



**Base Realignment and Closure  
Program Management Office West  
1455 Frazee Road, Suite 900  
San Diego, California 92108-4310**

**CONTRACT NO. N62473-06-D-2201  
CTO NO. 0015**

**FINAL  
SUMMARY OF FINDINGS  
EXPLORATORY TRENCHES  
Revision 1  
May 16, 2008**

**INSTALLATION RESTORATION SITE 1  
FORMER NAVAL AIR STATION ALAMEDA  
ALAMEDA POINT, ALAMEDA, CALIFORNIA**

**DCN: ECSD-2201-0015-0005.R1**

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DCN: ECSD-2201-0015-0005.R1

Prepared by:



**TETRA TECH EC, INC.**  
1230 Columbia Street, Suite 750  
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A handwritten signature in black ink, appearing to read 'Kent Weingardt'.

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Kent Weingardt, P.E., P.M.P.  
Project Manager



TRANSMITTAL/DELIVERABLE RECEIPT

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Naval Facilities Engineering Command SW
Ms. Beatrice Appling, AQE.BA
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San Diego, CA 92132-5190
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CTO: 0015
LOCATION: Alameda, CA
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Installation Restoration Site 1, Former Naval Air Station Alameda

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FINAL  
SUMMARY OF FINDINGS  
EXPLORATORY TRENCHES  
INSTALLATION RESTORATION SITE 1

DATED 13 MARCH 2008

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## ABBREVIATIONS AND ACRONYMS

BEI	Bechtel Environmental, Inc.
bgs	below ground surface
cpm	counts per minute
CQC	Contractor Quality Control
CSO	Caretaker Site Office
DON	Department of the Navy
IR	Installation Restoration
NaI	sodium iodide
NAS	Naval Air Station
PQCM	Project Quality Control Manager
RASO	Radiological Affairs Support Office
RCT	Radiological Control Technician
ROICC	Resident Officer in Charge of Construction
RPM	Remedial Project Manager
TCRA	time-critical removal action
TtEC	Tetra Tech EC, Inc.
UXO	unexploded ordnance

## 1.0 INTRODUCTION

This report is a summary of the findings of exploratory trenching performed at Installation Restoration (IR) Site 1 at former Naval Air Station (NAS) Alameda, Alameda, California. The work summarized in this report was conducted for the Department of the Navy (DON) under Contract Task Order 0015 issued under Contract No. N62473-06-D-2201.

### 1.1 SITE HISTORY

IR Site 1 was operated between 1943 and 1956 as the principal site for waste disposal at the former NAS Alameda. The disposal area reportedly received all waste generated at the former NAS Alameda except wastewater, which was discharged directly into Seaplane Lagoon via the storm drain system. Accurate estimates of the amounts and types of waste disposed of at IR Site 1 are not available. The estimated quantity of solid waste ranges from 15,000 to 200,000 tons. Waste materials have included old aircraft engines, cables, scrap metal, waste oil, paint waste, solvents, cleaning compounds, construction debris, ashes from the incinerator located in former Building 68 (demolished in 1961), and low-level radioactive material from the Naval Air Rework Facility. The low-level radioactive material is a result of the application and use of radium-226 as a luminescent agent for switches and instruments on aircraft that were disposed of at IR Site 1.

Depth to groundwater at IR Site 1 ranges from the ground surface to approximately 8 feet below ground surface (bgs) and averages 3 to 5 feet bgs (Bechtel Environmental, Inc. [BEI], 2006).

### 1.2 PURPOSE

Seven former disposal cells are believed to lie within the IR Site 1 landfill (BEI, 2006). In accordance with the Final Addendum to the Final Time-Critical Removal Action Work Plan, hereinafter referred to as the Final Addendum (Tetra Tech EC, Inc. [TtEC], 2007a), 11 exploratory trenches were excavated within the former disposal cells (Figure 1-1). The objectives of these excavations were to better understand the nature of the waste materials present and the estimated waste volume in the IR Site 1 disposal area, to confirm the absence of buried drums, and to characterize any waste material encountered or removed.

## 2.0 EXPLORATORY TRENCHES

Exploratory trench activities were performed from September 5 through September 11, 2007. Eleven trenches were excavated within the IR Site 1 Disposal Area (Figure 1-1). The trenches were located within the seven former landfill disposal cells. The primary activities and procedures related to the trenching activities within IR Site 1 are listed below and discussed in the following sections:

- Notifications and permits
- Preparatory activities and meetings
- Staking the trench endpoints
- Trench excavation and documentation
- Backfilling with trench cuttings, then covering with imported soil and compacting
- Waste management
- Free-release survey and decontamination of equipment and tools

### 2.1 NOTIFICATIONS AND PERMITS

TtEC obtained all necessary authorizations from the DON for completing the exploratory trenching at IR Site 1. Prior to field activities, TtEC notified the Remedial Project Manager (RPM), the Resident Officer in Charge of Construction (ROICC), the Radiological Affairs Support Office (RASO), and the Caretaker Site Office (CSO) about the schedule of the trenching activities.

TtEC maintains a current annual excavation permit from the California Occupational Safety and Health Administration (No. 2004-573713). The site has an existing underground dig alert number that is renewed monthly. All excavations were conducted in accordance with requirements of Title 8, California Code of Regulations, Sections 1539 through 1543, and 29 Code of Federal Regulations, Parts 1910 and 1926. Daily inspections of excavations were performed by a competent person to assess the stability of slopes and excavated areas.

Any additional permits and/or notifications required by regulatory agencies for specific activities conducted under the Final Addendum (TtEC, 2007a) have been addressed in the corresponding subsections or appendices of the Final Time-Critical Removal Action (TCRA) Work Plan (TtEC, 2007b).

## 2.2 PREPARATORY ACTIVITIES AND MEETINGS

A kick-off meeting was held between the DON and TtEC on August 29, 2007. The meeting was held concurrently with the weekly Contractor Quality Control (CQC) meetings. The purpose of the kick-off meeting was to develop a mutual understanding of the removal activities. The following people were requested to attend the kickoff meeting: the RPM, the ROICC, and CSO and RASO representatives. TtEC representatives included the TtEC Project Manager, Site Superintendent, Project Quality Control Manager (PQCM), Project Radiation Safety Officer, and the Site Health and Safety Specialist.

## 2.3 STAKING THE TRENCH ENDPOINTS

On September 4, 2007, Coast Surveying, Inc., surveyed the endpoints of each of the trenches. The endpoints were surveyed in California Zone III state plane coordinates using North American Datum of 1927 as the horizontal datum and National Geodetic Vertical Datum of 1929 as the vertical datum.

The trench locations were sited based on rough field determination utilizing the trench location figure from the Work Plan (included here as Figure 1-1). Physical site features were used to determine a rough approximation of field location in accordance with the figure.

## 2.4 TRENCH EXCAVATION

Seven former disposal cells are believed to lie within the IR Site 1 landfill (BEI, 2006). One of the cells lies beneath the runway and runway apron; three other cells lie partially beneath the runway and/or apron. Seasonal wetlands intersect parts of three other cells. Trenches were not excavated over the runway, on established roads, or within the wetlands areas (Figure 1-1). No more than two trenches were excavated in any one disposal cell.

Excavation of the exploratory trenches commenced on September 5, 2007, and was completed on September 11, 2007. Eleven exploratory trenches were excavated within the former landfill disposal cells. The trenches were excavated one bucket width (approximately 3 feet) to a minimum length of 25 feet.

Prior to commencing trenching excavations, plastic liners were placed on the ground adjacent to the trenches to contain the cap material (approximately 1 to 2 feet thick) and to contain the excavated waste soil removed to the groundwater level. To the extent possible, the soil overlying the waste was segregated from the underlying waste material. The excavated materials were placed a minimum of 3 feet from the excavation edge to permit safe access to the trench to allow completion of photographic/video documentation. During excavation, descriptions of the excavated soil cover as well as the waste material were recorded on the trench log forms (Appendix A). Digital photographic images and video scenes were also taken of the stockpiled material and the trench walls (Appendix B). In the event that waste material was encountered at

the groundwater level, additional material was scraped from the excavation floor and smeared along the trench end wall to further characterize the material and confirm that drums were not located below groundwater. The process continued until the technician determined no additional waste existed at depth.

In accordance with the Final Addendum (TtEC, 2007a), during excavation, an Unexploded Ordnance (UXO) Specialist and Radiological Control Technician (RCT) were on site to monitor for the presence of material potentially presenting an explosive hazard and radiologically impacted soil and debris. The excavated material was placed on the plastic liners and spread out in a 12-inch-thick layer. A scan survey using a sodium iodide (NaI) detector was then performed on the excavated material, which included soil cover and waste material. Static measurements were performed in areas where scan measurements were greater than the investigation level of 6,000 counts per minute (cpm). The investigation level is set at less than 3 standard deviations above background readings for the site as established in the Final TCRA Work Plan (TtEC, 2007b). The static measurements were used to confirm the scan measurement. Material exhibiting radioactivity greater than the investigation level was identified, and this material, as well as any material located within an additional 1 foot extending in all directions, was removed and placed into a plastic sheet draped within an excavator bucket. When the bucket was full, the plastic sheeting was wrapped together and sealed with tape. The "burrito" was then placed in an intermodal bin positioned at the excavation site. Approximately 57 cubic yards of potentially radiologically impacted soil, i.e., soil exhibiting NaI readings above 6,000 cpm along with the surrounding material, was removed from the trenches during the excavation activity (Table 2-1).

Routine radiological scans of the excavator bucket were performed during the excavation process in accordance with the Final Addendum (TtEC, 2007a). At a minimum, the RCT scanned the excavator bucket after every fifth bucket of material was removed from the trench. Prior to the excavator relocating to another trench excavation location or leaving the controlled area, the RCT performed a conditional release survey on the excavator.

No munitions or explosives of concern were discovered during trenching activities. One 5X inert 20-millimeter target practice round was found in Trench 5. (Items categorized as 5X are considered inert, entirely safe, and defined as scrap metal.) The scrap metal was logged and containerized in accordance with procedures in the Final TCRA Work Plan (TtEC, 2007b).

The entire length and depth of the trench were excavated prior to placing backfill material in the trench. Soil/material that exhibited radioactivity greater than the investigation level was not placed back into the trench. In accordance with the Final Addendum (TtEC, 2007a), in situ scan surveys of the excavated trench sidewalls and bottom were not to be performed prior to backfilling the trench.

## **2.5 BACKFILL PLACEMENT AND COMPACTION**

Following completion of excavation and documentation of trench conditions, the trench was backfilled with the non-radiologically impacted excavated soils/materials and compacted. The excavated waste soil was placed in the trench first and then covered with the segregated cap material. For trench areas that remained below grade, trenches were backfilled using Stevens Creek Quarry Fines. The Stevens Creek Quarry Fines have been pre-approved by the DON as an appropriate type and of an appropriate nature to be utilized as fill material at this site.

The excavation cuttings and approved import (as necessary) were placed in 24-inch lifts and compacted with the excavator bucket to an elevation where the backfill could be reached with wheel equipment. Backfilling activities then continued, and the soil was compacted by wheel or track rolling to a firm, unyielding condition and verified by the PQCM. In accordance with the Final Addendum (TtEC, 2007a), no compaction testing was conducted as part of this characterization effort. The area above the trench was backfilled slightly above grade to account for any future settlement and to ensure that ponding does not occur.

Because some excavated soils were determined to be radiologically impacted, a surface scan survey was performed over the trench excavation areas (i.e., the areas where the plastic liners were located and the backfill areas of the trenches) in accordance with the Final Addendum (TtEC, 2007a). The results showed that these areas were below the investigation level and had not been contaminated as a part of these efforts.

## **2.6 WASTE MANAGEMENT**

Radiologically impacted soil and debris, including plastic liners, were removed and disposed of in accordance with the Final TCRA Work Plan (TtEC, 2007b).

## **2.7 DECONTAMINATION OF EQUIPMENT AND FREE-RELEASE SURVEYING**

At the completion of the trenching activities, surveys were conducted according to Appendix D-1, Radiation and Contamination Surveys, and Appendix D-9, Decontamination of Equipment and Tools, of the Final TCRA Work Plan (TtEC, 2007b) on all equipment, tools, and storage areas.

### 3.0 FINDINGS

Seven former disposal cells are believed to lie within the IR Site 1 landfill (BEI, 2006). In accordance with the Final Addendum (TtEC, 2007a), 11 exploratory trenches were excavated within the former disposal cells. An estimated 225 cubic yards of soil was excavated. A summary of the trenching activities, including date excavated, dimensions, description, and radiological details, is included as Table 2-1.

Contrary to the general understanding of the area as a debris disposal site, only trace debris was encountered during exploratory trench excavations. In general, throughout the trenches, soil was observed interspersed with some debris such as concrete, bricks, pipes, glass, and wood. Debris was observed from a very shallow depth (0 to 2 feet bgs) down to groundwater at about 7 to 8 feet bgs. During these investigations, debris was not readily apparent immediately below groundwater. While the overall density of debris intermixed with the soil is much less than would be expected at a landfill, the overall volume of soil and debris mixture is within the range expected, as discussed below.

Based on the results of the exploratory trenching, an attempt was made to better estimate the total amount of waste within the disposal cells at the former landfill. Maximum and minimum volume estimates were calculated for each of the seven waste cells and then summed. The findings indicate the total waste volume within the disposal cells could be between 94,000 and 133,000 cubic yards. Assuming that most of this volume consists of soil and using a generalized density of in situ soil (1.5 tons/cubic yard), this would equate to between 141,000 and 200,000 tons, which is within the range of 15,000 to 200,000 tons estimated in the Feasibility Study Report (BEI, 2006) (refer to Table 3-1 for a breakdown of calculations). The higher number reflects an assumption that there is waste in the cell from the shallowest depth of contact down to the depth where groundwater was encountered. The lower number reflects the assumption that there is debris only between the shallowest depths of contact down through to the deepest depth of contact. No attempt was made to estimate the depth of waste beyond the depth of groundwater; however, in most trenches, waste was not observed to extend below the depth of groundwater. The observation made during trenching supports the correlation of the total mass of the disposal cells, including soil, with the upper end of the estimate in the Feasibility Study Report. The actual mass of wastes within the disposal cells would be expected to be much lower.

While radioactive contamination was confirmed in the excavations, a precise quantification of radiologically impacted soils was not obtained, as this was not an objective of this investigation. Of the total volume excavated, approximately 25 percent was estimated to be potentially radiologically impacted based on characterization methods previously described. However, given the limited capabilities of using only field NaI instrumentation to segregate potentially radiologically impacted from nonimpacted materials, it should not be inferred that the

distribution of radiological contamination in the excavations is consistent throughout the volume that was considered radiologically impacted, nor should it be inferred that this distribution would be consistent throughout the entire site. The actual percentage of radiologically contaminated soil cannot be determined because it was not possible to test all the soil at the site. The efforts conducted here did not attempt to precisely quantify the volume of radiologically impacted soil. The identification of soil that was deemed to be radioactively contaminated was based on limited scanning of the excavated soils, and soil was conservatively removed (overexcavated) in an attempt to ensure full removal of contaminated material.

Based on the results of exploratory trenching, the current findings indicate that intact drums are not present in these areas:

## 4.0 REFERENCES

Bechtel Environmental, Inc. (BEI). 2006. Final Feasibility Study Report, IR Site 1, 1943–1956 Disposal Area, Alameda Point, Alameda, California. February.

Tetra Tech EC, Inc. (TtEC). 2007a. Final Addendum to the Final Time-Critical Removal Action Work Plan, Installation Restoration Sites 1, 2, and 32, Former Naval Air Station Alameda, Alameda Point, Alameda, California. DCN: ECSD-2201-0015-0003. August 30.

—. 2007b. Final Time-Critical Removal Action Work Plan, Installation Restoration Sites 1, 2, and 32, Former Naval Air Station Alameda, Alameda Point, Alameda, California. DCN: ECSD-RAC-IV-07-0232. March 2.

## **TABLES**

## EXPLORATORY TRENCH EXCAVATIONS SUMMARY TABLE

Trench	Date Excavated	Length (feet)	Width (feet)	Depth (feet)	Water level (feet bgs)	Radiologically Impacted Soil	Trench Description	Radiological Details
T-1	9/5/2007	25	3	6	6	1.5 cy	0-6 ft bgs topsoil/sandy silty fill with limited construction debris At 6 ft bgs dark gray clay, "Bay Mud," and water. No drums, no radiological discrete items, no UXO	Field readings up to 20,000 cpm.
T-2	9/5/2007	25	3	8	8	1.5 cy	0-1.5 ft bgs topsoil 1.5-4.5 ft bgs brown sandy soil with wood, glass, and metal 4.5-8 ft bgs gray sandy silt with trace debris. At 5 ft bgs abandoned pipeline runs across trench 8 ft bgs groundwater No drums, no radiological discrete items, no UXO	Field readings up to 7,000 cpm.
T-3	9/7/2007	25	3	8	7	10 cy	0-2.5 ft bgs brown topsoil mixed with minor debris consisting of wood, metal, and rubber 2.5 -7 ft bgs oily, sandy soil and mixed debris, odorous 7 ft bgs groundwater 7-8 ft bgs sandy soil No drums, no radiological discrete items, no UXO	Field readings up to 20,000 cpm were encountered. Note: Field diagram incorrectly stated lack of impacted soil.
T-4	9/7/2007	25	3	7	6.5	2cy	0-1 ft bgs topsoil with some asphalt and wood debris 1-7 ft brown sand with no debris 2-3 ft abandoned pipeline uncovered but not excavated 6.5 ft bgs groundwater No drums, no radiological discrete items, no UXO	Field readings to 22,000 cpm were encountered.
T-5	9/7/2007	25	3	7	7	2cy	0-7 ft topsoil, probably fill, with limited debris (bricks and wood) One small 5 x 20mm UXO scrap 7 ft dark gray clay "Bay Mud" and water No drums, no radiological discrete items, no UXO	Field readings to 72,000 cpm were encountered.
T-6	9/10/2007	25	3	8	7.5	20 cy	0-1.5 ft bgs topsoil with asphalt and metal debris; white small diameter pipeline unearthed but not excavated 1.5-8 ft bgs brown sandy soil with trace mixed debris 7.5 ft groundwater No drums, no radiological discrete items, no UXO	Approximately 20 cy impacted (all soil excavated from trench) - field readings to 78,000 cpm were encountered.
T-7	9/10/2007	25	3	8	8	5cy	0-3 ft topsoil and no debris 3-8 ft sandy loam with no debris 8 ft groundwater No drums, no radiological discrete items, no UXO	Field readings up to 6,800 cpm were encountered.
T-8	9/10/2007	25	3	7	7	None	0-7 ft sandy loam with no debris 7 ft groundwater No drums, no radiological discrete items, no UXO	No soil radiologically impacted - all readings < IL.

## EXPLORATORY TRENCH EXCAVATIONS SUMMARY TABLE

Trench	Date Excavated	Length (feet)	Width (feet)	Depth (feet)	Water level (feet bgs)	Radiologically Impacted Soil	Trench Description	Radiological Details
T-9	9/11/2007	25	3	6.5	6.5	2 cy	0-1.5 ft topsoil with some concrete debris 1.5-6.5 ft sandy loam with large concrete debris (2 cy) 6.5 ft groundwater No drums, no radiological discrete items, no UXO pictures were acquired due to camera malfunction	No Field readings up to 20,000 cpm were encountered.
T-10	9/11/2007	25	3	7	5.5	3 cy	0-1 ft topsoil with roots 1-5 ft minor gravel and rock material in a brown soil matrix 5 ft approximately 3-inch steel (?) pipe crosses trench width 5-6 ft dark brown to black soil with minor debris; abandoned pipeline unearthed but not excavated 6.5 ft groundwater 6-6 ft dark gray clay "Bay Mud" No drums, no radiological discrete items, no UXO Excavation observed by Navy and regulatory agencies	Field readings up to 10,000 cpm were encountered.
T-11	9/11/2007	25	3	8	8	10 cy	0- 3 inches asphalt 3 inches -3 ft brown to tan fine sand with gravel 3 ft encountered two buried abandoned steel (?) pipes that cross the trench width approximately 16 feet south of north edge of trench. Continue excavation north of pipeline 3-8 ft tan to gray sand with wood debris 8 ft groundwater No drums, no radiological discrete items, no UXO, concrete with rebar excavated at bottom of trench	Field readings up to 7,000 cpm were encountered.

**Abbreviations and Acronyms:**

bgs - below ground surface  
 cpm - counts per minute  
 cy - cubic yard  
 ft - foot  
 IL - investigation level  
 mm - millimeter  
 UXO - unexploded ordance

TABLE 3-1

REFUSE VOLUME CALCULATIONS

Trench Location	Area (ft <sup>2</sup> )	Best Case Scenario (ft <sup>3</sup> )	Best Case Scenario (yrd <sup>3</sup> )	Best Case Scenario (tons)	Worst Case Scenario (ft <sup>3</sup> )	Worst Case Scenario (yrd <sup>3</sup> )	Worst Case Scenario (tons)
T-1/T-2	108,996.11	681,225.69	25,230.58	37,845.87	762,972.77	28,258.25	42,387.38
T-3/T-4	70,418.05	281,672.20	10,432.30	15,648.46	475,321.84	17,604.51	26,406.77
T-5/T-10	67,729.69	406,378.14	15,051.04	22,576.56	457,175.41	16,932.42	25,398.63
T-6	37,997.30	303,978.40	11,258.46	16,887.69	303,978.40	11,258.46	16,887.69
T-7	67,663.89	0.00	0.00	0.00	541,311.12	20,048.56	30,072.84
T-8/T-9	54,764.79	177,985.57	6,592.06	9,888.09	369,662.33	13,691.20	20,536.80
T-11	86,059.88	688,479.04	25,499.22	38,248.84	688,479.04	25,499.22	38,248.84
Total Refuse Removal		2,539,719.04	94,063.67	141,095.50	3,598,900.91	133,292.63	199,938.94

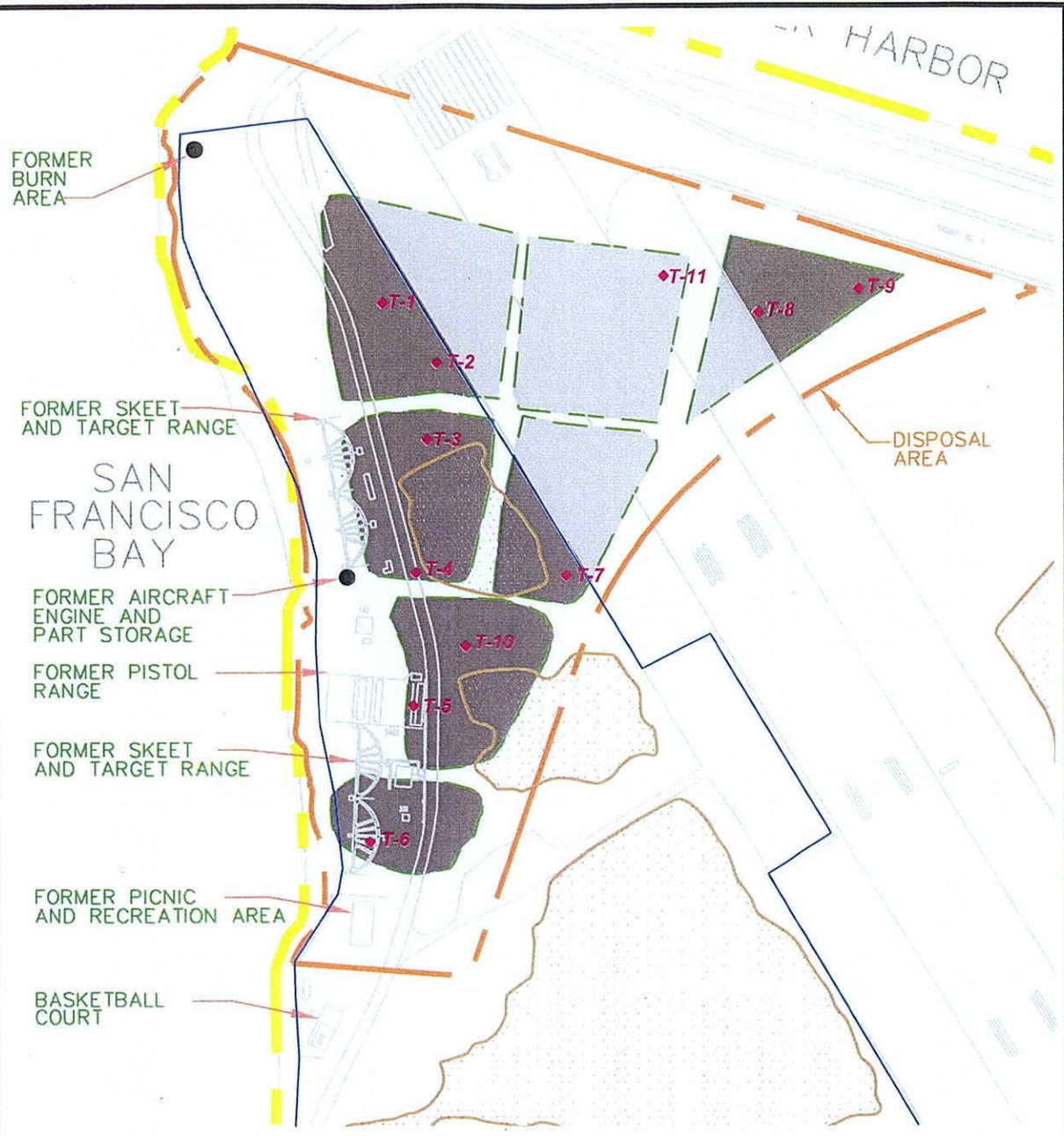
Trench Location	Refuse Depth (ft.)	
	Best Case Scenario	Worst Case Scenario
T-1	6.00	6.00
T-2	6.50	8.00
T-3	7.00	7.00
T-4	1.00	6.50
T-5	7.00	7.00
T-6	8.00	8.00
T-7	0.00	8.00
T-8	0.00	7.00
T-9	6.50	6.50
T-10	5.00	6.50
T-11	8.00	8.00

Notes:

1. For cells that consist of two samples; the calculations were made assuming that the area would be split 50/50 between the two samples for the volume calculations
2. The areas of the cells were calculated using Autocad.
3. The refuse depth for each cell was determined from the results found in Table 2-1.
4. The Best Case Scenario Depth was determined by assuming that there would only be debris found in the depths specified in Table 2-1.
5. The Worst Case Scenario Depth was determined by assuming that debris would be encountered all the way down to the water table.

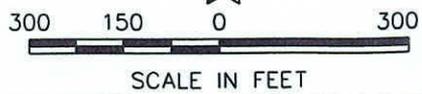
## FIGURES

DRAWING NO: 000411.DWG  
 DCN: ECSD-2201-0015-0005.R1  
 CTO: #0015  
 APPROVED BY: KW  
 CHECKED BY: LB  
 REVISION: 0  
 DRAWN BY: MD  
 DATE: 10/19/07



LEGEND

- IR SITE 1 AND 32 BOUNDARIES
- DISPOSAL AREA BOUNDARY
- SEASONAL WETLAND BOUNDARY
- RMA BOUNDARY
- TRENCH LOCATIONS
- SEASONAL WETLAND AREA
- DISPOSAL CELL



**Figure 1-1**  
**TRENCH LOCATIONS**  
 IR SITE 32 AND THE SHORELINES OF IR SITES 1 AND 2  
 ALAMEDA POINT - ALAMEDA, CA



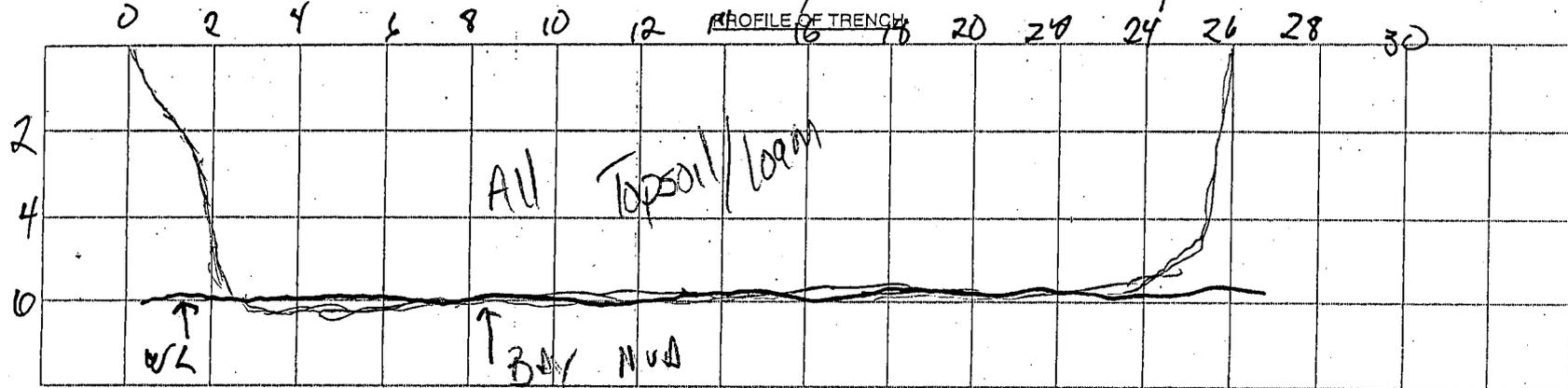
TETRA TECH EC, INC.

**APPENDIX A**  
**TRENCH LOGS**

**TRENCH LOG**

Project: RAC IV, CTO 15, Alameda

TRENCH: <u>T-15-01</u>	LENGTH: <u>25'</u>	EQUIPMENT: <u>250 excavator</u>	LOCATION: <u>Alameda</u>
	WIDTH: <u>3'</u>	BUCKET SIZE: <u>3' 2x</u>	DATE: <u>9/5/07</u>
	DEPTH: <u>6'</u> (Avg)	OPERATOR: <u>Steve</u>	LOGGED BY: <u>G. Hrybko</u>
DESCRIPTION & REMARKS: <u>START: 0915 FINISH: 1020</u> <u>0-6' Topsoil - limited debris</u> <u>6' - Bay mud &amp; water table reached</u> <u>No OXO NO DRUMS Soil w/ elevated RAD readings</u>			PLAN VIEW SKETCH OF TRENCH: 

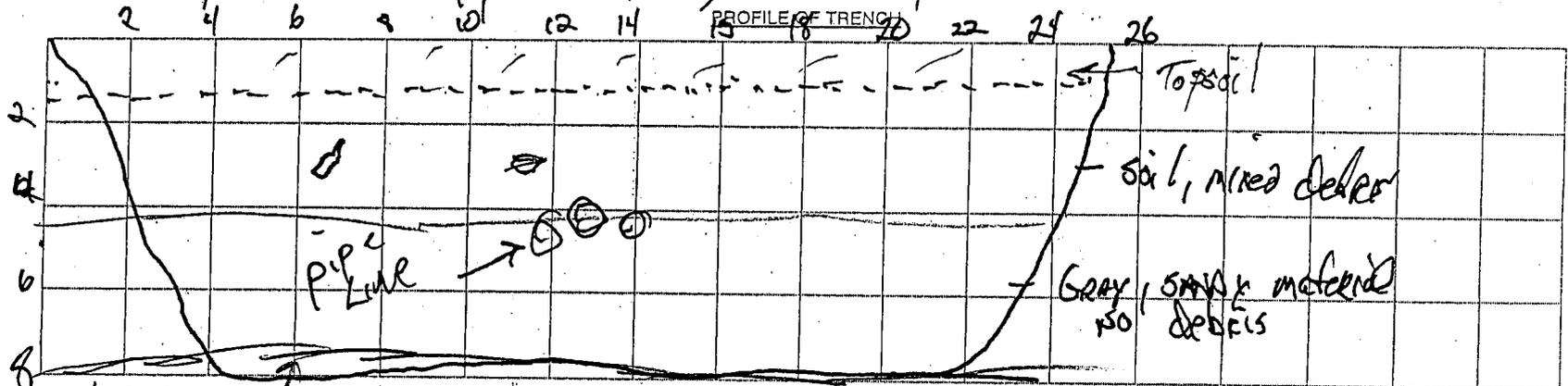


HORIZONTAL SCALE: \_\_\_\_\_ VERTICAL EXAGGERATION: \_\_\_\_\_ ORIENTATION: \_\_\_\_\_

TRENCH LOG

Project: RAC IV, CTO 15, Alameda

TRENCH: <u>T-015-02</u>	LENGTH: <u>25'</u>	EQUIPMENT: <u>350 Excavator</u>	LOCATION: <u>Alameda</u>
	WIDTH: <u>3'</u>	BUCKET SIZE: <u>3' 2cy</u>	DATE: <u>9/9/02</u>
	DEPTH: _____ (Avg)	OPERATOR: <u>Steve</u>	LOGGED BY: <u>L. G. [unclear]</u>
DESCRIPTION & REMARKS: <u>STARTED: 1300 Finished - WATER LEVEL - 1445</u> <u>0-1.5' Topsoil 1.5'</u> <u>1.5'-4.5' - <del>Black</del> sandy soil - MIXED debris (wood, glass, metal)</u> <u>4.5' - 8' - Gray, SANDY soil, little debris</u> <u>- Cut through abandoned pipeline APPROX 5' - SAND is probably backfill</u>			PLAN VIEW SKETCH OF TRENCH: 



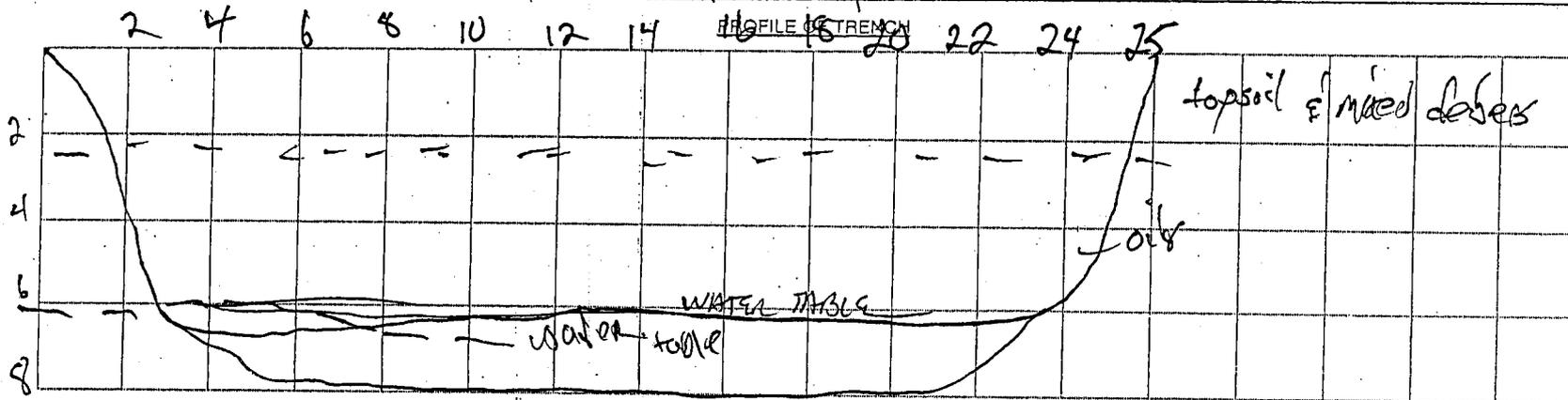
water level  
 HORIZONTAL SCALE: 1:2      VERTICAL EXAGGERATION: 1:2      ORIENTATION: N/S

NO OXO, 1 DRUM CARCASS, SMALL AMT RAD impacted soil

**TRENCH LOG**

Project: RAC IV, CTO 15, Alameda

TRENCH: <u>T-015-03</u>	LENGTH: <u>25'</u>	EQUIPMENT: <u>350 excavator</u>	LOCATION: <u>Alameda</u>
	WIDTH: <u>3'</u>	BUCKET SIZE: <u>2cy</u>	DATE: <u>9/06/07 - 9/07</u>
	DEPTH: _____ (Avg)	OPERATOR: <u>Steve</u>	LOGGED BY: <u>L. Humphreys</u>
DESCRIPTION & REMARKS: <u>START: 0830 - secured 0915 9/7/07 steel 0800</u> <u>0-2 1/2' - topsoil mixed debris - wood, metal, rubber</u> <u>2 1/2-7' - oily, sandy soil and mixed debris</u> <u>water table - 7' - Dig to 8' Bgs - no change -</u> <u>No drums, No UXO, Rd unpaved soil - lots</u>			PLAN VIEW SKETCH OF TRENCH: 



HORIZONTAL SCALE: \_\_\_\_\_

VERTICAL EXAGGERATION: \_\_\_\_\_

ORIENTATION: N-S

S

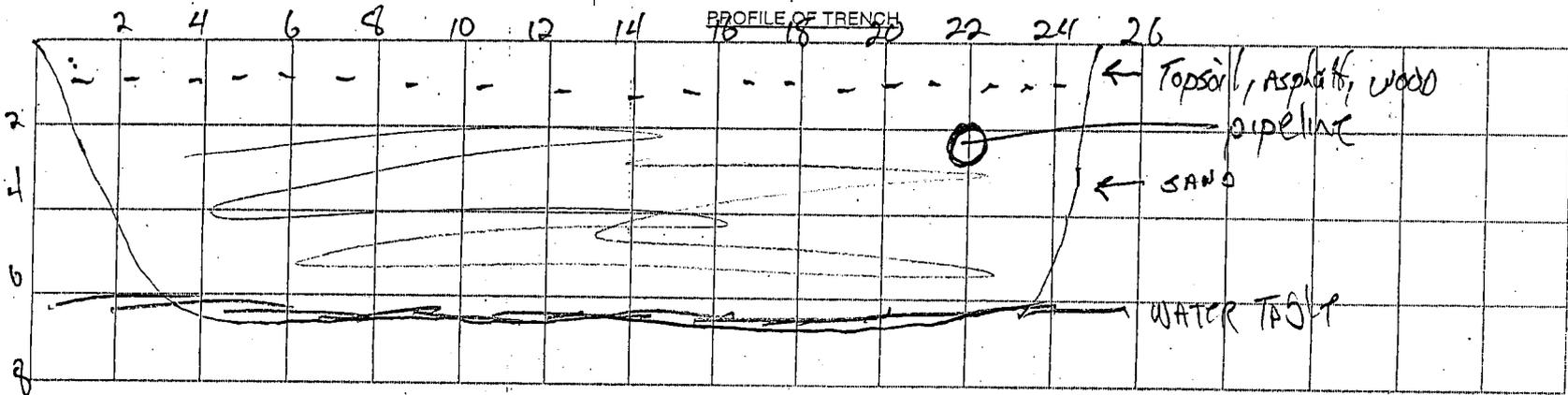
N

FIGURE 1-2

**TRENCH LOG**

Project: RAC IV, CTO 15, Alameda

TRENCH: <u>T-015-04</u>	LENGTH: <u>25'</u>	EQUIPMENT: <u>430 Backho</u>	LOCATION: <u>30 Alameda</u>
	WIDTH: <u>2'</u>	BUCKET SIZE: <u>3'</u>	DATE: <u>9/6/07-9/10/07</u>
	DEPTH: <u>7'</u> (Avg)	OPERATOR: <u>Mike</u>	LOGGED BY: <u>L. Ny</u>
DESCRIPTION & REMARKS: <u>START: 0830 - SECURE 0915 a/7/07 - START 0800</u> <u>0-1' - topsoil &amp; asphalt debris - wood</u> <u>1'-7' - SAND - NO debris</u> <u>water table - 6 1/2'</u> <u>NO UVO, NO DEUMS, NO RAD</u> <u>Finish - 0822</u>			PLAN VIEW SKETCH OF TRENCH: 



HORIZONTAL SCALE: \_\_\_\_\_

VERTICAL EXAGGERATION: \_\_\_\_\_

ORIENTATION: E-W

W

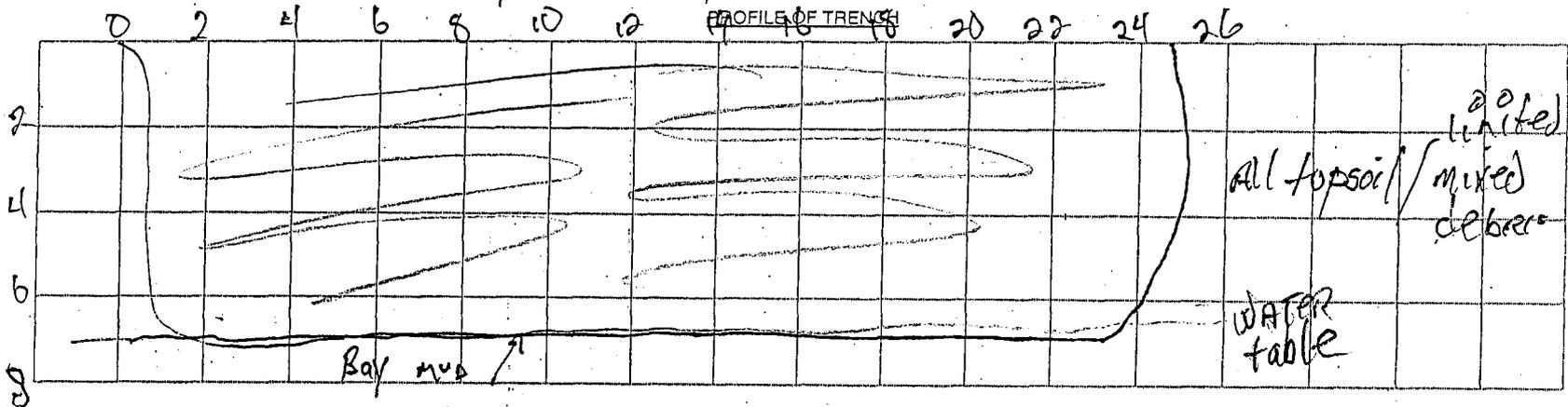
E

FIGURE 1-2

**TRENCH LOG**

Project: RAC IV, CTO 15, Alameda

TRENCH: <u>T-15-05</u>	LENGTH: <u>25'</u>	EQUIPMENT: <u>430E Backhoe</u>	LOCATION: <u>Alameda Pt</u>
	WIDTH: <u>3'</u>	BUCKET SIZE: <u>3'</u>	DATE: <u>8/2/07</u>
	DEPTH: <u>7'</u> (Avg)	OPERATOR: <u>Steve</u>	LOGGED BY: <u>L. Humphre</u>
DESCRIPTION & REMARKS: <u>Starts: 1025 Finished: 1410</u> <u>0-7' - topsoil with limited debris (bricks, wood) - probably fill</u> <u>Start of Bay AVO</u>			PLAN VIEW SKETCH OF TRENCH: 
<u>NO drums, NO OXO, SOME RAD AFFECTED SOIL</u>			



HORIZONTAL SCALE: 1-2

VERTICAL EXAGGERATION: 1-2

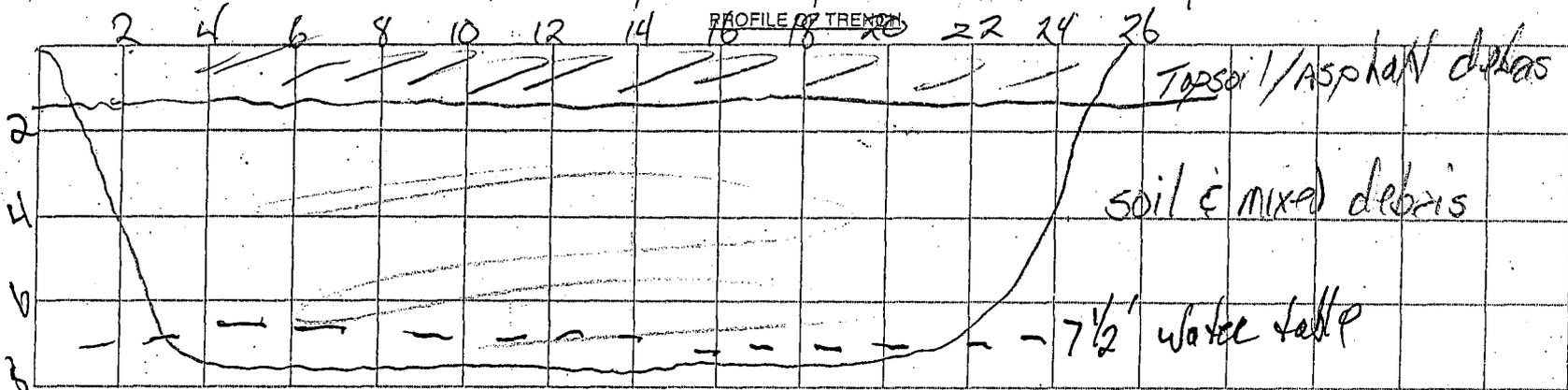
ORIENTATION: N-S

FIGURE 1-2

**TRENCH LOG**

Project: RAC IV, CTO 15, Alameda

TRENCH: <u>T-016-06</u>	LENGTH: <u>25'</u>	EQUIPMENT: <u>430E Backhoe</u>	LOCATION: <u>Alameda Pt</u>
	WIDTH: <u>3'</u>	BUCKET SIZE: <u>3'</u>	DATE: <u>9/10/07</u>
	DEPTH: <u>7 1/2</u> (Avg)	OPERATOR: <u>MT Steep</u>	LOGGED BY: <u>LA</u>
DESCRIPTION & REMARKS: <u>Start: 0817</u> <u>Finish: 1510</u> <u>0 - 1 1/2' - top soil, asphalt debris - some metal</u> <u>1 1/2 - 7 1/2 soil &amp; mixed debris (metal, wood, glass, etc)</u> <u>water table: 7 1/2'</u> <u>No Dams, No UXO, All soil was RAD impacted</u>			PLAN VIEW SKETCH OF TRENCH: 



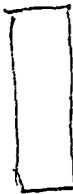
HORIZONTAL SCALE: 1:2'

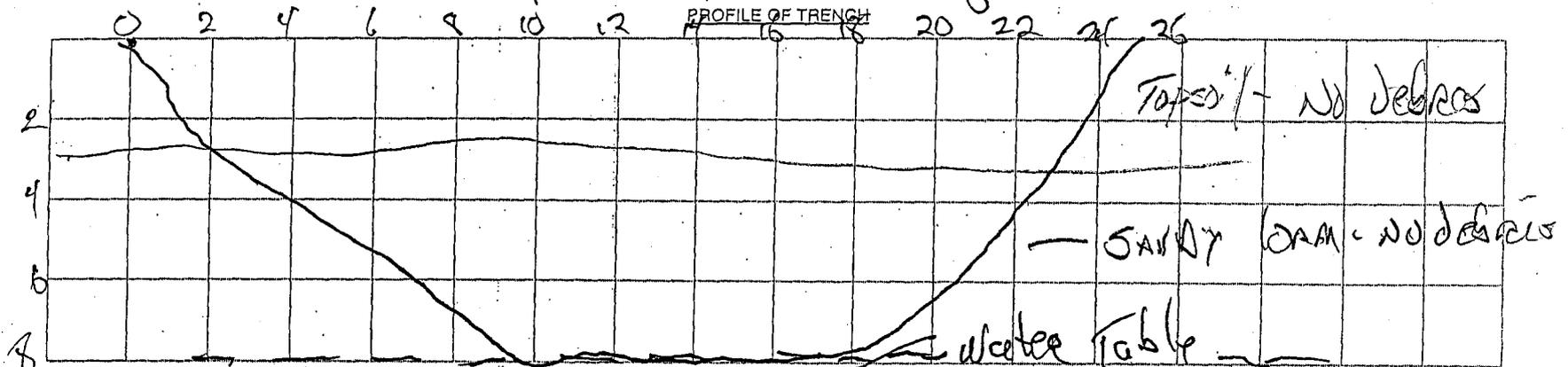
VERTICAL EXAGGERATION: 1:2'

ORIENTATION: N-S

**TRENCH LOG**

Project: RAC IV, CTO 15, Alameda

TRENCH: <u>7-015-07</u>	LENGTH: <u>25'</u>	EQUIPMENT: <u>350 Excavator</u>	LOCATION: <u>Alameda</u>
	WIDTH: <u>3'</u>	BUCKET SIZE: <u>3'</u>	DATE: <u>9/10/07</u>
	DEPTH: <u>8'</u> (Avg)	OPERATOR: <u>Mike</u>	LOGGED BY: <u>hlf</u>
DESCRIPTION & REMARKS: <u>Started: 0859</u> <u>Finished: 1010</u> <u>0-3': topsoil, NO DEBRIS</u> <u>3'-8' SANDY LOAM - NO DEBRIS</u> <u>water table - 8'</u> <u>NO TREES, NO UXO, small amount of RAO soil</u>			PLAN VIEW SKETCH OF TRENCH: 



HORIZONTAL SCALE: 1-2'

VERTICAL EXAGGERATION: 1-2'

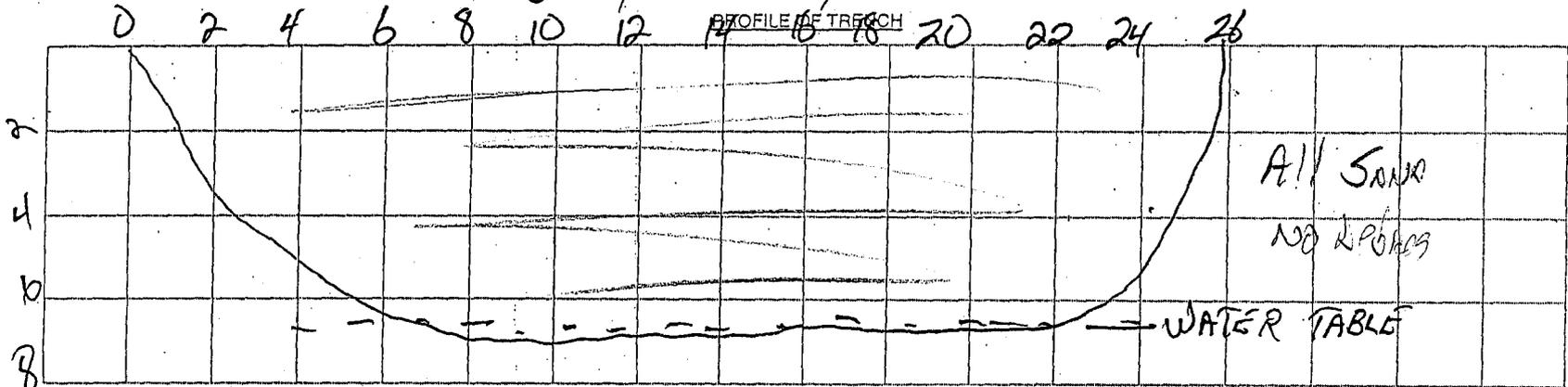
ORIENTATION: N-S

FIGURE 1-2

**TRENCH LOG**

Project: RAC IV, CTO 15, Alameda

TRENCH: <u>T-015-08</u>	LENGTH: <u>25'</u>	EQUIPMENT: <u>430E Excavator</u>	LOCATION: <u>Alameda P</u>
	WIDTH: <u>3'</u>	BUCKET SIZE: <u>3'</u>	DATE: <u>9/10/07</u>
	DEPTH: <u>7'</u> (Avg)	OPERATOR: <u>Steve</u>	LOGGED BY: <u>LN</u>
DESCRIPTION & REMARKS: <u>START 1457 FINISH 1530</u> <u>0-7' All SAND, NO debris</u> <u>water table - 2'</u>  <u>No DEbris, No Rnd, No UXD</u>			PLAN VIEW SKETCH OF TRENCH: 



HORIZONTAL SCALE: 1-2'

VERTICAL EXAGGERATION: 1-2'

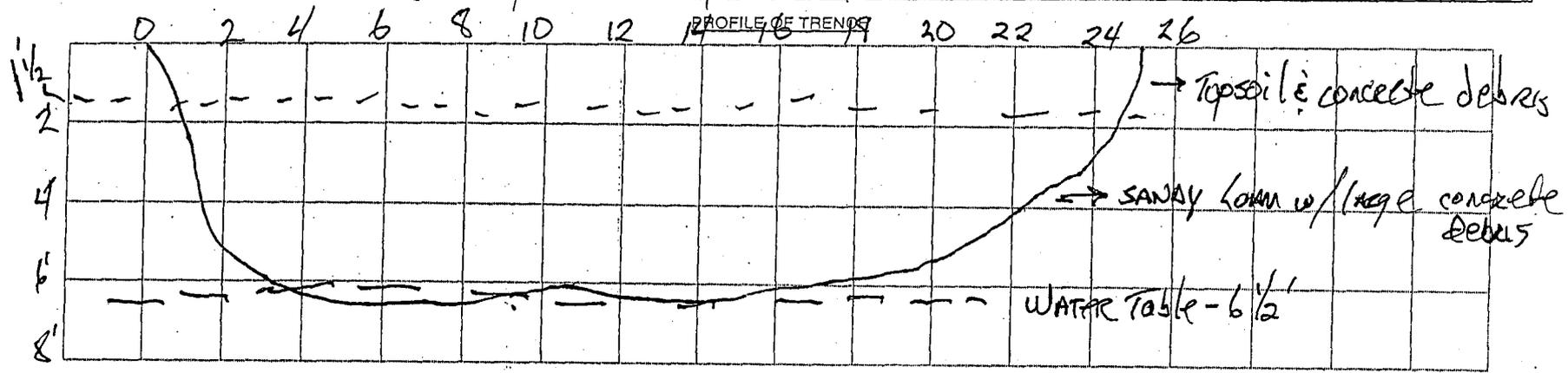
ORIENTATION: N-S

FIGURE 1-2

TRENCH LOG

Project: RAC IV, CTO 15, Alameda

TRENCH: <u>T-015-09</u>	LENGTH: <u>25'</u>	EQUIPMENT: <u>430 Backhoe</u>	LOCATION: <u>Alameda Pk</u>
	WIDTH: <u>3'</u>	BUCKET SIZE: <u>3'</u>	DATE: <u>9/11/07</u>
	DEPTH: <u>6 1/2'</u> (Avg)	OPERATOR: <u>Steve</u>	LOGGED BY: <u>LX</u>
DESCRIPTION & REMARKS: <u>Start: 0826 Finished: 1010</u> <u>0-1 1/2' - Topsoil w/ concrete debris</u> <u>1 1/2'-6 1/2' - SANDY loam w/ large concrete debris &amp; some wood</u> <u>Water Table - 6 1/2'</u> <u>No drums, No UXO, Small amt of Rad Soil</u>			PLAN VIEW SKETCH OF TRENCH: 



HORIZONTAL SCALE: 1" = 2'      VERTICAL EXAGGERATION: 1" = 2'      ORIENTATION: N-S

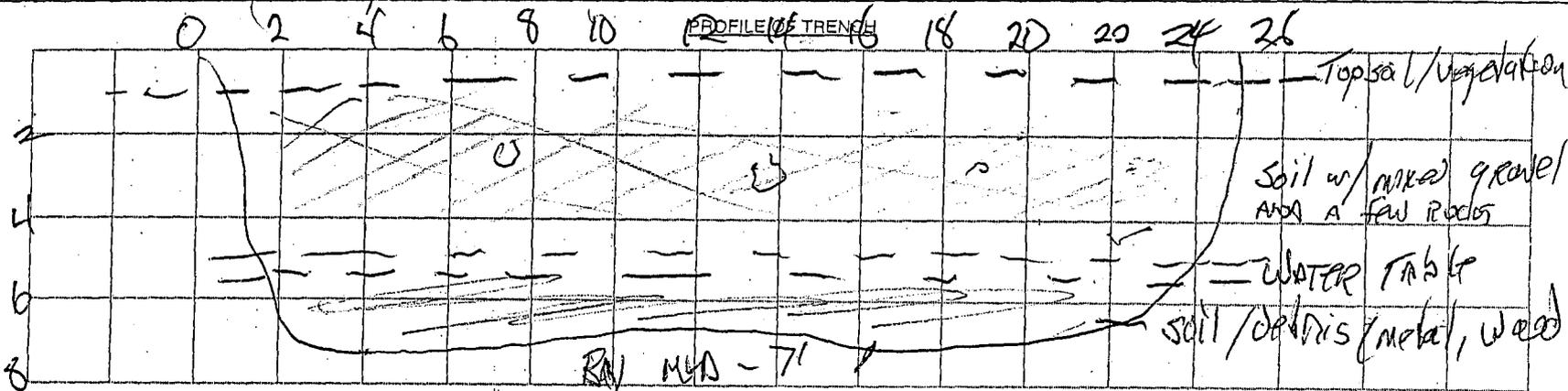
S  N

FIGURE 1-2

TRENCH LOG

Project: RAC IV, CTO 15, Alameda

TRENCH: <u>T-015-10</u>	LENGTH: <u>25'</u>	EQUIPMENT: <u>350 EXCAVATOR</u>	LOCATION: <u>Alameda Pk</u>
	WIDTH: <u>3'</u>	BUCKET SIZE: <u>3'</u>	DATE: <u>9/1/07</u>
	DEPTH: _____ (Avg)	OPERATOR: <u>Mike</u>	LOGGED BY: <u>LV</u>
DESCRIPTION & REMARKS: <u>START: U20</u> <u>Finish 1320 - 7'</u> 0-1' - Topsoil/vegetation 1'-5' soil w/ mixed gravel & a few larger rocks 5'-6' dark soil, debris → WATER TABLE: 5 1/2' Box MUA 7' No drums, No UXO			PLAN VIEW SKETCH OF TRENCH: 



HORIZONTAL SCALE: 1-2'

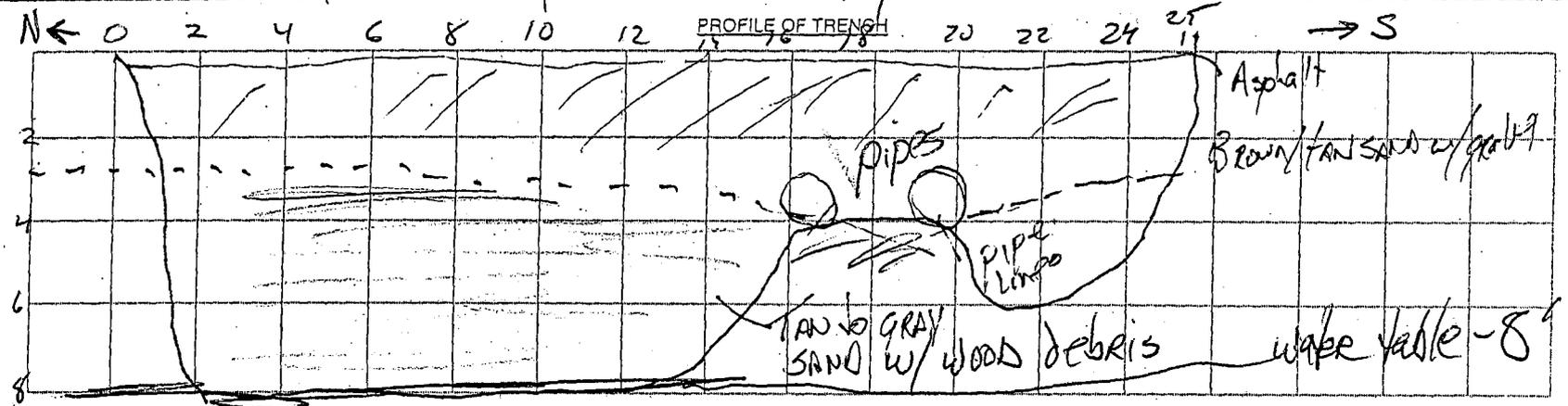
VERTICAL EXAGGERATION: 1-2'

ORIENTATION: E-W

TRENCH LOG

Project: RAC IV, CTO 15, Alameda

TRENCH: <u>11</u>	LENGTH: <u>25</u>	EQUIPMENT: <u>CM 430 E BACKHOE</u>	LOCATION: <u>T-14 EAST SIDE</u>
	WIDTH: <u>3'</u>	BUCKET SIZE: <u>3'</u>	DATE: <u>9/11/07</u>
	DEPTH: _____ (Avg)	OPERATOR: <u>STEVE DUGGON</u>	LOGGED BY: <u>V. R. M.</u>
DESCRIPTION & REMARKS: <u>0-3" BCS Asphalt @ 1418 ft</u> <u>@ 3' - Brown to tan fine silt w/ gravel - RAO HITS -</u> <u>3'-8' - SAND (Gill) AND GRAY SAND with some wooden debris - telephone poles</u> <u>Water table - 8'</u> <u>No drums, no WD, @ some RAO impacted soil</u>			PLAN VIEW SKETCH OF TRENCH:

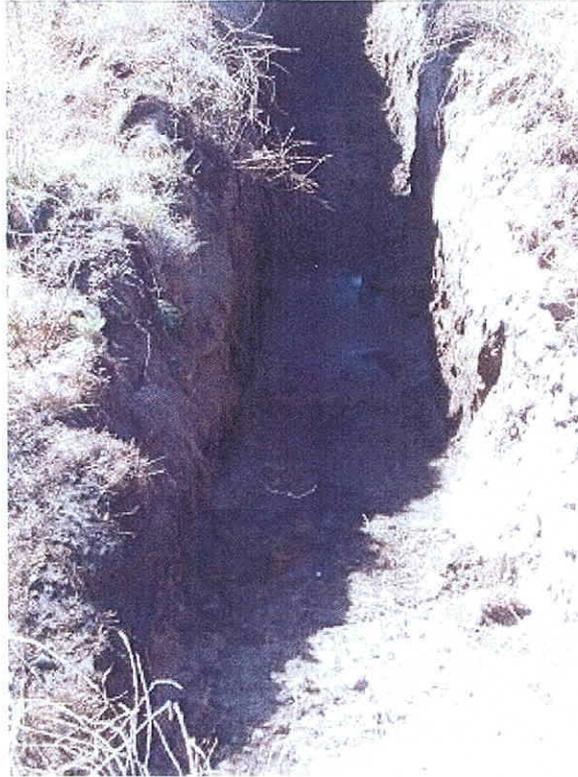


HORIZONTAL SCALE: 1-2'      VERTICAL EXAGGERATION: 1-2'      ORIENTATION: N-S

**APPENDIX B**  
**PHOTOGRAPHS/VIDEO LOG**  
**(VIDEO LOG PROVIDED ON CD ONLY)**

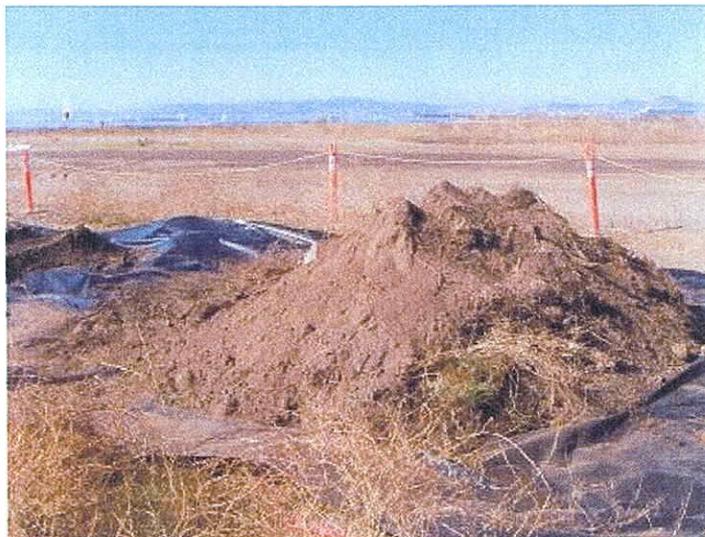
SEPTEMBER 5, 2007 PHOTOS

**Trench 1**



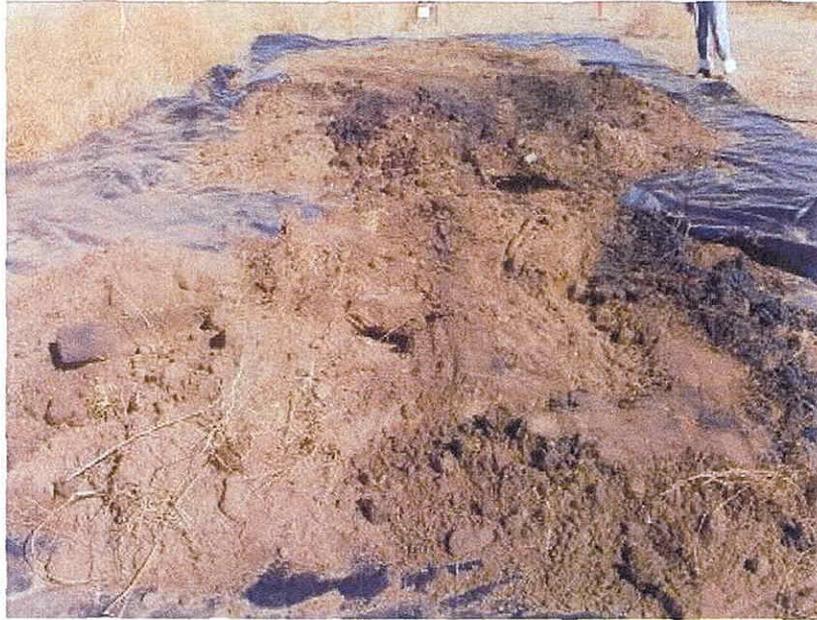
Trench 1 – Groundwater and Bay Mud at bottom of excavation. Trace debris only found in excavation.

**Trench 2**



Trench 2 – Sandy Silt soil with only a trace of debris

SEPTEMBER 5, 2007 PHOTOS



Trench 2 – Brown and dark gray soil with trace debris



Trench 2 – Typical setup using a Cat 350 excavator with a 3-foot wide bucket. Plastic sheeting placed on both sides of trench to contain soil cuttings.

SEPTEMBER 5, 2007 PHOTOS



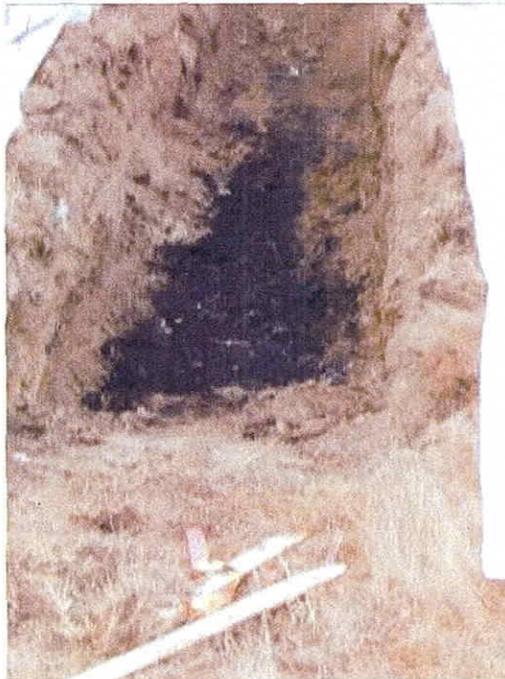
Trench 2 – Only trace debris was observed in excavation. A drum carcass was found in debris (not shown). No top or bottom third of drum body, which was highly rusted and corroded.

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Trench 3



Trench 3 – Dark gray to black soil encountered with debris at 2.5 feet below ground surface

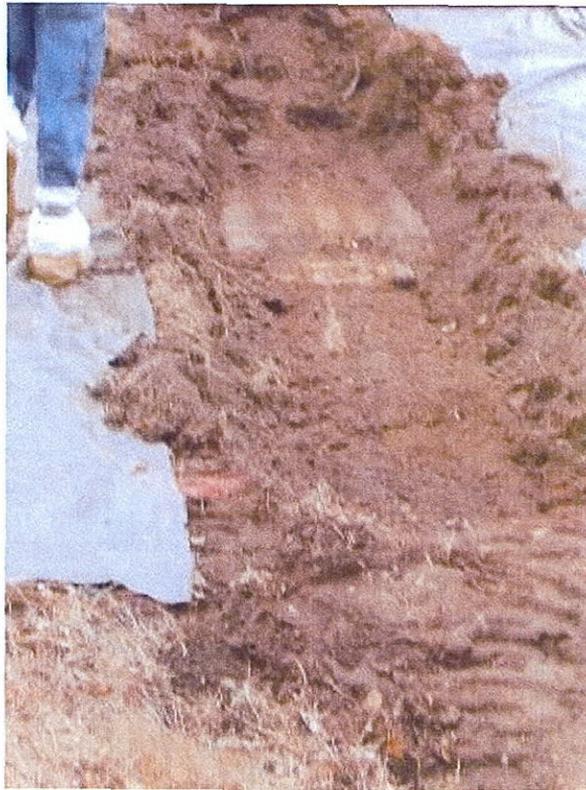


Trench 3 – Dark gray to black soil with debris

SEPTEMBER 7, 2007 PHOTOGRAPHS



Trench 3 – Cat 430 backhoe with 3-foot bucket. Typical work setup with plastic sheeting.



Trench 3 – Note typical foot protection of laborer working in radiologically contaminated area

SEPTEMBER 7, 2007 PHOTOGRAPHS



Trench 3 – An old rubber fuel cell removed from the dark gray soil zone. According to CSO, these cells were commonly used during the period the base was open.



Trench 3 – Radiation Control Technician (RCT) with a sodium iodide (NaI) detector monitoring the soil for radiological contamination. Lift is less than 12 inches.

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Trench 3 – Groundwater at 7 ft bgs. Dark gray soil with mixed debris from 2.5 to 7 ft bgs. Groundwater at 7 ft bgs and gray sandy soil from 7 to 8 ft bgs with no debris.



Trench 3 – Laborer has placed radiologically contaminated soil in the plastic burrito within the Cat 950 loader bucket and is securing plastic before transporting load to intermodal bin.

## SEPTEMBER 7, 2007 PHOTOGRAPHS



Trench 3 – Crews have completed excavation and have placed the nonimpacted soil and debris from excavation back into trench. The material was compacted using the excavator bucket. Crew is currently picking up plastic to place in an intermodal bin. One side of excavation trench has been cleaned. Note the remaining excavation is below grade due to radiologically impacted soil having been removed. The remaining portion of the trench will be backfilled with “Quarry Fines,” the approved backfill from the site. The material will be delivered in a dump truck, placed in the trench, and compacted with the excavator bucket.



Trench 3 – Removing plastic, which will be placed within the intermodal bin

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Trench 4



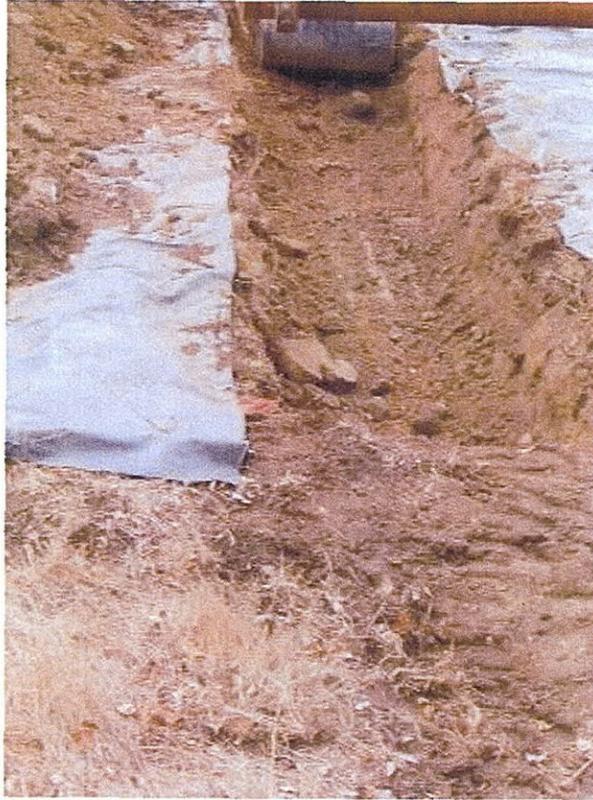
Trench 4 – Excavated trench. Trace debris. Gray sand at bottom of trench.



Trench 4 – Groundwater at final depth. Trace debris associated with trench.

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Trench 5



Trench 5 – Beginning of excavation. Plastic sheeting in place and used to contain soil cuttings.



Trench 5 – RCT and laborer prepare bucket for “burrito wrap” of radiologically impacted soil

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Trench 5 – The former pistol range area. Concrete near surface from former firing line.

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Trench 6

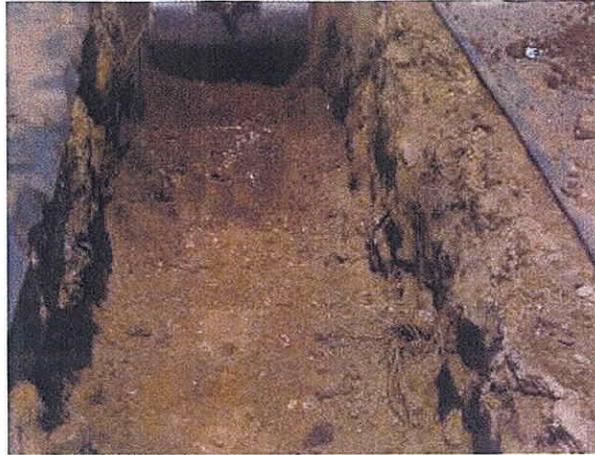


Trench 6 – Typical excavation



Trench 6 – Dark brown soil with rock and trace debris

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Trench 6 – Debris in trench. Note exposed wire in trench wall.



Trench 6 – RCT checking soil readings in excavator bucket



Trench 6 – Plastic burrito in loader bucket. Radiologically impacted soil has been placed inside.

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Trench 6 – Loader bucket in position. Cat 430 backhoe spreading out scoop of soil on plastic sheeting.



Trench 6 – A typical soil layer spread out. Once 5 scoops are spread to a layer no thicker than 12 inches, RCT and UXO technicians will survey layer.

SEPTEMBER 10, 2007 PHOTOGRAPHS



Trench 6 – Soil layer on plastic sheeting



Trench 6 – Excavation of the trench



Trench 6 – Radiologically impacted soil in plastic burrito

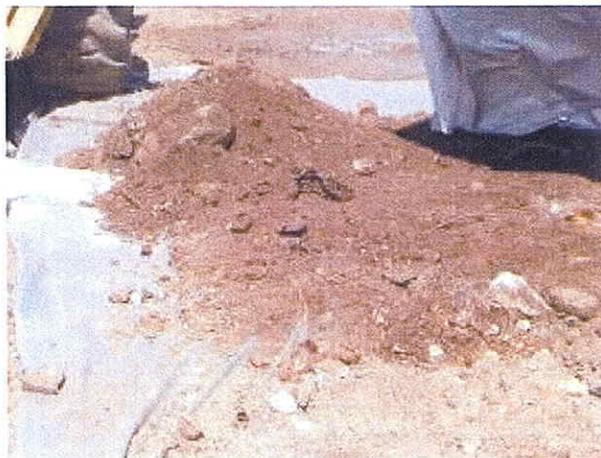
SEPTEMBER 10, 2007 PHOTOGRAPHS



Trench 6 – Typical soil with trace debris



Trench 6 – Radiologically-impacted soil being placed into plastic burrito



Trench 6 – Soil with trace metal debris and rock

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Trench 6 – Typical trench excavation



Trench 6 – The Cat 350 excavator bucket. Note numbers on side. Used by technicians to gauge depth of excavation to avoid workers standing near excavation.

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Trench 6 – The Cat 350 excavator used to perform work



Trench 6 – Groundwater at bottom of excavation



Trench 6 – Groundwater at bottom of excavation

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Trench 7



Trench 7 – Cat 950 loader spreading and compacting fill material over the top of the former excavation



Trench 7 – Completed excavation. Import soil mounded and compacted over former excavation.

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Trench 7 – Completed excavation



Trench 7 – Cat 430 backhoe wheel rolling the top of the excavation

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Trench 8



Trench 8 – Typical fine sandy soil in excavation. Trace debris only. Note delineators with rope and signage used to demark the radiological work area.



Trench 8 – Cat 430 backhoe beginning work

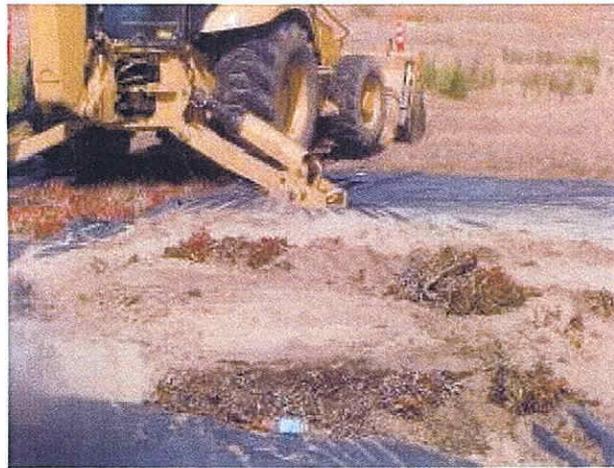


Trench 8 – Cat 430 backhoe

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Trench 8 – Cat 430 backhoe



Trench 8 – Sandy topsoil spread on plastic sheeting



Trench 8 – Sandy topsoil

SEPTEMBER 10, 2007 PHOTOGRAPHS



Trench 8 – Sandy soil, no debris



Trench 8 – Homogeneous soil throughout excavation

Trench 10



Trench 10 – Typical setup



Trench 10 – Excavated soil on plastic sheeting.



Trench 10 – Excavated trench approximately 2 feet in depth

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Trench 10 – Excavated soil on plastic sheeting being checked by the RCT



Trench 10 – Regulators observing excavation work



Trench 10 – Regulators observing work activities

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Trench 10 – Excavated soil spread out on plastic, which would then be checked by RCT and Site Unexploded Explosive Ordnance Supervisor (SUXOS)



Trench 10 – Regulatory group



Trench 10 – Partial excavation. Trench had only trace debris.

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Trench 10 – RCT taking radioactivity reading of soil in 350 excavator bucket



Trench 10 – Typical excavation



Trench 10 – RCT taking readings

SEPTEMBER 11, 2007 PHOTOGRAPHS



Trench 10 – Excavated soil. No debris.

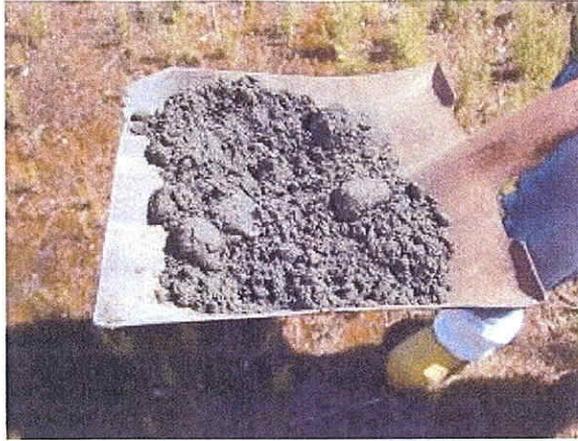


Trench 10 – RCT taking readings. Note large boulders removed from excavation.



Trench 10 – The excavated soil fairly homogeneous and containing only trace debris

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Trench 10 – Discolored gray soil. Soil was shown to regulators. Nonodorous.



Trench 10 – RCT identifies radiologically impacted soil which will then be removed from the stockpile by the laborer with the shovel and placed into the plastic burrito.



Trench 10 – Plastic burrito

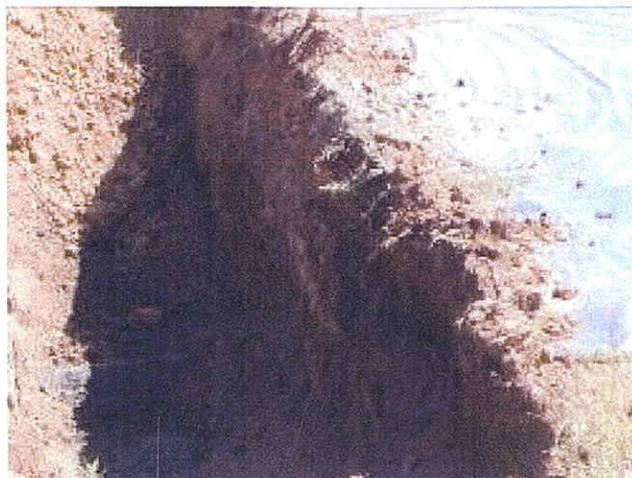
SEPTEMBER 11, 2007 PHOTOGRAPHS



Trench 10 – Laborer places radiologically impacted soil into plastic burrito



Trench 10 –An abandoned pipeline crossing the trench near excavation bottom



Trench 10 – Abandoned pipeline exposed across excavation

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Trench 10 – Groundwater in soil immediately below abandoned pipeline



Trench 10 – Groundwater



Trench 10 – Sandy gray soil that was excavated below waterline and spread on trench wall to confirm that the limited debris zone at the water level did not extend to depth. Discoloration associated with suspected anaerobic conditions at the site.

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Trench 10 – Groundwater



Trench 10 – Groundwater



Trench 10 – Typical soil removed from the trench

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Trench 11



Trench 11 – RCT taking readings on the excavated material



Trench 11 – Located in the asphalt shoulder adjacent to the runway. RCT checking material.

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Trench 11 – Radiologically impacted soil being placed in the Cat 430 bucket in which a plastic burrito has been prepared



Trench 11 – Radiologically impacted soil in plastic burrito



Trench 11 – Concrete debris in excavation

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Trench 11 – The removed concrete debris with rebar.



Trench 11 – RCT checks excavator bucket for readings. The material will then be spread on plastic and scanned again. If the material is radiologically impacted, the soil would be placed in the intermodal bin seen in the background.

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Trench 11 – Excavator bucket has encountered an abandoned pipeline that crosses the bottom of the excavation



Trench 11 – Two abandoned pipelines crossing excavation the bottom. Excavation resumed north of the pipelines to groundwater.



Trench 11 – Mostly silty sand material with trace rock and debris.

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Trench 11 – Excavated soil. Trace debris only.



Trench 11 – Groundwater