquatic feature on the attached site map and answer the following questions regarding the non-flowing aquatic features. If more than one non-flowing aquatic feature is present on or adjacent to the site, make additional copies of the following questions and fill out for each individual aquatic feature. Distinguish between aquatic features by using names or other designations, and clearly identify each area on the site map.

If no, proceed to Section III.B.2.

2Wetlands are defined in 40 CFR §232.2 as " Areas inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and that under normal circumstances does support, a prevalence of vegetation typically adapted for life in saturated soil conditions." Examples of typical wetlands plants include: cattails, cordgrass, willows and cypress trees. National wetland inventory maps may be available at http:\\nwi.fws.gov. Additional information on wetland delineation criteria is also available from the Army Corps of Engineers.

III.B.2 Flowing Aquatic Features

Are any flowing aquatic features (such as streams or rivers) located at or adjacent to the site?

☐ Yes X No

If yes, indicate the aquatic feature on the attached site map and answer the following questions regarding the flowing aquatic features. If more than one flowing aquatic feature is present on or adjacent to the site, make additional copies of the following questions and fill out for each individual aquatic feature. Distinguish between aquatic features by using names or other designations, and clearly identify each area on the site map

If no, proceed to Section III.C.

III.C Terrestrial Habitats

III.C.1 Wooded

Are any wooded areas on or adjacent to the site? ☐ Yes X No

If yes, indicate the wooded area on the attached site map and answer the following questions. If more than one wooded area is present on or adjacent to the site, make additional copies of the following questions and fill out for each individual wooded area. Distinguish between wooded areas by using names or other designations, and clearly identify each area on the site map.

If no, proceed to Section III.C.2.

III.C.2 Shrub/Scrub

Are any shrub/scrub areas on or adjacent to the site? ☐ Yes X No

If yes, indicate the shrub/scrub area on the attached site map and answer the following questions. If more than one shrub/scrub area is present on or adjacent to the site, make additional copies of the following questions and fill out for each individual shrub/scrub area. Distinguish between shrub/scrub areas, using names or other designations, and clearly identify each area on the site map.

If no, proceed to Section III.C.3.

III.C.3 Grassland

Are any grassland areas on or adjacent to the site? ☐ Yes X No

If yes, indicate the grassland area on the attached site map and answer the following questions. If more than one grassland area is present on or adjacent to the site, make additional copies of the following questions and fill out for each individual grassland area.

Distinguish between grassland areas by using names or other designations, and clearly identify each area on the site map.

If no, proceed to Section III.C.4.

III.C.4 Desert

Are any desert areas on or adjacent to the site? X Yes ☐ No

If yes, indicate the desert area on the attached site map and answer the following questions. If more than one desert area is present on or adjacent to the site, make additional copies of the following questions and fill out for each individual desert area. Distinguish between desert areas by using names or other designations, and clearly identify each area on the site map.

If no, proceed to Section III.C.5.

Desert Area Questions

X Onsite X Offsite

Name or Designation: Chihuahuan Desert

1. Estimate the approximate size of the desert area (in acres or sq. ft.). This site including WSMR is contained within tens of thousands of acres of the Chihuahuan Desert.

2. Describe the desert area (e.g., presence or absence of vegetation, vegetation types, presence/size of rocks, sand, etc.)

Vegetation specifically at HELSTF is primarily dominated by four-winged saltbush and gyp moonpod (*Acleisanthes lanceolata*) with scattered wolfberry (*Lycium berlandieri*). The entire area is located within gyp dome habitat and is currently covered with an extensive coat of cryptogrammic crust. No threatened or endangered species of plants are known or expected to occupy the habitat present at the sites.

The surface soil at HELSTF is dominated by silt to sand sized gypsum grains. Beneath the surface, alternating layers of sand and clay are present reflecting past deposition within a lacustrine environment.

3. Animals observed in the desert area or suspected to be present based on indirect evidence or file material:

- x Birds
- x Mammals
- x Reptiles (e.g., snakes, lizards)
- ❑ Amphibians (e.g., toads, salamanders)

Specify species, if known:

Faunal associations with this habitat type reflect the vegetative cover available and are not nearly as diverse in species associations as more varied vegetation types within WSMR. Invertebrates and reptiles comprise the largest faunal groups associated with the sites. Ants (*Formicidae*), termites (*termitidae*), darkling beetles (*Tenebrionidae*), and wolf spiders (*Lycocidae*) provide a large food base for collared lizards (*Crotaphytus collaris*), leopard lizards (Gambelia wislizenii) and side blotch lizards (*Uta stansburiana*). A few snake species commonly inhabit the area including plains blackhead snakes (*Tantilla nigriceps*), coachwhips (*Masticophis flagellum*), and prairie rattlesnakes (*Crotalus viridis*). Avians common to the area include cactus wrens (*Campylorhynchus brunneicapillus*), loggerhead shrikes (*Lanius ludovicianus*) and, in the summer months, Swainson's hawks (*Buteo swainsoni*). Species of small mammals that utilize this habitat include kangaroo rats (*Dipodomys sp.*), deer mice (*Peromyscus maniculatus*), and pocket mice (*Perognathus* and *Chaetodipus* sp.). Larger mammals include desert cottontail rabbits (*Sylvilagus audubonii*), blacktail jackrabbits (*Lepus californicus*), and gemsbok (*Oryx gazella*). No threatened or endangered species of animals are known to or expected to occupy the habitat present at the site.

III.C.5 Other

1. Are there any other terrestrial communities or habitats on or adjacent to the site which was not previously described?

   ☐ Yes X No

   If yes, indicate the "other" area(s) on the attached site map and describe the area(s) below. Distinguish between onsite and offsite areas. If no, proceed to Section III.D.

   _____
   _____
   _____
   _____
   _____

III.D Sensitive Environments and Receptors

1. Do any other potentially sensitive environmental areas[3] exist adjacent to or within 0.5 miles of the site? If yes, list these areas and provide the source(s) of information used to identify sensitive areas. *Do not answer "no" without confirmation from the U.S. Fish and Wildlife Service and appropriate State of New Mexico division.*

Habitat present is not considered rare or sensitive by any of the regulating or management agencies including the USFWS, NMDGF, and WSMR Directorate of Environment and Safety. No species of vegetation or animals that are considered rare or listed as threatened or endangered are known or expected in this habitat.

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3 Areas that provide unique and often protected habitat for wildlife species. These areas are typically used during critical life stages such as breeding, hatching, rearing of young and over wintering. Refer to **Table 1** at the end of this document for examples of sensitive environments.

2. Are any areas on or near (i.e., within 0.5 miles) the site which are owned or used by local tribes? If yes, describe. *Contact the Tribal Liason in the Office of the Secretary (505)827-2855 to obtain this information.*

No.

Does the site serve or potentially serve as a habitat, foraging area, or refuge by rare, threatened, endangered, candidate and/or proposed species (plants or animals), or any otherwise protected species? If yes, identify species. *This information should be obtained from the U.S. Fish and Wildlife Service and appropriate State of New Mexico division.*

No. The latest lists of State and Federal species of concern, candidate, threatened, and endangered species were consulted. Resource experts familiar with the sites confirmed that none of these species utilize the habitats at or adjacent to the Site.

3. Is the site potentially used as a breeding, roosting or feeding area by migratory bird species? If yes, identify which species.

Yes. There are hundreds of species of migrating birds that may potentially roost or feed at or near the Site. Several species of birds may nest near the Site including Say's phoebe and mourning dove.

4. Is the site used by any ecologically[4], recreationally, or commercially important species? If yes, explain.

The site is frequented by recreationally important species (hunted) such as Oryx, mule deer, and quail.

IV. EXPOSURE PATHWAY EVALUATION

1. Do existing data provide sufficient information on the nature, rate, and extent of contamination at the site?

   x Yes
   ❑ No
   ❑ Uncertain

   Please provide an explanation for your answer:
   Phase I, II, and III RFI data and ground water monitoring indicate potential soil contamination is a depth at the site. Contaminants of concern are confined to the lower perched ground water zone.

---

4 Ecologically important species include populations of species which provide a critical (i.e., not replaceable) food resource for higher organisms and whose function as such would not be replaced by more tolerant species; or perform a critical ecological function (such as organic matter decomposition) and whose functions will not be replaced by other species. Ecologically important species include pest and opportunistic species that populate an area if they serve as a food source for other species, but do not include domesticated animals (e.g., pets and livestock) or plants/animals whose existence is maintained by continuous human interventions (e.g., fish hatcheries, agricultural crops, etc.,)

2. Do existing data provide sufficient information on the nature, rate, and extent of contamination in offsite affected areas?

- ❑ Yes
- ❑ No
- ❑ Uncertain
- x No offsite contamination

Please provide an explanation for your answer:_____

Contamination present at the HELSTF is currently confined to the immediate area of HELSTF. Down gradient monitoring wells contained within WSMR boundaries show no evidence of contaminant migration.

3. Do existing data address potential migration pathways of contaminants at the site?

- x Yes
- ❑ No
- ❑ Uncertain

Please provide an explanation for your answer:

Data is present for depth to soil contamination and depth to water contamination as provided in the Phase I through Phase III RFIs.

4. Do existing data address potential migration pathways of contaminants in offsite affected areas?

- ❑ Yes
- ❑ No
- ❑ Uncertain
- x No offsite contamination

Please provide an explanation for your answer:_____

Contamination present at the HELSTF is currently confined to the immediate area of HELSTF. Down gradient monitoring wells contained within WSMR boundaries show no evidence of contaminant migration.

5. Are there visible indications of stressed habitats or receptors on or near (i.e., within 0.5 miles) the site that may be the result of a chemical release? If yes, explain. Attach photographs if available.
No.

6. Is the location of the contamination such that receptors might be reasonably expected to come into contact with it? For soil, this means contamination in the soil 0 to 5 feet below ground surface (bgs). If yes, explain.

No. Depth to soil COCs is 10 ft or greater. There are no known surface contaminants.

7. Are receptors located in or using habitats where chemicals exist in air, soil, sediment or surface water? If yes, explain.

No. Potential receptors could be living on site, however, contact with contaminated media is not expected.

8. Could chemicals reach receptors via groundwater? Can chemicals leach or dissolve to groundwater? Are chemicals mobile in groundwater? Does groundwater discharge into receptor habitats? If yes, explain.

No. Chemicals are present in the lower perched aquifer and are mobile. However, no ground water discharges from the HELSTF Site to receptor habitats.

9. Could chemicals reach receptors through runoff or erosion? Answer the following questions:

What is the approximate distance from the contaminated area to the nearest watercourse or arroyo?

- ❑ 0 feet (i.e., contamination has reached a watercourse or arroyo)
- ❑ 1-10 feet
- ❑ 11-20 feet
- ❑ 21-50 feet
- ❑ 51-100 feet
- ❑ 101-200 feet
- ❑ > 200 feet
- ❑ > 500 feet
- x > 1000 feet

What is the slope of the ground in the contaminated area?

- x 0-10%
- ❑ 10-30%
- ❑ > 30%

What is the approximate amount of ground and canopy vegetative cover in the contaminated area?

- x < 25%
- ❑ 25-75%
- ❑ > 75%

Is there visible evidence of erosion (e.g., a rill or gully) in or near the contaminated area?

- ❑ Yes
- x No
- ❑ Do not know

Do any structures, pavement, or natural drainage features direct run-on flow (i.e., surface flows originating upstream or uphill from the area of concern) into the contaminated area?

- ❑ Yes
- x No
- ❑ Do not know

10. Could chemicals reach receptors through the dispersion of contaminants in air (e.g., volatilization, vapors, fugitive dust)? If yes, explain.

No. It is not suspected that contaminants could reach receptors via volatilization, vapors or fugitive dust.

11. Could chemicals reach receptors through migration of non-aqueous phase liquids (NAPLs)? Is a NAPL present at the site that might be migrating towards receptors or habitats? Could NAPL discharge contact receptors or their habitat?

NAPLs are not present at this site.

12. Could receptors be impacted by external irradiation at the site? Are gamma emitting radionuclides present at the site? Is the radionuclide contamination buried or at the surface? No.

PHOTOGRAPHIC DOCUMENTATION

During the site visit(s), photographs should be taken to document the current conditions at the site and to support the information entered in the checklist. For example, photographs may be used to document the following:

- The nature, quality, and distribution of vegetation at the site
- Receptors or evidence of receptors
- Potentially important ecological features, such as ponds and drainage ditches
- Potential exposure pathways
- Any evidence of contamination or impact

The following space may be used to record photo subjects.

This site is located just east of the developed area associated with HELSTF. The site was historically a wastewater discharge site. Currently the site consists of a small (under ½ acre) dense stand of invasive salt cedar (*Tamarisk ramosisima*) surrounded by a matrix of four-winged saltbush (*Atriplex canascens*) and dropseed grasses (*Sporobolus* sp.). Contamination at this site is restricted to deep underground. No potential contaminant pathway to organisms is expected at this site.
A SLERA was completed for this site and is attached to this Appendix. Based on the SLERA Checklist, an exclusion should be granted for further ecological assessment at this time.

SUMMARY OF OBSERVATIONS AND SITE SETTING

Include information on significant source areas and migration pathways that are likely to constitute complete exposure pathways.

This site including WSMR is contained within tens of thousands of acres of the Chihuahuan Desert. Vegetation specifically at HELSTF is primarily dominated by four-winged saltbush and gyp moonpod (*Acleisanthes lanceolata*) with scattered wolfberry (*Lycium berlandieri*). The entire area is located within gyp dome habitat and is currently covered with an extensive coat of cryptogrammic crust. No threatened or endangered species of plants are known or expected to occupy the habitat present at the sites.

This site is located just east of the developed area associated with HELSTF. The site was historically a wastewater discharge site. Currently the site consists of a small (under ½ acre) dense stand of invasive salt cedar (*Tamarisk ramosisima*) surrounded by a matrix of four-winged saltbush (*Atriplex canascens*) and dropseed grasses (*Sporobolus* sp.). Contamination at this site is restricted to deep underground. No potential contaminant pathway to organisms is expected at this site.

Phase I, II, and III RFI data and ground water monitoring indicate potential soil contamination is a depth at the site. Contaminants of concern are confined to the lower perched ground water zone.

Checklist Completed by_____Bradley Davis_____

Affiliation____White Sands Technical Services_____

Author Assisted by___Doug Burkett and William Little_____

Date_____

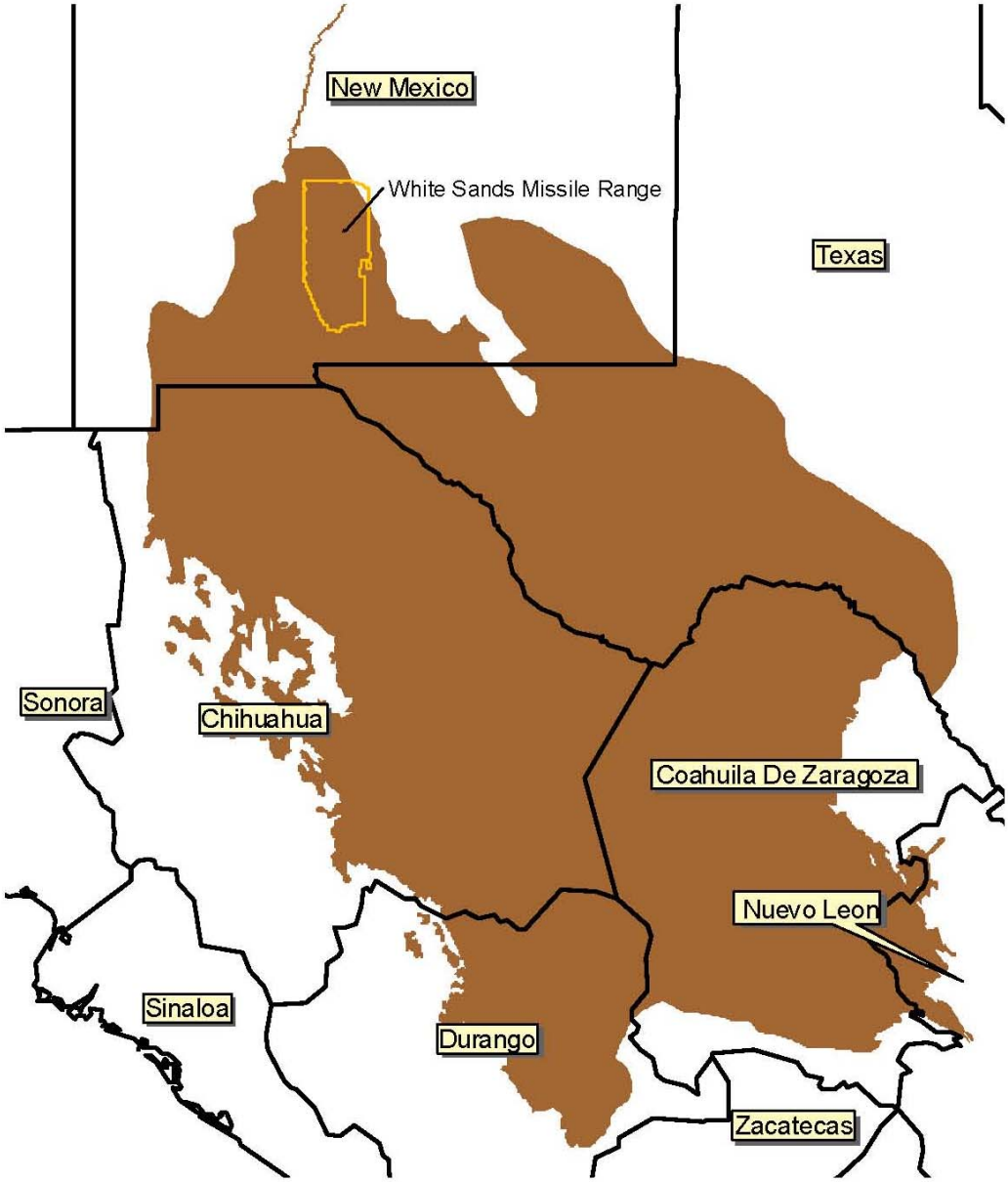

Figure 2.1 WSMR within the Chihuahuan Desert Ecoregion

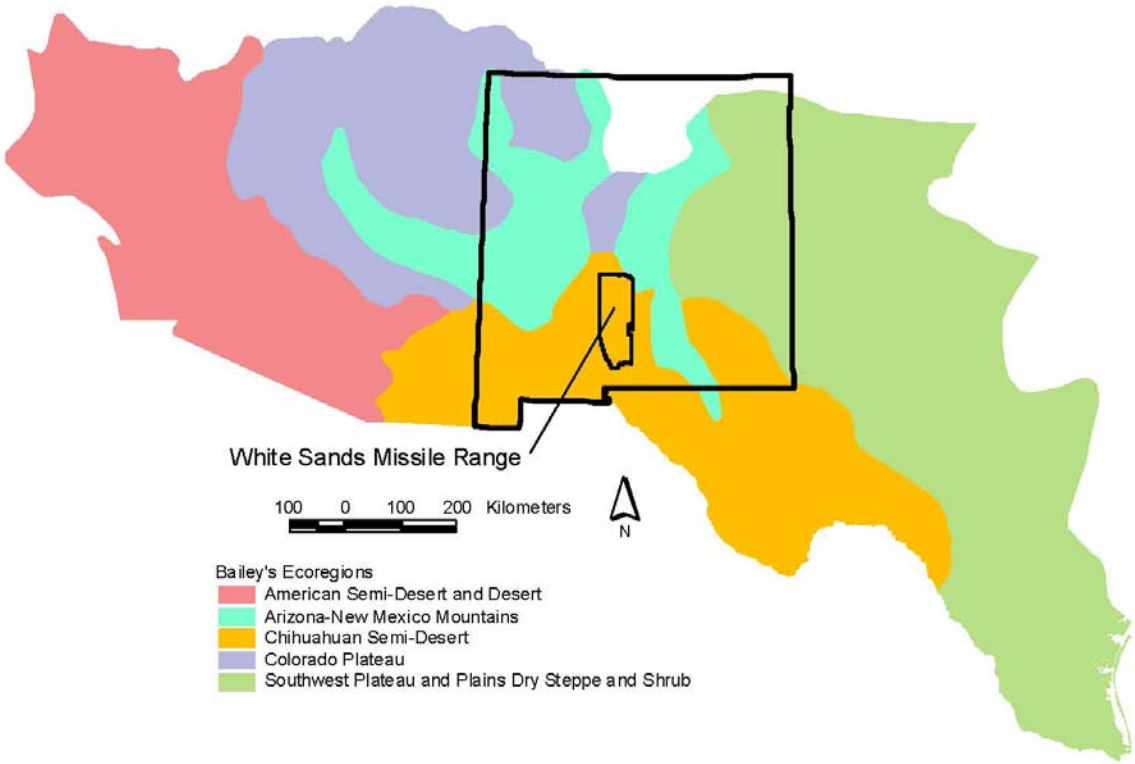

Figure 6.1. Chihuahuan Semi-desert Ecoregion and adjacent ecoregions (Bailey et al. 1994)

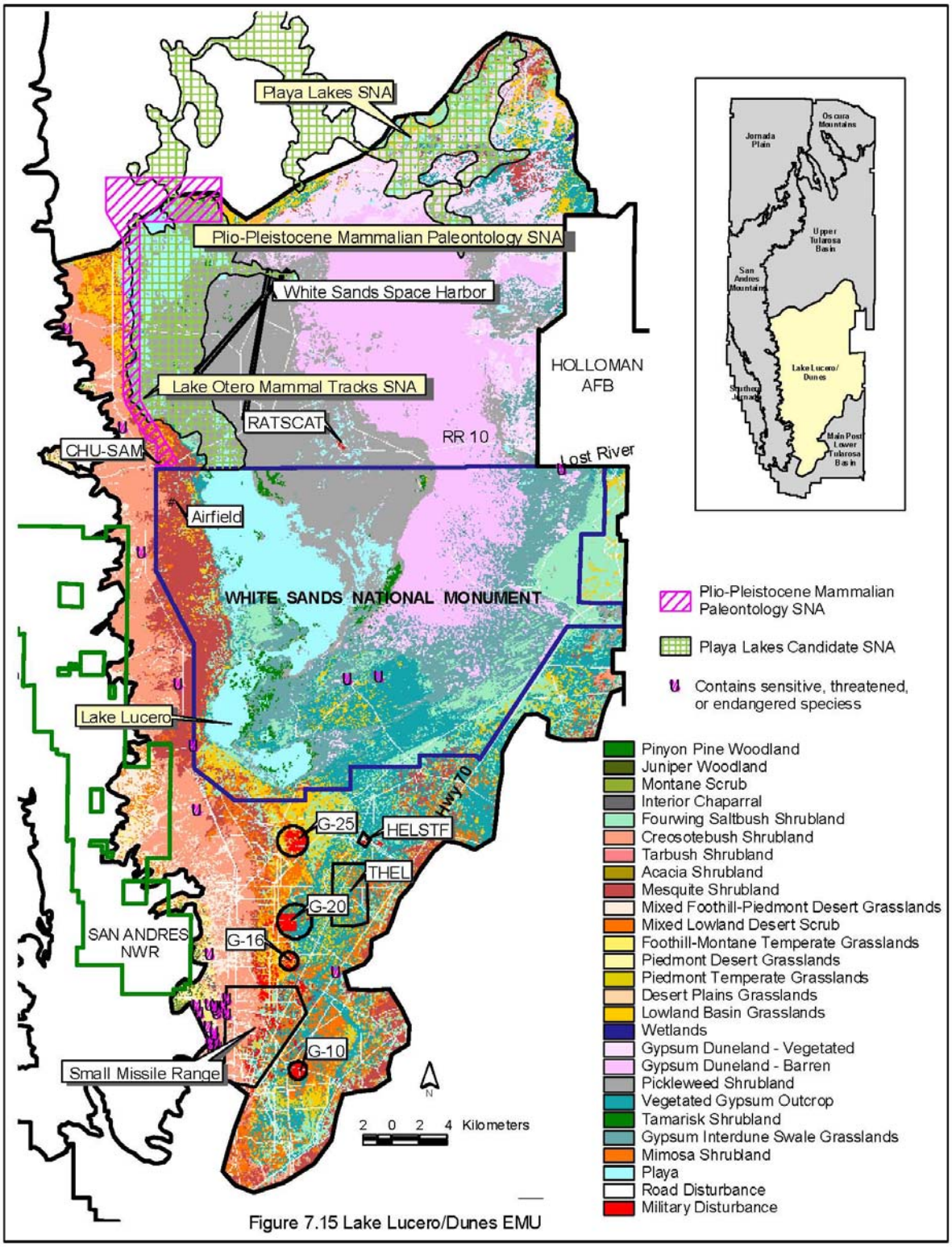

Figure 7.15 Lake Lucero/Dunes EMU

TABLE 1
EXAMPLES OF SENSITIVE ENVIRONMENTS

National Parks and National Monuments

Designated or Administratively Proposed Federal Wilderness Areas

National Preserves

National or State Wildlife Refuges

National Lakeshore Recreational Areas

Federal land designated for protection of natural ecosystems

State land designated for wildlife or game management

State designated Natural Areas

Federal or state designated Scenic or Wild River

All areas that provide or could potentially provide critical habitat[1] for state and federally listed Threatened or Endangered Species, those species that are currently petitioned for listing, and species designated by other agencies as sensitive or species of concern

All areas that provide or could potentially provide habitat for state protected species as defined in the Wildlife Code, Chapter 17 of the New Mexico Statutes

All areas that provide or could potentially provide habitat for migratory birds as protected by the Migratory Bird Treaty Act (16 U.S.C. §§ 703-712)

All areas that provide or could potentially provide habitat for bald eagles and golden eagles as protected by the Bald and Golden Eagle Protection Act (16 U.S.C. 668-668d)

All areas that provide or could potentially provide habitat for song birds as protected by the State of New Mexico statute (New Mexico Statute, 1978, Chapter 17, Game and Fish, 17-2-13)

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1 Critical habitats are defined by the Endangered Species Act (50 CFR §424.02(d)) as:

1) Specific areas within the geographical area currently occupied by a species, at the time it is listed in accordance with the Act, on which are found those physical or biological features (I) essential to the conservation of the species and (ii) that may require special management considerations or protection, and
2) Specific areas outside the geographical area occupied by a species at the time it is listed upon a determination by the Secretary [of Interior] that such areas are essential for the conservation of the species.

All areas that provide or could potentially provide habitat for hawks, vultures and owls as protected by the State of New Mexico statute (New Mexico Statute, 1978, Chapter 17, Game and Fish, 17-2-14)

All areas that provide or could potentially provide habitat for horned toads and Bullfrogs as protected by the State of New Mexico statute (New Mexico Statute, 1978, Chapter 17, Game and Fish, 17-2-15 and 16, resp.)

All perennial waters (e.g., rivers, lakes, playas, sloughs, ponds, etc)

All ephemeral drainage (e.g., arroyos, puddles/pools, intermittent streams, etc) that provide significant wildlife habitat or that could potentially transport contaminants off site to areas that provide wildlife habitat

All riparian habitats

All perennial and ephemeral wetlands (not limited to jurisdictional wetlands)

All areas that are potentially important breeding, staging, and overwintering habitats as well as other habitats important for the survival of animals during critical periods of their life cycle.

ATTACHMENT B

ECOLOGICAL SITE EXCLUSION CRITERIA CHECKLIST AND DECISION TREE

1. NEW MEXICO ECOLOGICAL EXCLUSION CRITERIA CHECKLIST

The following questions are designed to be used in conjunction with the Ecological Exclusion Criteria Decision Tree (Figure 1). After answering each question, refer to the Decision Tree to determine the appropriate next step. In some cases, questions will be omitted as the user is directed to another section as indicated by the flow diagram in the Decision Tree. For example, if the user answers "yes" to Question 1 of Section I, he or she is directed to proceed to Section II.

I. Habitat

In the following questions, "affected property" refers to all property on which a release has occurred or is believed to have occurred, including off-site areas where contamination may have occurred or migrated.

1. Are any of the below-listed sensitive environments at, adjacent to, or in the locality[1] of the affected property? **No.**

   - National Park or National Monument
   - Designated or administratively proposed Federal Wilderness Area
   - National Preserve
   - National or State Wildlife Refuge
   - Federal or State land designated for wildlife or game management
   - State designated Natural Areas
   - All areas that are owned or used by local tribes
   - All areas that are potentially important breeding, staging, and overwintering habitats as well as other habitats important for the survival of animals during critical periods of their life cycle
   - All areas that provide or could potentially provide habitat for state and federally listed Threatened or Endangered Species, those species that are currently petitioned for listing, and species designated by other agencies as sensitive or species of concern
   - All areas that provide or could potentially provide habitat for state protected species as defined in the Wildlife Code, Chapter 17 of the New Mexico Statutes
   - All areas that provide or could potentially provide habitat for migratory birds as protected by the Migratory Bird Treaty Act (16 U.S.C. §§ 703-712)
   - All areas that provide or could potentially provide habitat for bald eagles and golden eagles as protected by the Bald and Golden Eagle Protection Act (16 U.S.C. 668-668d)

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1 *Locality* of the site refers to any area where an ecological receptor is likely to contact site-related chemicals. The locality of the site considers the likelihood of contamination migrating over time and places the site in the context of its general surrounding. Therefore, the locality is typically larger than the site and the areas adjacent to the site.

- All areas that provide or could potentially provide habitat for song birds as protected by the state of New Mexico statute (New Mexico Statute, 1978, Chapter 17, Game and Fish, 17-2-13)
- All areas that provide or could potentially provide habitat for hawks, vultures and owls as protected by the state of New Mexico statute (New Mexico Statute, 1978, Chapter 17, Game and Fish, 17-2-14)
- All areas that provide or could potentially provide habitat for horned toads and bullfrogs as protected by the state of New Mexico statute (New Mexico Statute, 1978, Chapter 17, Game and Fish, 17-2-15 and 16, respectively)

2. Does the affected property contain land areas which were not listed in Question 1, but could be considered viable ecological habitat? The following are examples (but not a complete listing) of viable ecological habitats: **Yes.**

- Wooded areas
- Shrub/scrub vegetated areas
- Open fields (prairie)
- Other grassy areas
- Desert areas
- Any other areas which support wildlife and/or vegetation, excluding areas which support only opportunistic species (such as house mice, Norway rats, pigeons, etc.) that do not serve as prey to species in adjacent habitats.

The following features are not considered ecologically viable:

- Pavement
- Buildings
- Paved areas of roadways
- Paved/concrete equipment storage pads
- Paved manufacturing or process areas
- Other non-natural surface cover or structure

3. Does the affected property contain any perennial or ephemeral aquatic features which were not listed in Question 1? **No.**

II. Receptors

1. Is any part of the affected property used for habitat, foraging area, or refuge by any rare, threatened, or endangered species (plant *or* animal), or otherwise protected species (e.g., raptors, migratory birds)? **No.**

2. Is any part of the affected property used for habitat, foraging area, or refuge by any species used as a recreational (e.g., game animals) and/or commercial resource? **Yes.**

3. Is any part of the affected property used for habitat, foraging area, or refuge by any plant or animal species? This includes plants considered "weeds" and opportunistic insect and animal species (such as cockroaches and rats) if they are used as a food source for other species in the area. **Yes.**

III. Exposure Pathways

1. Could receptors be impacted by contaminants via direct contact?

   Is a receptor located in or using an area where it could contact contaminated air, soil[3], or surface water? **No.**

For Questions 2 and 3, note that one must answer "yes" to all three bullets in order to be directed to the "exclusion denied" box of the decision tree. This is because answering "no" to one of the questions in the bullet list indicates that a complete exposure pathway is not present. For example, in Question 2, if the chemical cannot leach or dissolve to groundwater (bullet 1), there is no chance of ecological receptors being exposed to the chemical through contact with contaminated groundwater. Similarly, the responses to the questions in Question 4 determine whether a complete pathway exists for exposure to NAPL.

2. Could receptors contact contaminants via groundwater?
   - Can the chemical leach or dissolve to groundwater[4]? **Yes.**
   - Can groundwater mobilize the chemical? **Yes.**
   - Could (does) contaminated groundwater discharge into known or potential receptor habitats? **No.**

3. Could receptors contact contaminants via runoff (i.e., surface water and/or suspended sediment) or erosion by water or wind? **No.**
   - Are chemicals present in surface soils? **No.**
   - Can the chemical be leached from or eroded with surface soils? **No.**
   - Is there a receptor habitat located downgradient of the leached/eroded surface soil? **No.**

---

3 For soil, this means contamination less than 5 feet below ground surface (bgs).

4 Information on the environmental fate of specific chemicals can be found on the Internet at *http://www.epa.gov/opptintr/chemfact/* or at a local library in published copies of the *Hazardous Substances Data Bank*.

4. Could receptors contact contaminants via migration of non-aqueous phase liquids (NAPL)?

- Is NAPL present at the site? **No.**
- Is NAPL migrating toward potential receptors or habitats? **No.**
- Could NAPL discharge impact receptors or habitats? **No.**

Figure 1 -Ecological Exclusion Criteria Decision Tree

(Refer to corresponding checklist for the full text of each question)

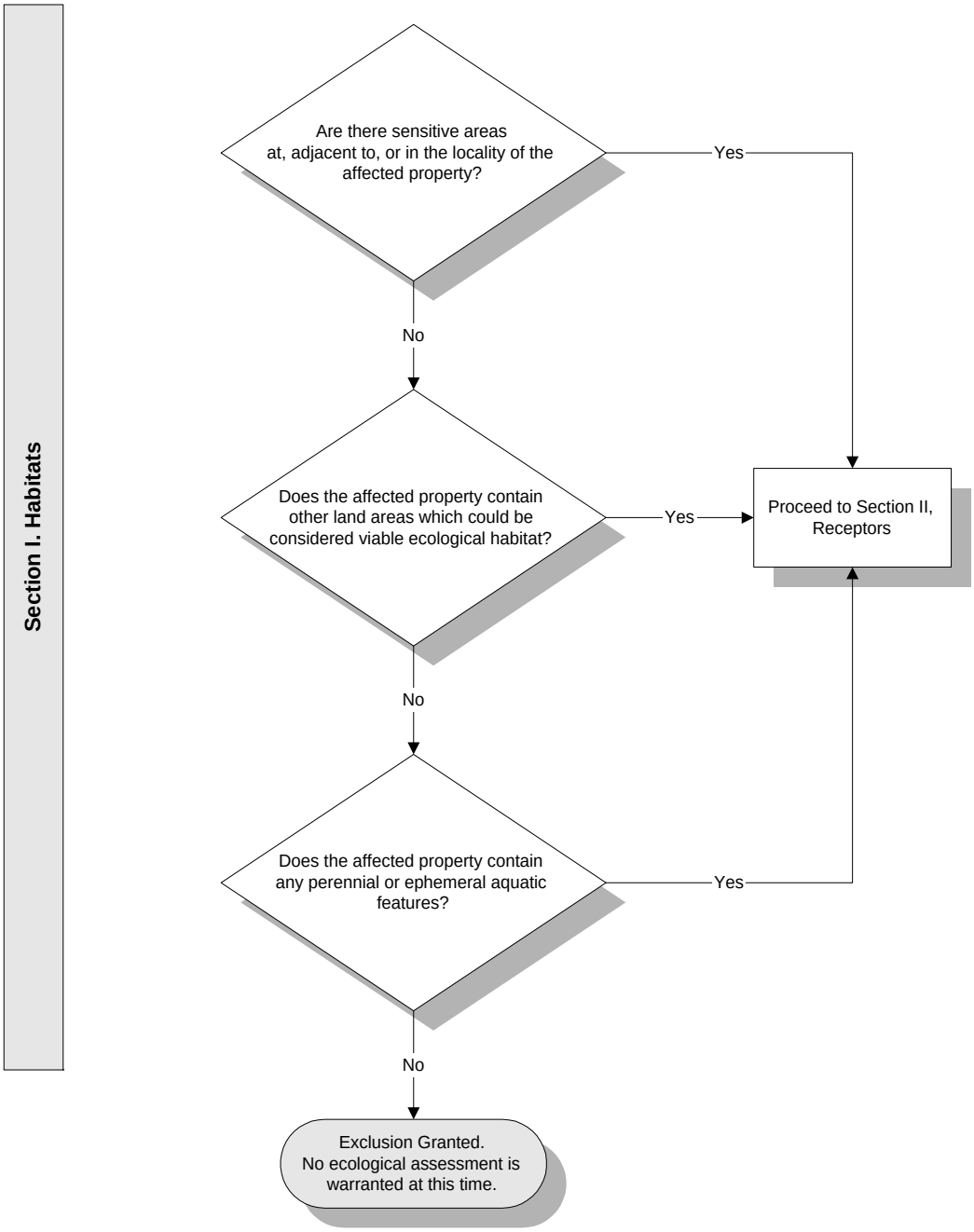


Figure 1 - Exclusion Criteria Decision Tree (continued)

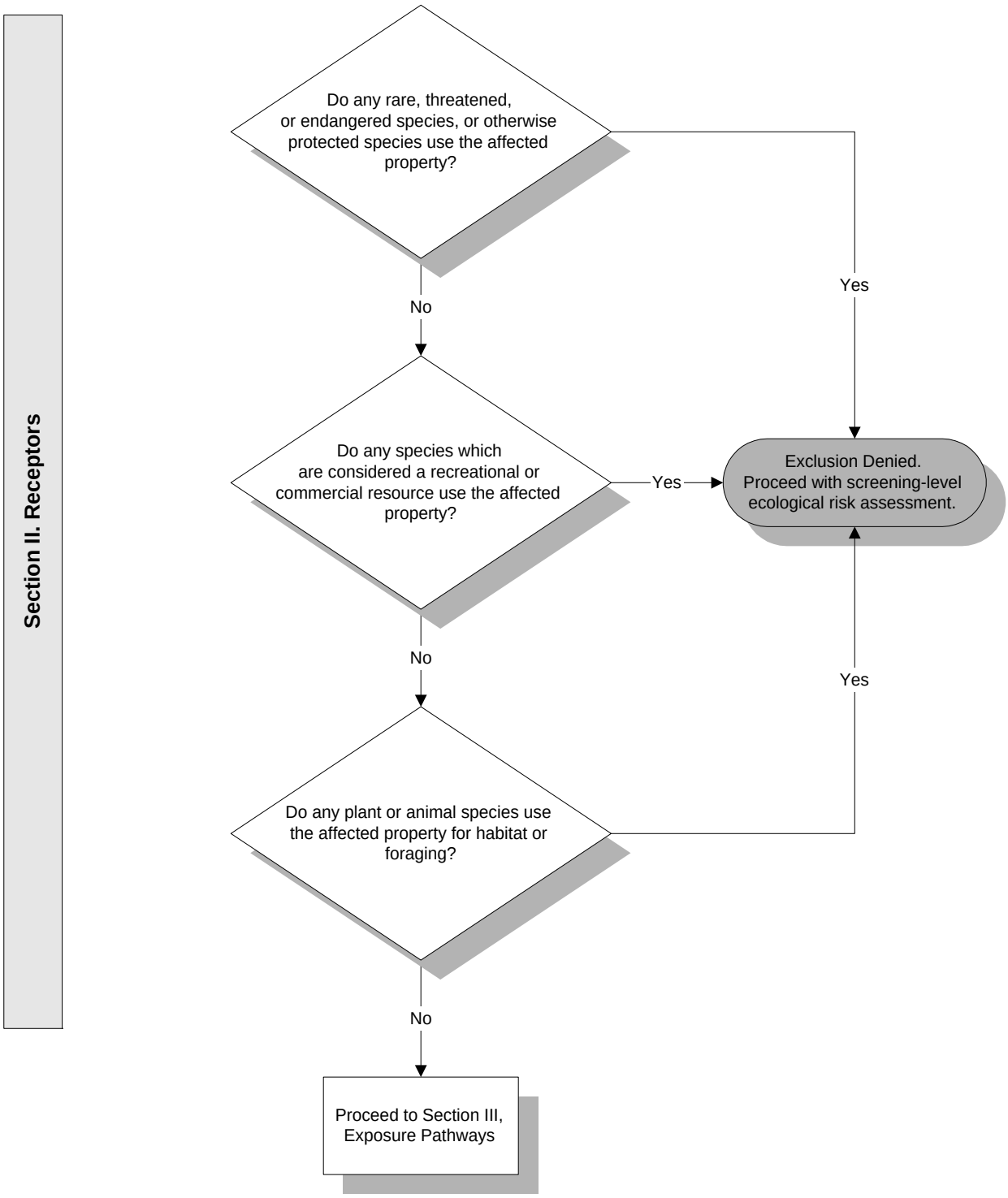
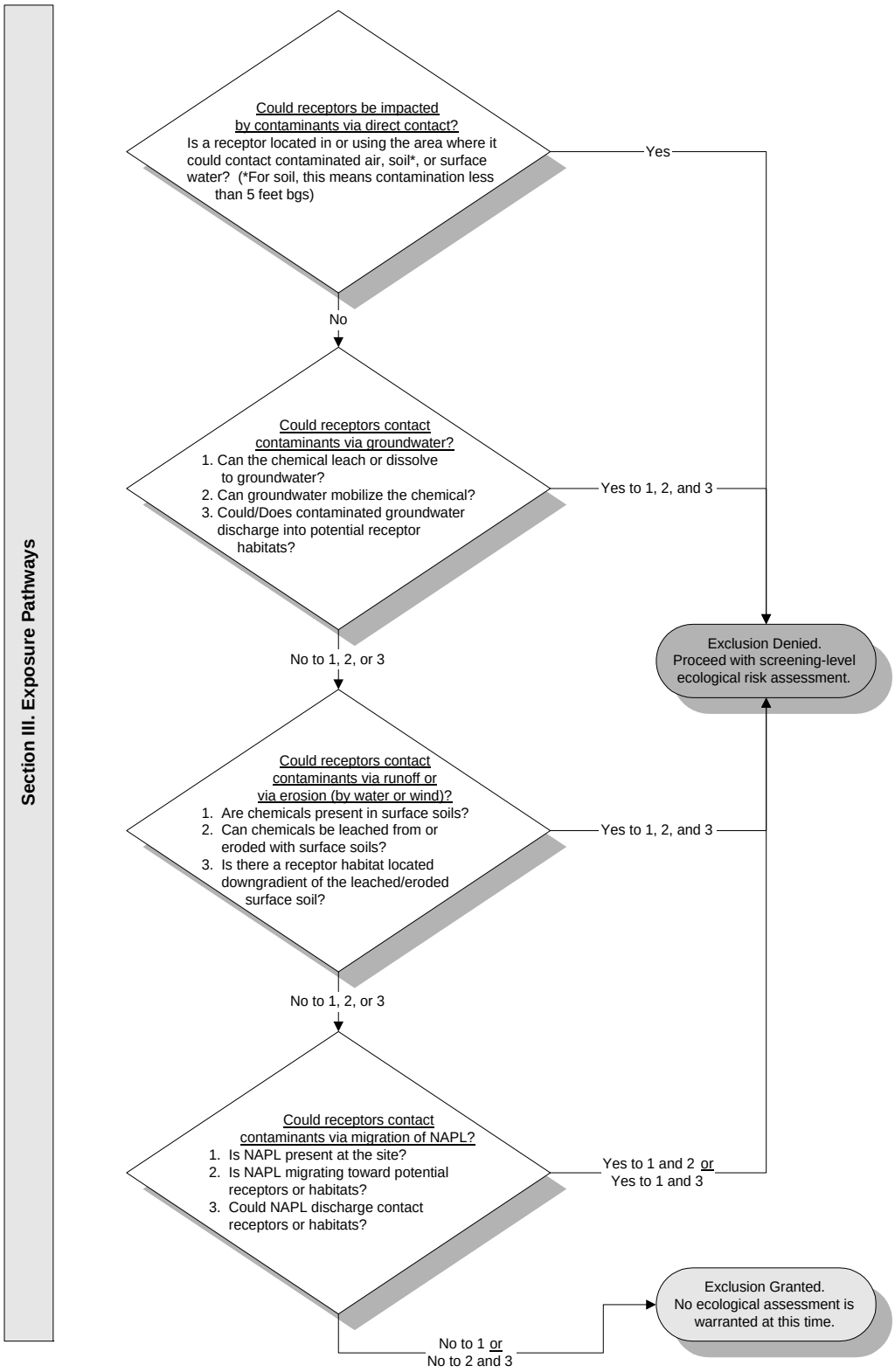


Figure 1 - Exclusion Criteria Decision Tree (continued)



ATTACHMENT A

SCREENING-LEVEL ECOLOGICAL RISK ASSESSMENT
SCOPING ASSESSMENT
SITE ASSESSMENT CHECKLIST

NEW MEXICO ENVIRONMENT DEPARTMENT

SITE ASSESSMENT CHECKLIST

I. SITE LOCATION

1. Site Name: SWMU 146 Dry Pond
   US EPA I.D. Number: NM2750211235
   Location: High Energy Laser Systems Test Facility
   County: Otero
   City: WSMR State: NM

2. Latitude: 32.6302 Longitude: 106.3319

3. Attach site maps, including a topographical map, a diagram which illustrates the layout of the facility (e.g., site boundaries, structures, etc.), and maps showing all habitat areas identified in Section III of the checklist. Also, include maps which illustrate known release areas, sampling locations, and any other important features, if available.

II. SITE CHARACTERIZATION

1. Indicate the approximate area of the site (i.e., acres or sq. ft) _____
2. Provide an approximate breakdown of the land uses on the site:

_____% Heavy Industrial	_____% Light Industrial	_____% Urban
_____% Residential	_____% Rural	_____% Agricultural[b]
_____% Recreational[a]	_____% Undisturbed	100 % Other[c]

[a]For recreational areas, please describe the usage of the area (e.g., park, playing field, etc.):
_____

[b]For agricultural areas, please list the crops and/or livestock which are present:
_____

[c]For areas designated as "other", please describe the usage of the area:
The HELSTF Facility is a Department of Defense test facility.

3. Provide an approximate breakdown of the land uses in the area surrounding the site. Indicate the radius (in miles) of the area described: 3,200 square miles

_____% Heavy Industrial	_____% Light Industrial	_____% Urban
_____% Residential	_____% Rural	_____% Agricultural[b]
_____% Recreational[a]	_____% Undisturbed	100 % Other [c]

[a]For recreational areas, please describe the usage of the area (e.g., park, playing field, golf course, etc.):
_____

[b]For agricultural areas, please list the crops and/or livestock which are present:
_____

[c]For areas designated as "other", please describe the usage of the area:
The HELSTF test facility is contained within 3,200 square miles of the White Sands Missile Range which is used for testing weapon systems for the Department of Defense.

4. Describe reasonable and likely future land and/or water use(s) at the site.
The HELSTF Facility is likely to remain a Department of Defense test facility for the foreseeable future. The regional ground water at the site has greater than 10,000 mg/l total dissolved solids and will not likely be used for drinking water in the foreseeable future. Regional water away from the test facility may be used for construction purposes.

5. Describe the historical uses of the site. Include information on chemical releases that may have occurred as a result of previous land uses. For each chemical release, provide information on the form of the chemical released (i.e., solid, liquid, vapor) and the known or suspected causes or mechanism of the release (i.e., spills, leaks, material disposal, dumping, explosion, etc.).
The Dry Pond is a 120 by 120 by 7 foot deep, unlined surface impoundment constructed about 1981. The pond reportedly received non-sewage wastewater from the Test Cell 2 Mechanical Building (26115) and overflow from treated wastewater from the sewage lagoons (SWMU 27 thru 30). The pond continues to receive water thru the discharge pipe (presumably from building 26115).

6. If any movement of soil has taken place at the site, describe the degree of the disturbance. Indicate the likely source of any disturbances (e.g., erosion, agricultural, mining, industrial activities, removals, etc.) and estimate when these events occurred.

No soil movement has occurred at the site.

7. Describe the current uses of the site. Include information on recent (previous 5 years) disturbances or chemical releases that have occurred. For each chemical release, provide information on the form of the chemical released and the causes or mechanism of the release.
SWMU 146 still receives non-sanitary wastewater effluent from Test Cell 2. There are no known chemical releases to the site in the last 5 years.

8. Identify the location or suspected location of chemical releases at the site. Provide an estimate of the distance between these locations and the areas identified in Section III.
Wastewater is discharged to the northern corner of the dry pond. If chemicals have been released to the pond, this location would be the likely source.

9. Identify the suspected contaminants of concern (COCs) at the site. If known, include the maximum contaminant levels. Please indicate the source of data cited (e.g., RFI, confirmatory sampling, etc.).
The VOC acetone and the inorganics arsenic and chromium are COCs at the site based on previous sampling events during the Phase I and Phase II RFI.

10. Identify the media (e.g., soil (surface or subsurface), surface water, air, groundwater) which are known or suspected to contain COCs.
Based on data from the Phase III RFI, arsenic (highest concentration 2.68 mg/kg) and chromium (highest concentration 3.93 mg/kg) concentrations in the surface soil cannot be ruled out as background. Contaminants in ground water perched upper and perched lower may be attributed to the sewage lagoons (SWMUs 27-30)

11. Indicate the approximate depth to groundwater (in feet below ground surface [(bgs)].
Average depth to the regional ground water table at HELSTF is 71-73 ft below ground surface. The perched ground water is approximately 12-20 ft bgs.

12. Indicate the direction of groundwater flow (e.g., north, southeast, etc.)
The direction of regional ground water flow at HELSTF is to the south-east.

III. HABITAT EVALUATION

III.A Wetland Habitats

Are any wetland[2] areas such as marshes or swamps on or adjacent to the site?

☐ Yes X No

If yes, indicate the wetland area on the attached site map and answer the following questions regarding the wetland area. If more than one wetland area is present on or adjacent to the site, make additional copies of the following questions and fill out for each individual wetland area. Distinguish between wetland areas by using names or other designations (such as location), and clearly identify each area on the site map. Also, obtain and attach a National Wetlands Inventory Map (or maps) to illustrate each wetland area.

Identify the sources of the observations and information (e.g., National Wetland Inventory, Federal or State Agency, USGS topographic maps) used to make the determination that wetland areas are or are not present.

2Wetlands are defined in 40 CFR §232.2 as " Areas inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and that under normal circumstances does support, a prevalence of vegetation typically adapted for life in saturated soil conditions." Examples of typical wetlands plants include: cattails, cordgrass, willows and cypress trees. National wetland inventory maps may be available at http:\\nwi.fws.gov. Additional information on wetland delineation criteria is also available from the Army Corps of Engineers.

Site visit by wildlife biologist and USGS topographic maps.

If no wetland areas are present, proceed to Section III.B.

III.B Aquatic Habitats

III.B.1 Non-Flowing Aquatic Features

Are any non-flowing aquatic features (such as ponds or lakes) located at or adjacent to the site?

☐ Yes X No

If yes, indicate the aquatic feature on the attached site map and answer the following questions regarding the non-flowing aquatic features. If more than one non-flowing aquatic feature is present on or adjacent to the site, make additional copies of the following questions and fill out for each individual aquatic feature. Distinguish between aquatic features by using names or other designations, and clearly identify each area on the site map.

If no, proceed to Section III.B.2.

III.B.2 Flowing Aquatic Features

Are any flowing aquatic features (such as streams or rivers) located at or adjacent to the site?

☐ Yes X No

If yes, indicate the aquatic feature on the attached site map and answer the following questions regarding the flowing aquatic features. If more than one flowing aquatic feature is present on or adjacent to the site, make additional copies of the following questions and fill out for each individual aquatic feature. Distinguish between aquatic features by using names or other designations, and clearly identify each area on the site map

If no, proceed to Section III.C.

III.C Terrestrial Habitats

III.C.1 Wooded

Are any wooded areas on or adjacent to the site? ☐ Yes X No

If yes, indicate the wooded area on the attached site map and answer the following questions. If more than one wooded area is present on or adjacent to the site, make additional copies of the following questions and fill out for each individual wooded area. Distinguish between wooded areas by using names or other designations, and clearly identify each area on the site map.

If no, proceed to Section III.C.2.

III.C.2 Shrub/Scrub

Are any shrub/scrub areas on or adjacent to the site? ☐ Yes X No

If yes, indicate the shrub/scrub area on the attached site map and answer the following questions. If more than one shrub/scrub area is present on or adjacent to the site, make additional copies of the following questions and fill out for each individual shrub/scrub area. Distinguish between shrub/scrub areas, using names or other designations, and clearly identify each area on the site map.

If no, proceed to Section III.C.3.

III.C.3 Grassland

Are any grassland areas on or adjacent to the site? ☐ Yes X No

If yes, indicate the grassland area on the attached site map and answer the following questions. If more than one grassland area is present on or adjacent to the site, make additional copies of the following questions and fill out for each individual grassland area. Distinguish between grassland areas by using names or other designations, and clearly identify each area on the site map.

If no, proceed to Section III.C.4.

III.C.4 Desert

Are any desert areas on or adjacent to the site? X Yes ☐ No

If yes, indicate the desert area on the attached site map and answer the following questions. If more than one desert area is present on or adjacent to the site, make additional copies of the following questions and fill out for each individual desert area. Distinguish between desert areas by using names or other designations, and clearly identify each area on the site map.

If no, proceed to Section III.C.5.

Desert Area Questions

X Onsite X Offsite

Name or Designation: Chihuahuan Desert

1. Estimate the approximate size of the desert area (in acres or sq. ft.).
   This site including WSMR is contained within tens of thousands of acres of the Chihuahuan Desert.

2. Describe the desert area (e.g., presence or absence of vegetation, vegetation types, presence/size of rocks, sand, etc.)
Vegetation specifically at HELSTF is primarily dominated by four-winged saltbush and gyp moonpod (*Acleisanthes lanceolata*) with scattered wolfberry (*Lycium berlandieri*). The entire area is located within gyp dome habitat and is currently covered with an extensive coat of cryptogrammic crust. No threatened or endangered species of plants are known or expected to occupy the habitat present at the sites.

The surface soil at HELSTF is dominated by silt to sand sized gypsum grains. Beneath the surface, alternating layers of sand and clay are present reflecting past deposition within a lacustrine environment.

3. Animals observed in the desert area or suspected to be present based on indirect evidence or file material:

x Birds
x Mammals
x Reptiles (e.g., snakes, lizards)
❑ Amphibians (e.g., toads, salamanders)

Specify species, if known:

Faunal associations with this habitat type reflect the vegetative cover available and are not nearly as diverse in species associations as more varied vegetation types within WSMR. Invertebrates and reptiles comprise the largest faunal groups associated with the sites. Ants (*Formicidae*), termites (*termitidae*), darkling beetles (*Tenebrionidae*), and wolf spiders (*Lycocidae*) provide a large food base for collared lizards (*Crotaphytus collaris*), leopard lizards (Gambelia wislizenii) and side blotch lizards (*Uta stansburiana*). A few snake species commonly inhabit the area including plains blackhead snakes (*Tantilla nigriceps*), coachwhips (*Masticophis flagellum*), and prairie rattlesnakes (*Crotalus viridis*). Avians common to the area include cactus wrens (*Campylorhynchus brunneicapillus*), loggerhead shrikes (*Lanius ludovicianus*) and, in the summer months, Swainson's hawks (*Buteo swainsoni*). Species of small mammals that utilize this habitat include kangaroo rats (*Dipodomys sp.*), deer mice (*Peromyscus maniculatus*), and pocket mice (*Perognathus* and *Chaetodipus* sp.). Larger mammals include desert cottontail rabbits (*Sylvilagus auduboni*), blacktail jackrabbits (*Lepus californicus*), and gemsbok (*Oryx gazella*). No threatened or endangered species of animals are known to or expected to occupy the habitat present at the site.

III.C.5 Other

1. Are there any other terrestrial communities or habitats on or adjacent to the site which was not previously described?
☐ Yes X No

If yes, indicate the "other" area(s) on the attached site map and describe the area(s) below. Distinguish between onsite and offsite areas. If no, proceed to Section III.D.

_____
_____
_____
_____
_____
_____
_____
_____
_____

III.D Sensitive Environments and Receptors

1. Do any other potentially sensitive environmental areas[3] exist adjacent to or within 0.5 miles of the site? If yes, list these areas and provide the source(s) of information used to identify sensitive areas. *Do not answer "no" without confirmation from the U.S. Fish and Wildlife Service and appropriate State of New Mexico division.*

Habitat present is not considered rare or sensitive by any of the regulating or management agencies including the USFWS, NMDGF, and WSMR Directorate of Environment and Safety. No species of vegetation or animals that are considered rare or listed as threatened or endangered are known or expected in this habitat.

2. Are any areas on or near (i.e., within 0.5 miles) the site which are owned or used by local tribes? If yes, describe. *Contact the Tribal Liason in the Office of the Secretary (505)827-2855 to obtain this information.*

No.

Does the site serve or potentially serve as a habitat, foraging area, or refuge by rare, threatened, endangered, candidate and/or proposed species (plants or animals), or any otherwise protected species? If yes, identify species. *This information should be obtained from the U.S. Fish and Wildlife Service and appropriate State of New Mexico division.*

No. The latest lists of State and Federal species of concern, candidate, threatened, and endangered species were consulted. Resource experts familiar with the sites confirmed that none of these species utilize the habitats at or adjacent to the Site.

3 Areas that provide unique and often protected habitat for wildlife species. These areas are typically used during critical life stages such as breeding, hatching, rearing of young and overwintering. Refer to **Table 1** at the end of this document for examples of sensitive environments.

3. Is the site potentially used as a breeding, roosting or feeding area by migratory bird species? If yes, identify which species.

Yes. There are hundreds of species of migrating birds that may potentially roost or feed at or near the Site. Several species of birds may nest near the Site including Say's phoebe and mourning dove.

4. Is the site used by any ecologically[4], recreationally, or commercially important species? If yes, explain.

The HELSTF site is frequented by recreationally important species (hunted) such as Oryx, mule deer, and quail.

IV. EXPOSURE PATHWAY EVALUATION

1. Do existing data provide sufficient information on the nature, rate, and extent of contamination at the site?

   x Yes
   ❑ No
   ❑ Uncertain

   Please provide an explanation for your answer:
   Current data from the Phase III RFI is sufficient to determine COCs which could potentially affect ecology of the site with respect to soil contamination.

2. Do existing data provide sufficient information on the nature, rate, and extent of contamination in offsite affected areas?

   ❑ Yes
   ❑ No
   ❑ Uncertain
   x No offsite contamination

   Please provide an explanation for your answer:_____

Contamination present at the HELSTF is currently confined to the immediate area of HELSTF. Down gradient monitoring wells contained within WSMR boundaries show no evidence of contaminant migration.

4 Ecologically important species include populations of species which provide a critical (i.e., not replaceable) food resource for higher organisms and whose function as such would not be replaced by more tolerant species; or perform a critical ecological function (such as organic matter decomposition) and whose functions will not be replaced by other species. Ecologically important species include pest and opportunistic species that populate an area if they serve as a food source for other species, but do not include domesticated animals (e.g., pets and livestock) or plants/animals whose existence is maintained by continuous human interventions (e.g., fish hatcheries, agricultural crops, etc.,)

3. Do existing data address potential migration pathways of contaminants at the site?

x Yes
❑ No
❑ Uncertain

Please provide an explanation for your answer:
Contaminants of Concern were discovered at depths (surface), at concentrations above background, which are within the exposure pathway for ecological evaluation of the soil.

4. Do existing data address potential migration pathways of contaminants in offsite affected areas?

❑ Yes
❑ No
❑ Uncertain
x No offsite contamination

Please provide an explanation for your answer:_____

Contamination present at the HELSTF is currently confined to the immediate area of HELSTF. Down gradient monitoring wells contained within WSMR boundaries show no evidence of contaminant migration.

5. Are there visible indications of stressed habitats or receptors on or near (i.e., within 0.5 miles) the site that may be the result of a chemical release? If yes, explain. Attach photographs if available.

No.

6. Is the location of the contamination such that receptors might be reasonably expected to come into contact with it? For soil, this means contamination in the soil 0 to 5 feet below ground surface (bgs). If yes, explain.

Yes. It is possible for receptors to come in contact with potential contamination in the soil.

7. Are receptors located in or using habitats where chemicals exist in air, soil, sediment or surface water? If yes, explain.

Yes. Potential receptors have been noted on site.

8. Could chemicals reach receptors via groundwater? Can chemicals leach or dissolve to groundwater? Are chemicals mobile in groundwater? Does groundwater discharge into receptor habitats? If yes, explain.

No. It is not expected that receptors could come in contact with the ground water. Ground water does not discharge to receptor habitats.

9. Could chemicals reach receptors through runoff or erosion? Answer the following questions:

What is the approximate distance from the contaminated area to the nearest watercourse or arroyo?

- ❑ 0 feet (i.e., contamination has reached a watercourse or arroyo)
- ❑ 1-10 feet
- ❑ 11-20 feet
- ❑ 21-50 feet
- ❑ 51-100 feet
- ❑ 101-200 feet
- ❑ > 200 feet
- ❑ > 500 feet
- x > 1000 feet

What is the slope of the ground in the contaminated area?

- x 0-10%
- ❑ 10-30%
- ❑ > 30%

What is the approximate amount of ground and canopy vegetative cover in the contaminated area?

- x < 25%
- ❑ 25-75%
- ❑ > 75%

Is there visible evidence of erosion (e.g., a rill or gully) in or near the contaminated area?

- ❑ Yes
- x No
- ❑ Do not know

Do any structures, pavement, or natural drainage features direct run-on flow (i.e., surface flows originating upstream or uphill from the area of concern) into the contaminated area?

- ❑ Yes
- x No
- ❑ Do not know

10. Could chemicals reach receptors through the dispersion of contaminants in air (e.g., volatilization, vapors, fugitive dust)? If yes, explain.

<u>Yes. It is expected that COCs in surface soil could reach receptors via fugitive dust.</u>

11. Could chemicals reach receptors through migration of non-aqueous phase liquids (NAPLs)? Is a NAPL present at the site that might be migrating towards receptors or habitats? Could NAPL discharge contact receptors or their habitat?

No NAPLs are present at this site.

12. Could receptors be impacted by external irradiation at the site? Are gamma emitting radionuclides present at the site? Is the radionuclide contamination buried or at the surface?

No.

PHOTOGRAPHIC DOCUMENTATION

During the site visit(s), photographs should be taken to document the current conditions at the site and to support the information entered in the checklist. For example, photographs may be used to document the following:

- The nature, quality, and distribution of vegetation at the site
- Receptors or evidence of receptors
- Potentially important ecological features, such as ponds and drainage ditches
- Potential exposure pathways
- Any evidence of contamination or impact

The following space may be used to record photo subjects.

This SWMU is a man-made earthen tank with signs of recent soil disturbance from vehicles. A dense grove of saltcedar (*Tamarix ramosissima*) covers about one third of the area of the tank providing nesting and roosting habitat for birds, and cover for small mammals including cottontail (*Sylvilagus auduboni*) and jack rabbits (*Lepus californcus*). A SLERA was completed for this site and is attached to this Appendix. Based on the SLERA Checklist, exclusion should be denied for further ecological assessment at this time.

SUMMARY OF OBSERVATIONS AND SITE SETTING

Include information on significant source areas and migration pathways that are likely to constitute complete exposure pathways.

This site including WSMR is contained within tens of thousands of acres of the Chihuahuan Desert. Vegetation specifically at HELSTF is primarily dominated by four-winged saltbush and gyp moonpod (*Acleisanthes lanceolata*) with scattered wolfberry (*Lycium berlandieri*). The entire area is located within gyp dome habitat and is currently covered with an extensive coat of cryptogrammic crust. No threatened or endangered species of plants are known or expected to occupy the habitat present at the sites.

The surface soil at HELSTF is dominated by silt to sand sized gypsum grains. Beneath the surface, alternating layers of sand and clay are present reflecting past deposition within a lacustrine environment.

Based on data from the Phase III RFI, arsenic (highest concentration 2.68 mg/kg) and chromium (highest concentration 3.93 mg/kg) concentrations in the surface soil cannot be ruled out as background. Contaminants in ground water perched upper and perched lower may be attributed to the sewage lagoons (SWMUs 27-30).

There is a complete exposure pathway for soils at the site.

Checklist Completed by Bradley Davis

Affiliation White Sands Technical Services

Author Assisted by Doug Burkett and William Little

Date

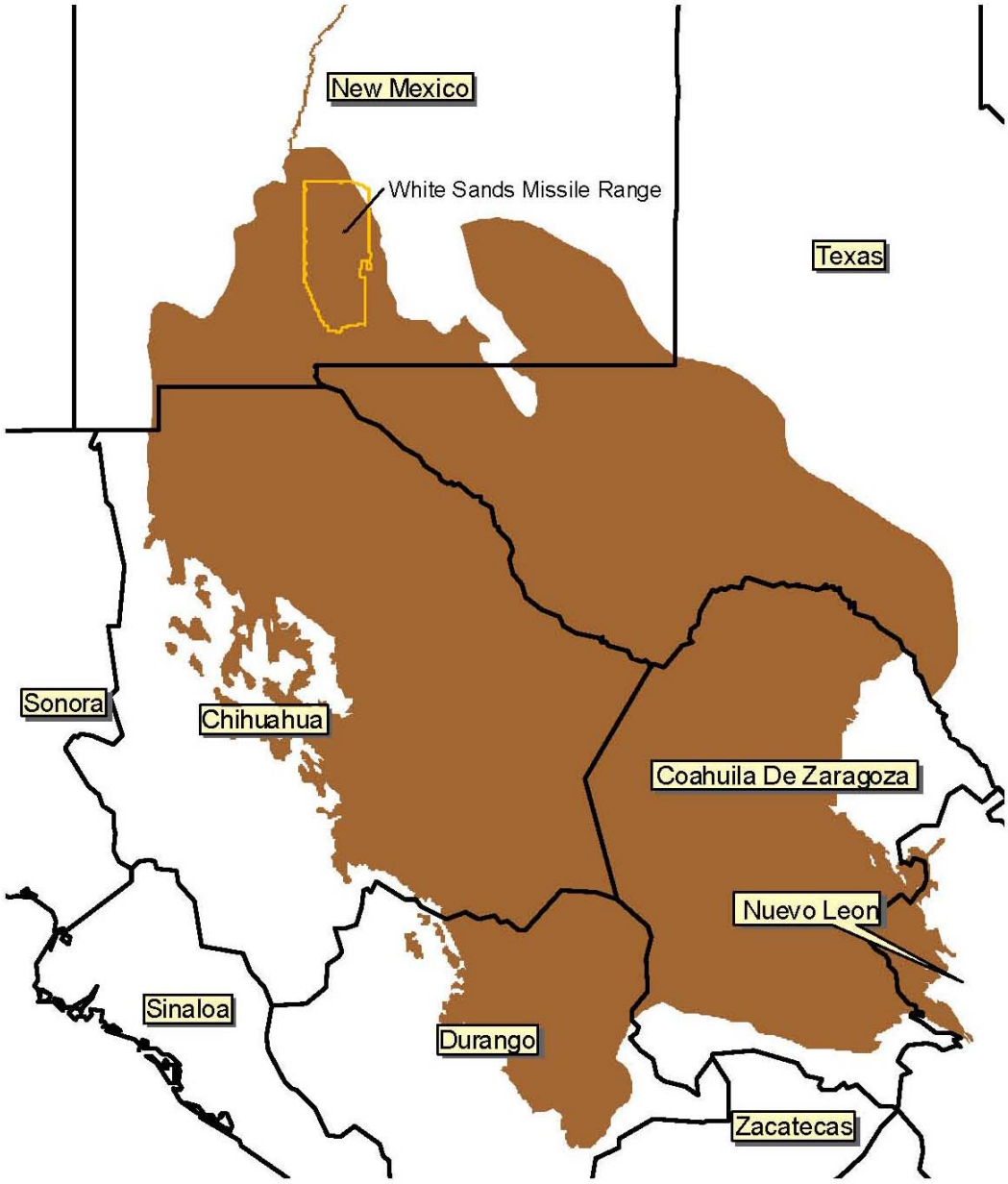


Figure 2.1 WSMR within the Chihuahuan Desert Ecoregion

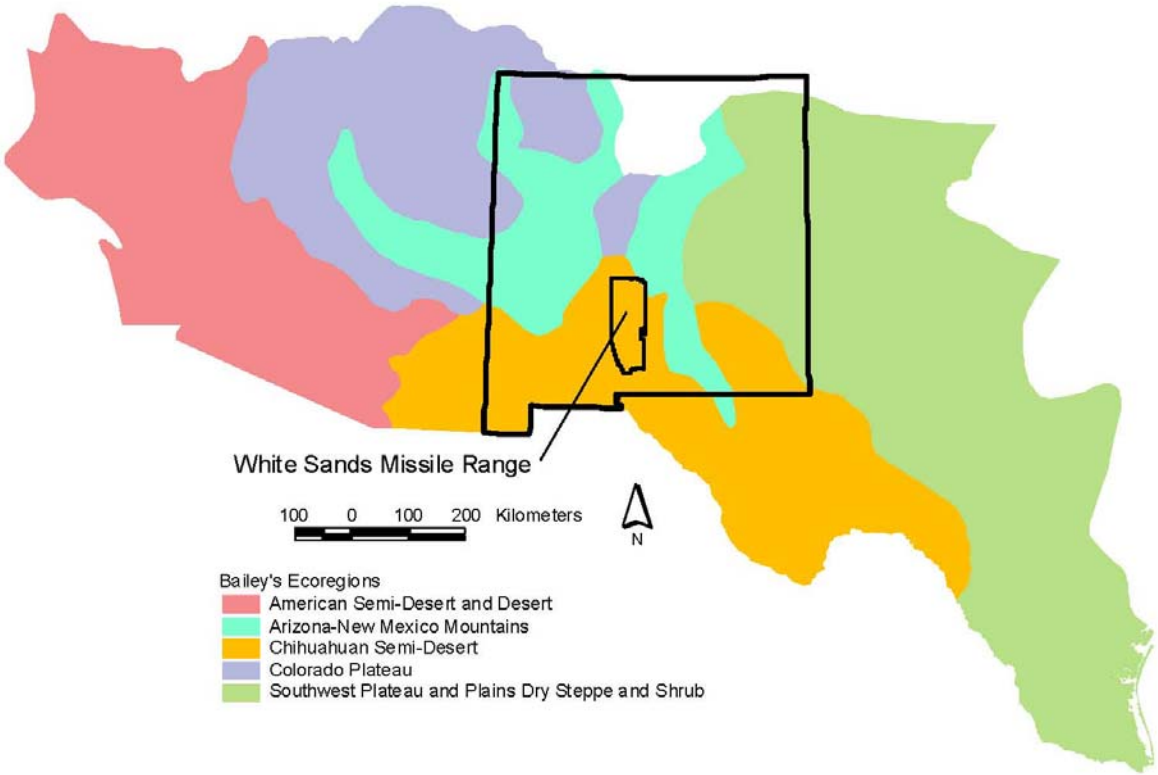


Figure 6.1. Chihuahuan Semi-desert Ecoregion and adjacent ecoregions (Bailey et al. 1994)

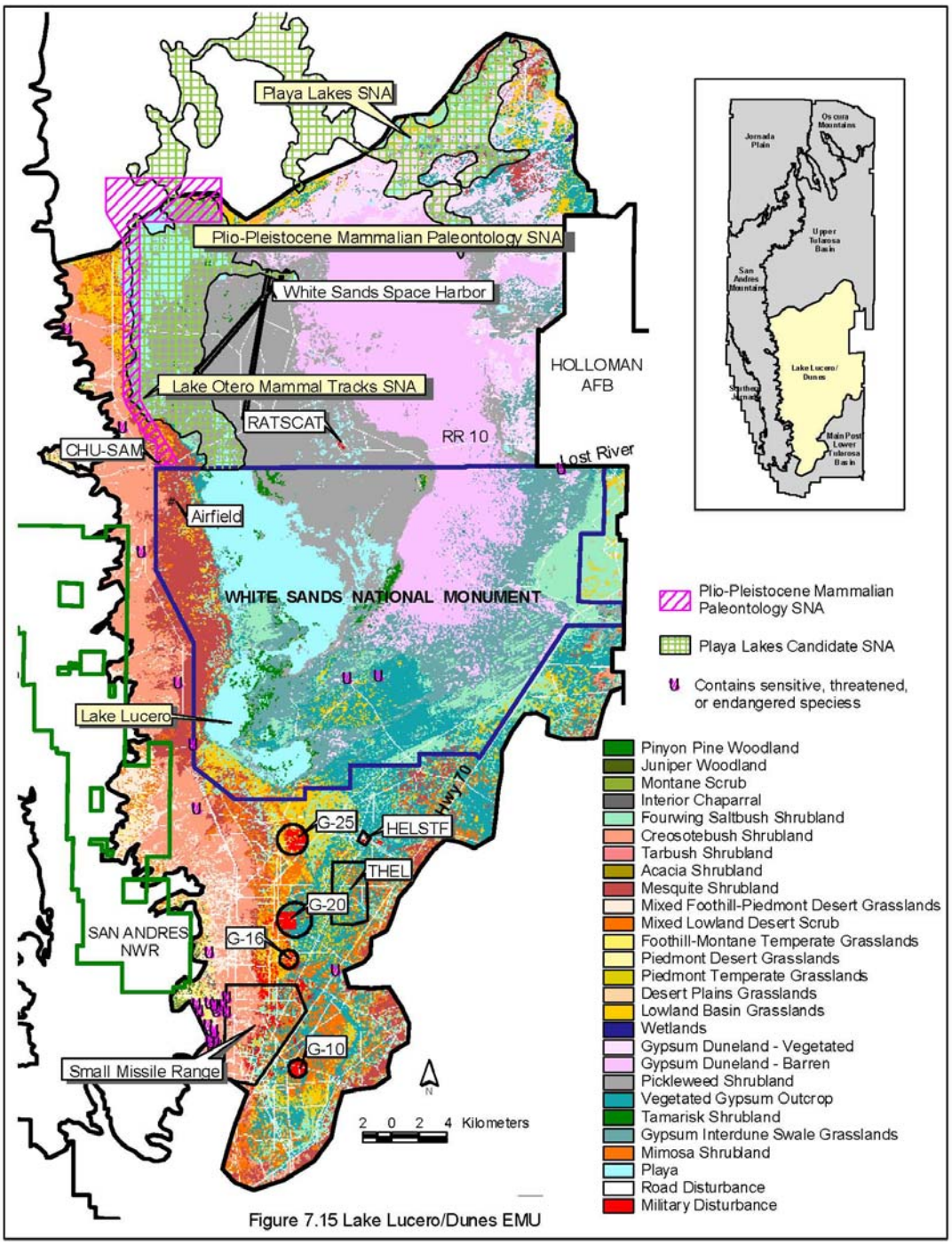


Figure 7.15 Lake Lucero/Dunes EMU

TABLE 1
EXAMPLES OF SENSITIVE ENVIRONMENTS

National Parks and National Monuments

Designated or Administratively Proposed Federal Wilderness Areas

National Preserves

National or State Wildlife Refuges

National Lakeshore Recreational Areas

Federal land designated for protection of natural ecosystems

State land designated for wildlife or game management

State designated Natural Areas

Federal or state designated Scenic or Wild River

All areas that provide or could potentially provide critical habitat[1] for state and federally listed Threatened or Endangered Species, those species that are currently petitioned for listing, and species designated by other agencies as sensitive or species of concern

All areas that provide or could potentially provide habitat for state protected species as defined in the Wildlife Code, Chapter 17 of the New Mexico Statutes

All areas that provide or could potentially provide habitat for migratory birds as protected by the Migratory Bird Treaty Act (16 U.S.C. §§ 703-712)

All areas that provide or could potentially provide habitat for bald eagles and golden eagles as protected by the Bald and Golden Eagle Protection Act (16 U.S.C. 668-668d)

All areas that provide or could potentially provide habitat for song birds as protected by the State of New Mexico statute (New Mexico Statute, 1978, Chapter 17, Game and Fish, 17-2-13)

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1 Critical habitats are defined by the Endangered Species Act (50 CFR §424.02(d)) as:

1) Specific areas within the geographical area currently occupied by a species, at the time it is listed in accordance with the Act, on which are found those physical or biological features (I) essential to the conservation of the species and (ii) that may require special management considerations or protection, and
2) Specific areas outside the geographical area occupied by a species at the time it is listed upon a determination by the Secretary [of Interior] that such areas are essential for the conservation of the species.

All areas that provide or could potentially provide habitat for hawks, vultures and owls as protected by the State of New Mexico statute (New Mexico Statute, 1978, Chapter 17, Game and Fish, 17-2-14)

All areas that provide or could potentially provide habitat for horned toads and Bullfrogs as protected by the State of New Mexico statute (New Mexico Statute, 1978, Chapter 17, Game and Fish, 17-2-15 and 16, resp.)

All perennial waters (e.g., rivers, lakes, playas, sloughs, ponds, etc)

All ephemeral drainage (e.g., arroyos, puddles/pools, intermittent streams, etc) that provide significant wildlife habitat or that could potentially transport contaminants off site to areas that provide wildlife habitat

All riparian habitats

All perennial and ephemeral wetlands (not limited to jurisdictional wetlands)

All areas that are potentially important breeding, staging, and over wintering habitats as well as other habitats important for the survival of animals during critical periods of their life cycle.

ATTACHMENT B

ECOLOGICAL SITE EXCLUSION CRITERIA CHECKLIST AND DECISION TREE

1. NEW MEXICO ECOLOGICAL EXCLUSION CRITERIA CHECKLIST

The following questions are designed to be used in conjunction with the Ecological Exclusion Criteria Decision Tree (Figure 1). After answering each question, refer to the Decision Tree to determine the appropriate next step. In some cases, questions will be omitted as the user is directed to another section as indicated by the flow diagram in the Decision Tree. For example, if the user answers "yes" to Question 1 of Section I, he or she is directed to proceed to Section II.

I. Habitat

In the following questions, "affected property" refers to all property on which a release has occurred or is believed to have occurred, including off-site areas where contamination may have occurred or migrated.

1. Are any of the below-listed sensitive environments at, adjacent to, or in the locality[1] of the affected property? **No.**

   - National Park or National Monument
   - Designated or administratively proposed Federal Wilderness Area
   - National Preserve
   - National or State Wildlife Refuge
   - Federal or State land designated for wildlife or game management
   - State designated Natural Areas
   - All areas that are owned or used by local tribes
   - All areas that are potentially important breeding, staging, and overwintering habitats as well as other habitats important for the survival of animals during critical periods of their life cycle
   - All areas that provide or could potentially provide habitat for state and federally listed Threatened or Endangered Species, those species that are currently petitioned for listing, and species designated by other agencies as sensitive or species of concern
   - All areas that provide or could potentially provide habitat for state protected species as defined in the Wildlife Code, Chapter 17 of the New Mexico Statutes
   - All areas that provide or could potentially provide habitat for migratory birds as protected by the Migratory Bird Treaty Act (16 U.S.C. §§ 703-712)
   - All areas that provide or could potentially provide habitat for bald eagles and golden eagles as protected by the Bald and Golden Eagle Protection Act (16 U.S.C. 668-668d)

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1 *Locality* of the site refers to any area where an ecological receptor is likely to contact site-related chemicals. The locality of the site considers the likelihood of contamination migrating over time and places the site in the context of its general surrounding. Therefore, the locality is typically larger than the site and the areas adjacent to the site.

- All areas that provide or could potentially provide habitat for song birds as protected by the state of New Mexico statute (New Mexico Statute, 1978, Chapter 17, Game and Fish, 17-2-13)
- All areas that provide or could potentially provide habitat for hawks, vultures and owls as protected by the state of New Mexico statute (New Mexico Statute, 1978, Chapter 17, Game and Fish, 17-2-14)
- All areas that provide or could potentially provide habitat for horned toads and bullfrogs as protected by the state of New Mexico statute (New Mexico Statute, 1978, Chapter 17, Game and Fish, 17-2-15 and 16, respectively)

2. Does the affected property contain land areas which were not listed in Question 1, but could be considered viable ecological habitat? The following are examples (but not a complete listing) of viable ecological habitats: **Yes.**

- Wooded areas
- Shrub/scrub vegetated areas
- Open fields (prairie)
- Other grassy areas
- Desert areas
- Any other areas which support wildlife and/or vegetation, excluding areas which support only opportunistic species (such as house mice, Norway rats, pigeons, etc.) that do not serve as prey to species in adjacent habitats.

The following features are not considered ecologically viable:

- Pavement
- Buildings
- Paved areas of roadways
- Paved/concrete equipment storage pads
- Paved manufacturing or process areas
- Other non-natural surface cover or structure

3. Does the affected property contain any perennial or ephemeral aquatic features which were not listed in Question 1? **No.**

II. Receptors

1. Is any part of the affected property used for habitat, foraging area, or refuge by any rare, threatened, or endangered species (plant *or* animal), or otherwise protected species (e.g., raptors, migratory birds)? **No.**

2. Is any part of the affected property used for habitat, foraging area, or refuge by any species used as a recreational (e.g., game animals) and/or commercial resource? **Yes.**

3. Is any part of the affected property used for habitat, foraging area, or refuge by any plant or animal species? This includes plants considered "weeds" and opportunistic insect and animal species (such as cockroaches and rats) if they are used as a food source for other species in the area. **Yes.**

III. Exposure Pathways

1. Could receptors be impacted by contaminants via direct contact?

   Is a receptor located in or using an area where it could contact contaminated air, soil[3], or surface water? **Yes.**

For Questions 2 and 3, note that one must answer "yes" to all three bullets in order to be directed to the "exclusion denied" box of the decision tree. This is because answering "no" to one of the questions in the bullet list indicates that a complete exposure pathway is not present. For example, in Question 2, if the chemical cannot leach or dissolve to groundwater (bullet 1), there is no chance of ecological receptors being exposed to the chemical through contact with contaminated groundwater. Similarly, the responses to the questions in Question 4 determine whether a complete pathway exists for exposure to NAPL.

2. Could receptors contact contaminants via groundwater?
   - Can the chemical leach or dissolve to groundwater[4]? **Yes.**
   - Can groundwater mobilize the chemical? **Yes.**
   - Could (does) contaminated groundwater discharge into known or potential receptor habitats? **No.**

3. Could receptors contact contaminants via runoff (i.e., surface water and/or suspended sediment) or erosion by water or wind?
   - Are chemicals present in surface soils? **Yes.**
   - Can the chemical be leached from or eroded with surface soils? **Yes.**
   - Is there a receptor habitat located downgradient of the leached/eroded surface soil? **Yes.**

4. Could receptors contact contaminants via migration of non-aqueous phase liquids (NAPL)?
   - Is NAPL present at the site? **No.**
   - Is NAPL migrating toward potential receptors or habitats? **No.**
   - Could NAPL discharge impact receptors or habitats? **No.**

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3 For soil, this means contamination less than 5 feet below ground surface (bgs).
4 Information on the environmental fate of specific chemicals can be found on the Internet at *http://www.epa.gov/opptintr/chemfact/* or at a local library in published copies of the *Hazardous Substances Data Bank*.

Figure 1 -Ecological Exclusion Criteria Decision Tree

(Refer to corresponding checklist for the full text of each question)

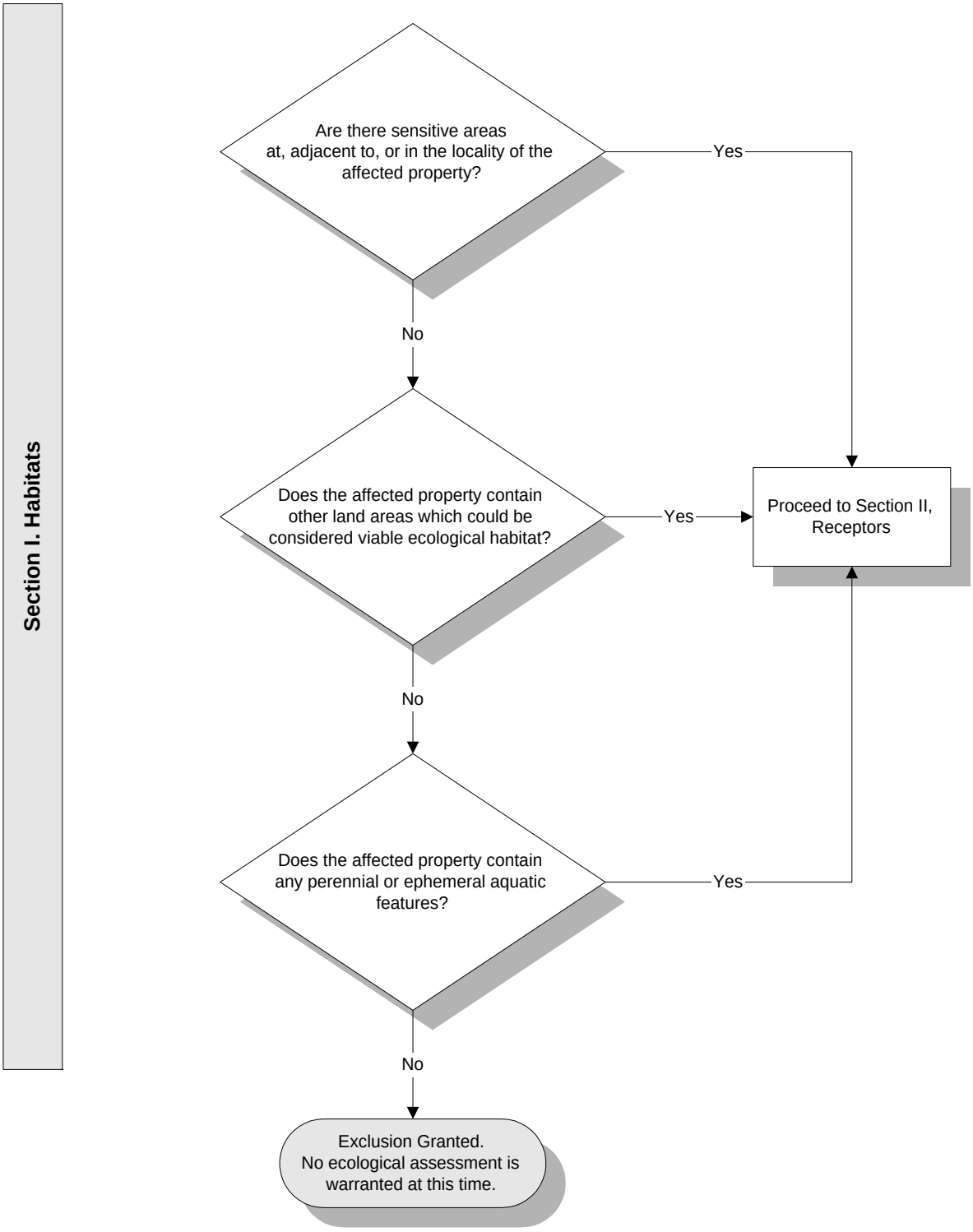


Figure 1 - Exclusion Criteria Decision Tree (continued)

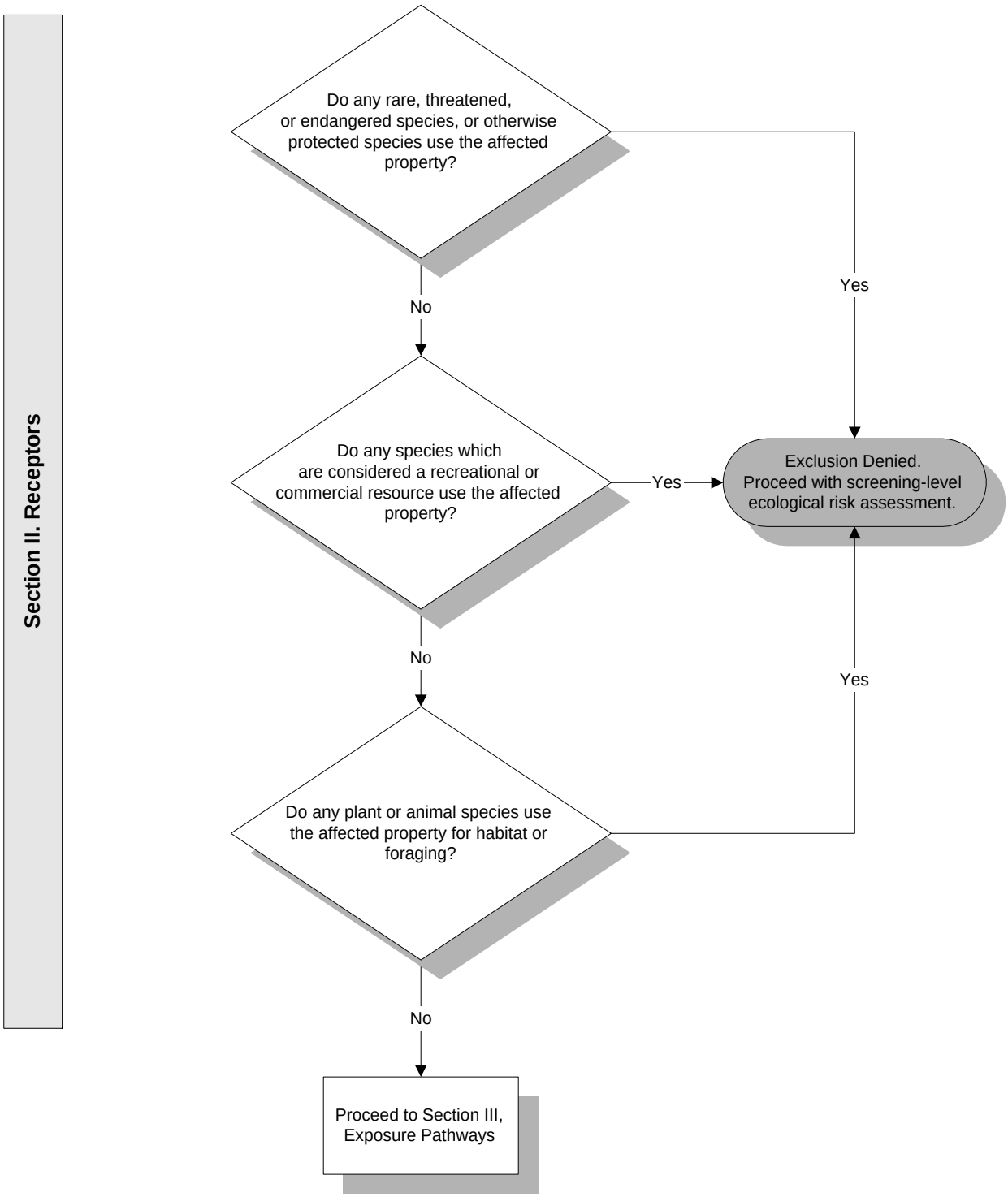
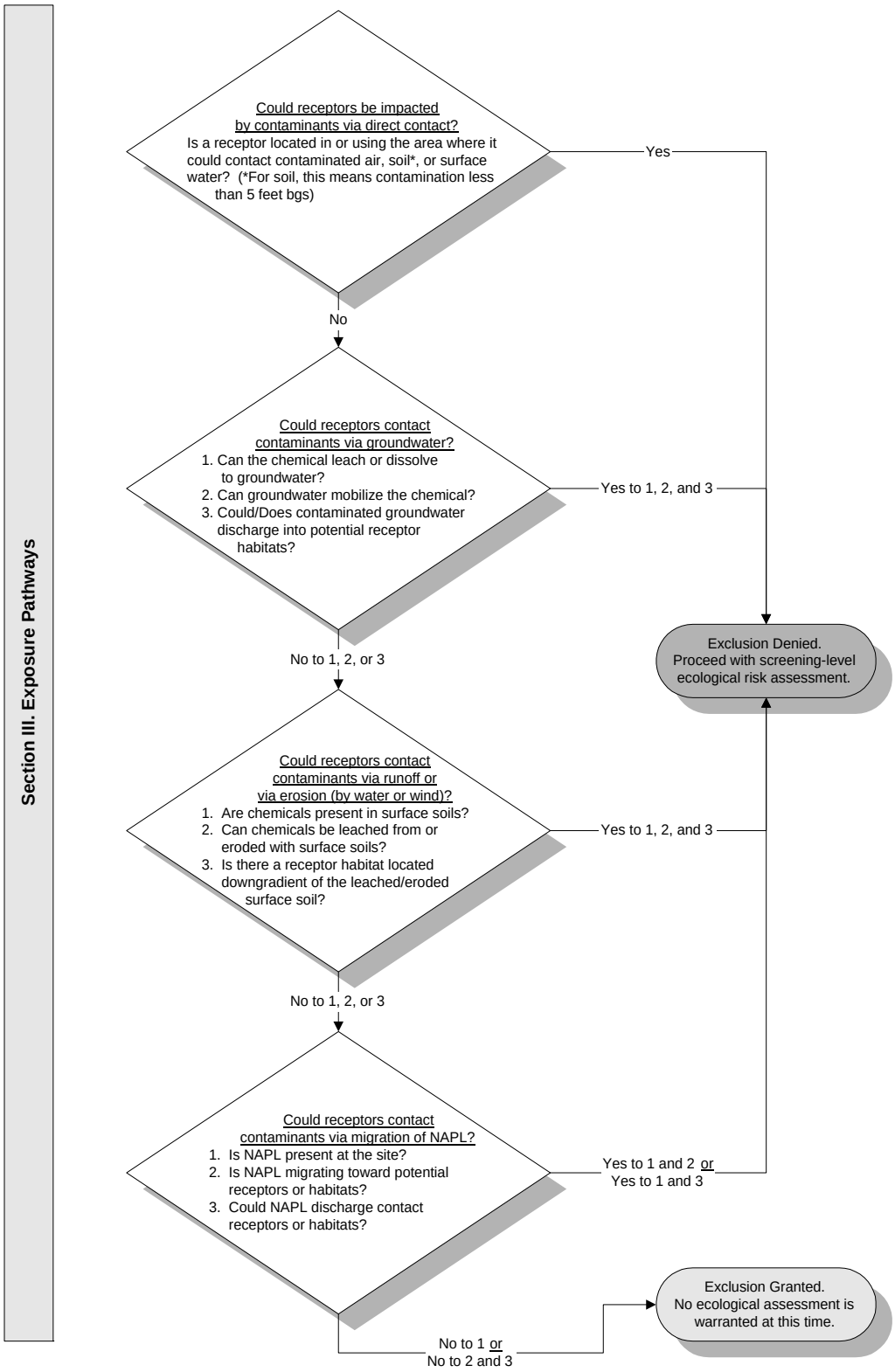


Figure 1 - Exclusion Criteria Decision Tree (continued)



ATTACHMENT A

SCREENING-LEVEL ECOLOGICAL RISK ASSESSMENT
SCOPING ASSESSMENT
SITE ASSESSMENT CHECKLIST

NEW MEXICO ENVIRONMENT DEPARTMENT

SITE ASSESSMENT CHECKLIST

I. SITE LOCATION

1. Site Name: SWMU 149 Maintenance Bldg Septic System
   US EPA I.D. Number: NM2750211235
   Location: High Energy Laser Systems Test Facility
   County: Otero
   City: WSMR State: NM

2. Latitude: 32.6324 Longitude: 106.3303

3. Attach site maps, including a topographical map, a diagram which illustrates the layout of the facility (e.g., site boundaries, structures, etc.), and maps showing all habitat areas identified in Section III of the checklist. Also, include maps which illustrate known release areas, sampling locations, and any other important features, if available.

II. SITE CHARACTERIZATION

1. Indicate the approximate area of the site (i.e., acres or sq. ft) 2100 Square Feet
2. Provide an approximate breakdown of the land uses on the site:

_____% Heavy Industrial	_____% Light Industrial	_____% Urban
_____% Residential	_____% Rural	_____% Agricultural[b]
_____% Recreational[a]	_____% Undisturbed	100 % Other[c]

[a]For recreational areas, please describe the usage of the area (e.g., park, playing field, etc.):
_____

[b]For agricultural areas, please list the crops and/or livestock which are present:
_____

[c]For areas designated as "other", please describe the usage of the area:
The HELSTF Facility is a Department of Defense test facility.

3. Provide an approximate breakdown of the land uses in the area surrounding the site. Indicate the radius (in miles) of the area described: 3,200 square miles

_____% Heavy Industrial	_____% Light Industrial	_____% Urban
_____% Residential	_____% Rural	_____% Agricultural[b]
_____% Recreational[a]	_____% Undisturbed	100 % Other [c]

[a]For recreational areas, please describe the usage of the area (e.g., park, playing field, golf course, etc.):
_____

[b]For agricultural areas, please list the crops and/or livestock which are present:
_____

[c]For areas designated as "other", please describe the usage of the area:
The HELSTF test facility is contained within 3,200 square miles of the White Sands Missile Range which is used for testing weapon systems for the Department of Defense.

4. Describe reasonable and likely future land and/or water use(s) at the site.

The HELSTF Facility is likely to remain a Department of Defense test facility for the foreseeable future. The regional ground water at the site has greater than 10,000 mg/l total dissolved solids and will not likely be used for drinking water in the foreseeable future. Regional water away from the test facility may be used for construction purposes.

5. Describe the historical uses of the site. Include information on chemical releases that may have occurred as a result of previous land uses. For each chemical release, provide information on the form of the chemical released (i.e., solid, liquid, vapor) and the known or suspected causes or mechanism of the release (i.e., spills, leaks, material disposal, dumping, explosion, etc.).

The maintenance building septic system (SWMU 149) has been in use since the 1960s and consists of a 200 gallon septic tank and a drainage field measuring approximately 30 ft by 70 ft. There are two subsurface 4-inch drainage lines measuring 30 feet in length. There is no history of release from this site according to the Phase I RFI.

6. If any movement of soil has taken place at the site, describe the degree of the disturbance. Indicate the likely source of any disturbances (e.g., erosion, agricultural, mining, industrial activities, removals, etc.) and estimate when these events occurred.

No soil movement has occurred.

7. Describe the current uses of the site. Include information on recent (previous 5 years) disturbances or chemical releases that have occurred. For each chemical release, provide information on the form of the chemical released and the causes or mechanism of the release.

This SWMU is an active leach field for a maintenance building at HELSTF. There are no known chemical releases.

8. Identify the location or suspected location of chemical releases at the site. Provide an estimate of the distance between these locations and the areas identified in Section III.

There are no known chemical releases at the site.

9. Identify the suspected contaminants of concern (COCs) at the site. If known, include the maximum contaminant levels. Please indicate the source of data cited (e.g., RFI, confirmatory sampling, etc.).

There are no ecological contaminants of concern associated with this site based on the Phase I RFI data.

10. Identify the media (e.g., soil (surface or subsurface), surface water, air, groundwater) which are known or suspected to contain COCs.

There are no ecological contaminants of concern associated with this site based on the Phase I RFI data.

11. Indicate the approximate depth to groundwater (in feet below ground surface [(bgs)].
Average depth to the regional ground water table at HELSTF is 71-73 ft below ground surface. Depth to the perched ground water zone beneath this site is approximately 27 ft bgs.

12. Indicate the direction of groundwater flow (e.g., north, southeast, etc.)

The direction of regional ground water flow at HELSTF is to the south-east.

III. HABITAT EVALUATION

III.A Wetland Habitats

Are any wetland[2] areas such as marshes or swamps on or adjacent to the site?

☐ Yes X No

If yes, indicate the wetland area on the attached site map and answer the following questions regarding the wetland area. If more than one wetland area is present on or adjacent to the site, make additional copies of the following questions and fill out for each individual wetland area. Distinguish between wetland areas by using names or other designations (such as location), and clearly identify each area on the site map. Also, obtain and attach a National Wetlands Inventory Map (or maps) to illustrate each wetland area.

2Wetlands are defined in 40 CFR §232.2 as " Areas inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and that under normal circumstances does support, a prevalence of vegetation typically adapted for life in saturated soil conditions." Examples of typical wetlands plants include: cattails, cordgrass, willows and cypress trees. National wetland inventory maps may be available at http:\\nwi.fws.gov. Additional information on wetland delineation criteria is also available from the Army Corps of Engineers.

Identify the sources of the observations and information (e.g., National Wetland Inventory, Federal or State Agency, USGS topographic maps) used to make the determination that wetland areas are or are not present.

Site visit by wildlife biologist and USGS topographic maps.

If no wetland areas are present, proceed to Section III.B.

III.B Aquatic Habitats

III.B.1 Non-Flowing Aquatic Features

Are any non-flowing aquatic features (such as ponds or lakes) located at or adjacent to the site?

☐ Yes X No

If yes, indicate the aquatic feature on the attached site map and answer the following questions regarding the non-flowing aquatic features. If more than one non-flowing aquatic feature is present on or adjacent to the site, make additional copies of the following questions and fill out for each individual aquatic feature. Distinguish between aquatic features by using names or other designations, and clearly identify each area on the site map.

If no, proceed to Section III.B.2.

III.B.2 Flowing Aquatic Features

Are any flowing aquatic features (such as streams or rivers) located at or adjacent to the site?

☐ Yes X No

If yes, indicate the aquatic feature on the attached site map and answer the following questions regarding the flowing aquatic features. If more than one flowing aquatic feature is present on or adjacent to the site, make additional copies of the following questions and fill out for each individual aquatic feature. Distinguish between aquatic features by using names or other designations, and clearly identify each area on the site map

If no, proceed to Section III.C.

III.C Terrestrial Habitats

III.C.1 Wooded

Are any wooded areas on or adjacent to the site? ☐ Yes X No

If yes, indicate the wooded area on the attached site map and answer the following questions. If more than one wooded area is present on or adjacent to the site, make additional copies of the following questions and fill out for each individual wooded area.

Distinguish between wooded areas by using names or other designations, and clearly identify each area on the site map.

If no, proceed to Section III.C.2.

III.C.2 Shrub/Scrub

Are any shrub/scrub areas on or adjacent to the site? ☐ Yes X No

If yes, indicate the shrub/scrub area on the attached site map and answer the following questions. If more than one shrub/scrub area is present on or adjacent to the site, make additional copies of the following questions and fill out for each individual shrub/scrub area. Distinguish between shrub/scrub areas, using names or other designations, and clearly identify each area on the site map.

If no, proceed to Section III.C.3.

III.C.3 Grassland

Are any grassland areas on or adjacent to the site? ☐ Yes X No

If yes, indicate the grassland area on the attached site map and answer the following questions. If more than one grassland area is present on or adjacent to the site, make additional copies of the following questions and fill out for each individual grassland area. Distinguish between grassland areas by using names or other designations, and clearly identify each area on the site map.

If no, proceed to Section III.C.4.

III.C.4 Desert

Are any desert areas on or adjacent to the site? X Yes ☐ No

If yes, indicate the desert area on the attached site map and answer the following questions. If more than one desert area is present on or adjacent to the site, make additional copies of the following questions and fill out for each individual desert area. Distinguish between desert areas by using names or other designations, and clearly identify each area on the site map.

If no, proceed to Section III.C.5.

Desert Area Questions

X Onsite X Offsite

Name or Designation: Chihuahuan Desert

1. Estimate the approximate size of the desert area (in acres or sq. ft.).

This site including WSMR is contained within tens of thousands of acres of the Chihuahuan Desert.

2. Describe the desert area (e.g., presence or absence of vegetation, vegetation types, presence/size of rocks, sand, etc.)

Vegetation specifically at HELSTF is primarily dominated by four-winged saltbush and gyp moonpod (*Acleisanthes lanceolata*) with scattered wolfberry (*Lycium berlandieri*). The entire area is located within gyp dome habitat and is currently covered with an extensive coat of cryptogrammic crust. No threatened or endangered species of plants are known or expected to occupy the habitat present at the sites.

The surface soil at HELSTF is dominated by silt to sand sized gypsum grains. Beneath the surface, alternating layers of sand and clay are present reflecting past deposition within a lacustrine environment.

3. Animals observed in the desert area or suspected to be present based on indirect evidence or file material:

- x Birds
- x Mammals
- x Reptiles (e.g., snakes, lizards)
- ❑ Amphibians (e.g., toads, salamanders)

Specify species, if known:

Faunal associations with this habitat type reflect the vegetative cover available and are not nearly as diverse in species associations as more varied vegetation types within WSMR. Invertebrates and reptiles comprise the largest faunal groups associated with the sites. Ants (*Formicidae*), termites (*termitidae*), darkling beetles (*Tenebrionidae*), and wolf spiders (*Lycocidae*) provide a large food base for collared lizards (*Crotaphytus collaris*), leopard lizards (Gambelia wislizenii) and side blotch lizards (*Uta stansburiana*). A few snake species commonly inhabit the area including plains blackhead snakes (*Tantilla nigriceps*), coachwhips (*Masticophis flagellum*), and prairie rattlesnakes (*Crotalus viridis*). Avians common to the area include cactus wrens (*Campylorhynchus brunneicapillus*), loggerhead shrikes (*Lanius ludovicianus*) and, in the summer months, Swainson's hawks (*Buteo swainsoni*). Species of small mammals that utilize this habitat include kangaroo rats (*Dipodomys sp.*), deer mice (*Peromyscus maniculatus*), and pocket mice (*Perognathus* and *Chaetodipus* sp.). Larger mammals include desert cottontail rabbits (*Sylvilagus auduboni*), blacktail jackrabbits (*Lepus californicus*), and gemsbok (*Oryx gazella*). No threatened or endangered species of animals are known to or expected to occupy the habitat present at the site.

III.C.5 Other

1. Are there any other terrestrial communities or habitats on or adjacent to the site which was not previously described?

☐ Yes X No

If yes, indicate the "other" area(s) on the attached site map and describe the area(s) below. Distinguish between onsite and offsite areas. If no, proceed to Section III.D.

_____
_____
_____
_____
_____
_____

III.D Sensitive Environments and Receptors

1. Do any other potentially sensitive environmental areas[3] exist adjacent to or within 0.5 miles of the site? If yes, list these areas and provide the source(s) of information used to identify sensitive areas. *Do not answer "no" without confirmation from the U.S. Fish and Wildlife Service and appropriate State of New Mexico division.*

Habitat present is not considered rare or sensitive by any of the regulating or management agencies including the USFWS, NMDGF, and WSMR Directorate of Environment and Safety. No species of vegetation or animals that are considered rare or listed as threatened or endangered are known or expected in this habitat.

2. Are any areas on or near (i.e., within 0.5 miles) the site which are owned or used by local tribes? If yes, describe. *Contact the Tribal Liason in the Office of the Secretary (505)827-2855 to obtain this information.*

No.

Does the site serve or potentially serve as a habitat, foraging area, or refuge by rare, threatened, endangered, candidate and/or proposed species (plants or animals), or any otherwise protected species? If yes, identify species. *This information should be obtained from the U.S. Fish and Wildlife Service and appropriate State of New Mexico division.*

No. The latest lists of State and Federal species of concern, candidate, threatened, and endangered species were consulted. Resource experts familiar with the sites confirmed that none of these species utilize the habitats at or adjacent to the Site.

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3 Areas that provide unique and often protected habitat for wildlife species. These areas are typically used during critical life stages such as breeding, hatching, rearing of young and overwintering. Refer to **Table 1** at the end of this document for examples of sensitive environments.

3. Is the site potentially used as a breeding, roosting or feeding area by migratory bird species? If yes, identify which species.

Yes. There are hundreds of species of migrating birds that may potentially roost or feed at or near the Site. Several species of birds may nest near the Site including Say's phoebe and mourning dove.

4. Is the site used by any ecologically[4], recreationally, or commercially important species? If yes, explain.

The site is frequented by recreationally important species (hunted) such as quail.

IV. EXPOSURE PATHWAY EVALUATION

1. Do existing data provide sufficient information on the nature, rate, and extent of contamination at the site?

x Yes
❑ No
❑ Uncertain

Please provide an explanation for your answer:

Based on the Phase I RFI, no soil contamination is present on site. There are not known chemical releases at this site.

2. Do existing data provide sufficient information on the nature, rate, and extent of contamination in offsite affected areas?

❑ Yes
❑ No
❑ Uncertain
x No offsite contamination

Please provide an explanation for your answer:_____

Contamination present at the HELSTF is currently confined to the immediate area of HELSTF. Down gradient monitoring wells contained within WSMR boundaries show no evidence of contaminant migration.

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4 Ecologically important species include populations of species which provide a critical (i.e., not replaceable) food resource for higher organisms and whose function as such would not be replaced by more tolerant species; or perform a critical ecological function (such as organic matter decomposition) and whose functions will not be replaced by other species. Ecologically important species include pest and opportunistic species that populate an area if they serve as a food source for other species, but do not include domesticated animals (e.g., pets and livestock) or plants/animals whose existence is maintained by continuous human interventions (e.g., fish hatcheries, agricultural crops, etc.,)

3. Do existing data address potential migration pathways of contaminants at the site?

x Yes
❑ No
❑ Uncertain

Please provide an explanation for your answer:

Based on the Phase I RFI, there are no COCs.

4. Do existing data address potential migration pathways of contaminants in offsite affected areas?

❑ Yes
❑ No
❑ Uncertain
x No offsite contamination

Please provide an explanation for your answer:_____

Contamination present at the HELSTF is currently confined to the immediate area of HELSTF. Down gradient monitoring wells contained within WSMR boundaries show no evidence of contaminant migration.

5. Are there visible indications of stressed habitats or receptors on or near (i.e., within 0.5 miles) the site that may be the result of a chemical release? If yes, explain. Attach photographs if available.

No.

6. Is the location of the contamination such that receptors might be reasonably expected to come into contact with it? For soil, this means contamination in the soil 0 to 5 feet below ground surface (bgs). If yes, explain.

Based on the Phase I RFI, there are no COCs.

7. Are receptors located in or using habitats where chemicals exist in air, soil, sediment or surface water? If yes, explain.

Based on the Phase I RFI, there are no COCs.

8. Could chemicals reach receptors via groundwater? Can chemicals leach or dissolve to groundwater? Are chemicals mobile in groundwater? Does groundwater discharge into receptor habitats? If yes, explain.

There are no known chemical releases from this site. Ground water does not discharge into receptor habitats.

9. Could chemicals reach receptors through runoff or erosion? Answer the following questions:

What is the approximate distance from the contaminated area to the nearest watercourse or arroyo?

- ❑ 0 feet (i.e., contamination has reached a watercourse or arroyo)
- ❑ 1-10 feet
- ❑ 11-20 feet
- ❑ 21-50 feet
- ❑ 51-100 feet
- ❑ 101-200 feet
- ❑ > 200 feet
- ❑ > 500 feet
- x > 1000 feet

What is the slope of the ground in the contaminated area?

- x 0-10%
- ❑ 10-30%
- ❑ > 30%

What is the approximate amount of ground and canopy vegetative cover in the contaminated area?

- x < 25%
- ❑ 25-75%
- ❑ > 75%

Is there visible evidence of erosion (e.g., a rill or gully) in or near the contaminated area?

- ❑ Yes
- x No
- ❑ Do not know

Do any structures, pavement, or natural drainage features direct run-on flow (i.e., surface flows originating upstream or uphill from the area of concern) into the contaminated area?

- ❑ Yes
- x No
- ❑ Do not know

10. Could chemicals reach receptors through the dispersion of contaminants in air (e.g., volatilization, vapors, fugitive dust)? If yes, explain.

<u>Based on the Phase I RFI, there are no COCs.</u>

11. Could chemicals reach receptors through migration of non-aqueous phase liquids (NAPLs)? Is a NAPL present at the site that might be migrating towards receptors or habitats? Could NAPL discharge contact receptors or their habitat?

No NAPLs are present.

12. Could receptors be impacted by external irradiation at the site? Are gamma emitting radionuclides present at the site? Is the radionuclide contamination buried or at the surface?
No.

PHOTOGRAPHIC DOCUMENTATION

During the site visit(s), photographs should be taken to document the current conditions at the site and to support the information entered in the checklist. For example, photographs may be used to document the following:

- The nature, quality, and distribution of vegetation at the site
- Receptors or evidence of receptors
- Potentially important ecological features, such as ponds and drainage ditches
- Potential exposure pathways
- Any evidence of contamination or impact

The following space may be used to record photo subjects.

SWMU 149 Septic System.

This site is currently a small disturbed fenced-in area with sparse vegetation, primarily narrow-leaf peppergrass (*Lepidium alyssoides*). No contaminants are known from this site and there is no expected pathway to organisms.

SUMMARY OF OBSERVATIONS AND SITE SETTING

Include information on significant source areas and migration pathways that are likely to constitute complete exposure pathways.

This site including WSMR is contained within tens of thousands of acres of the Chihuahuan Desert. Vegetation specifically at HELSTF is primarily dominated by four-winged saltbush and gyp moonpod (*Acleisanthes lanceolata*) with scattered wolfberry (*Lycium berlandieri*). The entire area is located within gyp dome habitat and is currently covered with an extensive coat of cryptogrammic crust. No threatened or endangered species of plants are known or expected to occupy the habitat present at the sites. The surface soil at HELSTF is dominated by silt to sand sized gypsum grains. Beneath the surface, alternating layers of sand and clay are present reflecting past deposition within a lacustrine environment.

Based on the Phase I RFI, there are no contaminants of concern associated with this site. There are no known chemical releases from this site. Ground water does not discharge into receptor habitats.

Checklist Completed by Bradley Davis

Affiliation White Sands Technical Services

Author Assisted by Doug Burkett and William Little

Date

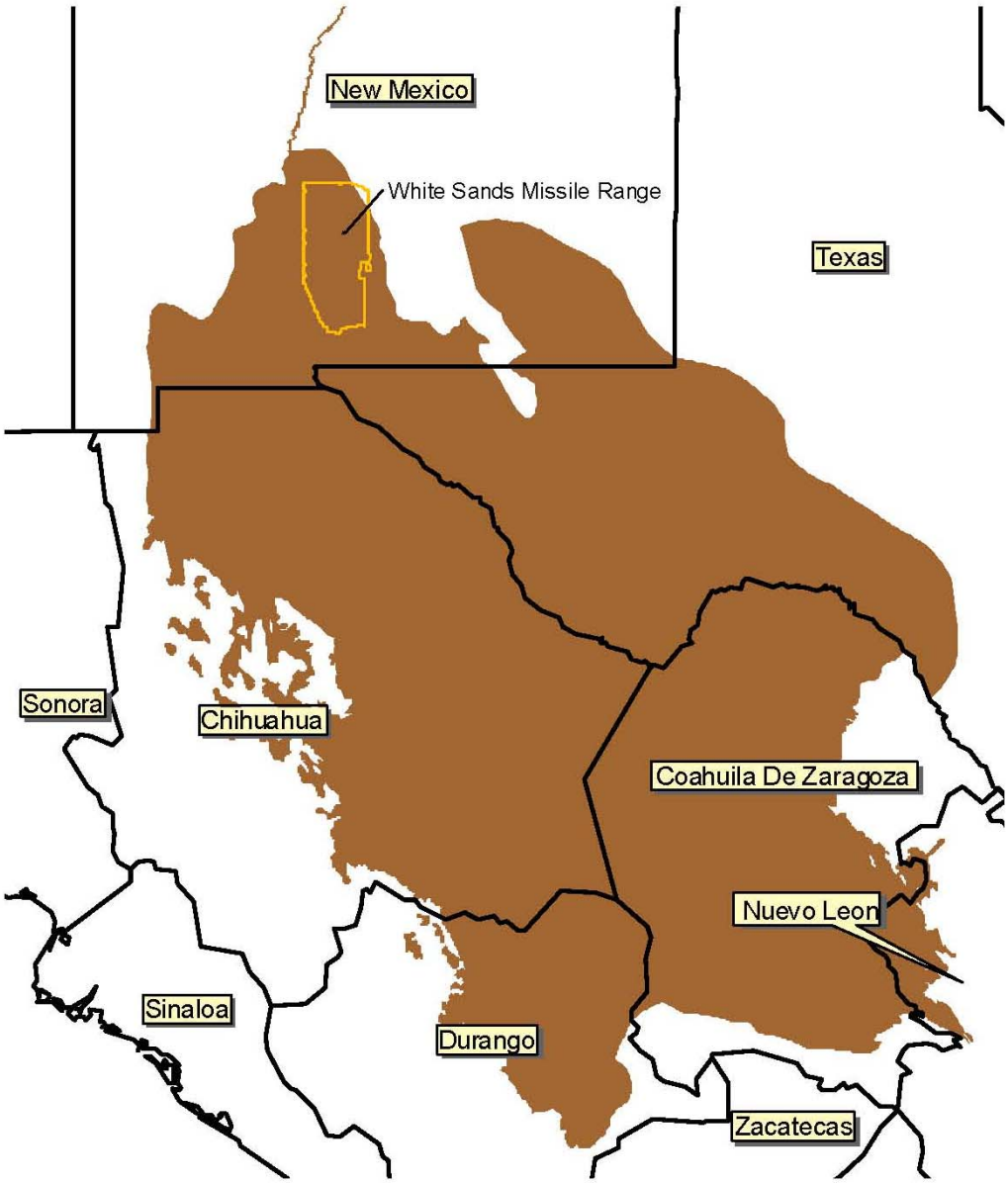


Figure 2.1 WSMR within the Chihuahuan Desert Ecoregion

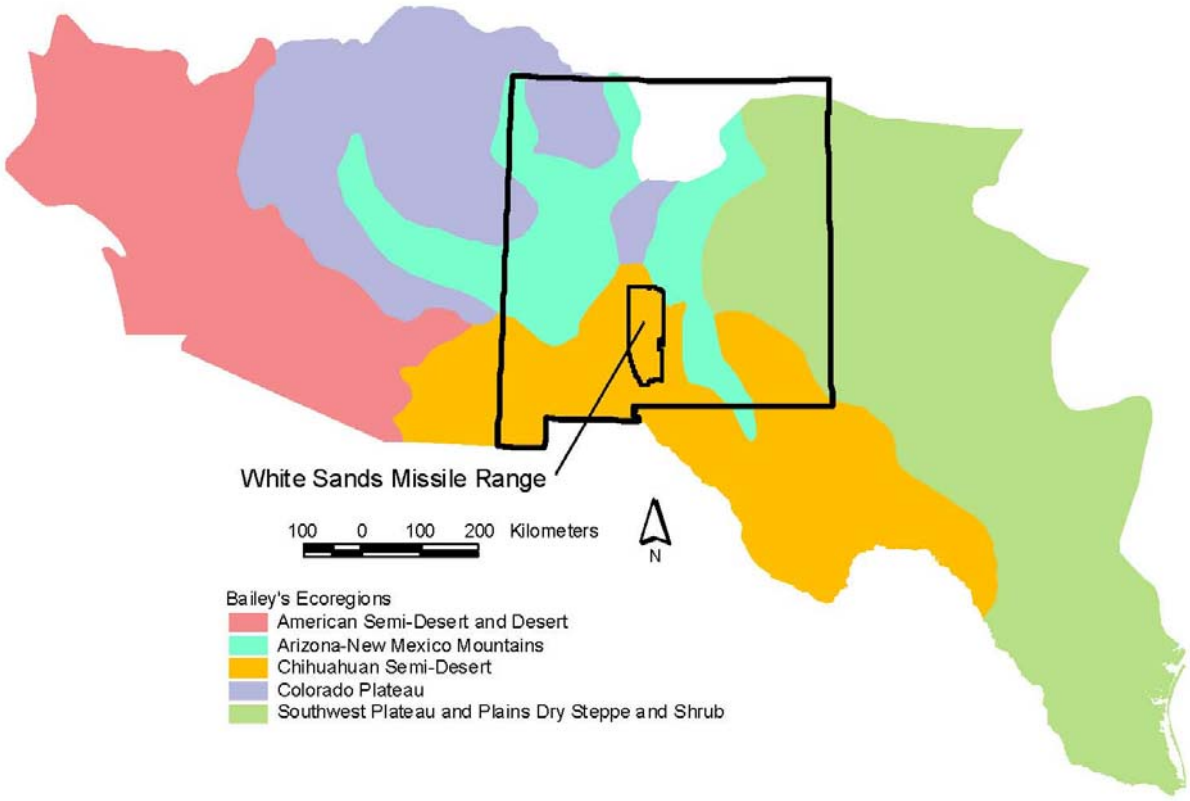


Figure 6.1. Chihuahuan Semi-desert Ecoregion and adjacent ecoregions (Bailey et al. 1994)

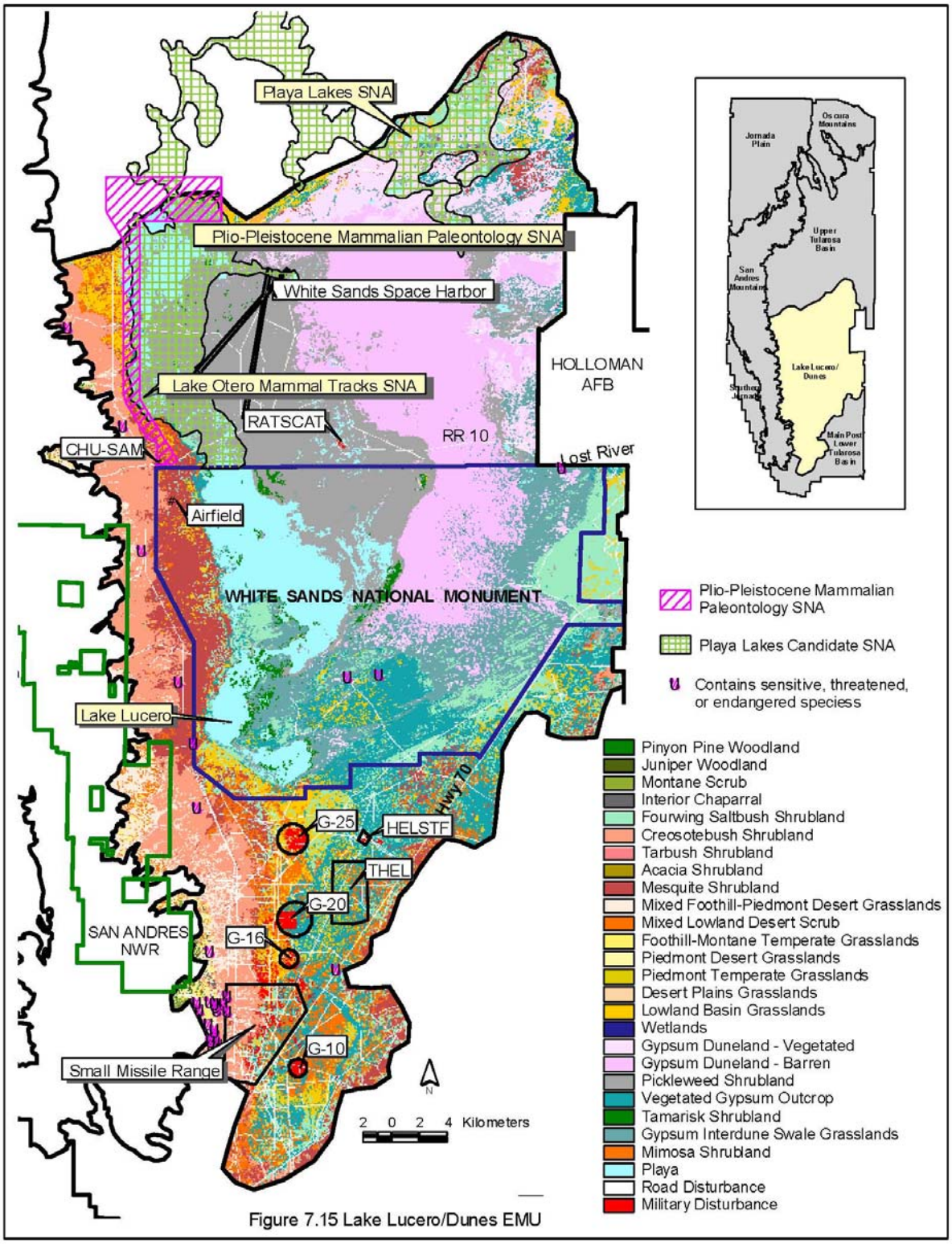


Figure 7.15 Lake Lucero/Dunes EMU

TABLE 1
EXAMPLES OF SENSITIVE ENVIRONMENTS

National Parks and National Monuments

Designated or Administratively Proposed Federal Wilderness Areas

National Preserves

National or State Wildlife Refuges

National Lakeshore Recreational Areas

Federal land designated for protection of natural ecosystems

State land designated for wildlife or game management

State designated Natural Areas

Federal or state designated Scenic or Wild River

All areas that provide or could potentially provide critical habitat[1] for state and federally listed Threatened or Endangered Species, those species that are currently petitioned for listing, and species designated by other agencies as sensitive or species of concern

All areas that provide or could potentially provide habitat for state protected species as defined in the Wildlife Code, Chapter 17 of the New Mexico Statutes

All areas that provide or could potentially provide habitat for migratory birds as protected by the Migratory Bird Treaty Act (16 U.S.C. §§ 703-712)

All areas that provide or could potentially provide habitat for bald eagles and golden eagles as protected by the Bald and Golden Eagle Protection Act (16 U.S.C. 668-668d)

All areas that provide or could potentially provide habitat for song birds as protected by the State of New Mexico statute (New Mexico Statute, 1978, Chapter 17, Game and Fish, 17-2-13)

---

1 Critical habitats are defined by the Endangered Species Act (50 CFR §424.02(d)) as:

1) Specific areas within the geographical area currently occupied by a species, at the time it is listed in accordance with the Act, on which are found those physical or biological features (I) essential to the conservation of the species and (ii) that may require special management considerations or protection, and
2) Specific areas outside the geographical area occupied by a species at the time it is listed upon a determination by the Secretary [of Interior] that such areas are essential for the conservation of the species.

All areas that provide or could potentially provide habitat for hawks, vultures and owls as protected by the State of New Mexico statute (New Mexico Statute, 1978, Chapter 17, Game and Fish, 17-2-14)

All areas that provide or could potentially provide habitat for horned toads and Bullfrogs as protected by the State of New Mexico statute (New Mexico Statute, 1978, Chapter 17, Game and Fish, 17-2-15 and 16, resp.)

All perennial waters (e.g., rivers, lakes, playas, sloughs, ponds, etc)

All ephemeral drainage (e.g., arroyos, puddles/pools, intermittent streams, etc) that provide significant wildlife habitat or that could potentially transport contaminants off site to areas that provide wildlife habitat

All riparian habitats

All perennial and ephemeral wetlands (not limited to jurisdictional wetlands)

All areas that are potentially important breeding, staging, and overwintering habitats as well as other habitats important for the survival of animals during critical periods of their life cycle.

ATTACHMENT B

ECOLOGICAL SITE EXCLUSION CRITERIA CHECKLIST AND DECISION TREE

1. NEW MEXICO ECOLOGICAL EXCLUSION CRITERIA CHECKLIST

The following questions are designed to be used in conjunction with the Ecological Exclusion Criteria Decision Tree (Figure 1). After answering each question, refer to the Decision Tree to determine the appropriate next step. In some cases, questions will be omitted as the user is directed to another section as indicated by the flow diagram in the Decision Tree. For example, if the user answers "yes" to Question 1 of Section I, he or she is directed to proceed to Section II.

I. Habitat

In the following questions, "affected property" refers to all property on which a release has occurred or is believed to have occurred, including off-site areas where contamination may have occurred or migrated.

1. Are any of the below-listed sensitive environments at, adjacent to, or in the locality[1] of the affected property? **No.**

   - National Park or National Monument
   - Designated or administratively proposed Federal Wilderness Area
   - National Preserve
   - National or State Wildlife Refuge
   - Federal or State land designated for wildlife or game management
   - State designated Natural Areas
   - All areas that are owned or used by local tribes
   - All areas that are potentially important breeding, staging, and overwintering habitats as well as other habitats important for the survival of animals during critical periods of their life cycle
   - All areas that provide or could potentially provide habitat for state and federally listed Threatened or Endangered Species, those species that are currently petitioned for listing, and species designated by other agencies as sensitive or species of concern
   - All areas that provide or could potentially provide habitat for state protected species as defined in the Wildlife Code, Chapter 17 of the New Mexico Statutes
   - All areas that provide or could potentially provide habitat for migratory birds as protected by the Migratory Bird Treaty Act (16 U.S.C. §§ 703-712)
   - All areas that provide or could potentially provide habitat for bald eagles and golden eagles as protected by the Bald and Golden Eagle Protection Act (16 U.S.C. 668-668d)

---

1 *Locality* of the site refers to any area where an ecological receptor is likely to contact site-related chemicals. The locality of the site considers the likelihood of contamination migrating over time and places the site in the context of its general surrounding. Therefore, the locality is typically larger than the site and the areas adjacent to the site.

- All areas that provide or could potentially provide habitat for song birds as protected by the state of New Mexico statute (New Mexico Statute, 1978, Chapter 17, Game and Fish, 17-2-13)
- All areas that provide or could potentially provide habitat for hawks, vultures and owls as protected by the state of New Mexico statute (New Mexico Statute, 1978, Chapter 17, Game and Fish, 17-2-14)
- All areas that provide or could potentially provide habitat for horned toads and bullfrogs as protected by the state of New Mexico statute (New Mexico Statute, 1978, Chapter 17, Game and Fish, 17-2-15 and 16, respectively)

2. Does the affected property contain land areas which were not listed in Question 1, but could be considered viable ecological habitat? The following are examples (but not a complete listing) of viable ecological habitats: **Yes.**

- Wooded areas
- Shrub/scrub vegetated areas
- Open fields (prairie)
- Other grassy areas
- Desert areas
- Any other areas which support wildlife and/or vegetation, excluding areas which support only opportunistic species (such as house mice, Norway rats, pigeons, etc.) that do not serve as prey to species in adjacent habitats.

The following features are not considered ecologically viable:

- Pavement
- Buildings
- Paved areas of roadways
- Paved/concrete equipment storage pads
- Paved manufacturing or process areas
- Other non-natural surface cover or structure

3. Does the affected property contain any perennial or ephemeral aquatic features which were not listed in Question 1? **No.**

II. Receptors

1. Is any part of the affected property used for habitat, foraging area, or refuge by any rare, threatened, or endangered species (plant *or* animal), or otherwise protected species (e.g., raptors, migratory birds)? **No.**

2. Is any part of the affected property used for habitat, foraging area, or refuge by any species used as a recreational (e.g., game animals) and/or commercial resource? **Yes.**

3. Is any part of the affected property used for habitat, foraging area, or refuge by any plant or animal species? This includes plants considered "weeds" and opportunistic insect and animal species (such as cockroaches and rats) if they are used as a food source for other species in the area. **Yes.**

III. Exposure Pathways

1. Could receptors be impacted by contaminants via direct contact? **No.**

Is a receptor located in or using an area where it could contact contaminated air, soil[3], or surface water? **No.**

For Questions 2 and 3, note that one must answer "yes" to all three bullets in order to be directed to the "exclusion denied" box of the decision tree. This is because answering "no" to one of the questions in the bullet list indicates that a complete exposure pathway is not present. For example, in Question 2, if the chemical cannot leach or dissolve to groundwater (bullet 1), there is no chance of ecological receptors being exposed to the chemical through contact with contaminated groundwater. Similarly, the responses to the questions in Question 4 determine whether a complete pathway exists for exposure to NAPL.

2. Could receptors contact contaminants via groundwater?
   - Can the chemical leach or dissolve to groundwater[4]? **No.**
   - Can groundwater mobilize the chemical? **No.**
   - Could (does) contaminated groundwater discharge into known or potential receptor habitats? **No.**

3. Could receptors contact contaminants via runoff (i.e., surface water and/or suspended sediment) or erosion by water or wind?
   - Are chemicals present in surface soils? **No.**
   - Can the chemical be leached from or eroded with surface soils? **No.**
   - Is there a receptor habitat located downgradient of the leached/eroded surface soil? **No.**

4. Could receptors contact contaminants via migration of non-aqueous phase liquids (NAPL)?
   - Is NAPL present at the site? **No.**
   - Is NAPL migrating toward potential receptors or habitats? **No.**
   - Could NAPL discharge impact receptors or habitats? **No.**

---

3 For soil, this means contamination less than 5 feet below ground surface (bgs).

4 Information on the environmental fate of specific chemicals can be found on the Internet at *http://www.epa.gov/opptintr/chemfact/* or at a local library in published copies of the *Hazardous Substances Data Bank*.

Figure 1 -Ecological Exclusion Criteria Decision Tree

(Refer to corresponding checklist for the full text of each question)

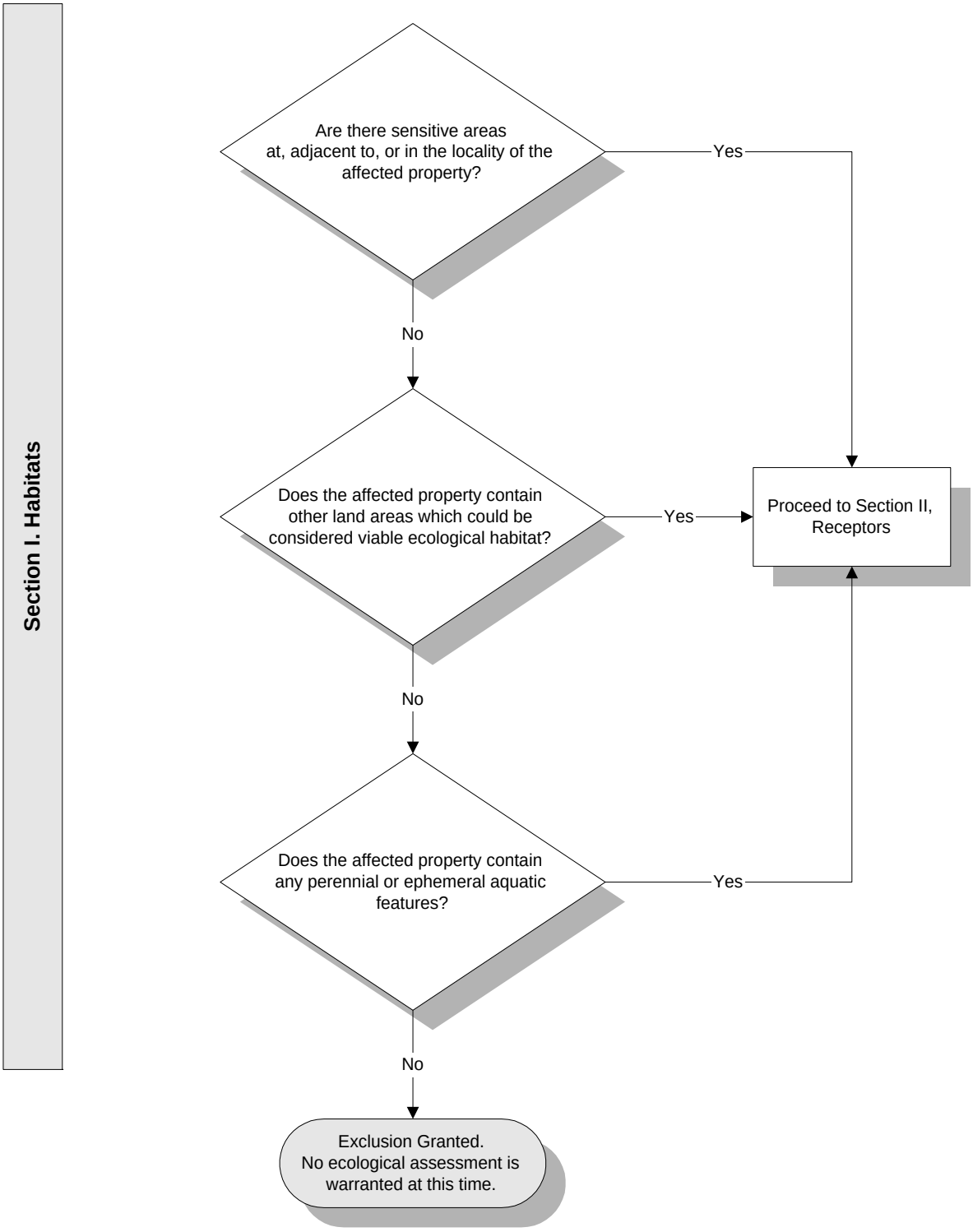


Figure 1 - Exclusion Criteria Decision Tree (continued)

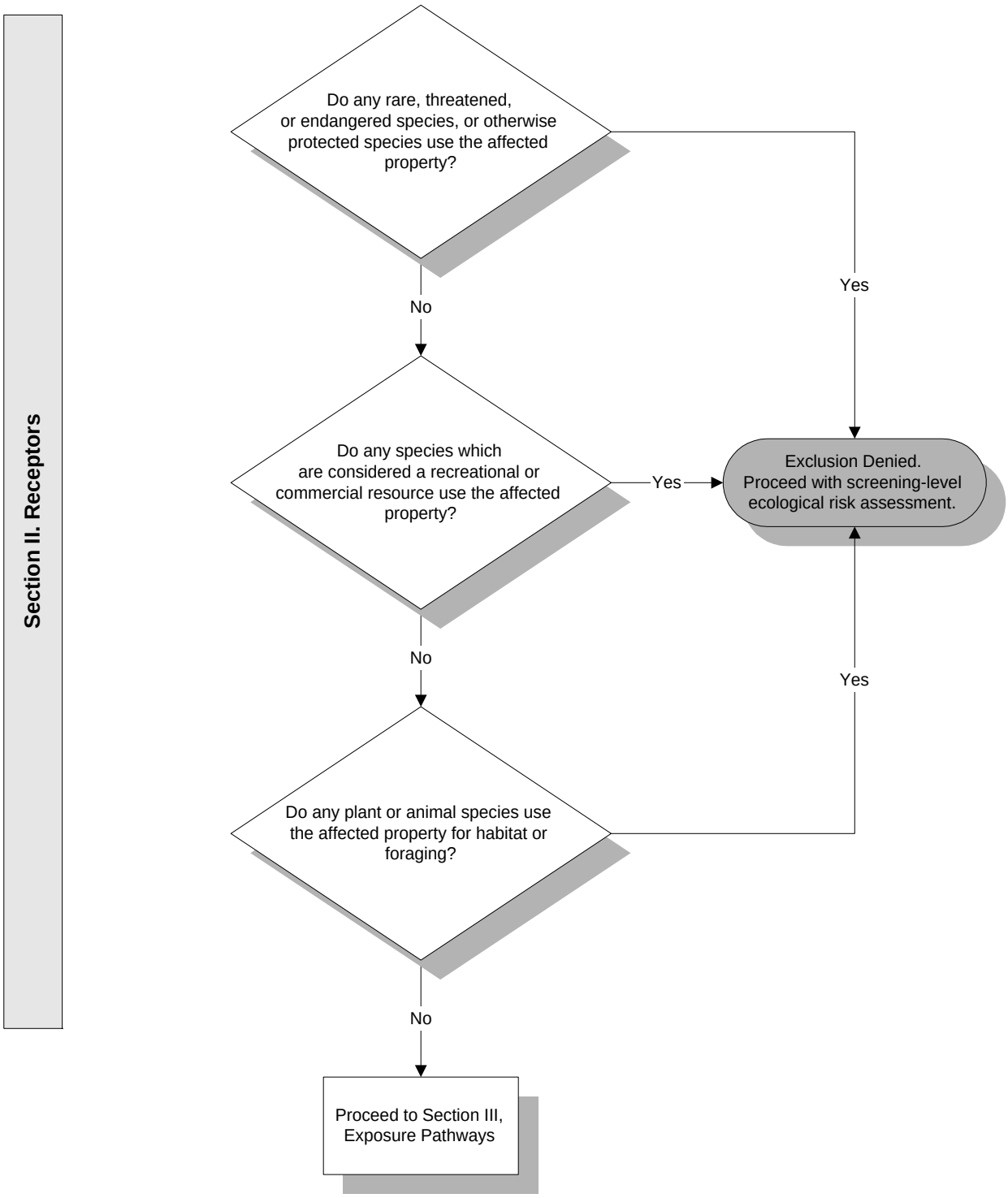
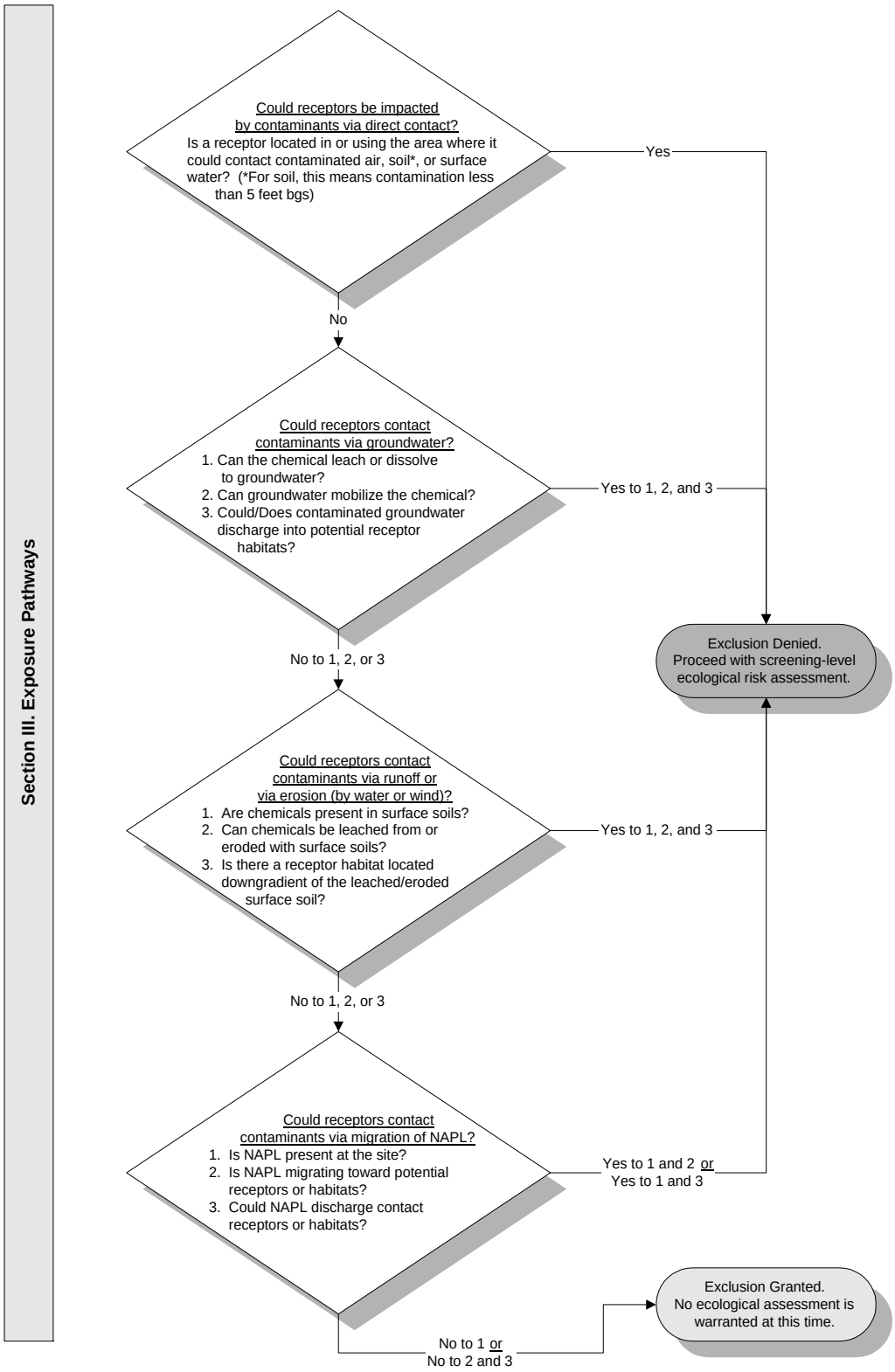


Figure 1 - Exclusion Criteria Decision Tree (continued)



ATTACHMENT A

SCREENING-LEVEL ECOLOGICAL RISK ASSESSMENT
SCOPING ASSESSMENT
SITE ASSESSMENT CHECKLIST

NEW MEXICO ENVIRONMENT DEPARTMENT

SITE ASSESSMENT CHECKLIST

I. SITE LOCATION

1. Site Name: SWMU 150 MAR Dump Site
   US EPA I.D. Number: NM2750211235
   Location: High Energy Laser Systems Test Facility
   County: Otero
   City: WSMR State: NM

2. Latitude: 32.6374 Longitude: 106.3239

3. Attach site maps, including a topographical map, a diagram which illustrates the layout of the facility (e.g., site boundaries, structures, etc.), and maps showing all habitat areas identified in Section III of the checklist. Also, include maps which illustrate known release areas, sampling locations, and any other important features, if available.

II. SITE CHARACTERIZATION

1. Indicate the approximate area of the site (i.e., acres or sq. ft) 8,000 square feet
2. Provide an approximate breakdown of the land uses on the site:

_____% Heavy Industrial	_____% Light Industrial	_____% Urban
_____% Residential	_____% Rural	_____% Agricultural[b]
_____% Recreational[a]	_____% Undisturbed	100 % Other[c]

[a]For recreational areas, please describe the usage of the area (e.g., park, playing field, etc.):
_____

[b]For agricultural areas, please list the crops and/or livestock which are present:
_____

[c]For areas designated as "other", please describe the usage of the area:
The HELSTF Facility is a Department of Defense test facility.

3. Provide an approximate breakdown of the land uses in the area surrounding the site. Indicate the radius (in miles) of the area described: 3,200 square miles

_____% Heavy Industrial	_____% Light Industrial	_____% Urban
_____% Residential	_____% Rural	_____% Agricultural[b]
_____% Recreational[a]	_____% Undisturbed	100 % Other [c]

[a]For recreational areas, please describe the usage of the area (e.g., park, playing field, golf course, etc.):
_____

[b]For agricultural areas, please list the crops and/or livestock which are present:
_____

[c]For areas designated as "other", please describe the usage of the area:
The HELSTF test facility is contained within 3,200 square miles of the White Sands Missile Range which is used for testing weapon systems for the Department of Defense.

4. Describe reasonable and likely future land and/or water use(s) at the site.

The HELSTF Facility is likely to remain a Department of Defense test facility for the foreseeable future. The regional ground water at the site has greater than 10,000 mg/l total dissolved solids and will not likely be used for drinking water in the foreseeable future. Regional water away from the test facility may be used for construction purposes.

5. Describe the historical uses of the site. Include information on chemical releases that may have occurred as a result of previous land uses. For each chemical release, provide information on the form of the chemical released (i.e., solid, liquid, vapor) and the known or suspected causes or mechanism of the release (i.e., spills, leaks, material disposal, dumping, explosion, etc.).

There is very little information regarding the MAR Dump Site. When discovered, it was an open trench approximately 225 ft by 35 ft by 8 ft deep. A spoil pile about 40 feet from the trench is believed to have been the soils excavated during the trench construction. It is presumed that the trench used as a landfill in the 1960s and early 1970s during the operation of the MAR facility. The materials in the trench have been recovered and the hole backfilled.

6. If any movement of soil has taken place at the site, describe the degree of the disturbance. Indicate the likely source of any disturbances (e.g., erosion, agricultural, mining, industrial activities, removals, etc.) and estimate when these events occurred.

WSMR performed the removal actions at SWMU 150 between February 1 and 8, 1996. The larger pieces of metal debris were recovered from the trench and transported to the WSMR scrap yard. The remaining small debris along with the upper six inches of soil were excavated and placed in roll-off containers. Eight confirmation samples were collected from the trench floor following excavation. The trench was backfilled following confirmation sampling.

7. Describe the current uses of the site. Include information on recent (previous 5 years) disturbances or chemical releases that have occurred. For each chemical release, provide information on the form of the chemical released and the causes or mechanism of the release.

The site is not currently used.

8. Identify the location or suspected location of chemical releases at the site. Provide an estimate of the distance between these locations and the areas identified in Section III.

The location of release would have been within the former trench location.

9. Identify the suspected contaminants of concern (COCs) at the site. If known, include the maximum contaminant levels. Please indicate the source of data cited (e.g., RFI, confirmatory sampling, etc.).

Based on results of the Phase III RFI, suspected contaminants of concern at the site include chromium (Highest detection 9.06 mg/kg) and lead (Highest detection 17.3 mg/kg) in the surface soil at the site.

Identify the media (e.g., soil (surface or subsurface), surface water, air, groundwater) which are known or suspected to contain COCs.

Surface soil at the site is suspected to contain COCs.

10. Indicate the approximate depth to groundwater (in feet below ground surface [(bgs)].

Average depth to the regional ground water table at HELSTF is 71-73 ft below ground surface. A perched zone is not suspected to be present beneath this site.

11. Indicate the direction of groundwater flow (e.g., north, southeast, etc.)

The direction of regional ground water flow at HELSTF is to the south-east.

III. HABITAT EVALUATION

III.A Wetland Habitats

Are any wetland[2] areas such as marshes or swamps on or adjacent to the site?

☐ Yes X No

2Wetlands are defined in 40 CFR §232.2 as " Areas inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and that under normal circumstances does support, a prevalence of vegetation typically adapted for life in saturated soil conditions." Examples of typical wetlands plants include: cattails, cordgrass, willows and cypress trees. National wetland inventory maps may be available at http:\\nwi.fws.gov. Additional information on wetland delineation criteria is also available from the Army Corps of Engineers.

If yes, indicate the wetland area on the attached site map and answer the following questions regarding the wetland area. If more than one wetland area is present on or adjacent to the site, make additional copies of the following questions and fill out for each individual wetland area. Distinguish between wetland areas by using names or other designations (such as location), and clearly identify each area on the site map. Also, obtain and attach a National Wetlands Inventory Map (or maps) to illustrate each wetland area.

Identify the sources of the observations and information (e.g., National Wetland Inventory, Federal or State Agency, USGS topographic maps) used to make the determination that wetland areas are or are not present.

Site visit by wildlife biologist and USGS topographic maps.

If no wetland areas are present, proceed to Section III.B.

III.B Aquatic Habitats

III.B.1 Non-Flowing Aquatic Features

Are any non-flowing aquatic features (such as ponds or lakes) located at or adjacent to the site?

☐ Yes X No

If yes, indicate the aquatic feature on the attached site map and answer the following questions regarding the non-flowing aquatic features. If more than one non-flowing aquatic feature is present on or adjacent to the site, make additional copies of the following questions and fill out for each individual aquatic feature. Distinguish between aquatic features by using names or other designations, and clearly identify each area on the site map.

If no, proceed to Section III.B.2.

III.B.2 Flowing Aquatic Features

Are any flowing aquatic features (such as streams or rivers) located at or adjacent to the site?

☐ Yes X No

If yes, indicate the aquatic feature on the attached site map and answer the following questions regarding the flowing aquatic features. If more than one flowing aquatic feature is present on or adjacent to the site, make additional copies of the following questions and fill out for each individual aquatic feature. Distinguish between aquatic features by using names or other designations, and clearly identify each area on the site map

If no, proceed to Section III.C.

III.C Terrestrial Habitats

III.C.1 Wooded

Are any wooded areas on or adjacent to the site? ☐ Yes X No

If yes, indicate the wooded area on the attached site map and answer the following questions. If more than one wooded area is present on or adjacent to the site, make additional copies of the following questions and fill out for each individual wooded area. Distinguish between wooded areas by using names or other designations, and clearly identify each area on the site map.

If no, proceed to Section III.C.2.

III.C.2 Shrub/Scrub

Are any shrub/scrub areas on or adjacent to the site? ☐ Yes X No

If yes, indicate the shrub/scrub area on the attached site map and answer the following questions. If more than one shrub/scrub area is present on or adjacent to the site, make additional copies of the following questions and fill out for each individual shrub/scrub area. Distinguish between shrub/scrub areas, using names or other designations, and clearly identify each area on the site map.

If no, proceed to Section III.C.3.

III.C.3 Grassland

Are any grassland areas on or adjacent to the site? ☐ Yes X No

If yes, indicate the grassland area on the attached site map and answer the following questions. If more than one grassland area is present on or adjacent to the site, make additional copies of the following questions and fill out for each individual grassland area. Distinguish between grassland areas by using names or other designations, and clearly identify each area on the site map.

If no, proceed to Section III.C.4.

III.C.4 Desert

Are any desert areas on or adjacent to the site? X Yes ☐ No

If yes, indicate the desert area on the attached site map and answer the following questions. If more than one desert area is present on or adjacent to the site, make additional copies of the following questions and fill out for each individual desert area. Distinguish between desert areas by using names or other designations, and clearly identify each area on the site map.

If no, proceed to Section III.C.5.

Desert Area Questions

X Onsite X Offsite

Name or Designation: Chihuahuan Desert

1. Estimate the approximate size of the desert area (in acres or sq. ft.).

This site including WSMR is contained within tens of thousands of acres of the Chihuahuan Desert.

2. Describe the desert area (e.g., presence or absence of vegetation, vegetation types, presence/size of rocks, sand, etc.)

Vegetation specifically at HELSTF is primarily dominated by four-winged saltbush and gyp moonpod (*Acleisanthes lanceolata*) with scattered wolfberry (*Lycium berlandieri*). The entire area is located within gyp dome habitat and is currently covered with an extensive coat of cryptogrammic crust. No threatened or endangered species of plants are known or expected to occupy the habitat present at the sites.

The surface soil at HELSTF is dominated by silt to sand sized gypsum grains. Beneath the surface, alternating layers of sand and clay are present reflecting past deposition within a lacustrine environment.

3. Animals observed in the desert area or suspected to be present based on indirect evidence or file material:

- x Birds
- x Mammals
- x Reptiles (e.g., snakes, lizards)
- ❑ Amphibians (e.g., toads, salamanders)

Specify species, if known:

Faunal associations with this habitat type reflect the vegetative cover available and are not nearly as diverse in species associations as more varied vegetation types within WSMR. Invertebrates and reptiles comprise the largest faunal groups associated with the sites. Ants (*Formicidae*), termites (*termitidae*), darkling beetles (*Tenebrionidae*), and wolf spiders (*Lycocidae*) provide a large food base for collared lizards (*Crotaphytus collaris*), leopard lizards (Gambelia wislizenii) and side blotch lizards (*Uta stansburiana*). A few snake species commonly inhabit the area including plains blackhead snakes (*Tantilla nigriceps*), coachwhips (*Masticophis flagellum*), and prairie rattlesnakes (*Crotalus viridis*). Avians common to the area include cactus wrens (*Campylorhynchus brunneicapillus*), loggerhead shrikes (*Lanius ludovicianus*) and, in the summer months, Swainson's hawks (*Buteo swainsoni*). Species of small mammals that utilize this habitat include kangaroo rats (*Dipodomys sp.*), deer mice (*Peromyscus maniculatus*), and pocket mice (*Perognathus* and *Chaetodipus* sp.). Larger mammals include desert cottontail rabbits (*Sylvilagus auduboni*), blacktail jackrabbits (*Lepus californicus*), and gemsbok (*Oryx gazella*). No threatened or endangered species of animals are known to or expected to occupy the habitat present at the site.

III.C.5 Other

1. Are there any other terrestrial communities or habitats on or adjacent to the site which were not previously described?

☐ Yes X No

If yes, indicate the "other" area(s) on the attached site map and describe the area(s) below. Distinguish between onsite and offsite areas. If no, proceed to Section III.D.

_____
_____
_____
_____
_____
_____

III.D Sensitive Environments and Receptors

1. Do any other potentially sensitive environmental areas[3] exist adjacent to or within 0.5 miles of the site? If yes, list these areas and provide the source(s) of information used to identify sensitive areas. *Do not answer "no" without confirmation from the U.S. Fish and Wildlife Service and appropriate State of New Mexico division.*

Habitat present is not considered rare or sensitive by any of the regulating or management agencies including the USFWS, NMDGF, and WSMR Directorate of Environment and Safety. No species of vegetation or animals that are considered rare or listed as threatened or endangered are known or expected in this habitat.

2. Are any areas on or near (i.e., within 0.5 miles) the site which are owned or used by local tribes? If yes, describe. *Contact the Tribal Liason in the Office of the Secretary (505)827-2855 to obtain this information.*

No.

Does the site serve or potentially serve as a habitat, foraging area, or refuge by rare, threatened, endangered, candidate and/or proposed species (plants or animals), or any otherwise protected species? If yes, identify species. *This information should be obtained from the U.S. Fish and Wildlife Service and appropriate State of New Mexico division.*

No. The latest lists of State and Federal species of concern, candidate, threatened, and endangered species were consulted. Resource experts familiar with the sites confirmed that none of these species utilize the habitats at or adjacent to the Site.

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3 Areas that provide unique and often protected habitat for wildlife species. These areas are typically used during critical life stages such as breeding, hatching, rearing of young and overwintering. Refer to **Table 1** at the end of this document for examples of sensitive environments.

3. Is the site potentially used as a breeding, roosting or feeding area by migratory bird species? If yes, identify which species.

Yes. There are hundreds of species of migrating birds that may potentially roost or feed at or near the Site. Several species of birds may nest near the Site including Say's phoebe and mourning dove.

4. Is the site used by any ecologically[4], recreationally, or commercially important species? If yes, explain.

The site is frequented by recreationally important species (hunted) such as Oryx, mule deer, and quail.

IV. EXPOSURE PATHWAY EVALUATION

1. Do existing data provide sufficient information on the nature, rate, and extent of contamination at the site?

   x Yes
   ❑ No
   ❑ Uncertain

   Please provide an explanation for your answer:_____
   _____
   _____
   _____
   _____

2. Do existing data provide sufficient information on the nature, rate, and extent of contamination in offsite affected areas?

   ❑ Yes
   ❑ No
   ❑ Uncertain
   x No offsite contamination

   Please provide an explanation for your answer:
   Contamination present at the HELSTF is currently confined to the immediate area of HELSTF. Down gradient monitoring wells contained within WSMR boundaries show no evidence of contaminant migration.

---

4 Ecologically important species include populations of species which provide a critical (i.e., not replaceable) food resource for higher organisms and whose function as such would not be replaced by more tolerant species; or perform a critical ecological function (such as organic matter decomposition) and whose functions will not be replaced by other species. Ecologically important species include pest and opportunistic species that populate an area if they serve as a food source for other species, but do not include domesticated animals (e.g., pets and livestock) or plants/animals whose existence is maintained by continuous human interventions (e.g., fish hatcheries, agricultural crops, etc.,)

3. Do existing data address potential migration pathways of contaminants at the site?

x Yes
❑ No
❑ Uncertain

Please provide an explanation for your answer:

Potential pathways for migration to receptors are present through chromium and lead detected above background in the surface soil.

4. Do existing data address potential migration pathways of contaminants in offsite affected areas?

❑ Yes
❑ No
❑ Uncertain
x No offsite contamination

Please provide an explanation for your answer:
Contamination present at the HELSTF is currently confined to the immediate area of HELSTF. Down gradient monitoring wells contained within WSMR boundaries show no evidence of contaminant migration.

5. Are there visible indications of stressed habitats or receptors on or near (i.e., within 0.5 miles) the site that may be the result of a chemical release? If yes, explain. Attach photographs if available.

No.

6. Is the location of the contamination such that receptors might be reasonably expected to come into contact with it? For soil, this means contamination in the soil 0 to 5 feet below ground surface (bgs). If yes, explain.

Yes. Potential COCs were detected in surface soil samples.

7. Are receptors located in or using habitats where chemicals exist in air, soil, sediment or surface water? If yes, explain.

Yes. Receptors could come in contact with surface soils at this site.

8. Could chemicals reach receptors via groundwater? Can chemicals leach or dissolve to groundwater? Are chemicals mobile in groundwater? Does groundwater discharge into receptor habitats? If yes, explain.

No. It is not expected that the chromium or lead could reach receptors via ground water. The ground water does not discharge into receptor habitats.

9. Could chemicals reach receptors through runoff or erosion? Answer the following questions:

What is the approximate distance from the contaminated area to the nearest watercourse or arroyo?

- ❑ 0 feet (i.e., contamination has reached a watercourse or arroyo)
- ❑ 1-10 feet
- ❑ 11-20 feet
- ❑ 21-50 feet
- ❑ 51-100 feet
- ❑ 101-200 feet
- ❑ > 200 feet
- ❑ > 500 feet
- x > 1000 feet

What is the slope of the ground in the contaminated area?

- x 0-10%
- ❑ 10-30%
- ❑ > 30%

What is the approximate amount of ground and canopy vegetative cover in the contaminated area?

- x < 25%
- ❑ 25-75%
- ❑ > 75%

Is there visible evidence of erosion (e.g., a rill or gully) in or near the contaminated area?

- ❑ Yes
- x No
- ❑ Do not know

Do any structures, pavement, or natural drainage features direct run-on flow (i.e., surface flows originating upstream or uphill from the area of concern) into the contaminated area?

- ❑ Yes
- x No
- ❑ Do not know

10. Could chemicals reach receptors through the dispersion of contaminants in air (e.g., volatilization, vapors, fugitive dust)? If yes, explain.

<u>Yes. It is possible that the potential COCs in the surface soil could reach receptors via dispersion through fugitive dust.</u>

11. Could chemicals reach receptors through migration of non-aqueous phase liquids (NAPLs)? Is a NAPL present at the site that might be migrating towards receptors or habitats? Could NAPL discharge contact receptors or their habitat?

No NAPLs are present at this site.

12. Could receptors be impacted by external irradiation at the site? Are gamma emitting radionuclides present at the site? Is the radionuclide contamination buried or at the surface?

No.

PHOTOGRAPHIC DOCUMENTATION

During the site visit(s), photographs should be taken to document the current conditions at the site and to support the information entered in the checklist. For example, photographs may be used to document the following:

- The nature, quality, and distribution of vegetation at the site
- Receptors or evidence of receptors
- Potentially important ecological features, such as ponds and drainage ditches
- Potential exposure pathways
- Any evidence of contamination or impact

The following space may be used to record photo subjects.

This SWMU is located several hundred meters east of the main HELSTF developed area. Vegetation is typical of that growing in disturbed areas and is currently comprised primarily of bare ground with scattered narrow-leaf peppergrass (*Lepidium alyssoides*) four-wing saltbush (*Atriplex canescens*) and snakeweed (*Gutierrezia sarothrae*).

SUMMARY OF OBSERVATIONS AND SITE SETTING

Include information on significant source areas and migration pathways that are likely to constitute complete exposure pathways.

There is very little information regarding the MAR Dump Site. When discovered, it was an open trench approximately 225 ft by 35 ft by 8 ft deep. A spoil pile about 40 feet from the trench is believed to have been the soils excavated during the trench construction. It is presumed that the trench used as a landfill in the 1960s and early 1970s during the operation of the MAR facility. The materials in the trench have been recovered and the hole backfilled.

This site including WSMR is contained within tens of thousands of acres of the Chihuahuan Desert. Vegetation specifically at HELSTF is primarily dominated by four-winged saltbush and gyp moonpod (*Acleisanthes lanceolata*) with scattered wolfberry (*Lycium berlandieri*). The entire area is located within gyp dome habitat and is currently covered with an extensive coat of cryptogrammic crust. No threatened or endangered species of plants are known or expected to occupy the habitat present at the sites.

The surface soil at HELSTF is dominated by silt to sand sized gypsum grains. Beneath the surface, alternating layers of sand and clay are present reflecting past deposition within a lacustrine environment.

Based on results of the Phase III RFI, suspected contaminants of concern at the site include chromium (Highest detection 9.06 mg/kg) and lead (Highest detection 17.3 mg/kg) in the surface soil at the site. It is possible that the potential COCs in the surface soil could reach receptors via dispersion through fugitive dust.

Checklist Completed by_____Bradley Davis_____

Affiliation_____White Sands Technical Services_____

Author Assisted by___Doug Burkett and William Little_____

Date_____

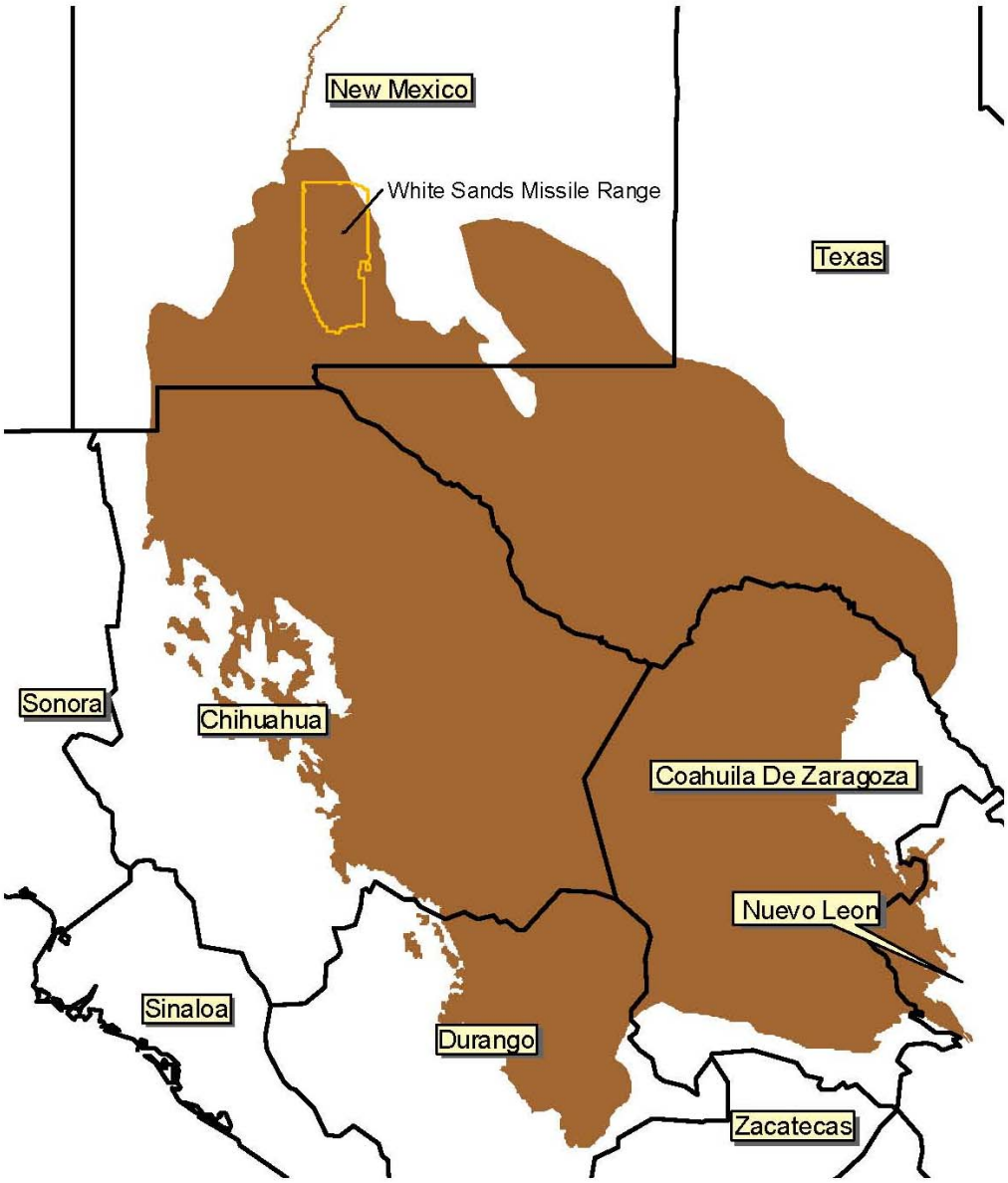


Figure 2.1 WSMR within the Chihuahuan Desert Ecoregion

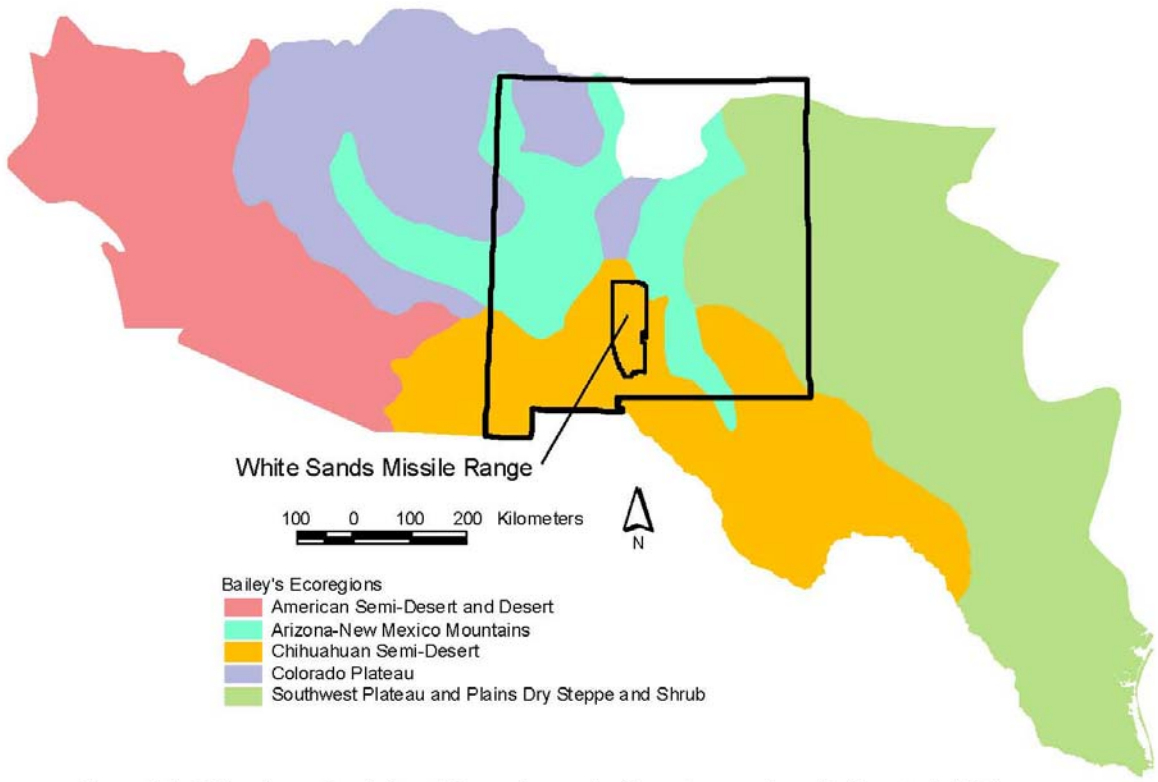


Figure 6.1. Chihuahuan Semi-desert Ecoregion and adjacent ecoregions (Bailey et al. 1994)

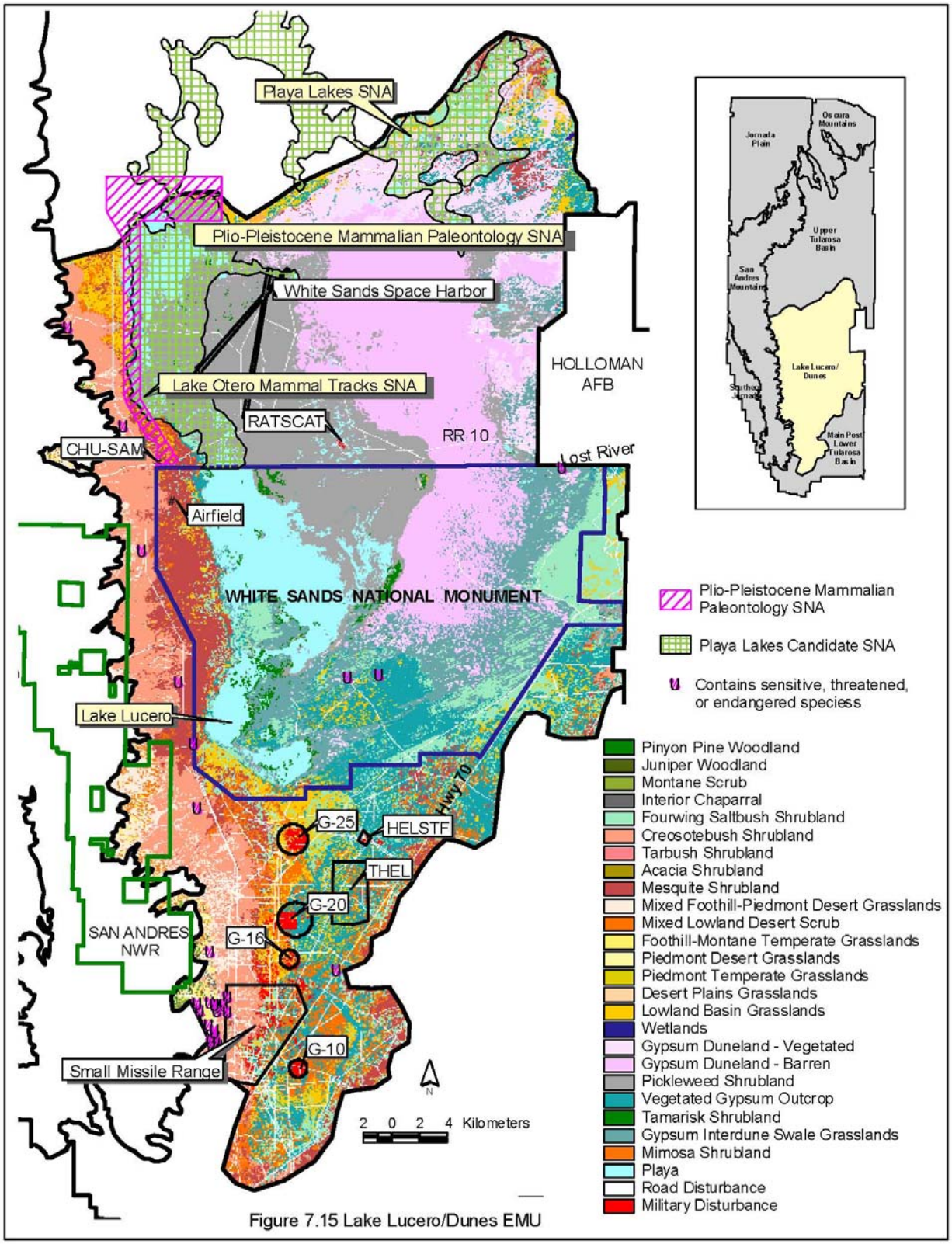


Figure 7.15 Lake Lucero/Dunes EMU

TABLE 1
EXAMPLES OF SENSITIVE ENVIRONMENTS

National Parks and National Monuments

Designated or Administratively Proposed Federal Wilderness Areas

National Preserves

National or State Wildlife Refuges

National Lakeshore Recreational Areas

Federal land designated for protection of natural ecosystems

State land designated for wildlife or game management

State designated Natural Areas

Federal or state designated Scenic or Wild River

All areas that provide or could potentially provide critical habitat[1] for state and federally listed Threatened or Endangered Species, those species that are currently petitioned for listing, and species designated by other agencies as sensitive or species of concern

All areas that provide or could potentially provide habitat for state protected species as defined in the Wildlife Code, Chapter 17 of the New Mexico Statutes

All areas that provide or could potentially provide habitat for migratory birds as protected by the Migratory Bird Treaty Act (16 U.S.C. §§ 703-712)

All areas that provide or could potentially provide habitat for bald eagles and golden eagles as protected by the Bald and Golden Eagle Protection Act (16 U.S.C. 668-668d)

All areas that provide or could potentially provide habitat for song birds as protected by the State of New Mexico statute (New Mexico Statute, 1978, Chapter 17, Game and Fish, 17-2-13)

---

1 Critical habitats are defined by the Endangered Species Act (50 CFR §424.02(d)) as:

1) Specific areas within the geographical area currently occupied by a species, at the time it is listed in accordance with the Act, on which are found those physical or biological features (I) essential to the conservation of the species and (ii) that may require special management considerations or protection, and
2) Specific areas outside the geographical area occupied by a species at the time it is listed upon a determination by the Secretary [of Interior] that such areas are essential for the conservation of the species.

All areas that provide or could potentially provide habitat for hawks, vultures and owls as protected by the State of New Mexico statute (New Mexico Statute, 1978, Chapter 17, Game and Fish, 17-2-14)

All areas that provide or could potentially provide habitat for horned toads and Bullfrogs as protected by the State of New Mexico statute (New Mexico Statute, 1978, Chapter 17, Game and Fish, 17-2-15 and 16, resp.)

All perennial waters (e.g., rivers, lakes, playas, sloughs, ponds, etc)

All ephemeral drainage (e.g., arroyos, puddles/pools, intermittent streams, etc) that provide significant wildlife habitat or that could potentially transport contaminants off site to areas that provide wildlife habitat

All riparian habitats

All perennial and ephemeral wetlands (not limited to jurisdictional wetlands)

All areas that are potentially important breeding, staging, and overwintering habitats as well as other habitats important for the survival of animals during critical periods of their life cycle.

ATTACHMENT B

ECOLOGICAL SITE EXCLUSION CRITERIA CHECKLIST AND DECISION TREE

1. NEW MEXICO ECOLOGICAL EXCLUSION CRITERIA CHECKLIST

The following questions are designed to be used in conjunction with the Ecological Exclusion Criteria Decision Tree (Figure 1). After answering each question, refer to the Decision Tree to determine the appropriate next step. In some cases, questions will be omitted as the user is directed to another section as indicated by the flow diagram in the Decision Tree. For example, if the user answers "yes" to Question 1 of Section I, he or she is directed to proceed to Section II.

I. Habitat

In the following questions, "affected property" refers to all property on which a release has occurred or is believed to have occurred, including off-site areas where contamination may have occurred or migrated.

1. Are any of the below-listed sensitive environments at, adjacent to, or in the locality[1] of the affected property? **No.**

   - National Park or National Monument
   - Designated or administratively proposed Federal Wilderness Area
   - National Preserve
   - National or State Wildlife Refuge
   - Federal or State land designated for wildlife or game management
   - State designated Natural Areas
   - All areas that are owned or used by local tribes
   - All areas that are potentially important breeding, staging, and overwintering habitats as well as other habitats important for the survival of animals during critical periods of their life cycle
   - All areas that provide or could potentially provide habitat for state and federally listed Threatened or Endangered Species, those species that are currently petitioned for listing, and species designated by other agencies as sensitive or species of concern
   - All areas that provide or could potentially provide habitat for state protected species as defined in the Wildlife Code, Chapter 17 of the New Mexico Statutes
   - All areas that provide or could potentially provide habitat for migratory birds as protected by the Migratory Bird Treaty Act (16 U.S.C. §§ 703-712)
   - All areas that provide or could potentially provide habitat for bald eagles and golden eagles as protected by the Bald and Golden Eagle Protection Act (16 U.S.C. 668-668d)

---

1 *Locality* of the site refers to any area where an ecological receptor is likely to contact site-related chemicals. The locality of the site considers the likelihood of contamination migrating over time and places the site in the context of its general surrounding. Therefore, the locality is typically larger than the site and the areas adjacent to the site.

- All areas that provide or could potentially provide habitat for song birds as protected by the state of New Mexico statute (New Mexico Statute, 1978, Chapter 17, Game and Fish, 17-2-13)
- All areas that provide or could potentially provide habitat for hawks, vultures and owls as protected by the state of New Mexico statute (New Mexico Statute, 1978, Chapter 17, Game and Fish, 17-2-14)
- All areas that provide or could potentially provide habitat for horned toads and bullfrogs as protected by the state of New Mexico statute (New Mexico Statute, 1978, Chapter 17, Game and Fish, 17-2-15 and 16, respectively)

2. Does the affected property contain land areas which were not listed in Question 1, but could be considered viable ecological habitat? The following are examples (but not a complete listing) of viable ecological habitats: **Yes.**

- Wooded areas
- Shrub/scrub vegetated areas
- Open fields (prairie)
- Other grassy areas
- Desert areas
- Any other areas which support wildlife and/or vegetation, excluding areas which support only opportunistic species (such as house mice, Norway rats, pigeons, etc.) that do not serve as prey to species in adjacent habitats.

The following features are not considered ecologically viable:

- Pavement
- Buildings
- Paved areas of roadways
- Paved/concrete equipment storage pads
- Paved manufacturing or process areas
- Other non-natural surface cover or structure

3. Does the affected property contain any perennial or ephemeral aquatic features which were not listed in Question 1? **No.**

II. Receptors

1. Is any part of the affected property used for habitat, foraging area, or refuge by any rare, threatened, or endangered species (plant *or* animal), or otherwise protected species (e.g., raptors, migratory birds)? **No.**

2. Is any part of the affected property used for habitat, foraging area, or refuge by any species used as a recreational (e.g., game animals) and/or commercial resource? **Yes.**

3. Is any part of the affected property used for habitat, foraging area, or refuge by any plant or animal species? This includes plants considered "weeds" and opportunistic insect and animal species (such as cockroaches and rats) if they are used as a food source for other species in the area. **Yes.**

III. Exposure Pathways

1. Could receptors be impacted by contaminants via direct contact? **Yes.**

Is a receptor located in or using an area where it could contact contaminated air, soil[3], or surface water? **Yes.**

For Questions 2 and 3, note that one must answer "yes" to all three bullets in order to be directed to the "exclusion denied" box of the decision tree. This is because answering "no" to one of the questions in the bullet list indicates that a complete exposure pathway is not present. For example, in Question 2, if the chemical cannot leach or dissolve to groundwater (bullet 1), there is no chance of ecological receptors being exposed to the chemical through contact with contaminated groundwater. Similarly, the responses to the questions in Question 4 determine whether a complete pathway exists for exposure to NAPL.

2. Could receptors contact contaminants via groundwater?
   - Can the chemical leach or dissolve to groundwater[4]? **Yes.**
   - Can groundwater mobilize the chemical? **Yes.**
   - Could (does) contaminated groundwater discharge into known or potential receptor habitats? **No.**

3. Could receptors contact contaminants via runoff (i.e., surface water and/or suspended sediment) or erosion by water or wind? **Yes.**
   - Are chemicals present in surface soils? **Yes.**
   - Can the chemical be leached from or eroded with surface soils? **Yes.**
   - Is there a receptor habitat located downgradient of the leached/eroded surface soil? **Yes.**

4. Could receptors contact contaminants via migration of non-aqueous phase liquids (NAPL)?
   - Is NAPL present at the site? **No.**
   - Is NAPL migrating toward potential receptors or habitats? **No.**
   - Could NAPL discharge impact receptors or habitats? **No.**

---

3 For soil, this means contamination less than 5 feet below ground surface (bgs).

4 Information on the environmental fate of specific chemicals can be found on the Internet at *http://www.epa.gov/opptintr/chemfact/* or at a local library in published copies of the *Hazardous Substances Data Bank*.

Figure 1 -Ecological Exclusion Criteria Decision Tree

(Refer to corresponding checklist for the full text of each question)

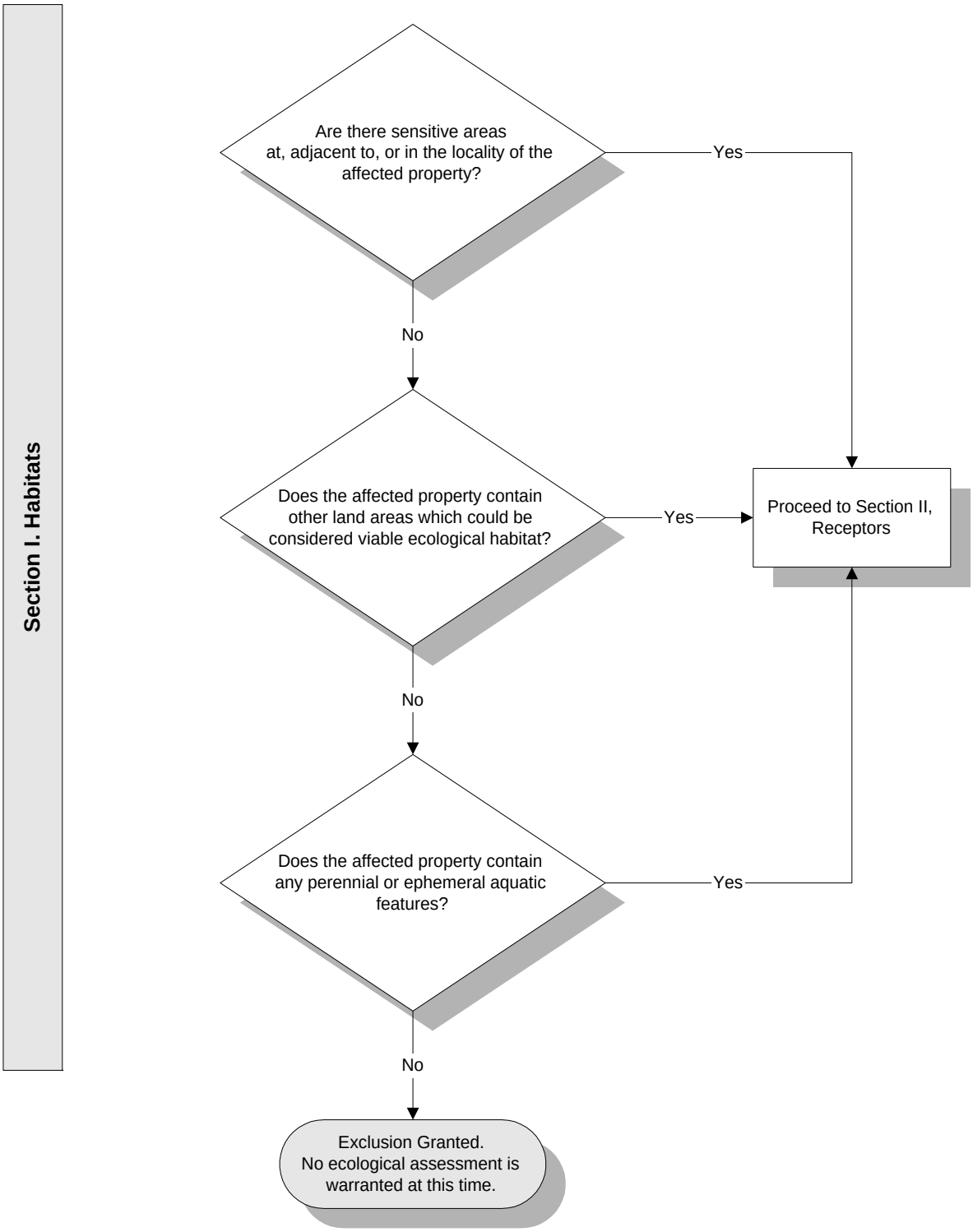


Figure 1 - Exclusion Criteria Decision Tree (continued)

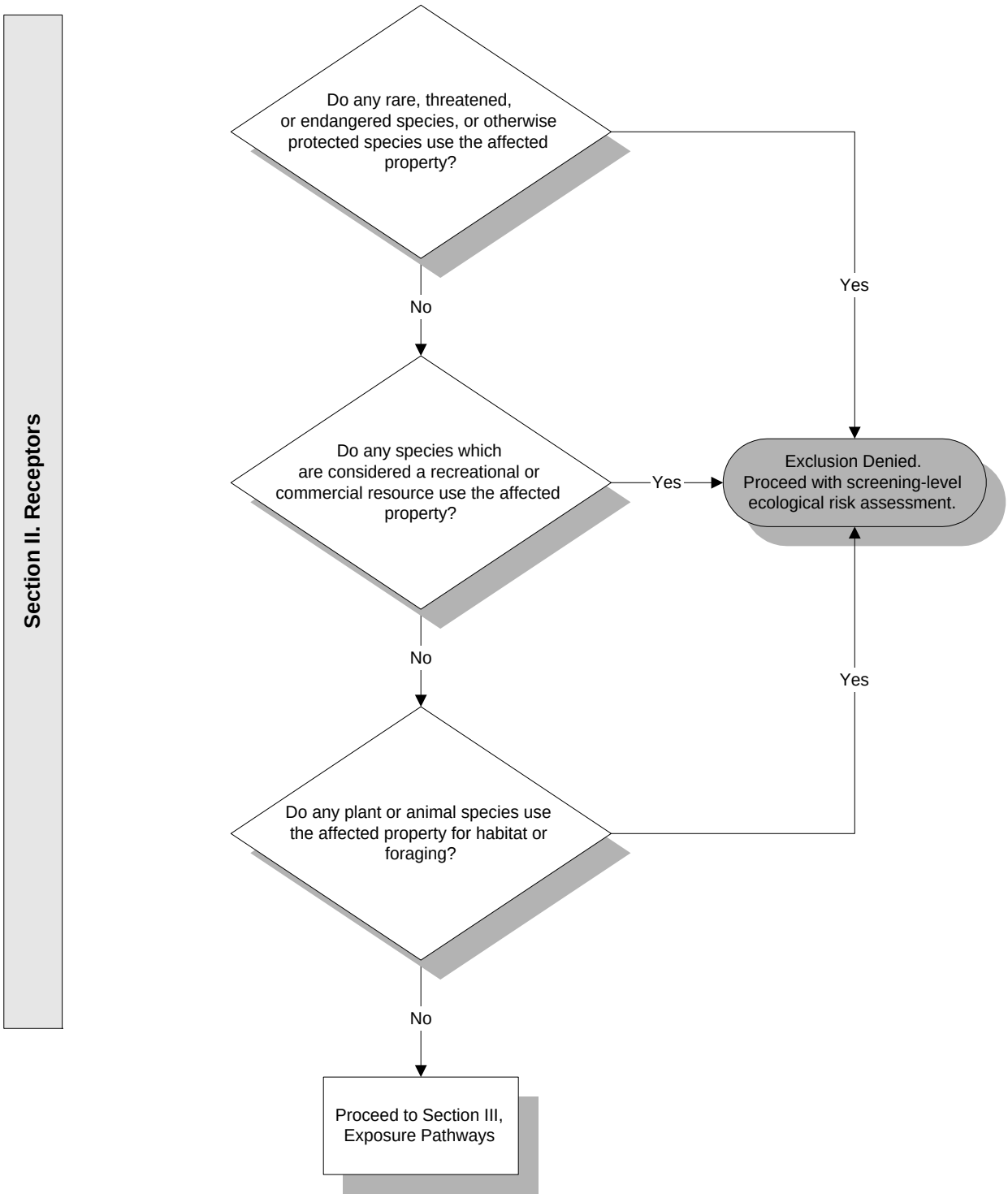
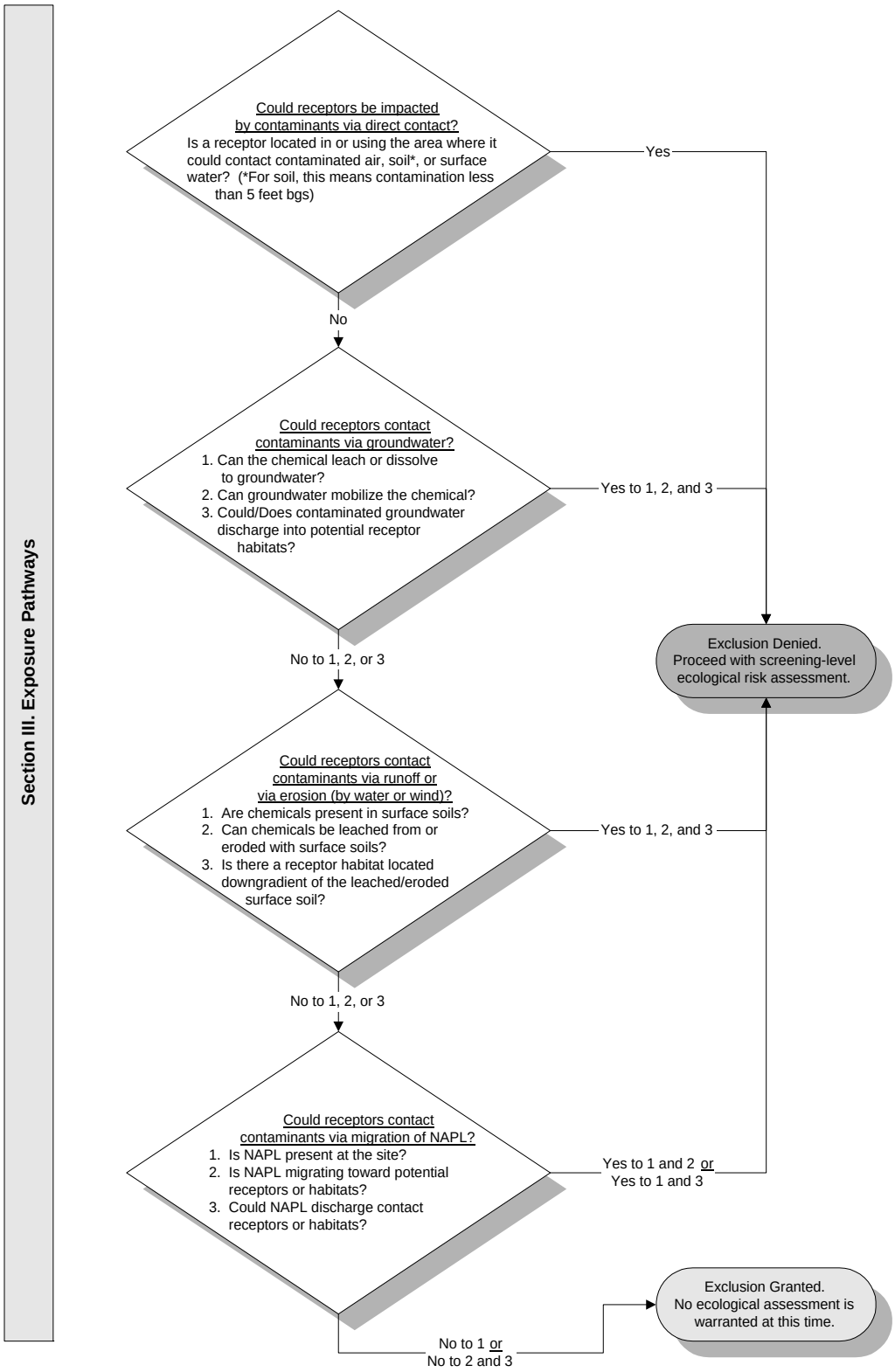


Figure 1 - Exclusion Criteria Decision Tree (continued)



ATTACHMENT A

SCREENING-LEVEL ECOLOGICAL RISK ASSESSMENT
SCOPING ASSESSMENT
SITE ASSESSMENT CHECKLIST

NEW MEXICO ENVIRONMENT DEPARTMENT

SITE ASSESSMENT CHECKLIST

I. SITE LOCATION

1. Site Name: SWMU 151 Trailer Area Septic System Septic System
   US EPA I.D. Number: NM2750211235
   Location: High Energy Laser Systems Test Facility
   County: Otero
   City: WSMR State: NM

2. Latitude: 32.6317 Longitude: 106.3295

3. Attach site maps, including a topographical map, a diagram which illustrates the layout of the facility (e.g., site boundaries, structures, etc.), and maps showing all habitat areas identified in Section III of the checklist. Also, include maps which illustrate known release areas, sampling locations, and any other important features, if available.

II. SITE CHARACTERIZATION

1. Indicate the approximate area of the site (i.e., acres or sq. ft) 2,000 Square Feet

2. Provide an approximate breakdown of the land uses on the site:

_____% Heavy Industrial	_____% Light Industrial	_____% Urban
_____% Residential	_____% Rural	_____% Agricultural[b]
_____% Recreational[a]	_____% Undisturbed	100 % Other[c]

[a]For recreational areas, please describe the usage of the area (e.g., park, playing field, etc.):
_____

[b]For agricultural areas, please list the crops and/or livestock which are present:
_____

[c]For areas designated as "other", please describe the usage of the area:
The HELSTF Facility is a Department of Defense test facility.

3. Provide an approximate breakdown of the land uses in the area surrounding the site. Indicate the radius (in miles) of the area described: 3,200 square miles

_____% Heavy Industrial	_____% Light Industrial	_____% Urban
_____% Residential	_____% Rural	_____% Agricultural[b]
_____% Recreational[a]	_____% Undisturbed	100 % Other [c]

[a]For recreational areas, please describe the usage of the area (e.g., park, playing field, golf course, etc.):
_____

[b]For agricultural areas, please list the crops and/or livestock which are present:
_____

[c]For areas designated as "other", please describe the usage of the area:
The HELSTF test facility is contained within 3,200 square miles of the White Sands Missile Range which is used for testing weapon systems for the Department of Defense.

4. Describe reasonable and likely future land and/or water use(s) at the site.

The HELSTF Facility is likely to remain a Department of Defense test facility for the foreseeable future. The regional ground water at the site has greater than 10,000 mg/l total dissolved solids and will not likely be used for drinking water in the foreseeable future. Regional water away from the test facility may be used for construction purposes.

5. Describe the historical uses of the site. Include information on chemical releases that may have occurred as a result of previous land uses. For each chemical release, provide information on the form of the chemical released (i.e., solid, liquid, vapor) and the known or suspected causes or mechanism of the release (i.e., spills, leaks, material disposal, dumping, explosion, etc.).

The septic systems for the trailer area (SWMU 151) and property and supply building (SWMU 152) are plumbed together. The trailer area system serviced the office trailers that used to occupy the location.

6. If any movement of soil has taken place at the site, describe the degree of the disturbance. Indicate the likely source of any disturbances (e.g., erosion, agricultural, mining, industrial activities, removals, etc.) and estimate when these events occurred.

No soil movement has occurred.

7. Describe the current uses of the site. Include information on recent (previous 5 years) disturbances or chemical releases that have occurred. For each chemical release, provide information on the form of the chemical released and the causes or mechanism of the release.

This SWMU is an active leach field for a building at HELSTF. There are no known chemical releases.

8. Identify the location or suspected location of chemical releases at the site. Provide an estimate of the distance between these locations and the areas identified in Section III.

There are no known chemical releases at the site.

9. Identify the suspected contaminants of concern (COCs) at the site. If known, include the maximum contaminant levels. Please indicate the source of data cited (e.g., RFI, confirmatory sampling, etc.).

There are no ecological contaminants of concern associated with this site based on the Phase I RFI data.

10. Identify the media (e.g., soil (surface or subsurface), surface water, air, groundwater) which are known or suspected to contain COCs.

There are no ecological contaminants of concern associated with this site based on the Phase I RFI data.

11. Indicate the approximate depth to groundwater (in feet below ground surface [(bgs)].

Average depth to the regional ground water table at HELSTF is 71-73 ft below ground surface. Depth to the perched ground water zone beneath this site is approximately 30 ft bgs.

12. Indicate the direction of groundwater flow (e.g., north, southeast, etc.)

The direction of regional ground water flow at HELSTF is to the south-east.

III. HABITAT EVALUATION

III.A Wetland Habitats

Are any wetland[2] areas such as marshes or swamps on or adjacent to the site?

☐ Yes X No

If yes, indicate the wetland area on the attached site map and answer the following questions regarding the wetland area. If more than one wetland area is present on or adjacent to the site, make additional copies of the following questions and fill out for each individual wetland area. Distinguish between wetland areas by using names or other designations (such as location), and clearly identify each area on the site map. Also, obtain and attach a National Wetlands Inventory Map (or maps) to illustrate each wetland area.

2Wetlands are defined in 40 CFR §232.2 as " Areas inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and that under normal circumstances does support, a prevalence of vegetation typically adapted for life in saturated soil conditions." Examples of typical wetlands plants include: cattails, cordgrass, willows and cypress trees. National wetland inventory maps may be available at http:\\nwi.fws.gov. Additional information on wetland delineation criteria is also available from the Army Corps of Engineers.

Identify the sources of the observations and information (e.g., National Wetland Inventory, Federal or State Agency, USGS topographic maps) used to make the determination that wetland areas are or are not present.

Site visit by wildlife biologist and USGS topographic maps.

If no wetland areas are present, proceed to Section III.B.

III.B Aquatic Habitats

III.B.1 Non-Flowing Aquatic Features

Are any non-flowing aquatic features (such as ponds or lakes) located at or adjacent to the site?

☐ Yes X No

If yes, indicate the aquatic feature on the attached site map and answer the following questions regarding the non-flowing aquatic features. If more than one non-flowing aquatic feature is present on or adjacent to the site, make additional copies of the following questions and fill out for each individual aquatic feature. Distinguish between aquatic features by using names or other designations, and clearly identify each area on the site map.

If no, proceed to Section III.B.2.

III.B.2 Flowing Aquatic Features

Are any flowing aquatic features (such as streams or rivers) located at or adjacent to the site?

☐ Yes X No

If yes, indicate the aquatic feature on the attached site map and answer the following questions regarding the flowing aquatic features. If more than one flowing aquatic feature is present on or adjacent to the site, make additional copies of the following questions and fill out for each individual aquatic feature. Distinguish between aquatic features by using names or other designations, and clearly identify each area on the site map

If no, proceed to Section III.C.

III.C Terrestrial Habitats

III.C.1 Wooded

Are any wooded areas on or adjacent to the site? ☐ Yes X No

If yes, indicate the wooded area on the attached site map and answer the following questions. If more than one wooded area is present on or adjacent to the site, make additional copies of the following questions and fill out for each individual wooded area. Distinguish between wooded areas by using names or other designations, and clearly identify each area on the site map.

If no, proceed to Section III.C.2.

III.C.2 Shrub/Scrub

Are any shrub/scrub areas on or adjacent to the site? ☐ Yes X No

If yes, indicate the shrub/scrub area on the attached site map and answer the following questions. If more than one shrub/scrub area is present on or adjacent to the site, make additional copies of the following questions and fill out for each individual shrub/scrub area. Distinguish between shrub/scrub areas, using names or other designations, and clearly identify each area on the site map.

If no, proceed to Section III.C.3.

III.C.3 Grassland

Are any grassland areas on or adjacent to the site? ☐ Yes X No

If yes, indicate the grassland area on the attached site map and answer the following questions. If more than one grassland area is present on or adjacent to the site, make additional copies of the following questions and fill out for each individual grassland area. Distinguish between grassland areas by using names or other designations, and clearly identify each area on the site map.

If no, proceed to Section III.C.4.

III.C.4 Desert

Are any desert areas on or adjacent to the site? X Yes ☐ No

If yes, indicate the desert area on the attached site map and answer the following questions. If more than one desert area is present on or adjacent to the site, make additional copies of the following questions and fill out for each individual desert area. Distinguish between desert areas by using names or other designations, and clearly identify each area on the site map.

If no, proceed to Section III.C.5.

Desert Area Questions

X Onsite X Offsite

Name or Designation: Chihuahuan Desert

1. Estimate the approximate size of the desert area (in acres or sq. ft.).

This site including WSMR is contained within tens of thousands of acres of the Chihuahuan Desert.

2. Describe the desert area (e.g., presence or absence of vegetation, vegetation types, presence/size of rocks, sand, etc.)

Vegetation specifically at HELSTF is primarily dominated by four-winged saltbush and gyp moonpod (*Acleisanthes lanceolata*) with scattered wolfberry (*Lycium berlandieri*). The entire area is located within gyp dome habitat and is currently covered with an extensive coat of cryptogrammic crust. No threatened or endangered species of plants are known or expected to occupy the habitat present at the sites.

The surface soil at HELSTF is dominated by silt to sand sized gypsum grains. Beneath the surface, alternating layers of sand and clay are present reflecting past deposition within a lacustrine environment.

3. Animals observed in the desert area or suspected to be present based on indirect evidence or file material:

- x Birds
- x Mammals
- x Reptiles (e.g., snakes, lizards)
- ❑ Amphibians (e.g., toads, salamanders)

Specify species, if known:

Faunal associations with this habitat type reflect the vegetative cover available and are not nearly as diverse in species associations as more varied vegetation types within WSMR. Invertebrates and reptiles comprise the largest faunal groups associated with the sites. Ants (*Formicidae*), termites (*termitidae*), darkling beetles (*Tenebrionidae*), and wolf spiders (*Lycocidae*) provide a large food base for collared lizards (*Crotaphytus collaris*), leopard lizards (Gambelia wislizenii) and side blotch lizards (*Uta stansburiana*). A few snake species commonly inhabit the area including plains blackhead snakes (*Tantilla nigriceps*), coachwhips (*Masticophis flagellum*), and prairie rattlesnakes (*Crotalus viridis*). Avians common to the area include cactus wrens (*Campylorhynchus brunneicapillus*), loggerhead shrikes (*Lanius ludovicianus*) and, in the summer months, Swainson's hawks (*Buteo swainsoni*). Species of small mammals that utilize this habitat include kangaroo rats (*Dipodomys sp.*), deer mice (*Peromyscus maniculatus*), and pocket mice (*Perognathus* and *Chaetodipus* sp.). Larger mammals include desert cottontail rabbits (*Sylvilagus auduboni*), blacktail jackrabbits (*Lepus californicus*), and gemsbok (*Oryx gazella*). No threatened or endangered species of animals are known to or expected to occupy the habitat present at the site.

III.C.5 Other

1. Are there any other terrestrial communities or habitats on or adjacent to the site which were not previously described?

☐ Yes X No

If yes, indicate the "other" area(s) on the attached site map and describe the area(s) below. Distinguish between onsite and offsite areas. If no, proceed to Section III.D.

_____
_____
_____
_____
_____

III.D Sensitive Environments and Receptors

1. Do any other potentially sensitive environmental areas[3] exist adjacent to or within 0.5 miles of the site? If yes, list these areas and provide the source(s) of information used to identify sensitive areas. *Do not answer "no" without confirmation from the U.S. Fish and Wildlife Service and appropriate State of New Mexico division.*

Habitat present is not considered rare or sensitive by any of the regulating or management agencies including the USFWS, NMDGF, and WSMR Directorate of Environment and Safety. No species of vegetation or animals that are considered rare or listed as threatened or endangered are known or expected in this habitat.

2. Are any areas on or near (i.e., within 0.5 miles) the site which are owned or used by local tribes? If yes, describe. *Contact the Tribal Liason in the Office of the Secretary (505)827-2855 to obtain this information.*

No.

Does the site serve or potentially serve as a habitat, foraging area, or refuge by rare, threatened, endangered, candidate and/or proposed species (plants or animals), or any otherwise protected species? If yes, identify species. *This information should be obtained from the U.S. Fish and Wildlife Service and appropriate State of New Mexico division.*

No. The latest lists of State and Federal species of concern, candidate, threatened, and endangered species were consulted. Resource experts familiar with the sites confirmed that none of these species utilize the habitats at or adjacent to the Site.

3. Is the site potentially used as a breeding, roosting or feeding area by migratory bird species? If yes, identify which species.

Yes. There are hundreds of species of migrating birds that may potentially roost or feed at or near the Site. Several species of birds may nest near the Site including Say's phoebe and mourning dove.

---

3 Areas that provide unique and often protected habitat for wildlife species. These areas are typically used during critical life stages such as breeding, hatching, rearing of young and over wintering. Refer to **Table 1** at the end of this document for examples of sensitive environments.

4. Is the site used by any ecologically[4], recreationally, or commercially important species? If yes, explain.

The site is frequented by recreationally important species (hunted) such as quail.

IV. EXPOSURE PATHWAY EVALUATION

1. Do existing data provide sufficient information on the nature, rate, and extent of contamination at the site?

x Yes
❑ No
❑ Uncertain

Please provide an explanation for your answer:

Based on the Phase I RFI, no soil contamination is present on site. There are no known chemical releases at this site.

2. Do existing data provide sufficient information on the nature, rate, and extent of contamination in offsite affected areas?

❑ Yes
❑ No
❑ Uncertain
x No offsite contamination

Please provide an explanation for your answer:

Contamination present at the HELSTF is currently confined to the immediate area of HELSTF. Down gradient monitoring wells contained within WSMR boundaries show no evidence of contaminant migration.

3. Do existing data address potential migration pathways of contaminants at the site?

x Yes
❑ No
❑ Uncertain

---

4 Ecologically important species include populations of species which provide a critical (i.e., not replaceable) food resource for higher organisms and whose function as such would not be replaced by more tolerant species; or perform a critical ecological function (such as organic matter decomposition) and whose functions will not be replaced by other species. Ecologically important species include pest and opportunistic species that populate an area if they serve as a food source for other species, but do not include domesticated animals (e.g., pets and livestock) or plants/animals whose existence is maintained by continuous human interventions (e.g., fish hatcheries, agricultural crops, etc.,)

Please provide an explanation for your answer:

Based on the Phase I RFI, there are no COCs.

4. Do existing data address potential migration pathways of contaminants in offsite affected areas?

- ❑ Yes
- ❑ No
- ❑ Uncertain
- x No offsite contamination

Please provide an explanation for your answer:

Contamination present at the HELSTF is currently confined to the immediate area of HELSTF. Down gradient monitoring wells contained within WSMR boundaries show no evidence of contaminant migration.

5. Are there visible indications of stressed habitats or receptors on or near (i.e., within 0.5 miles) the site that may be the result of a chemical release? If yes, explain. Attach photographs if available.

No.

6. Is the location of the contamination such that receptors might be reasonably expected to come into contact with it? For soil, this means contamination in the soil 0 to 5 feet below ground surface (bgs). If yes, explain.

Based on the Phase I RFI, there are no COCs.

7. Are receptors located in or using habitats where chemicals exist in air, soil, sediment or surface water? If yes, explain.

Based on the Phase I RFI, there are no COCs.

8. Could chemicals reach receptors via groundwater? Can chemicals leach or dissolve to groundwater? Are chemicals mobile in groundwater? Does groundwater discharge into receptor habitats? If yes, explain.

There are no known chemical releases from this site. Ground water does not discharge into receptor habitats.

9. Could chemicals reach receptors through runoff or erosion? Answer the following questions:

What is the approximate distance from the contaminated area to the nearest watercourse or arroyo?

- ❑ 0 feet (i.e., contamination has reached a watercourse or arroyo)
- ❑ 1-10 feet
- ❑ 11-20 feet

- ❑ 21-50 feet
- ❑ 51-100 feet
- ❑ 101-200 feet
- ❑ > 200 feet
- ❑ > 500 feet
- x > 1000 feet

What is the slope of the ground in the contaminated area?

- x 0-10%
- ❑ 10-30%
- ❑ > 30%

What is the approximate amount of ground and canopy vegetative cover in the contaminated area?

- x < 25%
- ❑ 25-75%
- ❑ > 75%

Is there visible evidence of erosion (e.g., a rill or gully) in or near the contaminated area?

- ❑ Yes
- x No
- ❑ Do not know

Do any structures, pavement, or natural drainage features direct run-on flow (i.e., surface flows originating upstream or uphill from the area of concern) into the contaminated area?

- ❑ Yes
- x No
- ❑ Do not know

10. Could chemicals reach receptors through the dispersion of contaminants in air (e.g., volatilization, vapors, fugitive dust)? If yes, explain.

Based on the Phase I RFI, there are no COCs.

11. Could chemicals reach receptors through migration of non-aqueous phase liquids (NAPLs)? Is a NAPL present at the site that might be migrating towards receptors or habitats? Could NAPL discharge contact receptors or their habitat?

No NAPLs are present.

12. Could receptors be impacted by external irradiation at the site? Are gamma emitting radionuclides present at the site? Is the radionuclide contamination buried or at the surface?

No.

PHOTOGRAPHIC DOCUMENTATION

During the site visit(s), photographs should be taken to document the current conditions at the site and to support the information entered in the checklist. For example, photographs may be used to document the following:

- The nature, quality, and distribution of vegetation at the site
- Receptors or evidence of receptors
- Potentially important ecological features, such as ponds and drainage ditches
- Potential exposure pathways
- Any evidence of contamination or impact

The following space may be used to record photo subjects.

SWMU 151 Septic System

This site is a small area of thick brush and an old underground septic tank located within the midst of the HELSTF developed area. This site consists of a single salt cedar (*Tamarisk ramosisima*), and a small dense cluster of four-winged saltbush (*Atriplex canascens*) encircled by a 4-strand barbed wire fence. No surface contaminants are known from this site and there is no expected pathway to organisms. Based on the SLERA Checklist, exclusion should be granted for further ecological assessment at this time.

SUMMARY OF OBSERVATIONS AND SITE SETTING

Include information on significant source areas and migration pathways that are likely to constitute complete exposure pathways.

This site including WSMR is contained within tens of thousands of acres of the Chihuahuan Desert. Vegetation specifically at HELSTF is primarily dominated by four-winged saltbush and gyp moonpod (*Acleisanthes lanceolata*) with scattered wolfberry (*Lycium berlandieri*). The entire area is located within gyp dome habitat and is currently covered with an extensive coat of cryptogrammic crust. No threatened or endangered species of plants are known or expected to occupy the habitat present at the sites. The surface soil at HELSTF is dominated by silt to sand sized gypsum grains. Beneath the surface, alternating layers of sand and clay are present reflecting past deposition within a lacustrine environment.

Based on the Phase I RFI, there are no contaminants of concern associated with this site. There are no known chemical releases from this site. Ground water does not discharge into receptor habitats.

Checklist Completed by Bradley Davis

Affiliation White Sands Technical Services

Author Assisted by Doug Burkett and William Little

Date

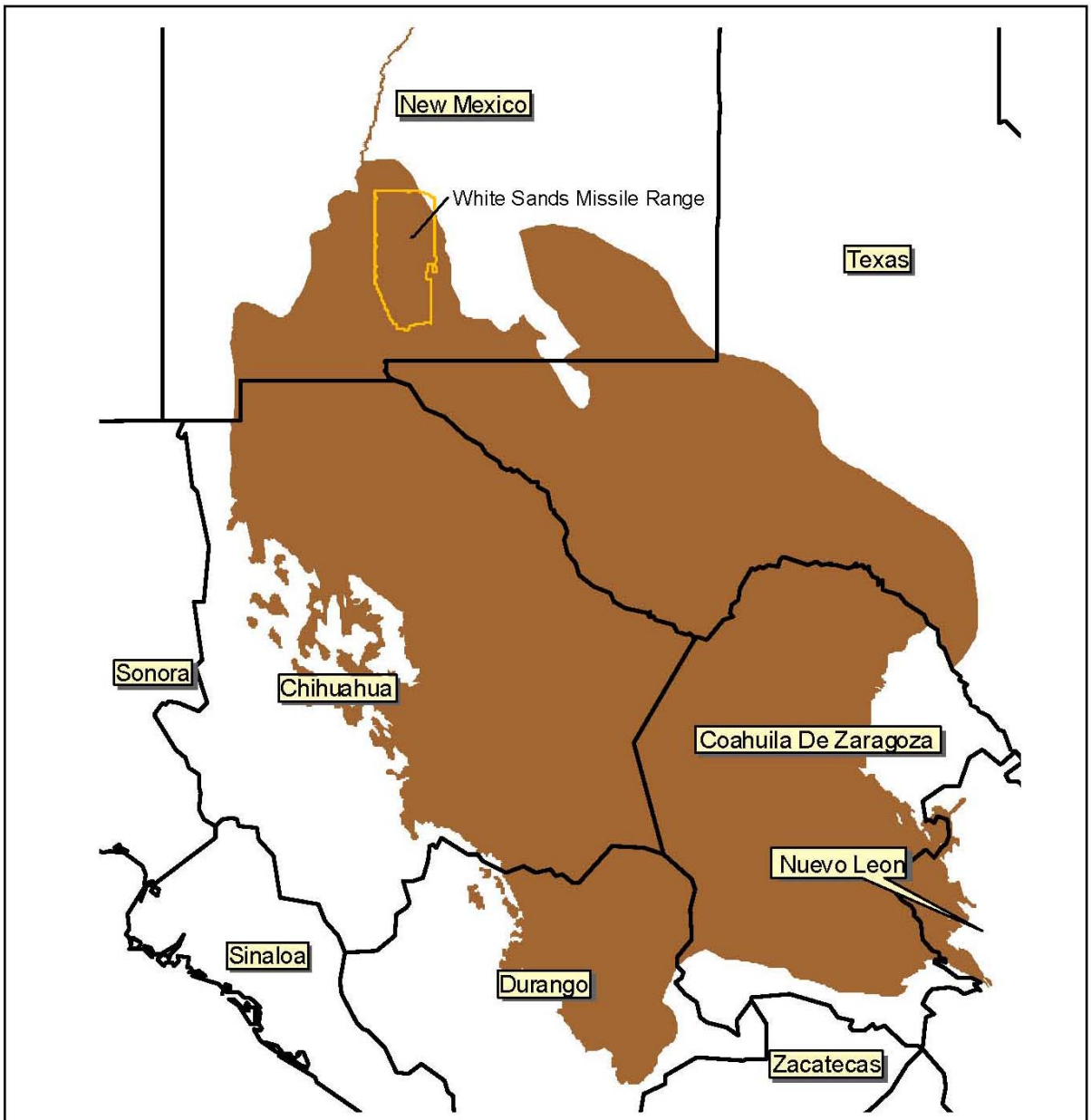


Figure 2.1 WSMR within the Chihuahuan Desert Ecoregion

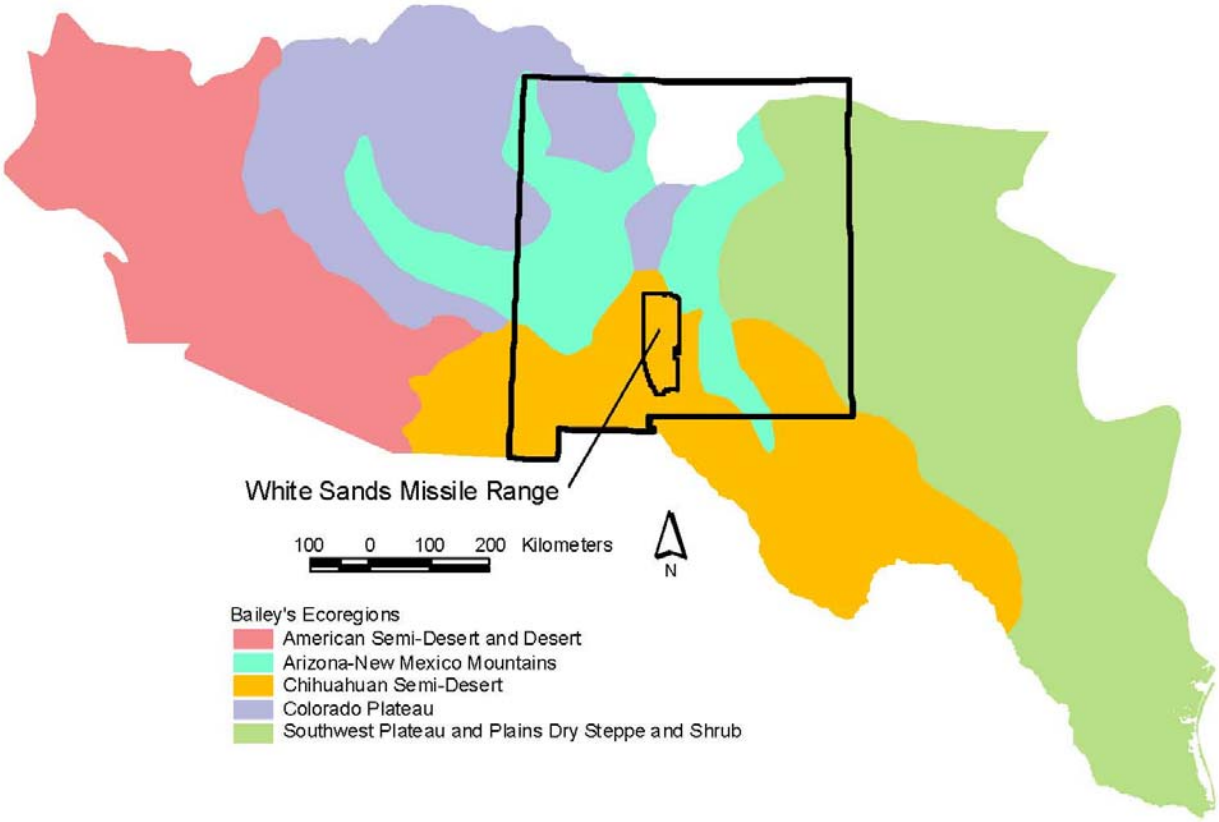


Figure 6.1. Chihuahuan Semi-desert Ecoregion and adjacent ecoregions (Bailey et al. 1994)

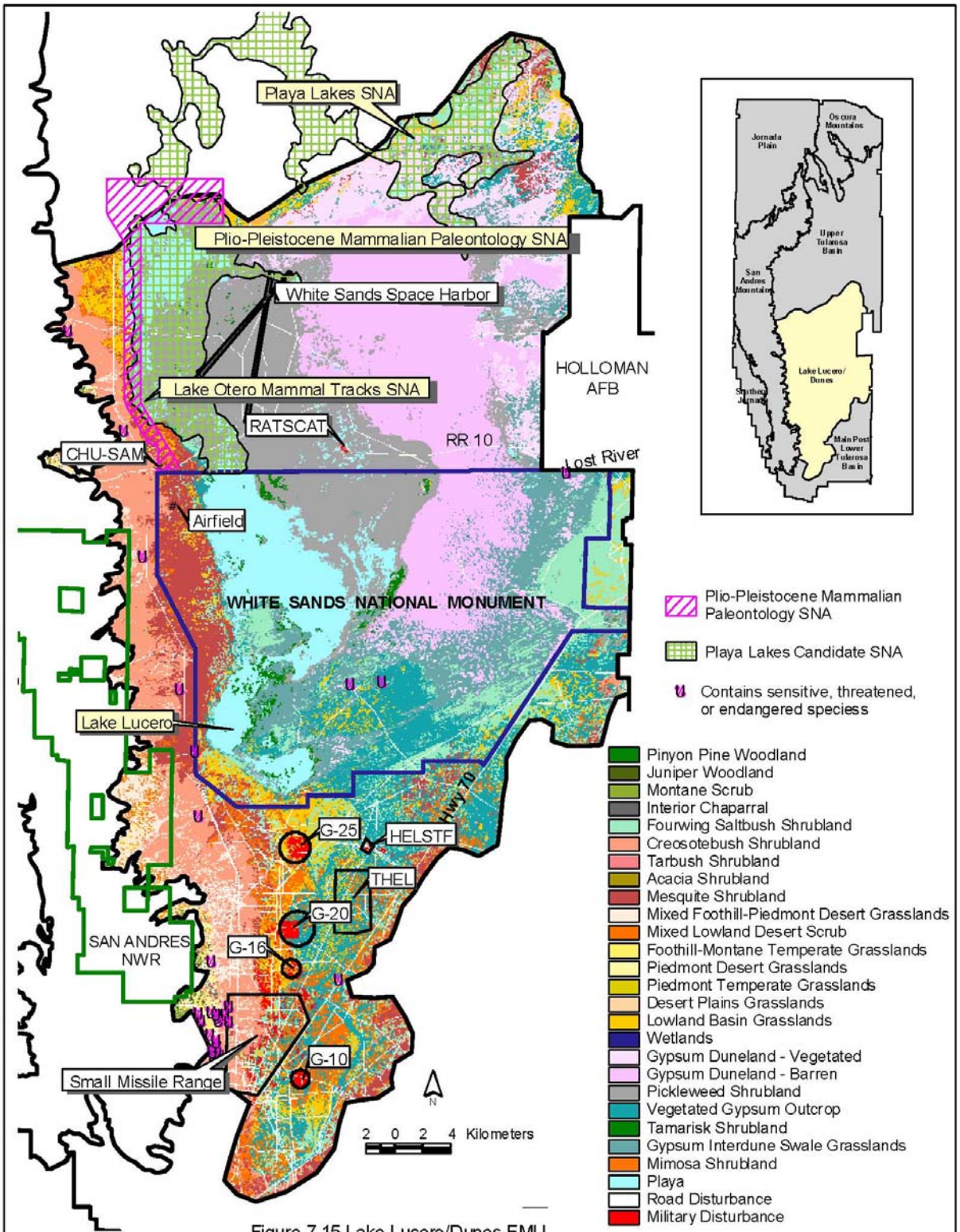


Figure 7.15 Lake Lucero/Dunes EMU

TABLE 1
EXAMPLES OF SENSITIVE ENVIRONMENTS

National Parks and National Monuments

Designated or Administratively Proposed Federal Wilderness Areas

National Preserves

National or State Wildlife Refuges

National Lakeshore Recreational Areas

Federal land designated for protection of natural ecosystems

State land designated for wildlife or game management

State designated Natural Areas

Federal or state designated Scenic or Wild River

All areas that provide or could potentially provide critical habitat[1] for state and federally listed Threatened or Endangered Species, those species that are currently petitioned for listing, and species designated by other agencies as sensitive or species of concern

All areas that provide or could potentially provide habitat for state protected species as defined in the Wildlife Code, Chapter 17 of the New Mexico Statutes

All areas that provide or could potentially provide habitat for migratory birds as protected by the Migratory Bird Treaty Act (16 U.S.C. §§ 703-712)

All areas that provide or could potentially provide habitat for bald eagles and golden eagles as protected by the Bald and Golden Eagle Protection Act (16 U.S.C. 668-668d)

All areas that provide or could potentially provide habitat for song birds as protected by the State of New Mexico statute (New Mexico Statute, 1978, Chapter 17, Game and Fish, 17-2-13)

---

1 Critical habitats are defined by the Endangered Species Act (50 CFR §424.02(d)) as:

1) Specific areas within the geographical area currently occupied by a species, at the time it is listed in accordance with the Act, on which are found those physical or biological features (I) essential to the conservation of the species and (ii) that may require special management considerations or protection, and
2) Specific areas outside the geographical area occupied by a species at the time it is listed upon a determination by the Secretary [of Interior] that such areas are essential for the conservation of the species.

All areas that provide or could potentially provide habitat for hawks, vultures and owls as protected by the State of New Mexico statute (New Mexico Statute, 1978, Chapter 17, Game and Fish, 17-2-14)

All areas that provide or could potentially provide habitat for horned toads and Bullfrogs as protected by the State of New Mexico statute (New Mexico Statute, 1978, Chapter 17, Game and Fish, 17-2-15 and 16, resp.)

All perennial waters (e.g., rivers, lakes, playas, sloughs, ponds, etc)

All ephemeral drainage (e.g., arroyos, puddles/pools, intermittent streams, etc) that provide significant wildlife habitat or that could potentially transport contaminants off site to areas that provide wildlife habitat

All riparian habitats

All perennial and ephemeral wetlands (not limited to jurisdictional wetlands)

All areas that are potentially important breeding, staging, and overwintering habitats as well as other habitats important for the survival of animals during critical periods of their life cycle.

ATTACHMENT B

ECOLOGICAL SITE EXCLUSION CRITERIA CHECKLIST AND DECISION TREE

1. NEW MEXICO ECOLOGICAL EXCLUSION CRITERIA CHECKLIST

The following questions are designed to be used in conjunction with the Ecological Exclusion Criteria Decision Tree (Figure 1). After answering each question, refer to the Decision Tree to determine the appropriate next step. In some cases, questions will be omitted as the user is directed to another section as indicated by the flow diagram in the Decision Tree. For example, if the user answers "yes" to Question 1 of Section I, he or she is directed to proceed to Section II.

I. Habitat

In the following questions, "affected property" refers to all property on which a release has occurred or is believed to have occurred, including off-site areas where contamination may have occurred or migrated.

1. Are any of the below-listed sensitive environments at, adjacent to, or in the locality[1] of the affected property? **No.**

   - National Park or National Monument
   - Designated or administratively proposed Federal Wilderness Area
   - National Preserve
   - National or State Wildlife Refuge
   - Federal or State land designated for wildlife or game management
   - State designated Natural Areas
   - All areas that are owned or used by local tribes
   - All areas that are potentially important breeding, staging, and overwintering habitats as well as other habitats important for the survival of animals during critical periods of their life cycle
   - All areas that provide or could potentially provide habitat for state and federally listed Threatened or Endangered Species, those species that are currently petitioned for listing, and species designated by other agencies as sensitive or species of concern
   - All areas that provide or could potentially provide habitat for state protected species as defined in the Wildlife Code, Chapter 17 of the New Mexico Statutes
   - All areas that provide or could potentially provide habitat for migratory birds as protected by the Migratory Bird Treaty Act (16 U.S.C. §§ 703-712)
   - All areas that provide or could potentially provide habitat for bald eagles and golden eagles as protected by the Bald and Golden Eagle Protection Act (16 U.S.C. 668-668d)

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1 *Locality* of the site refers to any area where an ecological receptor is likely to contact site-related chemicals. The locality of the site considers the likelihood of contamination migrating over time and places the site in the context of its general surrounding. Therefore, the locality is typically larger than the site and the areas adjacent to the site.

- All areas that provide or could potentially provide habitat for song birds as protected by the state of New Mexico statute (New Mexico Statute, 1978, Chapter 17, Game and Fish, 17-2-13)
- All areas that provide or could potentially provide habitat for hawks, vultures and owls as protected by the state of New Mexico statute (New Mexico Statute, 1978, Chapter 17, Game and Fish, 17-2-14)
- All areas that provide or could potentially provide habitat for horned toads and bullfrogs as protected by the state of New Mexico statute (New Mexico Statute, 1978, Chapter 17, Game and Fish, 17-2-15 and 16, respectively)

2. Does the affected property contain land areas which were not listed in Question 1, but could be considered viable ecological habitat? The following are examples (but not a complete listing) of viable ecological habitats: **Yes.**

- Wooded areas
- Shrub/scrub vegetated areas
- Open fields (prairie)
- Other grassy areas
- Desert areas
- Any other areas which support wildlife and/or vegetation, excluding areas which support only opportunistic species (such as house mice, Norway rats, pigeons, etc.) that do not serve as prey to species in adjacent habitats.

The following features are not considered ecologically viable:

- Pavement
- Buildings
- Paved areas of roadways
- Paved/concrete equipment storage pads
- Paved manufacturing or process areas
- Other non-natural surface cover or structure

3. Does the affected property contain any perennial or ephemeral aquatic features which were not listed in Question 1? **No.**

II. Receptors

1. Is any part of the affected property used for habitat, foraging area, or refuge by any rare, threatened, or endangered species (plant *or* animal), or otherwise protected species (e.g., raptors, migratory birds)? **No.**

2. Is any part of the affected property used for habitat, foraging area, or refuge by any species used as a recreational (e.g., game animals) and/or commercial resource? **Yes.**

3. Is any part of the affected property used for habitat, foraging area, or refuge by any plant or animal species? This includes plants considered "weeds" and opportunistic insect and animal species (such as cockroaches and rats) if they are used as a food source for other species in the area. **Yes.**

III. Exposure Pathways

1. Could receptors be impacted by contaminants via direct contact? **No.**

Is a receptor located in or using an area where it could contact contaminated air, soil[3], or surface water? **No.**

For Questions 2 and 3, note that one must answer "yes" to all three bullets in order to be directed to the "exclusion denied" box of the decision tree. This is because answering "no" to one of the questions in the bullet list indicates that a complete exposure pathway is not present. For example, in Question 2, if the chemical cannot leach or dissolve to groundwater (bullet 1), there is no chance of ecological receptors being exposed to the chemical through contact with contaminated groundwater. Similarly, the responses to the questions in Question 4 determine whether a complete pathway exists for exposure to NAPL.

2. Could receptors contact contaminants via groundwater?
   - Can the chemical leach or dissolve to groundwater[4]? **No.**
   - Can groundwater mobilize the chemical? **No.**
   - Could (does) contaminated groundwater discharge into known or potential receptor habitats? **No.**

3. Could receptors contact contaminants via runoff (i.e., surface water and/or suspended sediment) or erosion by water or wind?
   - Are chemicals present in surface soils? **No.**
   - Can the chemical be leached from or eroded with surface soils? **No.**
   - Is there a receptor habitat located downgradient of the leached/eroded surface soil? **No.**

4. Could receptors contact contaminants via migration of non-aqueous phase liquids (NAPL)?
   - Is NAPL present at the site? **No.**
   - Is NAPL migrating toward potential receptors or habitats? **No.**
   - Could NAPL discharge impact receptors or habitats? **No.**

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3 For soil, this means contamination less than 5 feet below ground surface (bgs).
4 Information on the environmental fate of specific chemicals can be found on the Internet at *http://www.epa.gov/opptintr/chemfact/* or at a local library in published copies of the *Hazardous Substances Data Bank*.

Figure 1 -Ecological Exclusion Criteria Decision Tree

(Refer to corresponding checklist for the full text of each question)

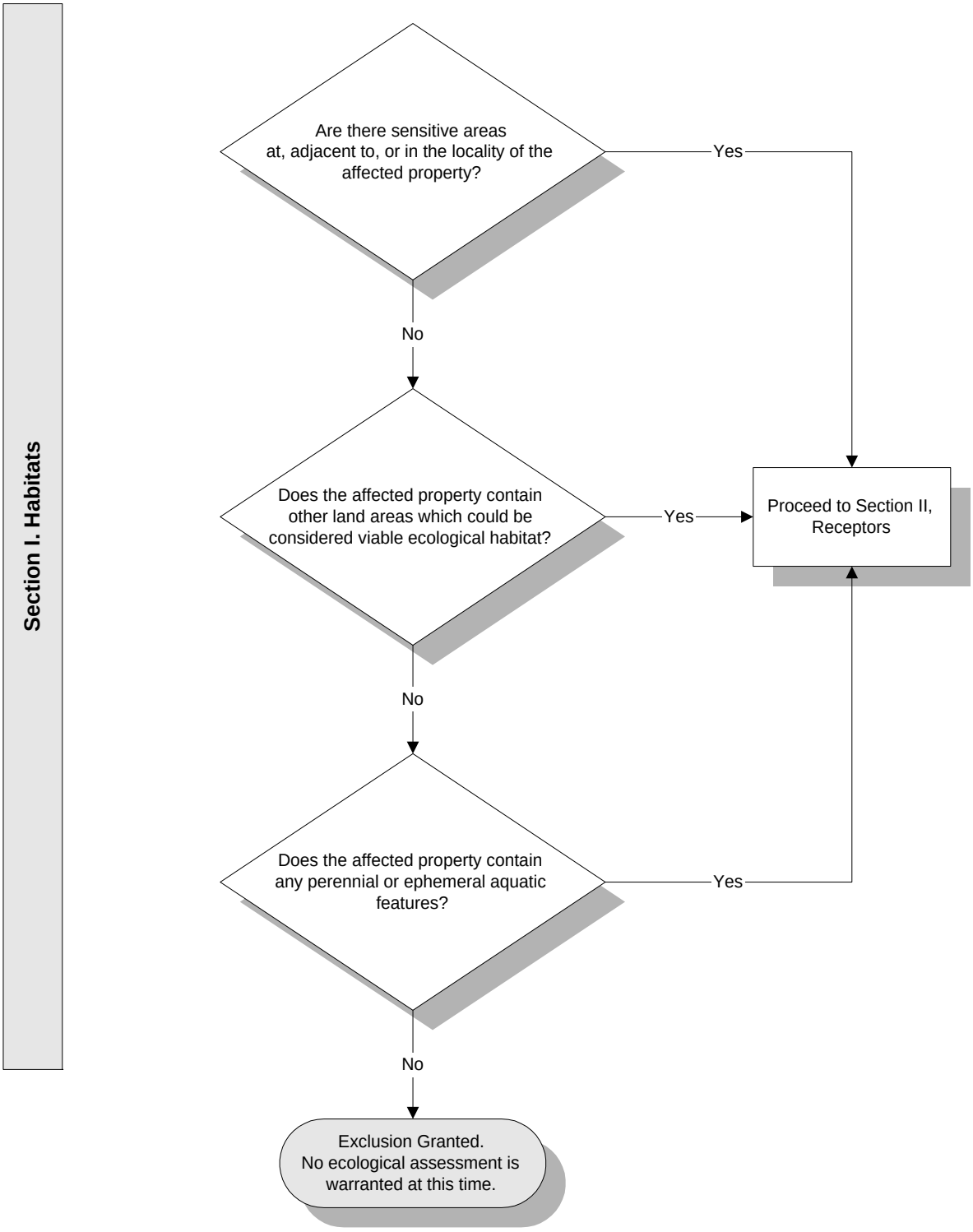


Figure 1 - Exclusion Criteria Decision Tree (continued)

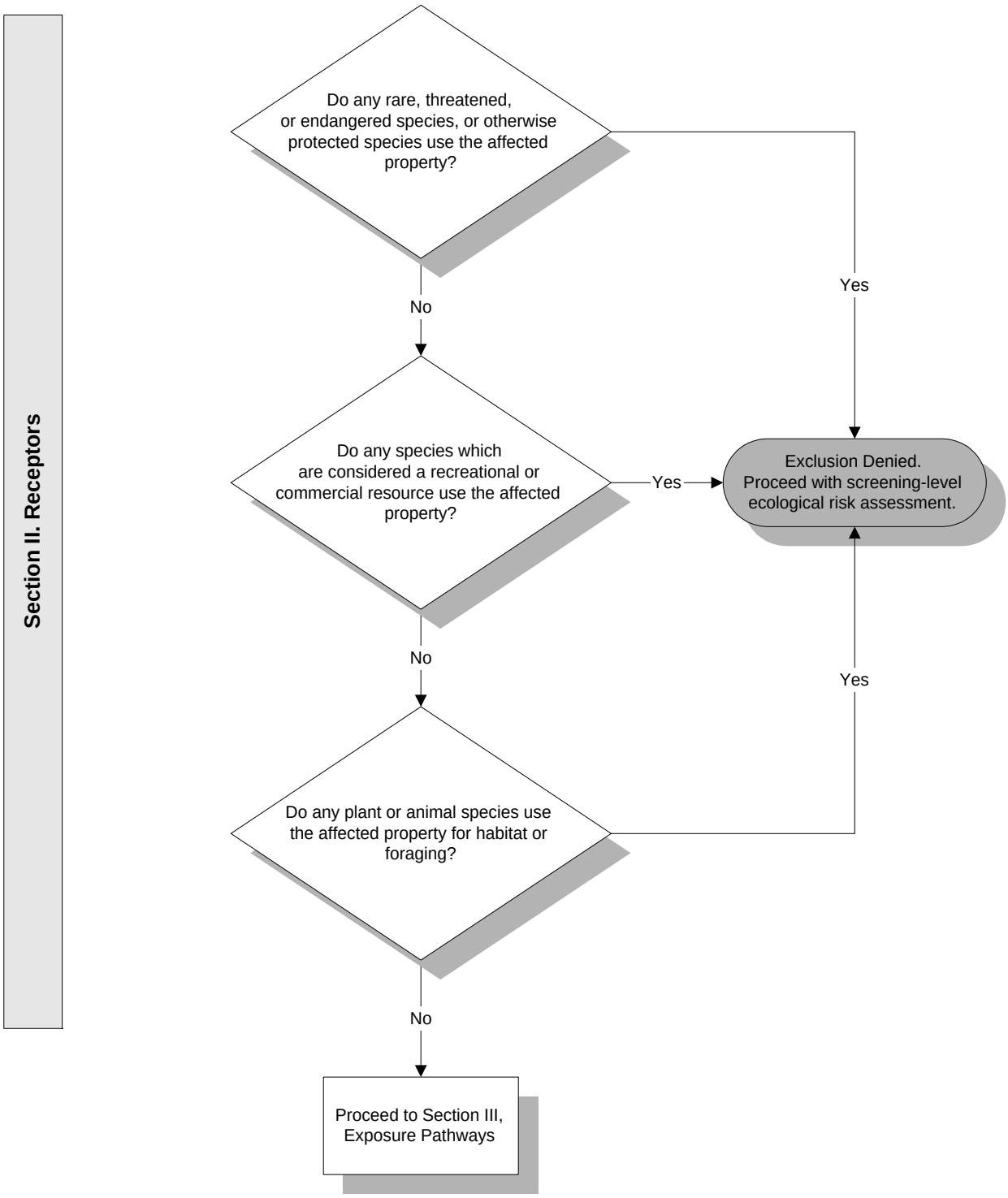
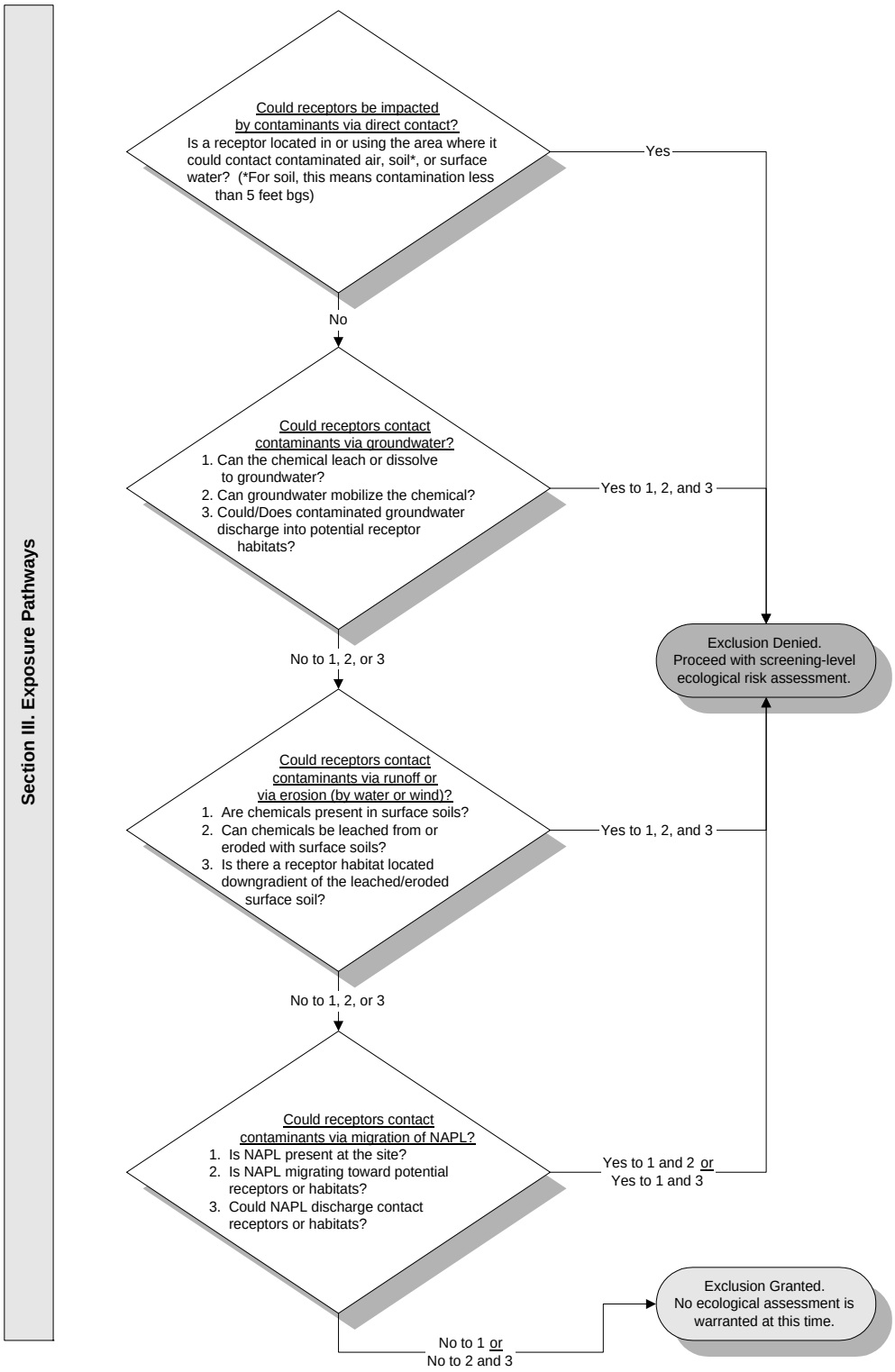


Figure 1 - Exclusion Criteria Decision Tree (continued)



ATTACHMENT A

SCREENING-LEVEL ECOLOGICAL RISK ASSESSMENT
SCOPING ASSESSMENT
SITE ASSESSMENT CHECKLIST

NEW MEXICO ENVIRONMENT DEPARTMENT

SITE ASSESSMENT CHECKLIST

I. SITE LOCATION

1. Site Name: SWMU 152 Property and Supply Bldg Septic System
   US EPA I.D. Number: NM2750211235
   Location: High Energy Laser Systems Test Facility
   County: Otero
   City: WSMR State: NM

2. Latitude: 32.6323 Longitude: 106.3294

3. Attach site maps, including a topographical map, a diagram which illustrates the layout of the facility (e.g., site boundaries, structures, etc.), and maps showing all habitat areas identified in Section III of the checklist. Also, include maps which illustrate known release areas, sampling locations, and any other important features, if available.

II. SITE CHARACTERIZATION

1. Indicate the approximate area of the site (i.e., acres or sq. ft) 2,000 Square Feet
2. Provide an approximate breakdown of the land uses on the site:

_____% Heavy Industrial	_____% Light Industrial	_____% Urban
_____% Residential	_____% Rural	_____% Agricultural[b]
_____% Recreational[a]	_____% Undisturbed	100 % Other[c]

[a]For recreational areas, please describe the usage of the area (e.g., park, playing field, etc.):
_____

[b]For agricultural areas, please list the crops and/or livestock which are present:
_____

[c]For areas designated as "other", please describe the usage of the area:
The HELSTF Facility is a Department of Defense test facility.

3. Provide an approximate breakdown of the land uses in the area surrounding the site. Indicate the radius (in miles) of the area described: 3,200 square miles

_____% Heavy Industrial	_____% Light Industrial	_____% Urban
_____% Residential	_____% Rural	_____% Agricultural[b]
_____% Recreational[a]	_____% Undisturbed	100 % Other [c]

[a]For recreational areas, please describe the usage of the area (e.g., park, playing field, golf course, etc.):
_____

[b]For agricultural areas, please list the crops and/or livestock which are present:
_____

[c]For areas designated as "other", please describe the usage of the area:
The HELSTF test facility is contained within 3,200 square miles of the White Sands Missile Range which is used for testing weapon systems for the Department of Defense.

4. Describe reasonable and likely future land and/or water use(s) at the site.
5.

The HELSTF Facility is likely to remain a Department of Defense test facility for the foreseeable future. The regional ground water at the site has greater than 10,000 mg/l total dissolved solids and will not likely be used for drinking water in the foreseeable future. Regional water away from the test facility may be used for construction purposes.

6. Describe the historical uses of the site. Include information on chemical releases that may have occurred as a result of previous land uses. For each chemical release, provide information on the form of the chemical released (i.e., solid, liquid, vapor) and the known or suspected causes or mechanism of the release (i.e., spills, leaks, material disposal, dumping, explosion, etc.).

The septic systems for the trailer area (SWMU 151) and property and supply building (SWMU 152) are plumbed together. The trailer area system serviced the office trailers that used to occupy the location.

7. If any movement of soil has taken place at the site, describe the degree of the disturbance. Indicate the likely source of any disturbances (e.g., erosion, agricultural, mining, industrial activities, removals, etc.) and estimate when these events occurred.

No soil movement has occurred.

8. Describe the current uses of the site. Include information on recent (previous 5 years) disturbances or chemical releases that have occurred. For each chemical release, provide information on the form of the chemical released and the causes or mechanism of the release.

This SWMU is an active leach field for a building at HELSTF. There are no known chemical releases.

9. Identify the location or suspected location of chemical releases at the site. Provide an estimate of the distance between these locations and the areas identified in Section III.

There are no known chemical releases at the site.

10. Identify the suspected contaminants of concern (COCs) at the site. If known, include the maximum contaminant levels. Please indicate the source of data cited (e.g., RFI, confirmatory sampling, etc.).

There are no ecological contaminants of concern associated with this site based on the Phase I RFI data.

11. Identify the media (e.g., soil (surface or subsurface), surface water, air, groundwater) which are known or suspected to contain COCs.

There are no ecological contaminants of concern associated with this site based on the Phase I RFI data.

12. Indicate the approximate depth to groundwater (in feet below ground surface [(bgs)].

Avergae depth to the regional ground water table at HELSTF is 71-73 ft below ground surface. Depth to the perched ground water zone beneath this site is approximately 30 ft bgs.

13. Indicate the direction of groundwater flow (e.g., north, southeast, etc.)

The direction of regional ground water flow at HELSTF is to the south-east.

III. HABITAT EVALUATION

III.A Wetland Habitats

Are any wetland[2] areas such as marshes or swamps on or adjacent to the site?

☐ Yes X No

If yes, indicate the wetland area on the attached site map and answer the following questions regarding the wetland area. If more than one wetland area is present on or adjacent to the site, make additional copies of the following questions and fill out for each individual wetland area. Distinguish between wetland areas by using names or other designations (such as location), and clearly identify each area on the site map. Also, obtain and attach a National Wetlands Inventory Map (or maps) to illustrate each wetland area.

2Wetlands are defined in 40 CFR §232.2 as " Areas inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and that under normal circumstances does support, a prevalence of vegetation typically adapted for life in saturated soil conditions." Examples of typical wetlands plants include: cattails, cordgrass, willows and cypress trees. National wetland inventory maps may be available at http:\\nwi.fws.gov. Additional information on wetland delineation criteria is also available from the Army Corps of Engineers.

Identify the sources of the observations and information (e.g., National Wetland Inventory, Federal or State Agency, USGS topographic maps) used to make the determination that wetland areas are or are not present.

Site visit by wildlife biologist and USGS topographic maps.

If no wetland areas are present, proceed to Section III.B.

III.B Aquatic Habitats

III.B.1 Non-Flowing Aquatic Features

Are any non-flowing aquatic features (such as ponds or lakes) located at or adjacent to the site?

☐ Yes X No

If yes, indicate the aquatic feature on the attached site map and answer the following questions regarding the non-flowing aquatic features. If more than one non-flowing aquatic feature is present on or adjacent to the site, make additional copies of the following questions and fill out for each individual aquatic feature. Distinguish between aquatic features by using names or other designations, and clearly identify each area on the site map.

If no, proceed to Section III.B.2.

III.B.2 Flowing Aquatic Features

Are any flowing aquatic features (such as streams or rivers) located at or adjacent to the site?

☐ Yes X No

If yes, indicate the aquatic feature on the attached site map and answer the following questions regarding the flowing aquatic features. If more than one flowing aquatic feature is present on or adjacent to the site, make additional copies of the following questions and fill out for each individual aquatic feature. Distinguish between aquatic features by using names or other designations, and clearly identify each area on the site map

If no, proceed to Section III.C.

III.C Terrestrial Habitats

III.C.1 Wooded

Are any wooded areas on or adjacent to the site? ☐ Yes X No

If yes, indicate the wooded area on the attached site map and answer the following questions. If more than one wooded area is present on or adjacent to the site, make additional copies of the following questions and fill out for each individual wooded area.

Distinguish between wooded areas by using names or other designations, and clearly identify each area on the site map.

If no, proceed to Section III.C.2.

III.C.2 Shrub/Scrub

Are any shrub/scrub areas on or adjacent to the site? ☐ Yes X No

If yes, indicate the shrub/scrub area on the attached site map and answer the following questions. If more than one shrub/scrub area is present on or adjacent to the site, make additional copies of the following questions and fill out for each individual shrub/scrub area. Distinguish between shrub/scrub areas, using names or other designations, and clearly identify each area on the site map.

If no, proceed to Section III.C.3.

III.C.3 Grassland

Are any grassland areas on or adjacent to the site? ☐ Yes X No

If yes, indicate the grassland area on the attached site map and answer the following questions. If more than one grassland area is present on or adjacent to the site, make additional copies of the following questions and fill out for each individual grassland area. Distinguish between grassland areas by using names or other designations, and clearly identify each area on the site map.

If no, proceed to Section III.C.4.

III.C.4 Desert

Are any desert areas on or adjacent to the site? X Yes ☐ No

If yes, indicate the desert area on the attached site map and answer the following questions. If more than one desert area is present on or adjacent to the site, make additional copies of the following questions and fill out for each individual desert area. Distinguish between desert areas by using names or other designations, and clearly identify each area on the site map.

If no, proceed to Section III.C.5.

Desert Area Questions

X Onsite X Offsite

Name or Designation: Chihuahuan Desert

1. Estimate the approximate size of the desert area (in acres or sq. ft.).

This site including WSMR is contained within tens of thousands of acres of the Chihuahuan Desert.

2. Describe the desert area (e.g., presence or absence of vegetation, vegetation types, presence/size of rocks, sand, etc.)

Vegetation specifically at HELSTF is primarily dominated by four-winged saltbush and gyp moonpod (*Acleisanthes lanceolata*) with scattered wolfberry (*Lycium berlandieri*). The entire area is located within gyp dome habitat and is currently covered with an extensive coat of cryptogrammic crust. No threatened or endangered species of plants are known or expected to occupy the habitat present at the sites.

The surface soil at HELSTF is dominated by silt to sand sized gypsum grains. Beneath the surface, alternating layers of sand and clay are present reflecting past deposition within a lacustrine environment.

3. Animals observed in the desert area or suspected to be present based on indirect evidence or file material:

- x Birds
- x Mammals
- x Reptiles (e.g., snakes, lizards)
- ❑ Amphibians (e.g., toads, salamanders)

Specify species, if known:

Faunal associations with this habitat type reflect the vegetative cover available and are not nearly as diverse in species associations as more varied vegetation types within WSMR. Invertebrates and reptiles comprise the largest faunal groups associated with the sites. Ants (*Formicidae*), termites (*termitidae*), darkling beetles (*Tenebrionidae*), and wolf spiders (*Lycocidae*) provide a large food base for collared lizards (*Crotaphytus collaris*), leopard lizards (Gambelia wislizenii) and side blotch lizards (*Uta stansburiana*). A few snake species commonly inhabit the area including plains blackhead snakes (*Tantilla nigriceps*), coachwhips (*Masticophis flagellum*), and prairie rattlesnakes (*Crotalus viridis*). Avians common to the area include cactus wrens (*Campylorhynchus brunneicapillus*), loggerhead shrikes (*Lanius ludovicianus*) and, in the summer months, Swainson's hawks (*Buteo swainsoni*). Species of small mammals that utilize this habitat include kangaroo rats (*Dipodomys sp.*), deer mice (*Peromyscus maniculatus*), and pocket mice (*Perognathus* and *Chaetodipus* sp.). Larger mammals include desert cottontail rabbits (*Sylvilagus auduboni*), blacktail jackrabbits (*Lepus californicus*), and gemsbok (*Oryx gazella*). No threatened or endangered species of animals are known to or expected to occupy the habitat present at the site.

III.C.5 Other

1. Are there any other terrestrial communities or habitats on or adjacent to the site which were not previously described?

☐ Yes X No

If yes, indicate the "other" area(s) on the attached site map and describe the area(s) below. Distinguish between onsite and offsite areas. If no, proceed to Section III.D.

_____
_____
_____
_____
_____

III.D Sensitive Environments and Receptors

1. Do any other potentially sensitive environmental areas[3] exist adjacent to or within 0.5 miles of the site? If yes, list these areas and provide the source(s) of information used to identify sensitive areas. *Do not answer "no" without confirmation from the U.S. Fish and Wildlife Service and appropriate State of New Mexico division.*

Habitat present is not considered rare or sensitive by any of the regulating or management agencies including the USFWS, NMDGF, and WSMR Directorate of Environment and Safety. No species of vegetation or animals that are considered rare or listed as threatened or endangered are known or expected in this habitat.

2. Are any areas on or near (i.e., within 0.5 miles) the site which are owned or used by local tribes? If yes, describe. *Contact the Tribal Liason in the Office of the Secretary (505)827-2855 to obtain this information.*

No.

Does the site serve or potentially serve as a habitat, foraging area, or refuge by rare, threatened, endangered, candidate and/or proposed species (plants or animals), or any otherwise protected species? If yes, identify species. *This information should be obtained from the U.S. Fish and Wildlife Service and appropriate State of New Mexico division.*

No. The latest lists of State and Federal species of concern, candidate, threatened, and endangered species were consulted. Resource experts familiar with the sites confirmed that none of these species utilize the habitats at or adjacent to the Site.

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3 Areas that provide unique and often protected habitat for wildlife species. These areas are typically used during critical life stages such as breeding, hatching, rearing of young and overwintering. Refer to **Table 1** at the end of this document for examples of sensitive environments.

3. Is the site potentially used as a breeding, roosting or feeding area by migratory bird species? If yes, identify which species.

Yes. There are hundreds of species of migrating birds that may potentially roost or feed at or near the Site. Several species of birds may nest near the Site including Say's phoebe and mourning dove.

4. Is the site used by any ecologically[4], recreationally, or commercially important species? If yes, explain.

The site is frequented by recreationally important species (hunted) such as quail.

IV. EXPOSURE PATHWAY EVALUATION

1. Do existing data provide sufficient information on the nature, rate, and extent of contamination at the site?

x Yes
❑ No
❑ Uncertain

Please provide an explanation for your answer:

Based on the Phase I RFI, no soil contamination is present on site. There are no known chemical releases at this site.

2. Do existing data provide sufficient information on the nature, rate, and extent of contamination in offsite affected areas?

❑ Yes
❑ No
❑ Uncertain
x No offsite contamination

Please provide an explanation for your answer:

Contamination present at the HELSTF is currently confined to the immediate area of HELSTF. Down gradient monitoring wells contained within WSMR boundaries show no evidence of contaminant migration.

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4 Ecologically important species include populations of species which provide a critical (i.e., not replaceable) food resource for higher organisms and whose function as such would not be replaced by more tolerant species; or perform a critical ecological function (such as organic matter decomposition) and whose functions will not be replaced by other species. Ecologically important species include pest and opportunistic species that populate an area if they serve as a food source for other species, but do not include domesticated animals (e.g., pets and livestock) or plants/animals whose existence is maintained by continuous human interventions (e.g., fish hatcheries, agricultural crops, etc.,)

3. Do existing data address potential migration pathways of contaminants at the site?

x Yes
❑ No
❑ Uncertain

Please provide an explanation for your answer:

Based on the Phase I RFI, there are no COCs.

4. Do existing data address potential migration pathways of contaminants in offsite affected areas?

❑ Yes
❑ No
❑ Uncertain
x No offsite contamination

Please provide an explanation for your answer:_____

Contamination present at the HELSTF is currently confined to the immediate area of HELSTF. Down gradient monitoring wells contained within WSMR boundaries show no evidence of contaminant migration.

5. Are there visible indications of stressed habitats or receptors on or near (i.e., within 0.5 miles) the site that may be the result of a chemical release? If yes, explain. Attach photographs if available.

No.

6. Is the location of the contamination such that receptors might be reasonably expected to come into contact with it? For soil, this means contamination in the soil 0 to 5 feet below ground surface (bgs). If yes, explain.

Based on the Phase I RFI, there are no COCs.

7. Are receptors located in or using habitats where chemicals exist in air, soil, sediment or surface water? If yes, explain.

Based on the Phase I RFI, there are no COCs.

8. Could chemicals reach receptors via groundwater? Can chemicals leach or dissolve to groundwater? Are chemicals mobile in groundwater? Does groundwater discharge into receptor habitats? If yes, explain.

There are no known chemical releases from this site. Ground water does not discharge into receptor habitats.

9. Could chemicals reach receptors through runoff or erosion? Answer the following questions:

What is the approximate distance from the contaminated area to the nearest watercourse or arroyo?

- ❑ 0 feet (i.e., contamination has reached a watercourse or arroyo)
- ❑ 1-10 feet
- ❑ 11-20 feet
- ❑ 21-50 feet
- ❑ 51-100 feet
- ❑ 101-200 feet
- ❑ > 200 feet
- ❑ > 500 feet
- x > 1000 feet

What is the slope of the ground in the contaminated area?

- x 0-10%
- ❑ 10-30%
- ❑ > 30%

What is the approximate amount of ground and canopy vegetative cover in the contaminated area?

- x < 25%
- ❑ 25-75%
- ❑ > 75%

Is there visible evidence of erosion (e.g., a rill or gully) in or near the contaminated area?

- ❑ Yes
- x No
- ❑ Do not know

Do any structures, pavement, or natural drainage features direct run-on flow (i.e., surface flows originating upstream or uphill from the area of concern) into the contaminated area?

- ❑ Yes
- x No
- ❑ Do not know

10. Could chemicals reach receptors through the dispersion of contaminants in air (e.g., volatilization, vapors, fugitive dust)? If yes, explain.

<u>Based on the Phase I RFI, there are no COCs.</u>

11. Could chemicals reach receptors through migration of non-aqueous phase liquids (NAPLs)? Is a NAPL present at the site that might be migrating towards receptors or habitats? Could NAPL discharge contact receptors or their habitat?

No NAPLs are present.

12. Could receptors be impacted by external irradiation at the site? Are gamma emitting radionuclides present at the site? Is the radionuclide contamination buried or at the surface?

No.

PHOTOGRAPHIC DOCUMENTATION

During the site visit(s), photographs should be taken to document the current conditions at the site and to support the information entered in the checklist. For example, photographs may be used to document the following:

- The nature, quality, and distribution of vegetation at the site
- Receptors or evidence of receptors
- Potentially important ecological features, such as ponds and drainage ditches
- Potential exposure pathways
- Any evidence of contamination or impact

The following space may be used to record photo subjects.

SWMU 152 Septic System

This SWMU is located adjacent to SWMU 151 within the HELSTF developed area. Vegetation within the small fenced enclosure is typical of that growing in disturbed areas and is currently comprised primarily of narrow-leaf peppergrass (*Lepidium alyssoides*). No contaminants are known from this site and there is no expected pathway to organisms. Based on the SLERA Checklist, exclusion should be granted for further ecological assessment at this time.

SUMMARY OF OBSERVATIONS AND SITE SETTING

Include information on significant source areas and migration pathways that are likely to constitute complete exposure pathways.

This site including WSMR is contained within tens of thousands of acres of the Chihuahuan Desert. Vegetation specifically at HELSTF is primarily dominated by four-winged saltbush and gyp moonpod (*Acleisanthes lanceolata*) with scattered wolfberry (*Lycium berlandieri*). The entire area is located within gyp dome habitat and is currently covered with an extensive coat of cryptogrammic crust. No threatened or endangered species of plants are known or expected to occupy the habitat present at the sites. The surface soil at HELSTF is dominated by silt to sand sized gypsum grains. Beneath the surface, alternating layers of sand and clay are present reflecting past deposition within a lacustrine environment.

Based on the Phase I RFI, there are no contaminants of concern associated with this site. There are no known chemical releases from this site. Ground water does not discharge into receptor habitats.

Checklist Completed by Bradley Davis

Affiliation White Sands Technical Services

Author Assisted by Doug Burkett and William Little

Date

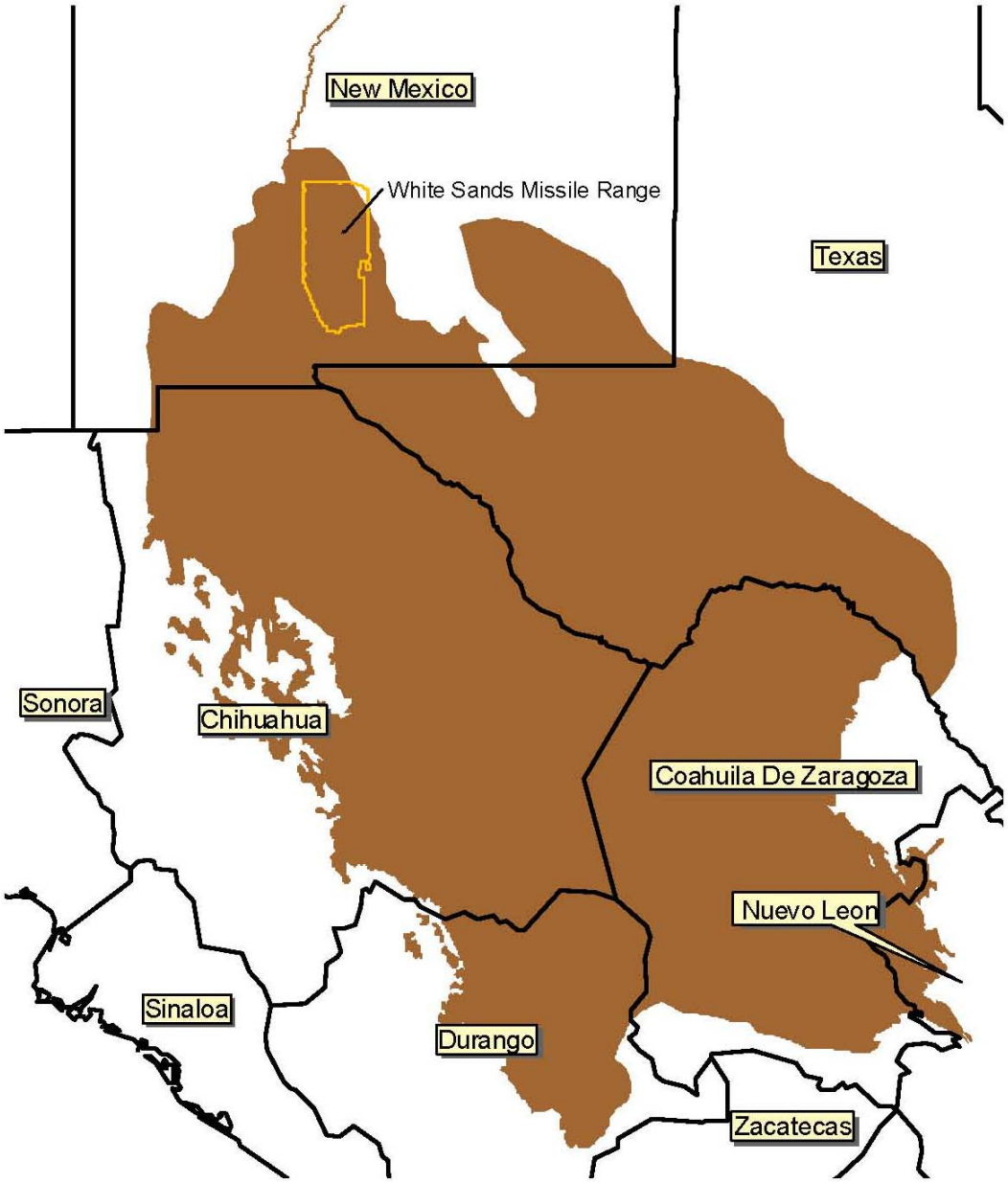

Figure 2.1 WSMR within the Chihuahuan Desert Ecoregion

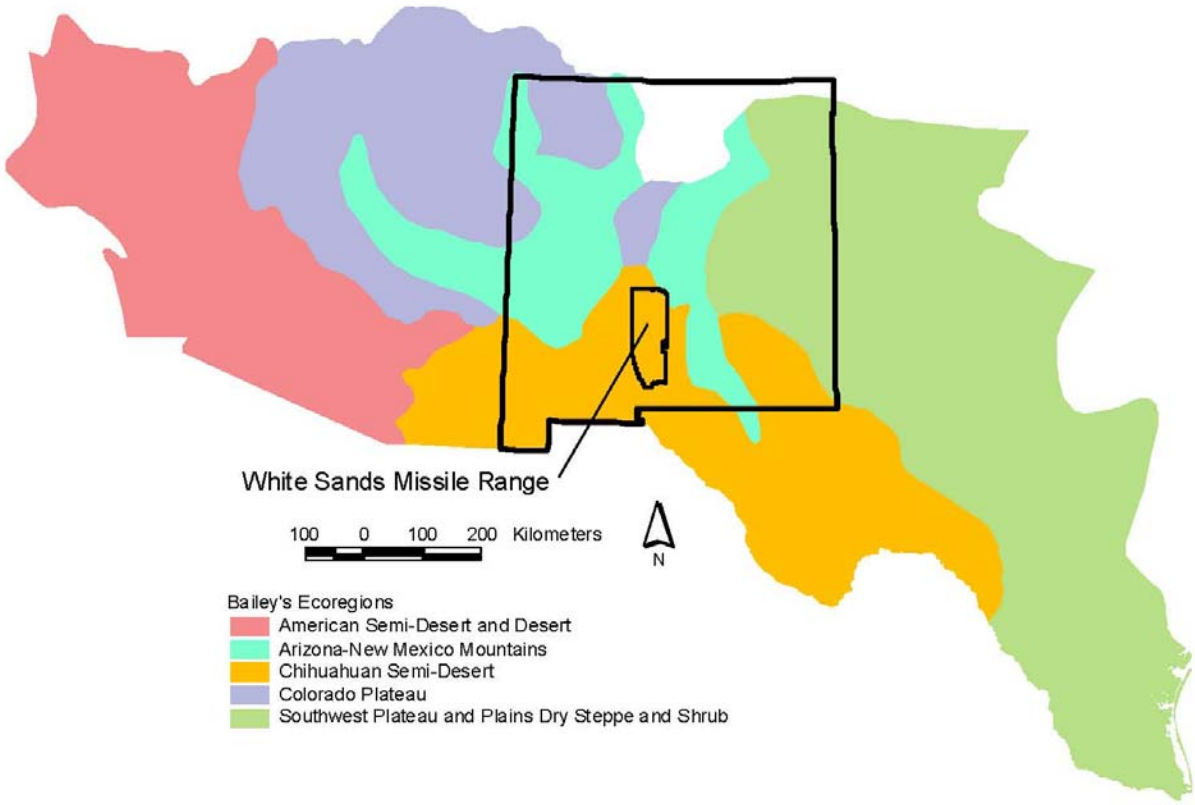

Figure 6.1. Chihuahuan Semi-desert Ecoregion and adjacent ecoregions (Bailey et al. 1994)

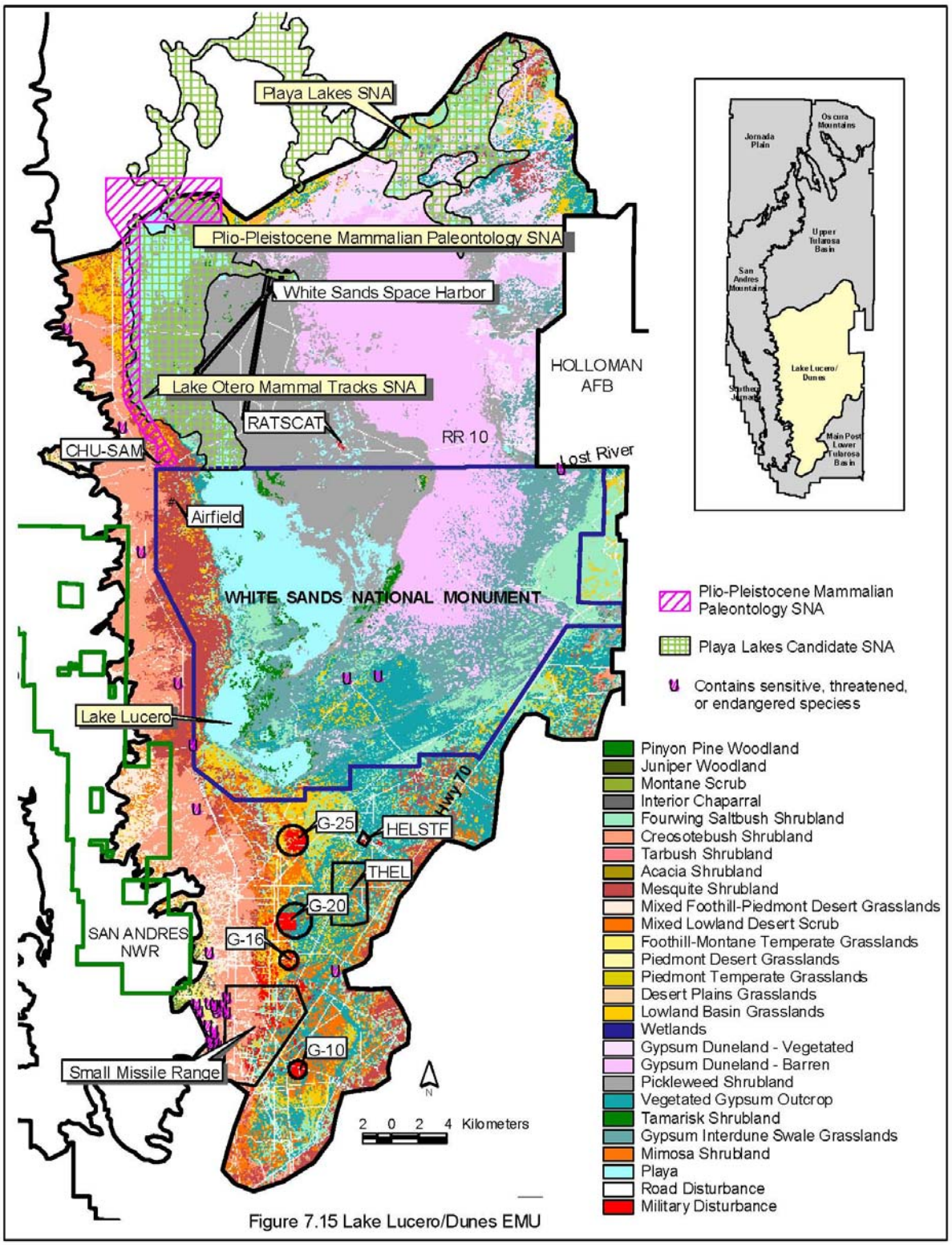

Figure 7.15 Lake Lucero/Dunes EMU

TABLE 1
EXAMPLES OF SENSITIVE ENVIRONMENTS

National Parks and National Monuments

Designated or Administratively Proposed Federal Wilderness Areas

National Preserves

National or State Wildlife Refuges

National Lakeshore Recreational Areas

Federal land designated for protection of natural ecosystems

State land designated for wildlife or game management

State designated Natural Areas

Federal or state designated Scenic or Wild River

All areas that provide or could potentially provide critical habitat[1] for state and federally listed Threatened or Endangered Species, those species that are currently petitioned for listing, and species designated by other agencies as sensitive or species of concern

All areas that provide or could potentially provide habitat for state protected species as defined in the Wildlife Code, Chapter 17 of the New Mexico Statutes

All areas that provide or could potentially provide habitat for migratory birds as protected by the Migratory Bird Treaty Act (16 U.S.C. §§ 703-712)

All areas that provide or could potentially provide habitat for bald eagles and golden eagles as protected by the Bald and Golden Eagle Protection Act (16 U.S.C. 668-668d)

All areas that provide or could potentially provide habitat for song birds as protected by the State of New Mexico statute (New Mexico Statute, 1978, Chapter 17, Game and Fish, 17-2-13)

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1 Critical habitats are defined by the Endangered Species Act (50 CFR §424.02(d)) as:

1) Specific areas within the geographical area currently occupied by a species, at the time it is listed in accordance with the Act, on which are found those physical or biological features (I) essential to the conservation of the species and (ii) that may require special management considerations or protection, and
2) Specific areas outside the geographical area occupied by a species at the time it is listed upon a determination by the Secretary [of Interior] that such areas are essential for the conservation of the species.

All areas that provide or could potentially provide habitat for hawks, vultures and owls as protected by the State of New Mexico statute (New Mexico Statute, 1978, Chapter 17, Game and Fish, 17-2-14)

All areas that provide or could potentially provide habitat for horned toads and Bullfrogs as protected by the State of New Mexico statute (New Mexico Statute, 1978, Chapter 17, Game and Fish, 17-2-15 and 16, resp.)

All perennial waters (e.g., rivers, lakes, playas, sloughs, ponds, etc)

All ephemeral drainage (e.g., arroyos, puddles/pools, intermittent streams, etc) that provide significant wildlife habitat or that could potentially transport contaminants off site to areas that provide wildlife habitat

All riparian habitats

All perennial and ephemeral wetlands (not limited to jurisdictional wetlands)

All areas that are potentially important breeding, staging, and overwintering habitats as well as other habitats important for the survival of animals during critical periods of their life cycle.

ATTACHMENT B

ECOLOGICAL SITE EXCLUSION CRITERIA CHECKLIST AND DECISION TREE

1. NEW MEXICO ECOLOGICAL EXCLUSION CRITERIA CHECKLIST

The following questions are designed to be used in conjunction with the Ecological Exclusion Criteria Decision Tree (Figure 1). After answering each question, refer to the Decision Tree to determine the appropriate next step. In some cases, questions will be omitted as the user is directed to another section as indicated by the flow diagram in the Decision Tree. For example, if the user answers "yes" to Question 1 of Section I, he or she is directed to proceed to Section II.

I. Habitat

In the following questions, "affected property" refers to all property on which a release has occurred or is believed to have occurred, including off-site areas where contamination may have occurred or migrated.

1. Are any of the below-listed sensitive environments at, adjacent to, or in the locality[1] of the affected property? **No.**

   - National Park or National Monument
   - Designated or administratively proposed Federal Wilderness Area
   - National Preserve
   - National or State Wildlife Refuge
   - Federal or State land designated for wildlife or game management
   - State designated Natural Areas
   - All areas that are owned or used by local tribes
   - All areas that are potentially important breeding, staging, and overwintering habitats as well as other habitats important for the survival of animals during critical periods of their life cycle
   - All areas that provide or could potentially provide habitat for state and federally listed Threatened or Endangered Species, those species that are currently petitioned for listing, and species designated by other agencies as sensitive or species of concern
   - All areas that provide or could potentially provide habitat for state protected species as defined in the Wildlife Code, Chapter 17 of the New Mexico Statutes
   - All areas that provide or could potentially provide habitat for migratory birds as protected by the Migratory Bird Treaty Act (16 U.S.C. §§ 703-712)
   - All areas that provide or could potentially provide habitat for bald eagles and golden eagles as protected by the Bald and Golden Eagle Protection Act (16 U.S.C. 668-668d)

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1 *Locality* of the site refers to any area where an ecological receptor is likely to contact site-related chemicals. The locality of the site considers the likelihood of contamination migrating over time and places the site in the context of its general surrounding. Therefore, the locality is typically larger than the site and the areas adjacent to the site.

- All areas that provide or could potentially provide habitat for song birds as protected by the state of New Mexico statute (New Mexico Statute, 1978, Chapter 17, Game and Fish, 17-2-13)
- All areas that provide or could potentially provide habitat for hawks, vultures and owls as protected by the state of New Mexico statute (New Mexico Statute, 1978, Chapter 17, Game and Fish, 17-2-14)
- All areas that provide or could potentially provide habitat for horned toads and bullfrogs as protected by the state of New Mexico statute (New Mexico Statute, 1978, Chapter 17, Game and Fish, 17-2-15 and 16, respectively)

2. Does the affected property contain land areas which were not listed in Question 1, but could be considered viable ecological habitat? The following are examples (but not a complete listing) of viable ecological habitats: **Yes.**

- Wooded areas
- Shrub/scrub vegetated areas
- Open fields (prairie)
- Other grassy areas
- Desert areas
- Any other areas which support wildlife and/or vegetation, excluding areas which support only opportunistic species (such as house mice, Norway rats, pigeons, etc.) that do not serve as prey to species in adjacent habitats.

The following features are not considered ecologically viable:

- Pavement
- Buildings
- Paved areas of roadways
- Paved/concrete equipment storage pads
- Paved manufacturing or process areas
- Other non-natural surface cover or structure

3. Does the affected property contain any perennial or ephemeral aquatic features which were not listed in Question 1? **No.**

II. Receptors

1. Is any part of the affected property used for habitat, foraging area, or refuge by any rare, threatened, or endangered species (plant *or* animal), or otherwise protected species (e.g., raptors, migratory birds)? **No.**

2. Is any part of the affected property used for habitat, foraging area, or refuge by any species used as a recreational (e.g., game animals) and/or commercial resource? **Yes.**

3. Is any part of the affected property used for habitat, foraging area, or refuge by any plant or animal species? This includes plants considered "weeds" and opportunistic insect and animal species (such as cockroaches and rats) if they are used as a food source for other species in the area. **Yes.**

III. Exposure Pathways

1. Could receptors be impacted by contaminants via direct contact? **No.**

Is a receptor located in or using an area where it could contact contaminated air, soil[3], or surface water? **No.**

For Questions 2 and 3, note that one must answer "yes" to all three bullets in order to be directed to the "exclusion denied" box of the decision tree. This is because answering "no" to one of the questions in the bullet list indicates that a complete exposure pathway is not present. For example, in Question 2, if the chemical cannot leach or dissolve to groundwater (bullet 1), there is no chance of ecological receptors being exposed to the chemical through contact with contaminated groundwater. Similarly, the responses to the questions in Question 4 determine whether a complete pathway exists for exposure to NAPL.

2. Could receptors contact contaminants via groundwater?
   - Can the chemical leach or dissolve to groundwater[4]? **No.**
   - Can groundwater mobilize the chemical? **No.**
   - Could (does) contaminated groundwater discharge into known or potential receptor habitats? **No.**

3. Could receptors contact contaminants via runoff (i.e., surface water and/or suspended sediment) or erosion by water or wind?
   - Are chemicals present in surface soils? **No.**
   - Can the chemical be leached from or eroded with surface soils? **No.**
   - Is there a receptor habitat located downgradient of the leached/eroded surface soil? **No.**

4. Could receptors contact contaminants via migration of non-aqueous phase liquids (NAPL)?
   - Is NAPL present at the site? **No.**
   - Is NAPL migrating toward potential receptors or habitats? **No.**
   - Could NAPL discharge impact receptors or habitats? **No.**

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3 For soil, this means contamination less than 5 feet below ground surface (bgs).
4 Information on the environmental fate of specific chemicals can be found on the Internet at *http://www.epa.gov/opptintr/chemfact/* or at a local library in published copies of the *Hazardous Substances Data Bank*.

Figure 1 -Ecological Exclusion Criteria Decision Tree

(Refer to corresponding checklist for the full text of each question)

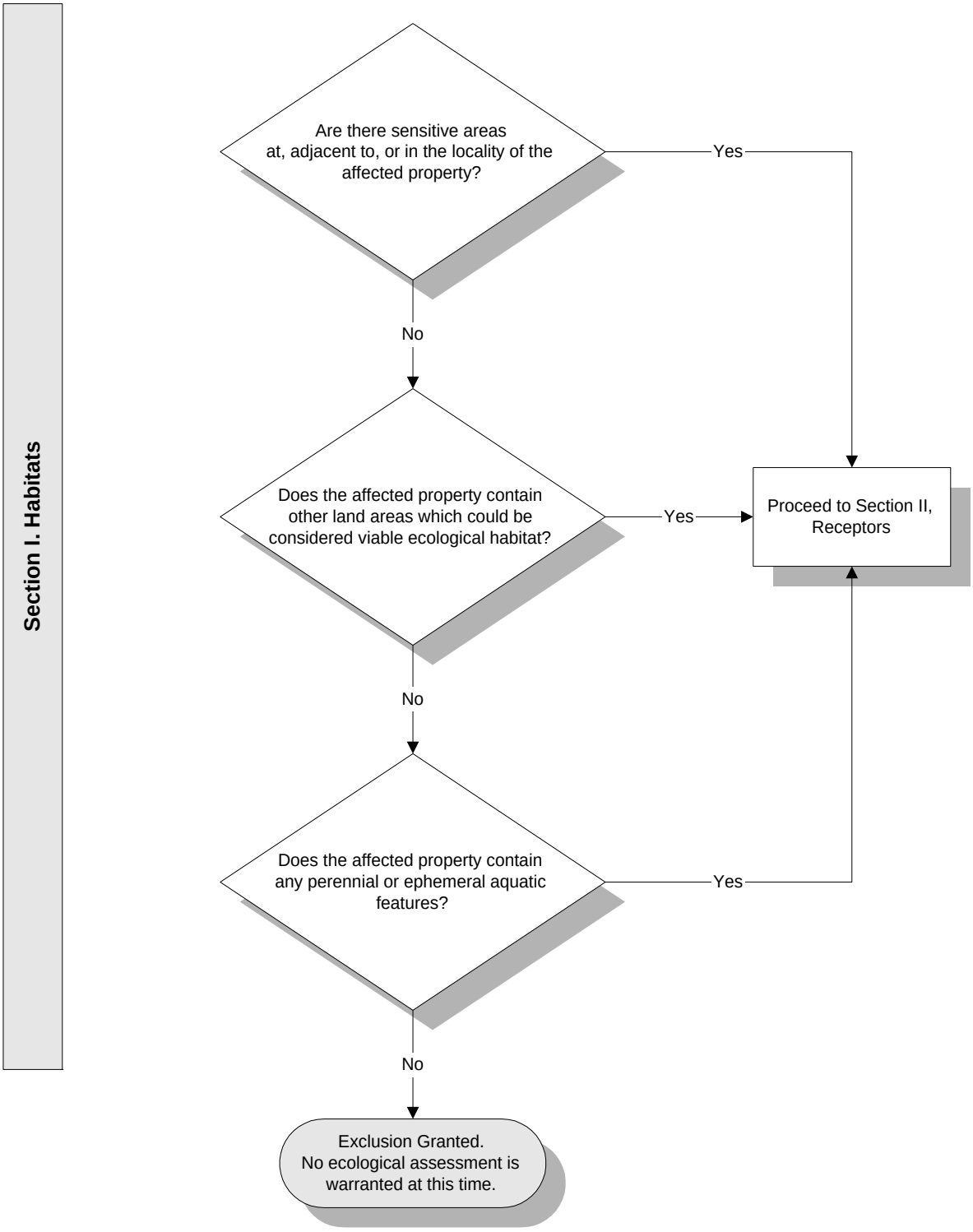

Figure 1 - Exclusion Criteria Decision Tree (continued)

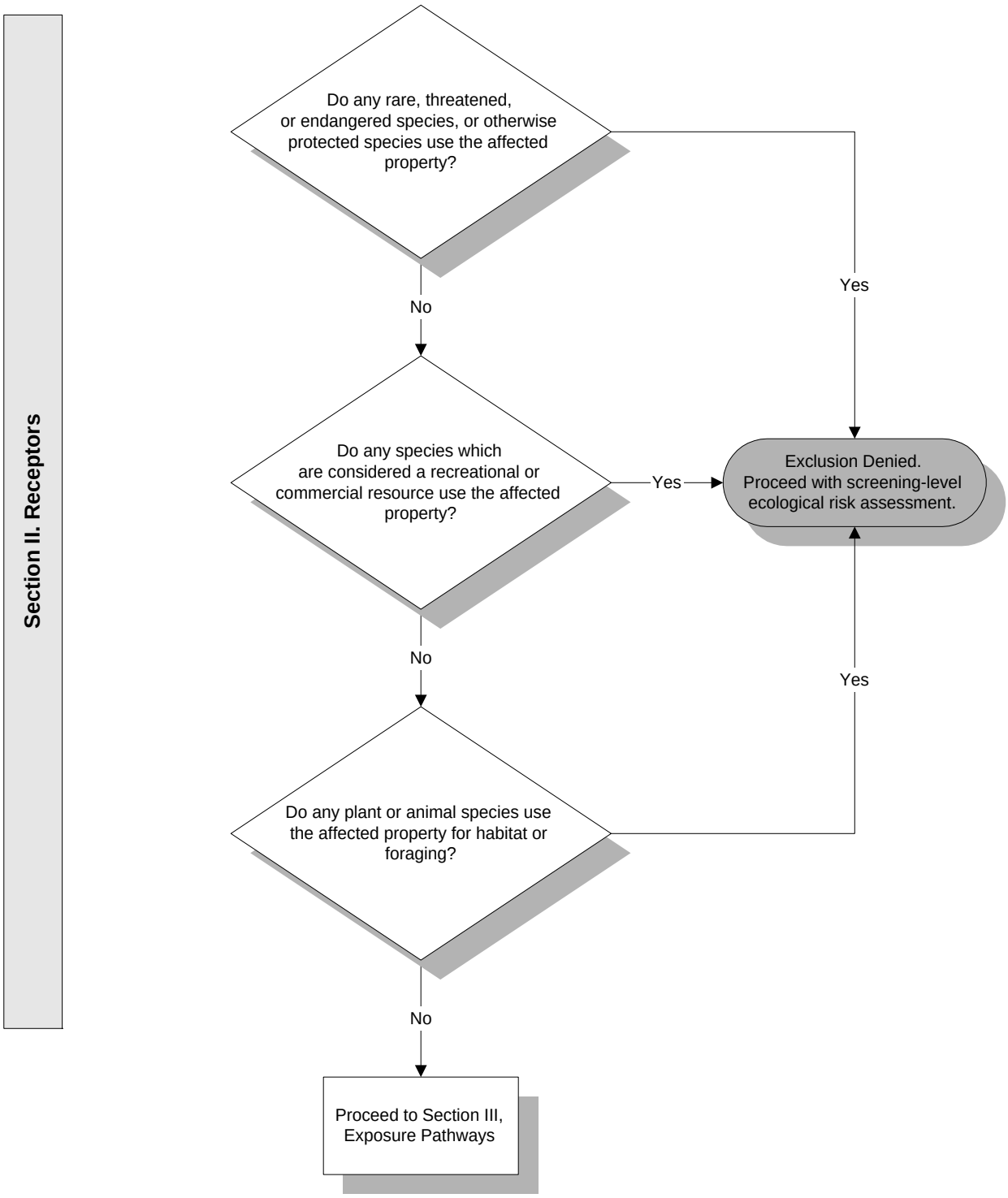
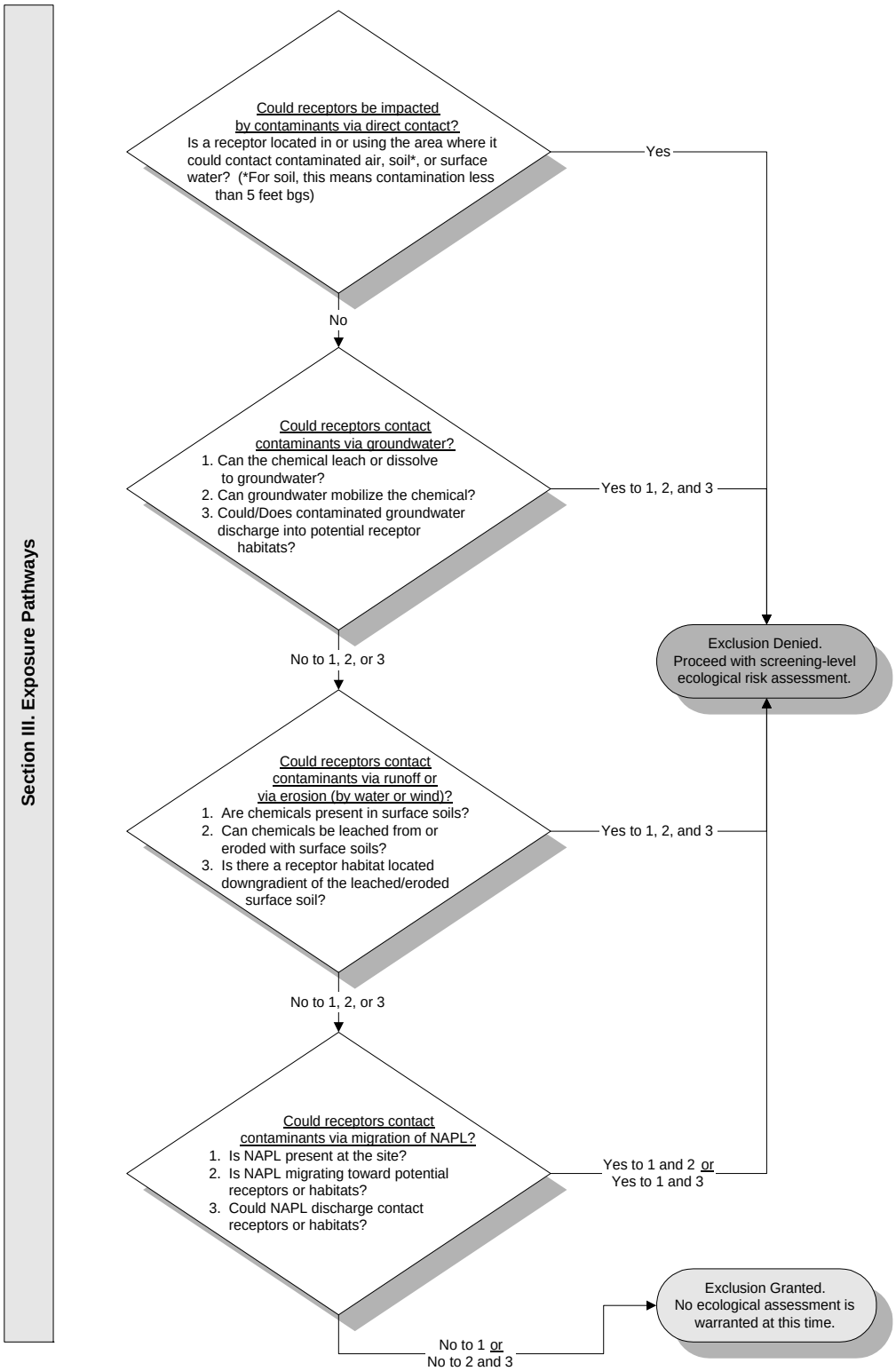
Figure 1 - Exclusion Criteria Decision Tree (continued)