Los Alamos National Laboratory

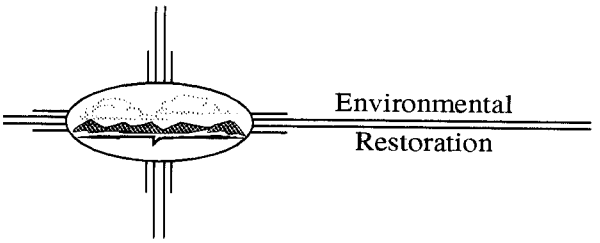
Environmental Restoration Project

EXPEDITED CLEANUP PLAN

for

SOLID WASTE MANAGEMENT UNIT 18-001(b)

April 1995
Revision 1



Approvals and Reviews

This document is based on the most current information available at the time of preparation. In the event changes or modifications are required from those proposed, modifications will be made to incorporate any and all revisions. Subsequent reviews and approvals, consistent with those provided for this revision, will be required. This document has been reviewed for content and approved as reflected by the signatures below:

Document Approved By:

Gene Gould, Field Project Leader

4/24/95
Date

ACRONYMS

AOC	area of concern
AP	Administrative Procedure
CEARP	Comprehensive Environmental Assessment and Response Program
COC	contaminant of concern
CST	Chemical Science and Technology (Division)
CST-3	Analytical Services (Group)
DOE	U.S. Department of Energy
DU	depleted uranium
EC	expedited cleanup
EPA	U.S. Environmental Protection Agency
ER	Environmental Restoration
FPL	Field Project Leader
FTL	Field Team Leader
HSWA	Hazardous and Solid Waste Amendments
LANL, the Laboratory	Los Alamos National Laboratory
PCOC	potential contaminant of concern
PPE	personal protective equipment
PRS	potential release site
RCRA	Resource Conservation and Recovery Act
RFI	RCRA Facility Investigation
SAL	screening action level
SOP	Standard Operating Procedure
SSHASP	Site-Specific Health and Safety Plan
SVOC	semivolatile organic compound
SWMU	solid waste management unit
TA	Technical Area
VOC	volatile organic compound

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TABLES

FIGURES

1.0 INTRODUCTION

This Expedited Cleanup (EC) Plan is for Solid Waste Management Unit (SWMU) 18-001 (b), located within the central portion of the Los Alamos National Laboratory (the Laboratory), Los Alamos, New Mexico (Figure 1-1). This EC Plan is being proposed as a part of the Resource Conservation and Recovery Act (RCRA) Facility Investigation (RFI) process described in the Operable Unit 1093 RFI Work Plan (LANL 1993, 1085) and the subsequent RFI Report for Operable Unit 1093, Potential Release Sites 18-001 (a), (b), (c); 18-007, 27-001, 27-003 (LANL 1995).

SWMU 18-001 (b) is included in Table A of the Hazardous and Solid Waste Amendments (HSWA) permit.

SWMU 18-001(b) consists of an inactive sewer line and eleven manholes. Associated with this waste line are two septic lagoons [SWMU 18-001(a)] and a single effluent outfall. The sanitary sewer line, lagoons and outfall constitute a single septic system which was in use from 1969 to 1992. Analytical results from the 1994 RFI sampling effort of the septic system were compared to conservative residential-use screening action levels (SAL) to assess the potential risk posed by SWMU 18-001(a) and (b) to human health and the environment. These results indicate constituents detected within the associated lagoons were below SALs while analytes detected in the manholes were slightly above SALs. This EC plan proposes the decommissioning in place of SWMU 18-001 (b) by immobilization of the remaining manhole sediments to eliminate the potential risk. Because a potential for mixed waste exists, demolition and removal of the manholes and associated drain lines would prove a complex and costly option, without providing significant additional reduction in risk to human health and the environment.

SWMU 18-001(a), the lagoons and associated outfall, are addressed in the RFI report referenced above.

This EC Plan identifies the level of effort required from initial transmittal of the plan to EPA for review, through implementation, to the completion of the final project report. In the development of this EC Plan, the following assumptions are made:

Future land use at the location of this SWMU will continue to be for industrial purposes.

Minimal delays in EC operations will be experienced as a result of inclement weather and site access delays. Delays that result from the acquisition and scheduling of heavy equipment and from accepting waste at permitted disposal facilities cannot be anticipated and therefore are not considered within this plan.

The Health and Safety Plan will be developed specifically to address COCs in this EC Plan. Deviations from these anticipated concentrations of contaminants of concern may necessitate adjustments to both plans.

Any comments generated by agencies for public review may necessitate adjustments to the scope of this EC plan.

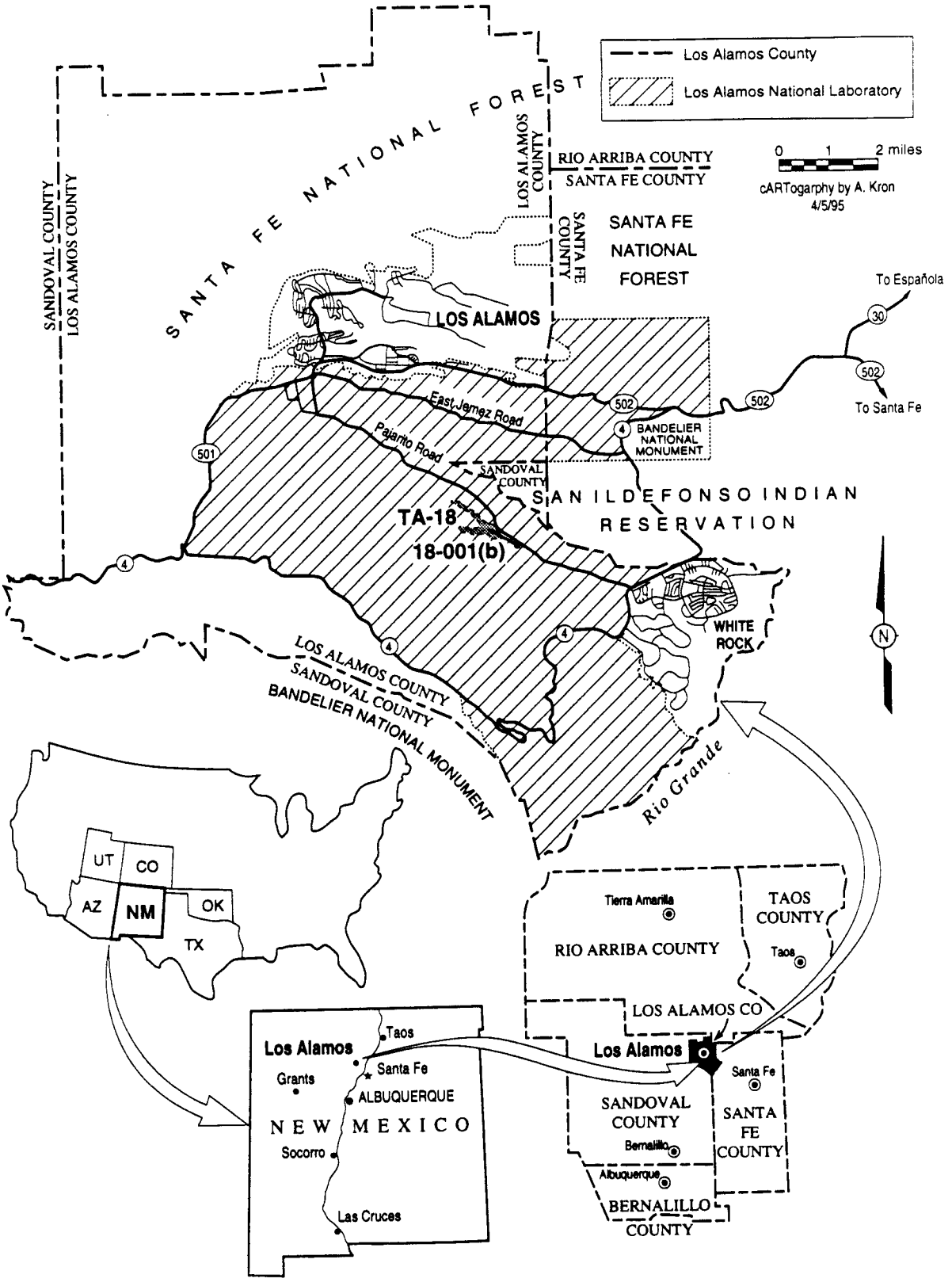

Figure 1-1. Regional location map.

2.0 SITE BACKGROUND AND ENVIRONMENTAL SETTING

2.1 Detailed Description of SWMU 18-001(b)

2.1.1 Operational History and System Description

SWMU 18-001(a) and (b) constitute a single sanitary waste system. SWMU 18-001(a) is comprised of two sanitary sewage lagoons. SWMU 18-001(b) consists of the associated sewer line and manholes (Figure 2-1). The system was placed in service in 1969 and remained active through the fall of 1992. During this period, the sanitary sewer system served Technical Area (TA)-18, excluding Kivas 1, 2, and 3, which are served by individual septic systems.

SWMU 18-001(b), the inactive sewer line, runs parallel to Pajarito Road. The line is buried approximately 5 ft to 6 ft below ground surface (bgs) and is constructed of vitrified clay pipe. The pipe is broken and cracked in places, allowing shallow alluvial groundwater to infiltrate the sewer line between the source buildings and the lagoons. Eleven manholes (TA 18-160,-161, and -169 through -177[1]) are associated with the inactive portion of the sewer line. The manholes consist of a 3-ft diameter concrete culvert pipe positioned vertically so that the manhole opening is approximately 1 ft above ground while the base extends to approximately 5 to 6 ft below ground surface. The base of each manhole is lined with concrete. Inlet and outlet ports from the clay sewer pipe are located at the invert elevation (bottom) of each manhole. SWMU 18-001(b) emptied into the two adjoining lagoons.

2.1.2 Physical Setting

The former sanitary sewer system lies entirely on U.S. Department of Energy (DOE)-owned land on the relatively flat Pajarito Canyon floor. The residential community of White Rock lies to the east. Pajarito Road (a public-access road) is immediately adjacent to SWMU 18-001 (b).

The prevalent soil type in the canyon bottom is the well-drained, alluvial-derived soils of the Totavi series. Alluvial channel-fill deposits consist of sandy clays, clayey sands, and cobbles. These deposits are approximately 35 ft thick in the eastern portion of TA-18 where the lagoons are located. Pleistocene ash flows of the Bandelier tuff directly underlie the soil and alluvial channel-fill deposits.

Stream flow in the eastern section of Pajarito Canyon is ephemeral. A significant volume of surface flow in the form of stream and surface water runoff recharges an unconfined, perched groundwater body in the channel-fill alluvium. The shallow groundwater is confined to the canyon alluvium extending from the top of the Bandelier tuff to near ground surface. Thickness of the saturated zone varies seasonally. The perched aquifer is believed to not be hydraulically connected with the regional groundwater system. The main aquifer is located approximately 300 ft below the perched alluvial groundwater.

[1] Note, as shown in Figure 2-1, the manhole numbers jump from MH-161 to MH-169.

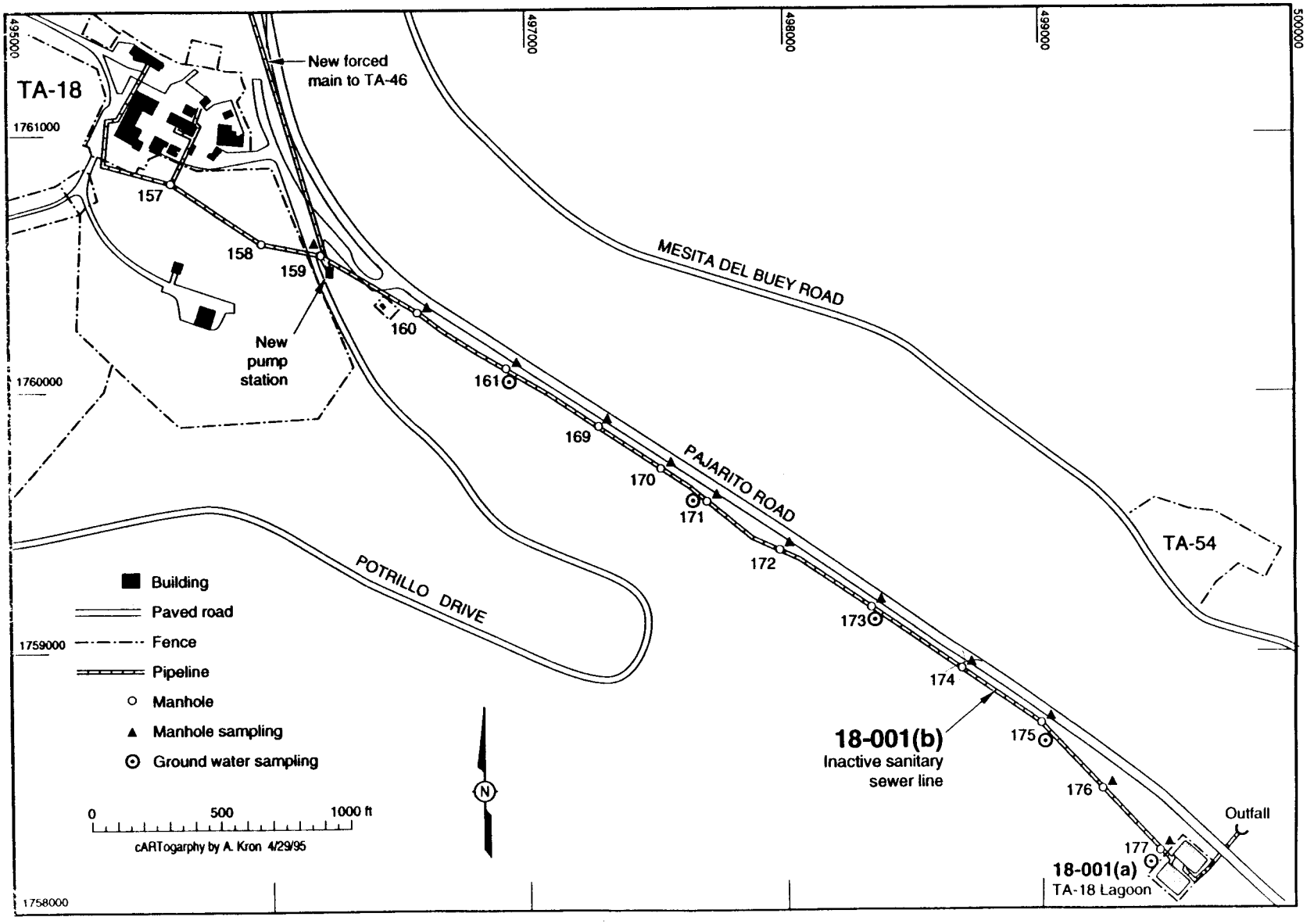

Figure 2-1. SWMU 18-001(b) location map.

2.2 Summary of Previous Investigations

2.2.1 Investigations Prior to RFI

A review of past operations in buildings served by the sanitary sewer system led to the development of a list of potential contaminants of concern (PCOC), including uranium, undifferentiated solvents, beryllium and other metals, and undifferentiated semivolatile organics. No information is available regarding any sampling efforts of SWMU 18-001(b) prior to the RFI. However, on April 13 and 14, 1988, SWMU 18-001(a), the associated sanitary lagoons, were sampled and analyzed for volatile organic compounds (VOC) and semi-volatile organic compounds(SVOC). Twelve lagoon samples of each category were taken; only the liquid was sampled, not the sludge. The results of the analysis indicate that all constituents were below detection limits (30 ppb for VOCs and 20 ppb for SVOCs) (Sutcliffe 1988,16-0031).

2.2.2 RFI Investigation

During September and October 1993, multimedia samples were collected from SWMU 18-001(b), to ascertain the potential effect of the inactive sewer system on public health and the environment. The results of the investigation were presented in the RFI Report for Operable Unit 1093 (LANL 1995). A summary of the sampling effort for SWMU 18-001 (b) is described below. An evaluation of the results follows the sampling discussion.

SWMU 18-001(b), the inactive sewer line, includes 11 manholes, which serve as catchments for sediments and fluids moving through the sewer line. These manholes provided ease of access to the sewer line for sampling purposes. Samples collected from the manholes are believed to be indicative of the entire sewer line.

Either sediment or water samples were collected from Manholes 160, 169, 170, 173, 175, 176, and 177 (Figure 2-1). There was no manhole in which both water and sediment samples were present in sufficient quantities to allow sampling of both media. Furthermore, collection of sediment samples generally required the removal of nearly all the sediment in a manhole. No more than 0.5l of sediment remain in any manhole.

Water was flowing in small quantities in some manholes. This water is the result of infiltration of shallow groundwater into the manholes or connecting sewer line. The outflow from Manhole 177, which is immediately upstream of the lagoon, was plugged when the line was taken out of service to prevent this water from entering the lagoons. Thus, at the time of sample collection, Manhole 177 had accumulated water to a depth of approximately 30 in. In Manholes 161, 171, 172, and 174, neither sediment nor water was present in sufficient quantities to allow sample collection, so swipes were collected at four locations from the interior surface of each manhole and analyzed for gross alpha, beta, and gamma.

2.2.3 Evaluation of the Results

Appendix A presents a summary of the analytical data for all samples collected at SWMU 18-001(b). The contract-required quantification limit, the conservative residential land use SAL, and the upper tolerance limit (UTL) for background concentrations in soil and water are also presented in Appendix A. A discussion of screening assessment tools (SALs and UTL background values) is found in Section 2.4.3. The UTL background water concentrations are based on measured

concentrations in the main aquifer. Therefore, the measured concentrations above background levels for radioactive and inorganic constituents may result from their presence in the wastestream as well as the natural differences between the main and the shallow alluvial aquifers

The UTL background levels of selected heavy metals, radionuclides, SVOCs and VOCs were exceeded by samples obtained from the manholes. These concentrations are shaded in Appendix A. Analytical results from water and sediment samples collected from the sewer line and manholes are as follows:

MH-160. Two sediment samples were obtained from manhole MH-160. Analytical results indicate background levels were exceeded for lead, mercury, and total uranium. However, these levels are below SALs. Several SVOCs were detected for which background levels are not established; however, with the exception of benzo(a)pyrene, the reported levels were below the established SALs. It should be noted that based on laboratory error the concentration of benzo(a)pyrene is an estimated value. The VOC analysis reported low levels of acetone, 2-butanone and carbon disulfide. Acetone and 2-butanone, are considered to be estimated due to laboratory error. Carbon disulfide was detected in low concentrations (0.012 ppm) in one of the two sediment samples obtained from MH-160. As its presence was also in association with common laboratory contaminants (acetone and 2-butanone), in low concentration, and reported in one of two samples from the same sediment, the significance of this reported analyte is questionable.

MH-161. Insufficient material was present in the manhole; therefore, no samples were obtained.

MH-169. Analytical results of this sediment sample reveal elevated levels of inorganic constituents, of which barium (9400 ppm) may exceed the Toxicity, characteristic Leaching Procedure (TCLP) thus classifying the material as RCRA D-listed hazardous waste.

MH-170. Analytical results of this sediment sample indicate reported concentrations of PCOCs were below background and SALs with the exception of Bis(2-ethylhexyl)phthalate, a common laboratory contaminant.

MH-171. Insufficient material was present in this manhole; therefore no samples were obtained.

MH-172. Insufficient material was present in this manhole; therefore no samples were obtained.

MH-173. Analytical results of this water sample indicate all reported analytes were below SALs.

MH-174. Insufficient material was present in this manhole; therefore, no samples were obtained.

MH-175. Analytical results of this water sample indicate all reported analytes were below SALs.

MH-176. Analytical results from this sediment sample indicate three analytes exceeded SALs. Two of these analytes, benzo(a)pyrene and benzo(b)fluoranthene were detected at levels slightly above SALs. The third constituent, lead, was detected at a concentration of 480 ppm. This level exceeds the SAL of 400 ppm. The concentration may be sufficient to cause the sediment to exceed the maximum lead value for TCLP and thus be classified as RCRA hazardous waste.

MH-177. Two water samples were obtained from this manhole. Analytical results indicate all analytes were below SALs with the exception of 1,2 Dichloroethane (5.2 mg/l)

detected in one of the two water samples. This result is considered to be biased high because of incorrect recovery of surrogates in a related QC sample.

Filter swipes from the 11 manholes identified removable beta contamination on only one swipe from Manhole 176. The reported value was 35.4 pCi/100 cm^{-2}, well below the DOE release limit for removable beta contamination of 450 pCi/100 cm^{-2}.

2.2.4 Conclusions

The results of the RFI sampling effort indicate very low volumes of materials remain in SWMU 18-001(b). These materials include infiltrating groundwater and residual sediments. The remaining sediments, no more than 0.5 liter in any manhole, contain elevated levels of metals (primarily barium and lead) such that the maximum values for the TCLP for RCRA hazardous wastes may be exceeded. Sediment in one manhole exhibited low concentrations of total uranium and plutonium isotopes were also detected which exceeded background levels but were below SALs. Nonetheless, these slightly elevated levels of radioactive and potentially hazardous constituents may cause the manhole residuals to be classified as mixed waste.

Sample results collected from infiltrating groundwater indicate measured concentrations of all analytes were one or more orders of magnitude below SALs with the exception of one sample where laboratory error occurred. To the extent that water in the manholes is representative of groundwater infiltrating the sewer line, these values indicate that no unacceptable groundwater contamination has occurred.

Analytical results of sediment samples indicate radioactive or hazardous constituents are present in sufficiently low concentrations and volumes, such that following the proposed insitu immobilization of the sewer line, the risk posed by the sediments will be eliminated.

2.3 Types and Volumes of Waste Present

EC activities proposed for SWMU 18-001(b) consist of decommissioning in place of the sewer line. This plan is designed to further reduce any potential risk to human health and the environment while minimizing waste generation.

As indicated in Section 2.2.3, organic or inorganic constituents detected at concentrations approaching or somewhat in excess of SALs were present in nearly every manhole from which a sample could be collected. The risk associated with this material, based on a residential land use, is in the range of 10^{-6} to 10^{-5}. However, less than 0.5 liters of sediment remains within any one manhole and the land at this site is anticipated to remain under industrial use. We propose that the manholes be decommissioned in place without removing the bottom of the manhole or any residual material. As described in Section 3.3, the decommissioning will include plugging the 11 manholes with concrete to above the inlet/outlet ports and removing the upper portion of each manhole. The remaining excavations will then be backfilled with clean soil. Therefore, the anticipated waste associated with this EC plan is limited to the upper portion of each manhole, which is not contaminated, and nonhazardous administrative waste (used caution tape, etc.). However, to effectively apply the concrete to the manholes, it may be necessary to remove any accumulated water from the base of the structure. Should conditions warrant removal of any water, this waste will be pumped into drums and sampled for PCOCs. The material will be handled in accordance with the task-specific waste management plan and treated as potentially hazardous/radioactive waste pending field screening and/or analytical results.

2.4 Potential Impacts on Public Health and the Environment

Receptors of possible contaminants include animals and humans. A discussion of the screening assessment procedure is found in Section 2.4.3. Potential exposure routes of receptors include the following:

- Inhalation (especially when the SWMU is disturbed);
- Ingestion (in particular, receptors living onsite may be exposed by eating plants growing in contaminated soil or drinking contaminated water), and;
- Skin contact with contaminated soils or sediments.

2.4.1 Potential Pathways

Sources from which potential contaminants may migrate include the nominal quantities of sediments within the manholes and sewer line. Transport mechanisms include subsurface water, and plant uptake.

The primary mode for PCOC migration is via contaminant contact with the shallow alluvial aquifer. This release may occur as a result of direct contact between groundwater and the residual sediments within the manholes and sewer line.

2.4.1.1 SWMU-In Place

The residual sediments contained in the base of the manholes may present a low risk as they could be a source of contamination to the surrounding shallow alluvial aquifer. To the extent that water from the manholes is representative of groundwater infiltrating the sewer line, the sample results indicate that no groundwater contamination has occurred as a result of the inactive sewer line.

2.4.1.2 SWMU-Remediation

EC activities to be performed at SWMU 18-001(b) will include the insitu decommissioning of the sewer line and manholes. Under this scenario, significant impacts to human health or the environment as a result of the SWMU remediation are not likely.

2.4.2 Future Land Use

SWMU 18-001 (b) lies entirely on U.S. Department of Energy (DOE)-owned land in Pajarito Canyon. In the foreseeable future, the land is anticipated to be used exclusively for Laboratory (industrial) operations.

2.4.3 Screening Assessment Procedure

A screening assessment of potential risks to human health and the environment was performed of all analytes except those present in concentrations below detection levels. The assessment consists of comparisons of data with background concentrations and screening action levels

As discussed in Section 2.2.3, analytical results from the RFI sampling effort indicate that concentrations of PCOCs for the SWMU was generally below the SALs, with the exception of the sediment samples obtained from the manholes. As described above, the SALs for hazardous and radioactive constituents are calculated values, based on a conservative residential scenario, that represent a concentration at which exposure would produce a risk of 10^{-6} to human health. Since the future land use for this site is industrial, these are conservative criteria. The risk posed by the sediments in the manholes at SWMU 18-001(b) is in the range of 10^{-5} to 10^{-6} (LANL 1995) using these criteria. Based on the RFI sampling effort, the volume of remaining sediments is small, and the risk will be further reduced following the proposed EC activities (Section 3.3).

3.0 EXPEDITED CLEANUP

3.1 Overview and Rationale

As discussed in Sections 2.2.3 and 2.2.4, the results of the RFI investigation indicate small volumes of material remain at SWMU 18-001(b). Using a conservative risk-based screening assessment, these residuals pose a low risk to human health or the environment. Removal of this material from the manholes would require personnel entry into each manhole, resulting in increased cost and added occupational risks. Therefore, based on the low risk associated with contaminant concentrations detected in the manhole sediments, this plan proposes insitu immobilization of the manhole residuals. This proposed EC for SWMU 18-001 (b), the inactive sewer line, will implement the restoration action quickly and economically.

3.2 Permitting, Approval, and Notification Requirements

An excavation permit will be prepared and submitted for approval before execution of this plan.

Documentation will be prepared in accordance with Laboratory ER Administrative Procedure LANL-ER-AP-05.1, Rev. 0, Readiness Review for Environmental Restoration Program Field Activities (LANL 1995, 0875). Key documents to be prepared for this review include a site-specific health and safety plan (SSHASP) and a waste management plan. Personnel training requirements will be specified and will require completion prior to implementation of this EC Plan. Site workers must have received all training for this project as specified in the SSHASP.

3.2.1 DOE Approval

Prior to implementation of this EC, DOE must be notified. This EC will not be implemented until the Field Work Approval Form (Annex 6.7) is signed by DOE and approval is acknowledged.

3.2.2 Regulatory Notification/Permit Modifications

SWMU 18-001(b) is included in Table A of the original Hazardous and Solid Waste Amendments (HSWA) permit. Implementation of this EC will require a Class III modification to the Laboratory's HSWA Permit. EPA and the New Mexico Environment Department will be notified of this project, and a request for a permit modification will be submitted.

Voluntary corrective actions/ECs are addressed by the U.S. Department of Energy Environmental Checklist for Site Characterization of Operable Units 1093 and 1130 (DEC-92-0308).

3.3 Cleanup Activities

The construction site will be fenced off from the public with a temporary barricade. The site will be enclosed as work progresses. As the work area is adjacent to a public access road, flag men will be utilized to assist in traffic control.

Initially, the covers of each manhole will be removed and concrete will be poured such that a mixture of the residual sediments and concrete is obtained. Sufficient concrete will be applied to block the openings of the inlet and outlet ports of the sewer line at each manhole. The covers will

be replaced, and the concrete allowed to cure. The manholes will be inspected to ensure that the level of concrete is adequately maintained to provide complete plugging of the sewer line ports. The upper portion of each manhole will then be removed, and the remaining excavation backfilled with clean soil. This mode of final decommissioning is preferred by the LANL facilities engineering group, independent of any risk reduction associated with the closure.

Manhole 177, next to the lagoons, may contain sufficient water to impede the application of concrete to the base of the structure. If encountered, the water will be removed and placed in drums for storage and analysis, prior to the application of concrete.

3.4 Waste Management Issues

All wastes will be handled in accordance with the task-specific waste management plan (Annex 6.6). Any potentially contaminated wastes generated by this EC will be temporarily placed in a designated storage facility pending analytical characterization and/or field screening results.

3.4.1 Characterization of Materials for Disposal

Field screening for radioactivity and organic vapors will be performed.

No additional sampling is proposed; therefore, nominal wastes for disposal will be generated. Should removal of accumulated water in manhole 177 be necessary for application of concrete, the waste water will be removed, drummed and sampled for all PCOCs according to requirements of the task-specific waste management plan.

A nominal quantity of decontamination water and PPE may be generated under this EC effort. These wastes will be containerized and handled in accordance with the task-specific waste management plan.

The upper portion of each manhole which will be removed from the ground has not come in contact with waste materials. Further, swipe tests (Section 2.2.3) indicate this waste will not be contaminated.

3.5 Verification Plan

Verification sampling of this EC effort is not proposed. Based on sample results obtained during the RFI, the detected concentrations of hazardous or radioactive constituents are very low. Furthermore, it is believed that the water samples collected from the manholes, which represent groundwater infiltration, indicate that no significant releases have occurred to the surrounding media. Therefore, further sampling of the groundwater and adjacent soils is not warranted.

3.6 Site Restoration Plan

3.6.1 Return of Materials to Site

Minimal field activities are necessary for this EC. Surface soils adjacent to each manhole may be excavated or disturbed during removal of the surface portions of the manhole. Every attempt will be made to return the site to its pre-investigation condition.

3.6.2 Expedited Cleanup Waste

Field activities associated with this EC are not anticipated to generate waste other than construction debris and incidental administrative debris. If potentially contaminated waste is generated, it will be stored in a designated storage area pending laboratory analysis and/or field screening results, and appropriately treated, stored, or disposed.

3.7 Acceptance Inspection

The Laboratory proposes an Acceptance Inspection as the mechanism for DOE and EPA to assess that the Laboratory has implemented this EC Plan effectively. A minimum of 14 days' notification will be provided to the agencies before the start of field activities. At this time, a tentative date for the inspection will be agreed upon.

An inspection checklist will be used to document the scope of the inspection and will become part of the EC Final Report. The checklist and the timing of the inspection will be developed by the Laboratory and agreed to by the other agencies. This inspection checklist will contain specific items, criteria, and requirements, agreed upon by all parties, to be inspected that will constitute acceptance of remediation activities.

The Acceptance Inspection will be conducted by an independent professional skilled in the appropriate technical discipline. During the Acceptance Inspection, written resolution and an anticipated schedule for completion will be identified for any outstanding items, and documented on the inspection checklist. The Laboratory Field Project Leader (FPL or designee) will be responsible for completing outstanding inspection items and documenting their resolution in the EC Final Report.

Upon completion of remediation activities, the Laboratory will submit a written certification to EPA Region VI, stating that the remedy has been completed in accordance with the EC Plan and Acceptance Inspection Checklist. The certification will be signed by the Laboratory and by the independent professional conducting the inspection. The certification will accompany the final EC Report.

3.8 Final Report

Following the completion of all field activities, a final report will be prepared. A proposed outline for this report is presented as Annex 6.8.

4.0 PROJECT MANAGEMENT

4.1 Staffing Requirements

Overall implementation of this expedited cleanup will be managed by Gene Gould (Field Project Leader). Catherine Goetz of ICF Kaiser Engineers will serve as Field Team Leader (FTL) for general EC activities. The Site Safety Officer will be provided by Morrison Knudsen.

4.2 Resource Requirements

Total anticipated costs to the ER Project for this EC are $25,200, as detailed below. The cost for removal of surface portions of the manholes is not included here, as that cost will be covered by the LANL Facilities Engineering Division.

Pre-Field Activities	
Preparation of Site Health and Safety Plan	2,800
Site Preparation/Subcontractor Scheduling	2,800
Subtotal	$5,600
Decommissioning of Manholes	
Concrete Fill in Manholes	$3,000
Backfill Material/Reseeding in disturbed area	600
Mobilization/Demobilization	500
Contractors General Expense	1,000
Subtotal	$5,100
Supervisory Support Personnel	
Site Safety Officer x 1 weeks @ $70/hr	$2,800
ICF KE FTL/Geologist x 2 weeks @ $70/hr	5,600
Subtotal	$8,400
Post-Field Activities	
Acceptance Inspection	500
Final report	5,600
Subtotal	6,100
TOTAL ESTIMATED COST	**$25,200**

4.3 Schedule

The proposed EC schedule is shown in Table 4-1. The submittal of this EC Plan to EPA in mid-April 1995 will initiate the 60-day public review/comment period. No sooner than 15 days after the start of this period, a public meeting will be held. Pre-field activities will be conducted concurrent to the public review period. Field work will be initiated with 10 days of agency and public approval or receipt of EPA temporary authorization to proceed. The final report will be submitted to EPA within 14 days of receipt of the Acceptance Inspection certification.

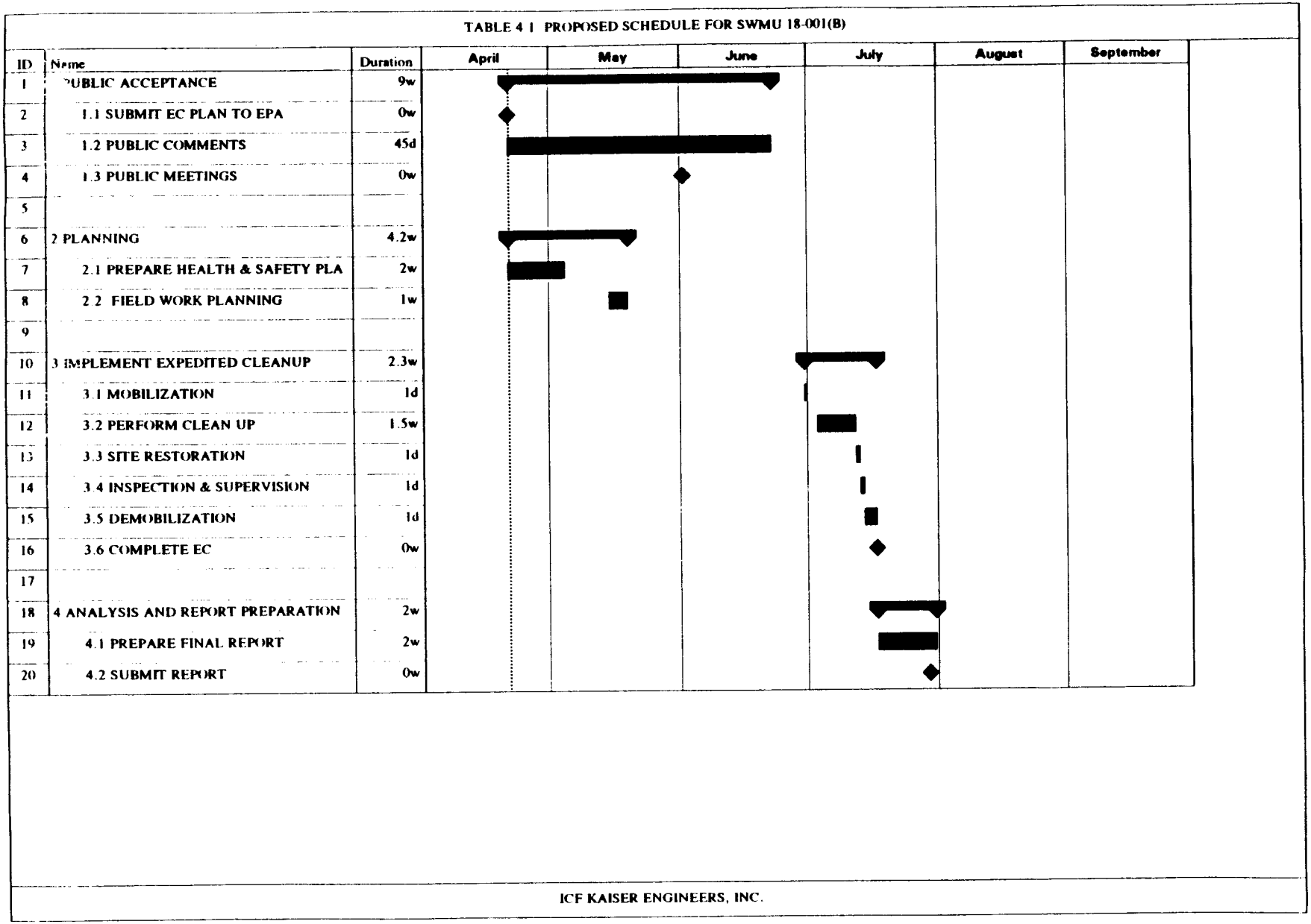

Table 4-1 Proposed Schedule for SWMU 18-001(b)

4.4 Stakeholder Notifications

Stakeholder notifications are an integral part of the procedure for conducting ECs. The ER Project will notify state and local governments, external and internal stakeholders, and individuals on the ER Project mailing list of the availability of the EC plan. The EC plan will be available to the stakeholders at the LANL Community Reading Room in Los Alamos, at the document repositories in Los Alamos, Espanola, and Santa Fe public libraries and at the San Ildefonso Pueblo, Governor's Office.

The submission of this EC plan to EPA will trigger publication of a public notice indicating the start of the 60-day public comment period.

5.0 References

LANL (Los Alamos National Laboratory), May 1993. "RFI Work Plan for Operable Unit 1093," Los Alamos National Laboratory Report LA-UR-93-422, Los Alamos, New Mexico. (LANL 1993, 1985)

LANL (Los Alamos National Laboratory), February 1995. "Installation Work Plan for Environmental Restoration," Revision 4, Los Alamos National Laboratory Report LA-UR-95-XXXX, Los Alamos, New Mexico. (LANL 1995, 1164)

LANL (Los Alamos National Laboratory), January 1995. "RFI Report for Operable Unit 1093, SWMUs 18-001(a),(b),(c); 27-001, 27-003," Revision 3, Los Alamos National Laboratory Report LA-XX-95-XXXX, Los Alamos, New Mexico. (LANL 1995)

LANL (Los Alamos National Laboratory), January 1993. "Los Alamos National Laboratory Environmental Restoration Program Standard Operating Procedures," Los Alamos National Laboratory Report, Los Alamos, New Mexico. (LANL 1993, 0875)

LANL (Los Alamos National Laboratory), September 1994. "Management of Environmental Restoration Program Wastes," LANL-ER-AP-05.03, Revision 0, Administrative and Quality Procedures for Environmental Restoration, Los Alamos National Laboratory report, Los Alamos, New Mexico. (LANL 1994, 0951).

6.0 Annexes

6.1 Implementation SOPs

See Environmental Restoration Standard Operating Procedures, Volumes I and II, November 17, 1993, Los Alamos National Laboratory.

6.2 Quality Assurance Plan

Quality Program Plan And Quality Assurance Project Plan For Environmental Restoration, last revision January 1993, May 1991, Los Alamos National Laboratory, Los Alamos, New Mexico.

6.3 Site-Specific Health and Safety Plan

See Los Alamos National Laboratory (LANL) Environmental Restoration (ER) Project Health and Safety Plan (HASP) (LANL, February 11, 1995).

6.4 Records Management Plan

See Installation Work Plan for Environmental Restoration, Revision 4, Chapter IV, Records Management Program Plan.

6.5 Public Involvement Plan

See Installation Work Plan for Environmental Restoration, Revision 4, Chapter V, Public Involvement Program Plan.

6.6 Waste Management Plan

6.7 Field Work Approval Form

6.8 Proposed Outline for Expedited Cleanup Report

6.9 RFI Analytical Reports

ANNEX 6.7
FIELD WORK APPROVAL FORM

This form must be completed prior to starting remediation field work in accordance with Expedited Cleanup Plans.

I, _____, DOE-LAAO, **APPROVE** the field work as proposed in the accompanying Expedited Cleanup Plan for Potential Release Site 18-001(b), TA-18.

I, _____, DOE-AL, **DO NOT APPROVE** the field work as proposed in the accompanying Expedited Cleanup Plan for Potential Release Site 18-001(b), TA-18.

The following reasons reflect the decision for disapproval:

Signed: _____ Date: _____

ANNEX 6.8
PROPOSED OUTLINE FOR EXPEDITED CLEANUP REPORTS

1.0 Summary of Expedited Cleanup

1.1 Overview
1.2 Expedited Cleanup

2.0 Site Restoration

3.0 Modifications to the EC Plan

4.0 Quantities and Types of Waste Generated

5.0 Outstanding Items from the Acceptance Inspection

6.0 Problems Encountered and Lessons Learned

APPENDICES

A Analytical Data
B Acceptance Inspection Checklist
C Wastestream Inventory
D Photographs
E Certification of Completion

ANNEX 6.9
RFI ANALYTICAL RESULTS FOR SWMU 18-001(b)

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Sample Location	Sample Number	Sample Type	Units	Metals	Radionuclides	SVOCs	VOCs	SALs	CRQLs	Background
MH-177 (2 Samples)	AAA5690	Water	µg/l	**100 Barium**				2000	200	130
			µg/l	**18.5 Lead**				50	3	1.1
			µg/l		**0.17 U(total)**			20 (MCL)	NA	0.0012
			pci/l		**0.01 Pu-238**			15	NA	0.051
			pci/l		0.01 Pu-239			15	NA	0.083
			µg/l				5.2 1,2 Dichloroethane	5	10	
	AAA5719	Water	µg/l	**100 Barium**				2000	200	130
			µg/l	**6.0 Lead**				50	3	1.1
			µg/l		**0.167 U(total)**			20 (MCL)	NA	0.0012
			pci/l		0.008 Pu-238			15	NA	0.051
			pci/l		**0.011 Pu-239**			15	NA	0.083
			µg/l			10 Di-n-butyl phthalate		3,500	10	
MH-176 (1 Sample)	AAA5699	Sediment	mg/kg	330 Barium				5600	40	1140
			mg/kg	0.36 Beryllium				NC	1	3.31
			mg/kg	**4.6 Cadmium**				80	1	2.7
			mg/kg	**64 Chromium**				400	2	34.2
			mg/kg	**480 Lead**				400	0.6	39
			mg/kg	**9.0 Mercury**				24	0.04	0.1
			mg/kg	**68 Nickel**				1600	8	26.7
			mg/kg	93 Silver				400	2	NA
			mg/kg	**620 Zinc**				24,000	4	101
			pci/g		**0.032 Pu-238**			20	NA	0.014
			pci/g		**0.676 Pu-239**			18	NA	0.052
			mg/kg		**4.387 U(total)**			160	NA	2.09
			mg/kg			0.430 Benzo(a)pyrene		0.1	0.33	
			mg/kg			0.750 Benzo(b)fluoranthene		0.7	0.33	
			mg/kg			18.80 Bis(2-ethylhexyl)phthalate		50	0.33	
			mg/kg			0.450 Chrysene		22	0.33	
			mg/kg			0.550 Fluoranthene		3,200	0.33	
			mg/kg			0.800 Pyrene		2400	0.33	
			mg/kg				0.019 Chloroform	0.21	0.01	

Maximum concentration in **boldface**
Shaded values: measured values above background UTL
(J): Estimated Value NA: Not Available
NC: SALs for beryllium set at background

ANNEX 6.9
RFI ANALYTICAL RESULTS FOR SWMU 18-001(b)

Sample Location	Sample Number	Sample Type	Units	Metals	Radionuclides	SVOCs	VOCs	SALs	CRQLs	Background
MH-175 (1 Sample)	AAA5710	Water	µg/l µg/l µg/l µg/l pci/l µg/l	**170 Barium** 5 Chromium **19.0 Lead** **79 Zinc**	0.011 Pu-238 **0.065 U(total)**	None Detected	None Detected	2000 50 50 10,000 15 20 (MCL)	200 10 3 20 NA NA	130 24 1.1 45 0.051 0.0012
MH-174 (No Samples)		None								
MH-173 (1 Sample)	AAA5730	Water	µg/l µg/l µg/l µg/l	130 Barium **1.5 Lead** **77 Zinc**	**0.432 U(total)**	None Detected	None Detected	2000 50 10,000 20 (MCL)	200 3 20 NA	130 1.1 45 0.0012
MH-172 (No Samples)		None								
MH-171 (No Samples)		None								
MH-170 (1 Sample)	AAA5755	Sediment	mg/kg mg/kg mg/kg mg/kg µg/l µg/l	21.0 Barium 3.5 Chromium 2.0 Silver 35.0 Zinc	None Detected	34.0 Bis(2-ethylhexyl)phthalate	**27.0 Benzoic acid**	5600 400 400 24,000 4 140,000	40 2 2 4 10 0	1140 34.2 NA 101
MH-169 (1 Sample)	AAA5764	Sediment	mg/kg mg/kg mg/kg mg/kg mg/kg mg/kg mg/kg	**9400 Barium** **1.2 Beryllium** **3.2 Cadmium** 26 Lead **94 Nickel** 91 Zinc	None Detected	None Detected	0.029 Chloroform	5600 NC 80 400 1600 24,000 0.21	40 1 1 0.6 8 4 0.01	1140 3.31 2.7 39 26.7 101
MH-161 (No Samples)		None								

Maximum concentration in **boldface**
Shaded values: measured values above background UTL
(J): Estimated Value NA: Not Available
NC: SALs for beryllium set at background

ANNEX 6.9
RFI ANALYTICAL RESULTS FOR SWMU 18-001(b)

Sample Location	Sample Number	Sample Type	Units	Metals	Radionuclides	SVOCs	VOCs	SALs	CRQLs	Background
MH-160 (2 Samples)	AAA5781	Sediment	mg/kg	36 Barium				5600	40	1140
			mg/kg	0.12 Beryllium				NC	1	3.31
			mg/kg	1.2 Cadmium				80	1	2.7
			mg/kg	**22 Chromium**				400	2	34.2
			mg/kg	**43 Lead**				400	0.6	39
			mg/kg	**0.3 Mercury**				24	0.04	0.1
			mg/kg	5.0 Nickel				1600	8	26.7
			mg/kg	21 Silver				400	2	NA
			mg/kg	**820 Zinc**				24,000	4	101
			mg/kg		0.99 U(total)			160	NA	2.09
			mg/kg			**0.760 Bis(2-ethylhexyl)phthalate**		50	0.33	
			mg/kg			**0.47 Butyl benzyl phthalate**		16,000	0.33	
			mg/kg			0.480 Fluoranthene		3,200	0.33	
			mg/kg			0.460 2-Methylphenol		4,000	0.33	
			mg/kg			0.560 Pyrene		2,400	0.33	
			mg/kg			**0.30 Benzo(a)pyrene (J)**		0.1	0.33	
			mg/kg				**0.690 Acetone**	8000	0.01	
			mg/kg				**0.200 2-Butanone**	4000	0.01	
	AAA5791	Sediment	mg/kg	**40 Barium**				5600	40	1140
			mg/kg	**0.18 Beryllium**				NC	1	3.31
			mg/kg	**1.9 Cadmium**				80	1	2.7
			mg/kg	20 Chromium				400	2	34.2
			mg/kg	**85 Lead**				400	0.6	39
			mg/kg	**0.6 Mercury**				24	0.04	0.1
			mg/kg	**10.0 Nickel**				1600	8	26.7
			mg/kg	**40 Silver**				400	2	NA
			mg/kg	**950 Zinc**				24,000	4	101
			mg/kg		**3.51 U(total)**			160	NA	2.09
			mg/kg			**0.470 Benzo(b)fluoranthene**		0.7	0.33	
			mg/kg			0.740 Bis(2-ethylhexyl)phthalate		50	0.33	
			mg/kg			**0.350 Benzo(a)pyrene (J)**		0.1	0.33	
			mg/kg			**0.530 Fluoranthene**		3,200	0.33	
			mg/kg			**0.680 2-Methylphenol**		4,000	0.33	
			mg/kg			**0.470 Phenanthrene**			0.33	
			mg/kg			**0.650 Pyrene**		2,400	0.33	
			mg/kg				0.300 Acetone	8000	0.01	
			mg/kg				0.110 2-Butanone	4000	0.01	
			mg/kg				**0.012 Carbon disulfide**	7.4	0.01	

Maximum concentration in **boldface**
Shaded values: measured values above background UTL
(J): Estimated Value NA: Not Available
NC: SALs for beryllium set at background