John

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RCRA FACILITY INVESTIGATION ~~AND~~ ADDENDUM REPORT FORT BLISS, TEXAS

Prepared for

Fort Bliss Directorate of Environment
Building 515B
Fort Bliss, TX 79916

and

United States Army Corps of Engineers
Tulsa District
1645 South 101st East Avenue
Tulsa, OK 74128

Submitted by

Roy F. Weston, Inc.
5599 San Felipe, Suite 700
Houston, TX 77056

WESTON W.O. No. 03886-146-001, 002

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FINAL
RCRA FACILITY INVESTIGATION REPORT
FORT BLISS, TX

LIST OF APPENDICES

APPENDIX	TITLE
A	Geologic Borings Logs
B	Investigation-Derived Waste (IDW) Tracking Form
C	Data Validation Summary Reports
D	Analytical Data Summary Tables
E	Chain-of-Custody Forms
F	EPA Region III Risk-Based Concentration Table
G	USACE Quality Control/Quality Assurance Comparability Report
H	RFI Addendum Report

3. *RCRA Facility Inspection Report, New Mexico Solid Waste Management Units, Fort Bliss*, Volume I, prepared by Environmental Science & Engineering, Inc. (ESE), September 1991.

4. *Draft Corrective Investigation Study Report for Solid Waste Management Unit No. 25B, Orogrande Oxidation Lagoon, Fort Bliss, El Paso, Texas*, prepared by ESE, 1992.

5. *Environmental Compliance Assessment Report*, prepared by the Earth Science Corporation, April 1993.

1.4 RFI REPORT FORMAT

The RFI Report has been organized in the following format:

- Section 1—Introduction
- Section 2—Regional Setting
- Section 3—Field Data Collection Methods
- Section 4—Data Evaluation
- Section 5—Characterization of SWMUs
- Section 6—Summary and Conclusions
- Section 7—References

Appendices to this RFI Report include the following:

- Appendix A— Geologic Borings Logs
- Appendix B—Investigation-Derived Waste (IDW) Tracking Form
- Appendix C—Data Validation Summary Reports
- Appendix D—Analytical Data Summary Tables
- Appendix E—Chain-of-Custody Forms
- Appendix F—EPA Region III Risk Based Concentration Table
- Appendix G—USACE Quality Control/Quality Assurance Comparability Report
- Appendix H—RFI Addendum Report

For purposes of presentation clarity, figures and tables have been placed at the end of each respective section.

APPENDIX H
ADDENDUM

Roy F. Weston, Inc. (WESTON®) was contracted by the U.S. Army Corps of Engineers (USACE) (Contract No. DACA56-96-D0011, Delivery Order No. 18) to complete additional investigative work at two Solid Waste Management Units (SWMUs) at Fort Bliss, Texas. The two SWMUs consist of the McGregor Range Oxidation Pond (SWMU19) and the Orogrande Range Oxidation Pond (SWMU25B). The associated sludge drying beds, and abandoned Imhoff tanks were also included in the study. These two SWMUs are associated with training camps that exist in the northern portion of Fort Bliss. This additional work is an addendum to the Resource Conservation and Recovery Act (RCRA) Facility Investigation (RFI) that WESTON completed in May 1997 and is referred to as the RFI Addendum.

H.1 OBJECTIVE

Analytical results from the May 1997 RFI indicated that site-related constituents, namely metals and pesticides) were present near the McGregor Range Oxidation Pond outfall and in the sludge drying beds, potentially constituting a release. To determine the extent of these constituents, WESTON performed additional surface and subsurface sampling downgradient of the outfall of the oxidation pond and around the sludge drying beds in an effort to determine the extent of these constituents. In addition, the abandoned Imhoff tanks associated with both the McGregor Range Oxidation Pond and the Orogrande Oxidation Ponds were sampled to evaluate closure options should the need arise.

H.2 SAMPLING PROCEDURES

The following sections describe the procedures that were used to collect samples from the oxidation pond outfall area, sludge drying beds, and the abandoned Imhoff tanks.

H.2.1 McGregor Range Oxidation Pond Outfall and Sludge Drying Beds

WESTON collected fourteen surface and near surface samples from seven sampling stations (S1920 through S1926) downgradient of the outfall of the McGregor Range Oxidation Pond and near RFI sample station SB-1906 (see Figure H-1). Ten surface and near surface samples were collected from five sample stations (S1915 through S1919) near the sludge drying beds adjacent to the McGregor Range Imhoff tanks. Surface samples were collected from 0 to 6 inches below ground surface (bgs) using disposable scoops. A shovel was used to advance the sampling hole to a depth of approximately 2 feet. The near surface samples were then collected from approximately 2.0 to 2.5 feet bgs using disposable scoops.

An sampling grid was established mainly south of the former RFI sample station SB-1906, including the area downstream of the outfall structure. Sampling locations SB-1907 and SB1908 were not reported with site related constituents during the RFI and these points served as the

northern boundary of the sampling. Due to heavy vegetation in the sampling area, the grid was established using a tape measure at an approximate spacing of 50 feet. The locations were not surveyed after the event.

The sample stations for the sludge drying beds were situated around the perimeter of the earthen berm wall which surrounds the drying beds. The locations were selected on all sides at a distance of approximately 25 feet from the berm wall. These locations also were not surveyed, but instead marked with wooden stakes.

In order to characterize the areas around the sludge drying beds, two sample stations were established along both the south (S1919 and S1918) and east (S1916 and S1917) sides of the earthen berm wall. Only one sample station (S1915) was established along the north side of the sludge drying beds due to recent disturbances of the area caused by road grading and the discharge of investigation derived waste (IDW) form the RFI. No samples were collected from the west side of the sludge drying beds due to the presence of the Imhoff tanks structure. Figure H-1 shows the sample station locations with respect to RFI sample station SB-1906, the McGregor Range Oxidation Pond outfall, and the Imhoff tanks.

Analytical parameters and methods used in evaluating the samples from the outfall of the McGregor Range Oxidation Pond and the sludge drying beds are presented in Table H-1.

H.2.2 McGregor Range Oxidation Pond Imhoff Tanks

To characterize the constituents associated with the two Imhoff tanks adjacent to the McGregor Range Oxidation Pond, samples were planned for collection from each tank. The underground design of the Imhoff tanks make them relatively inaccessible. and samples were collected from the surface with a 15-foot section of polyvinyl chloride (PVC) pipe. A core sediment sample (S1913) was collected from the large Imhoff tank at an approximate depth of 13 feet within the tank. The second tank proved inaccessible due to a large constructed wood and metal cover. Also, based on field observations, the western Imhoff tank appears to be or has recently been in use and some of the wastewater discharge from the McGregor Range camp is being routed through the tank. Therefore, sediment within a sewer manhole (located between the two Imhoff tanks) was sampled (S1914) to a depth of approximately 6 inches bgs with a disposable scoop.

The location of these samples in shown in the detail of Figure H-1. Analytical parameters and methods used in evaluating the samples from the McGregor Range Imhoff tanks are presented in Table H-1.

H.2.3 Orogrande Range Imhoff Tank

To characterize the constituents associated with the Imhoff tank located at Orogrande Range, a sediment sample (S25B13) was collected from the concrete trough upgradient from the tank. A sample could not be collected from inside the Imhoff tank due to inaccessibility by a large constructed wood and metal cover. A detail on Figure H-2 shows the sample location in relation to the Imhoff tank and the surrounding structures. According to field observations, the Imhoff

tank appears to be in good condition; however, the wastewater discharge is being diverted directly to the oxidation pond from the gate valve box.

Analytical parameters and methods used in evaluating the sample from the Orogrande Range Imhoff tank are presented in Table H-1.

H.3 ANALYTICAL METHODS AND PARAMETERS

WESTON collected a total of 30 surface and subsurface soil samples, including three field duplicate samples, from the area near the oxidation pond outfall and sludge drying beds at McGregor, and the abandoned Imhoff tanks at both McGregor and Orogrande. The field samples were shipped by Federal Express overnight mail to ReCRA Environmental Laboratories (ReCRA) for analyses. ReCRA (formerly WESTON EMI) analyzed all 30 samples for pesticides and polychlorinated biphenyls (PCBs) and 16 samples for RCRA metals (arsenic, barium, cadmium, chromium, lead, mercury, selenium, and silver), using EPA-approved methods. The analytical parameters and methods are provided in Table H-1. The RFI Work Plan (Thompson, 1996) provides detailed information on analytical methods, rationales and parameters.

H.4 DATA VALIDATION AND RESULTS

Section 4.3 of the May 1997 RFI Report explains how the data validation process was used to determine the usability of analytical data, using several types of quality control devices. The data validation tables and accompanying narrative summaries for this addendum are provided as Attachment H1.

The Decision Rules were used to evaluate the usability of the data, and the following statements were developed:

- All samples were collected in general accordance with the RFI Work Plan and the recommendations of the RFI Report. As discussed previously, some sample locations were moved as dictated by field conditions. However, samples at revised locations met the general requirements of the RFI.

- None of the extraction and holding times for constituents were exceeded. The laboratory performed all the requested analyses and the analyses completion criteria exceeded the project established goal of 90%.

- Two field normal and field duplicate samples exceeded the quality control limits for relative percent difference (RPD). However, the calculated RPDs were found to be less than 200%, indicating acceptable laboratory reproducibility. Therefore, none of the exceedances invalidated the data.

- One instance of sample bias was noted where selenium in sample S1913-1 was qualified estimated based on MS/MSD recoveries exceeded control limits.

- Analytical results for all the samples are provided in Attachment H2 and are summarized in sections pertaining to each location.

Based on WESTON's evaluation of the data using the Decision Rules, it has been determined that all the data results meet the data quality objectives for the RFI. All the data used to establish whether site-related constituents have been released from the SWMUs investigated in this study have been determined to be usable.

H.5 DATA EVALUATION METHODS

As discussed in Section 4.4 of the RFI Report, the results from background sampling were used to establish baseline conditions from which the characterization sampling results for each SWMU would be compared. Since pesticides, PCBs, and some metals were not detected above the reporting limit in background samples, the background comparison values for these constituents were established as the laboratory reporting limits. Results above the reporting limit in the characterization samples are considered significant with respect to the presence or release of hazardous constituents. Various metals were detected in background samples taken from SWMU 19 and SWMU 25. For these constituents, background values were established by multiplying the highest reported result by a factor of three. Therefore, characterization sampling results exceeding three times the maximum background for these constituents were considered significant.

H.6 FIELD QA/QC RESULTS

Three field duplicate samples were collected to measure the reproductivity of the laboratory methods and testing. As previously mentioned, two field normal and field duplicate samples exceeded the quality control limits for relative percent difference (RPD). However, the calculated RPDs were found to be less than 200%, indicating acceptable laboratory reproducibility. Therefore, none of the exceedances invalidated the data. Since disposable sampling equipment was utilized during the activities, equipment rinsate blanks were not collected.

H.7 SOIL/SEDIMENT SAMPLE RESULTS

The soil/sediment sample results are summarized in the following subsections. The analytical results from collected samples were evaluated against background comparative values that were developed for soils/sediments at each SWMU. The soil/sediment results exceeding the comparative values were further evaluated against risk-based concentrations developed by the EPA, Region III (EPA, 1995). The EPA Region III Risk-Based Concentrations Table is provided in Appendix F of the May 1997 RFI Report.

Analytical parameters reported in samples significantly above background outside the SWMU are summarized in Tables H-2 to H-13 as Attachment H-2. Chain-of-custody documentation is provided as Attachment H3. "Hit" tables are include as Tables H-2 through H-7 following this text, and summary tables are provided in Tables H-8 through H-13 in Attachment H2.

H.7.1 McGregor Range Oxidation Pond Outfall

Fourteen surface and subsurface soil samples were collected downgradient from the McGregor Range Oxidation Pond Outfall. The samples were analyzed for pesticides and PCBs, and the results are presented in Tables H-4 and H-3, respectively. A low concentration of the pesticide constituent 4,4-DDE was reported above background in one subsurface soil sample at 2.1 ug/kg (S1922-2). However, this value is well below the EPA Region III criteria for both the Industrial Soil Ingestion and Soil to Air Transfer scenarios. No other analytical parameters were reported above background comparison values for the samples collected at the oxidation pond outfall.

H.7.2 McGregor Range Sludge Drying Beds

Ten samples were collected from the area around the McGregor Range Sludge Drying Beds. The samples were analyzed for pesticides, PCBs, and RCRA metals. Slightly elevated levels of the pesticide constituents 4,4-DDE and 4,4-DDT were reported in several surface and subsurface soil samples (see Table H-4). The constituent 4,4-DDE was detected in five surface and one subsurface soil, ranging from 1.7 ug/kg (S1918-1) to 230 (S1915-1) ug/kg in the surface samples and 2.4 ug/kg (S1917-2) in the subsurface sample. The reported values for 4,4-DDT ranged from 2.1 ug/kg (S1919-1) to 290 ug/kg IS1915-1) in four surface soil samples and 1.7 ug/kg (S1917-2) in one subsurface soil sample. The reported pesticide values were below the EPA Region III criteria for Industrial Soil Ingestion and Soil to Air Transfer scenarios and are not considered significant. PCBs were not reported in the collected samples (Table H-3).

Cadmium was detected in one surface soil sample at 1.2 mg/kg (see Table H-2). The reported values were compared to the EPA Region III criteria for both the Industrial Soil Ingestion and Soil to Air Transfer scenarios.

H.7.3 McGregor Range Imhoff Tanks

Two surface soil samples were collected from the McGregor Range Imhoff Tanks. The samples were analyzed for pesticides, PCBs, and RCRA metals. The pesticide constituents 4,4-DDT and delta-BHC were reported above background comparison values in sample S1914-1 at 71 ug/kg and 6.8, ug/kg respectively (see Table H-4). The reported values were below EPA Region III criteria for Industrial Soil Ingestion and Soil to Air Transfer scenarios. PCBs were not reported in the collected samples (Table H-3).

Several metals were detected above background in the two surface soil samples. The sample results reported in mg/kg are provided below and in Table H-2.

	Ag	As	Ba	Cd	Cr	Hg	Pb	Se
S1913-1	<B	<B	780	15.3	119	1.8	124	13.0
S1914-1	<B	<B	<B	3.3	<B	0.14	82.3	<B

<B = below background

The sample results were compared to the EPA Region III risk-based concentration values for both the Industrial Soil Ingestion and Soil to Air Transfer scenarios. Inorganic lead is not listed in the EPA risk concentration table. However there are several EPA policies which effectively substitute for risk-based concentrations, including an EPA Office of Solid Waste directive on risk assessments and cleanups (EPA, 1995). The directive recommends that soil lead levels less than 400 mg/kg be considered safe for residential use. The lead concentrations in soil samples taken from the Imhoff tanks were well below the recommended cleanup levels for residential soils.

H.7.4 Orogrande Range Imhoff Tank

One surface soil sample (S25B13-1) was collected from the concrete trough located upgradient from the Orogrande Range Imhoff tank. The sample was analyzed for pesticides, PCBs, and RCRA metals. Low concentrations of the pesticide constituents 4,4-DDE was reported at 28 ug/kg and 4,4-DDT was reported at 21 ug/kg, respectively (Table H-7). Both of these values are below the EPA Region III Risk-Based Comparison criteria for Industrial Soil Ingestion and Soil to Air Transfer scenarios. PCBs were not reported in the collected samples (Table H-6)

Metals were detected above the background comparison values in the surface soil sample. The sample results reported in mg/kg are listed below and in Table H-5:

	Ag	As	Ba	Cd	Cr	Hg	Pb	Se
S2513-1	0.89	9.2	126	1,560	29.2	0.62	74	1.7

The reported cadmium concentration of 1,560 mg/kg exceeds the EPA Industrial Soil Ingestion risk based value of 1,000 mg/kg.

H.8 SUMMARY AND CONCLUSIONS

A summary of the findings and conclusions of the RFI Addendum are provided in this section. The analytical results from collected samples were evaluated against background comparative values that were developed for soils. The soil/sediment results exceeding background comparative values were further evaluated against risk-based concentrations developed by EPA, Region III (EPA, 1995) to determine whether constituents are present in significant concentrations.

H.8.1 McGregor Range Oxidation Pond Outfall (SWMU 19)

The findings and conclusions from the RFI Report, dated May 1997, indicated the presence of site-related constituents at the McGregor Range Oxidation Pond outfall. For this addendum, fourteen additional surface and subsurface samples were collected downgradient of the outfall to determine whether a significant release had occurred. Only one pesticide constituent (4,4-DDT) exceeded background in one subsurface soil sample. The 4.4-DDT value did not exceed the EPA Region III criteria for Industrial Soil Ingestion and Soil to Air Transfer scenarios. Based on the collected data, a release of significant risk from the oxidation ponds and near the outfall is not apparent.

H.8.2 McGregor Range Sludge Drying Beds

The May 1997 RFI Report reported low concentrations of metals and pesticides in the surface soils of the sludge drying beds. For this addendum, ten additional surface and near-surface soils samples were collected to further characterize the area around the drying beds.

Pesticides were reported in low concentrations (ug/kg) in several samples collected from the area around the drying beds. None of the pesticide constituents exceeded the EPA Region III criteria for both the Industrial Soil Ingestion to Air Transfer scenarios. Metals were reported in several soil/sediment samples above background, but none of the reported metals exceeded the EPA criteria.

While reportable levels of pesticides and metals exist around the drying beds, most likely as a result of historical operations and practices associated with wastewater treatment, a release of significant risk is not apparent.

H.8.3 McGregor Range Imhoff Tanks

The May 1997 RFI Report recommended consideration of a closure action for the abandoned McGregor Range Imhoff tanks. Two sediment samples were collected during the addendum field investigation to characterize the soils in the Imhoff tanks and to assist with future closure activities and the development of a closure plan should the need arise. One sample was collected from within one Imhoff tank, and the other was collected from within a sewer manhole.

Pesticides were reported in low concentrations (ug/kg) in both sediment samples. However, none of the pesticide constituents exceeded the EPA Region III criteria for both the Industrial Soil Ingestion and Soil to Air Transfer scenarios. Several metals were detected above background in the two sediment samples. The sample results were compared to the values listed in the EPA Region III guidance document. None of the metals exceeded the EPA criteria.

The western Imhoff tank appears in good condition and may in fact be in use based on field observations. The eastern Imhoff tank does not appear to be in use and the cover has deteriorated and collapsed into the tank. Research as to the status of the tanks and whether it would be beneficial to put them back into service should be considered if activity at the McGregor Range Camp increases. In this case, the tanks would most likely require interior cleaning and the cover for the eastern tank would have to be repaired. Alternately, closure of the tanks is an option that should not require removal and disposal of regulated waste material.

H.8.4 Orogrande Range Imhoff Tank

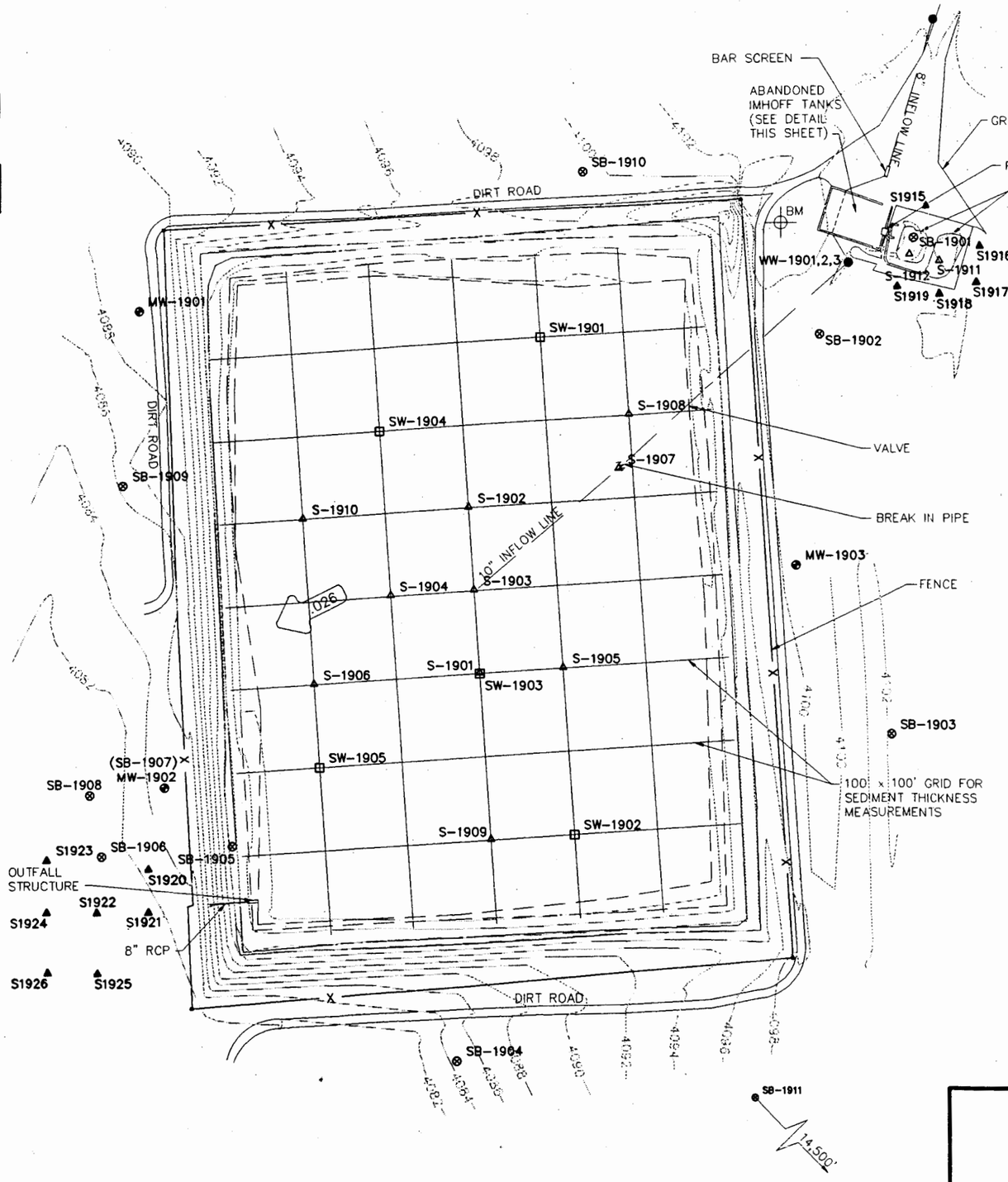
The May 1997 RFI Report recommended consideration of closure of the abandoned Orogrande Range Imhoff tank. The Orogrande Range Imhoff Tanks are located within an enclosed area approximately 250 feet from the Orogrande Range Oxidation Pond. The Imhoff tank is currently abandoned, but appears to be in good shape. One surface soil sample was collected from the concrete trough upgradient from the Imhoff tank.

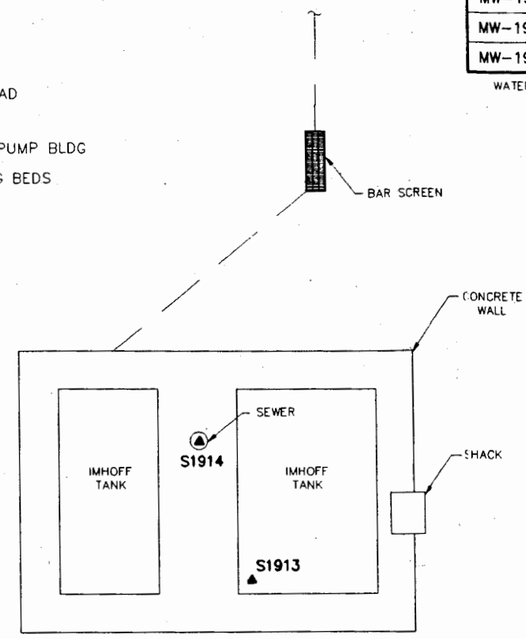
Low concentrations of the pesticide constituents 4,4-DDE and 4,4-DDT were reported above background, but well below the EPA Region III Risk-Based Comparison criteria for Industrial Soil Ingestion and Soil to Air Transfer scenarios.

Metals were detected above the background comparison values in the surface soil sample. The reported cadmium (1560 mg/kg) concentration exceeds the EPA criteria for the Industrial Soil Ingestion scenario. Cadmium within the Imhoff tank may have to be addressed should closure be initiated. Given the condition of the Imhoff tank, Fort Bliss may wish to clean the interior and put back in operation to assist in treating the wastewater generated by the nearby Orogrande Range Camp.

MONITORING WELL ID	TOC ELEV (FT MSL)	NG ELEV (FT MSL)	WATER ELEV (FT MSL)
MW-1901	4078.1	4075.02	4018.95
MW-1902	4071.77	4069.01	4014.21
MW-1903	4088.96	4085.28	4037.66

WATER LEVEL MEASUREMENTS COLLECTED ON 11 DEC, 1996





DETAIL OF ABANDONED IMHOFF TANKS

LEGEND

- ⊗ SB# — SOIL BORING LOCATION
- ⊕ MW# — MONITORING WELL LOCATION
- △ S# — SURFACE SOIL/SEDIMENT SAMPLE LOCATION
- □ SW# — SURFACE WATER SAMPLE LOCATION
- ● WW# — WASTEWATER SAMPLE LOCATION
- ▲ S# — SURFACE SOIL/SEDIMENT SAMPLE LOCATION COLLECTED AS PART OF RFI ADDENDUM, OCTOBER 1997
- 4082 — TOPOGRAPHIC ELEVATION (FT. MSL)
- GROUNDWATER GRADIENT

0 75 150
SCALE IN FEET

NOTE: NEW SAMPLING STATIONS WERE NOT SURVEYED.

MAP SOURCE: THOMPSON PROFESSIONAL GROUP, INC. RFI WORK PLAN – JULY 1996

WESTON® MANAGERS DESIGNERS/CONSULTANTS

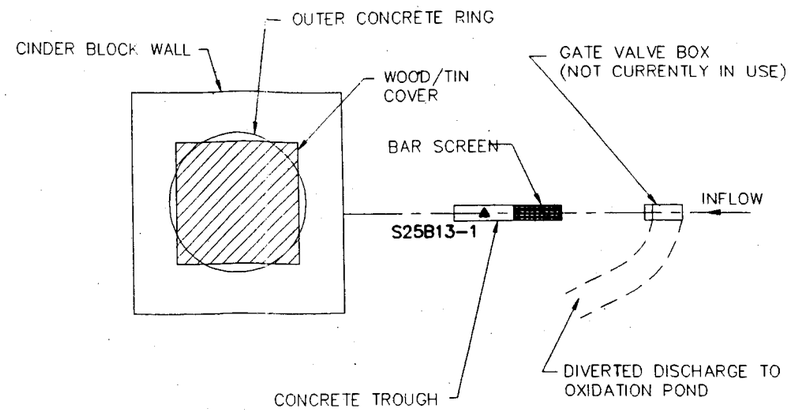
DRAWN	DATE	SCALE	DWG. NO.
JBF	MAY 97	1"=150'	
CHECKED	DATE	W.O. NUMBER	
DH	MAY 97	03886-146-002-0100-00	

FIGURE H-1
FORT BLISS RFI ADDENDUM
SITE PLAN AND SAMPLING LOCATION
McGREGOR RANGE OXIDATION POND
SWMU 19
EL PASO, TEXAS

\COL_V_1\BLISS\BA...ONDS\ADD19S.DJI 1=150 11-18-97 (SWMU1.PGP)

N

SB-25B11
DITCH
4140
4142
4144
4146
4148
4150
4152
4154
390'
S-25B10
ROCKS
1' CONC WALL
36" RCP
TOE SLOPE
SB-25B09
OUTFALL STRUCTURE
S-25B09
SB-25B01
SB-25B02
S-25B08
S-25B07
SW-25B03
SB-25B08
VEGETATION PATCH
S-25B04
HOLE IN PIPE
SB-25B04
DRYING BED
S-25B12
SB-25B10
S-25B11
WW-25B01
SB-25B03
S-25B03
SB-25B06
SW-25B01
8" SAN SWR
S-25B06
APPROXIMATE LOCATION OF BREAK IN PIPE
S-25B02
S-25B05
SW-25B02
SB-25B07
SB-25B05
S-25B01
ABANDONED IMHOFF TANKS (NOT CURRENTLY IN USE) SEE DETAIL THIS SHEET
20' PAVED ROAD



DETAIL OF ABANDONED IMHOFF TANK

LEGEND

- ⊗ SB# — SOIL BORING LOCATION
- △ S# — SURFACE SOIL/SEDIMENT SAMPLE LOCATION
- □ SW# — SURFACE WATER SAMPLE LOCATION
- ● WW# — WASTEWATER SAMPLE LOCATION
- ▲ S# — SURFACE SOIL/SEDIMENT SAMPLE LOCATION COLLECTED AS PART OF RFI ADDENDUM OCTOBER 1997
- 4154 — TOPOGRAPHIC ELEVATION (FT MSL)

0 50 100
SCALE IN FEET

MAP SOURCE: THOMPSON PROFESSIONAL GROUP, INC.
RFI WORK PLAN – JULY 1996

WESTON® MANAGERS DESIGNERS/CONSULTANTS

DRAWN	DATE	SCALE	DWG. NO.
JBF	MAY 97	1"=100'	
CHECKED	DATE	W.O. NUMBER	
DH	MAY 97	03886-146-002-0100-00	

FIGURE H-2
FORT BLISS RFI ADDENDUM
SITE PLAN AND SAMPLING LOCATION
OROGRANDE RANGE
SWMU 25B
EL PASO, TEXAS

COE\FTBLISS\BLISS\P \ADD25BS.BF 1=100 11-07-97 (SWMU1.PCP)