Decision Document

Solid Waste Management Unit B-12
Building 101-10 Catchment Pit
Hawthorne Army Depot
Hawthorne, Nevada

July 2000

Hawthorne Army
Depot

Decision Document SWMU B-12

July 2000

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ENVIRONMENTAL PROTECTION

The selected remedy is protective of human health and the environment. It has been shown that a complete pathway to human health and the environment does not exist, and there is no potential for an exposure pathway to be completed in the future.

U. S. Army

01 AUG 2000

Anne L. Davis
Lieutenant Colonel, U.S. Army
Commanding

State of Nevada

04 August 2000

Paul Liebendorfer
Chief, Bureau of Federal Facilities

Decision Document

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Hawthorne, Nevada

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Decision Document
SWMU B-12
Building 101-10Catchment Pit
HAWTHORNE ARMY DEPOT
HAWTHORNE, NEVADA

1.0 Introduction:

This decision document describes the rationale for the proposed closure of SWMU B-12, building 101-10 catchment pit, at the Hawthorne Army Depot (HWAD), Hawthorne, Nevada. This document was prepared by the U.S. Army Corps of Engineers, Sacramento District, with the help of HWAD for the Nevada Department of Environmental Protection (NDEP).

Tetra Tech, Inc. (Tt), and Ecology and Environment (E&E) were tasked by the US Army Corps of Engineers, Sacramento District (USACE), to perform remedial investigations and ground water monitoring at the Hawthorne Army Depot (HWAD), Hawthorne, Nevada. These tasks were conducted from 1993 through 1997, primarily at solid waste management units (SWMUs) designated by the Army and the Nevada Division of Environmental Protection (NDEP). The NDEP is the lead regulatory agency for environmental issues at HWAD. The purpose of the sampling was to determine the extent and degree of environmental impacts, if any, associated with activities performed at each SWMU. The primary goal of the investigation was to assess the environmental impacts and to report the findings, present conclusions, and recommend any remediation, if necessary.

With guidance from the NDEP, basewide proposed closure goals (PCGs) for soil were established as acceptable levels so that SWMU closure could be recommended and to assist in directing the investigative efforts toward those SWMUs where the target analytes were of greatest concern (Appendix A). These PCGs were used as action levels throughout this investigation and are used for comparison with the detected analytes in this report.

2.0 Site History

SWMU B12 is in the HWAD's central magazine area, on the southwest side of the 101 Production Area (Figure 1-1). SWMU B12 is an inactive unlined catchment pit located 60 feet northeast of Building 101-10 (Figure 1-2). The catchment pit measures 18 feet long by 18 feet wide and is up to six feet deep; however, the pit is eroded and partially filled with windblown sand. Two pipes discharge into the catchment pit from the west and one pipe enters from the south. No visible piles of dredged soil were noted at this catchment pit.

The USACE, HWAD, and the NDEP agreed to define the boundaries of each SWMU using annotated monuments and survey pins. As part of E&E's 1997 field investigations a survey monument was constructed and surveyed at SWMU B12. A brass survey pin on the monument designates the monument number HWAAP-81-1996 and the SWMU number B12. Three corner pins were set and surveyed to define the SWMU boundary with the monument as the northeast corner. The location of these corner markers and the SWMU boundary are shown on Figure 1-2. Survey data is presented in Appendix B.

USAEHA estimated the depth to ground water in the vicinity of SWMU B12 at approximately 120 feet below ground surface (bgs) in 1987 and 1988 (USAEHA 1988).

3.0 Site Conditions

The catchment pit at SWMU B12 reportedly was in operation from 1940 to the early 1970s and received large amounts of reactive hazardous wastewater containing TNT and cyclotrimethlyenetrinitramine (RDX). It also was reported that munitions handled in the 101 Production Area contained metal components.

Soils encountered during E&E's remedial investigation of SWMU B12 were primarily fine to medium grained sands, which graded to silty fine sands in the upper five feet within the catchment pit. Reddish-brown staining was observed on the surface around the catchment pit and inside the catchment pit. Stained soils were not observed in the subsurface soil (E&E 1995).

Based on the past uses of the pit and on observations made during the previous site inspections, the target analytes were explosives and metals.

4.0 INVESTIGATIONS

Site inspections of SWMU B12 were conducted by the USAEHA (1988), Jacobs Engineering (1988), and RAI (1992). During these inspections, evidence of TNT-stained soil was noted in and around the catchment pit. No investigation activities were conducted during these inspections, and no samples were collected from the SWMU at that time.

In 1994, sampling activities proposed by E&E for the remedial investigation at SWMU B12 included collecting and analyzing surface and subsurface soil samples.
A total of four surface and near-surface soil samples were collected during E&E's 1994 remedial investigation. Two surface soil samples were collected from the visually stained soil outside of the pit at locations SS01 and SS02. One surface soil sample and one near-surface soil sample were collected from the one hand auger sample location HA01 within the catchment pit.
Two subsurface soil samples were collected from the CPT sample boring at SWMU B12 at depths of 11 feet and 22 feet bgs

5.0 Investigation Results

Arsenic (1.6 mg/kg to 3.1 mg/kg), barium (45 mg/kg to 120 mg/kg), total chromium (2.1 mg/kg to 5.0 mg/kg), and lead (5.1 mg/kg to 26 mg/kg) were detected in all four surface and near-surface soil samples. Mercury (0.27 mg/kg and 0.55 mg/kg) was detected in the surface soil samples collected at location SS02 and in the hand auger sample collected at location HA01 at a depth of five feet bgs. Beryllium, cadmium, silver and selenium were not detected in any of the surface or near-surface samples.

TNT (1.1 mg/kg to 2,600 mg/kg) and 2-amino-4-6-DNT (2.2 mg/kg to 13 mg/kg) were detected in all four surface and near-surface samples. RDX (2.4 mg/kg to 1,900 mg/kg) and sym-trinitrobenzene (TNB) (0.31 mg/kg to 70 mg/kg) were detected only in the surface samples collected at locations SS01, SS02, and HA01. Octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine (HMX) (86 mg/kg to 170 mg/kg) and picric acid (0.44 mg/kg to 0.98 mg/kg) were detected only in surface samples collected at locations SS01 and SS02. 4-amino-2,6-DNT was only detected in the five-foot sample collected at location HA01 at a concentration of 3.4 mg/kg (E&E 1995).

Arsenic (2.5 mg/kg to 11 mg/kg), barium (41 mg/kg to 110 mg/kg), total chromium (8.4 mg/kg to 9.7 mg/kg), and lead (2.4 mg/kg to 6.1 mg/kg) were detected in all three subsurface samples (including the duplicate sample) collected at location CPS01. Beryllium was detected only in the 11-foot sample at this location at a concentration of 0.6 mg/kg. Cadmium, mercury, silver, and selenium were not detected in any of the subsurface samples.

RDX (0.48 mg/kg to 0.64 mg/kg) was detected in all three subsurface samples (including the duplicate sample) collected at location CPS01. 2-amino-4,6-DNT was detected only in the 22-foot sample at this location at a concentration of 0.21 mg/kg. No other explosive compounds were detected in any of the subsurface samples (E&E 1995).

Concentrations of arsenic, barium, total chromium, lead, and mercury were detected in the surface near-surface and subsurface soil samples. All of these detected metals concentrations are below the HWAD PCGs for soil. With the exception of lead and mercury, the concentrations are within the range of background levels observed in the Walker Valley. These slightly elevated concentrations of lead and mercury are likely naturally occurring anomalies, and are not of environmental concern, based on a comparison with the HWAD PCGs. There does not appear to have been a release of metals at SWMU B12 that has impacted the soil.

TNT, 2,4-DNT, RDX, and TNB were detected at concentrations exceeding their respective PCGs in both surface soil samples collected at locations SS01 and SS02. RDX was detected up to 1,900 mg/kg, almost 30 times its PCG of 64 mg/kg. TNB was detected up to 70 mg/kg, almost 20 times its PCG of 4 mg/kg. TNT was detected up to a concentration of 2,600 mg/kg, more than 10 times its PCG of 233 mg/kg. 2,4-DNT was detected up to 5.1 mg/kg, twice its PCG of 2.6 mg/kg. The RDX concentrations detected

in the subsurface samples did not exceed its PCG, and the 2-amino-4,6-DNT concentration did not exceed the PCG established for 2,4-DNT. Based on the analytical results of the soil samples, the lateral extent of the soils impacted by explosives at SWMU B12 appear to be in the catchment pit and widespread across the surface soils within the SWMU boundary.

6.0 Remediation

The explosives contaminated soil from SWMU B-12 was treated by windrow composting. Composting is a natural process in which microorganisms biologically degrade organic material. For the destruction of the explosives contamination temperatures in the compost must reach between 120° F -- 160° F and the system must remain in aerobic conditions. The windrow system of composting was selected as the most efficient and economical to be used at the site. Two hundred and four (204) cubic yards of contaminated soil was removed from B-12 and placed in compost windrows. Confirmation samples, from the excavated area and finished compost, were taken in accordance with the project work plan.

7.0 Remediation Results

Contaminated soil from B-12 was placed into three (3) different windrows at remediation pad 1(windrows 1, 2 and 3). After the treatment process the windrows were sampled for explosives and the test results are shown in appendix D; along with the windrow temperature graphs. The location of the confirmation samples taken in the B-12 excavation area are shown in figure 4 with the analytical results of these tests also shown in appendix D.

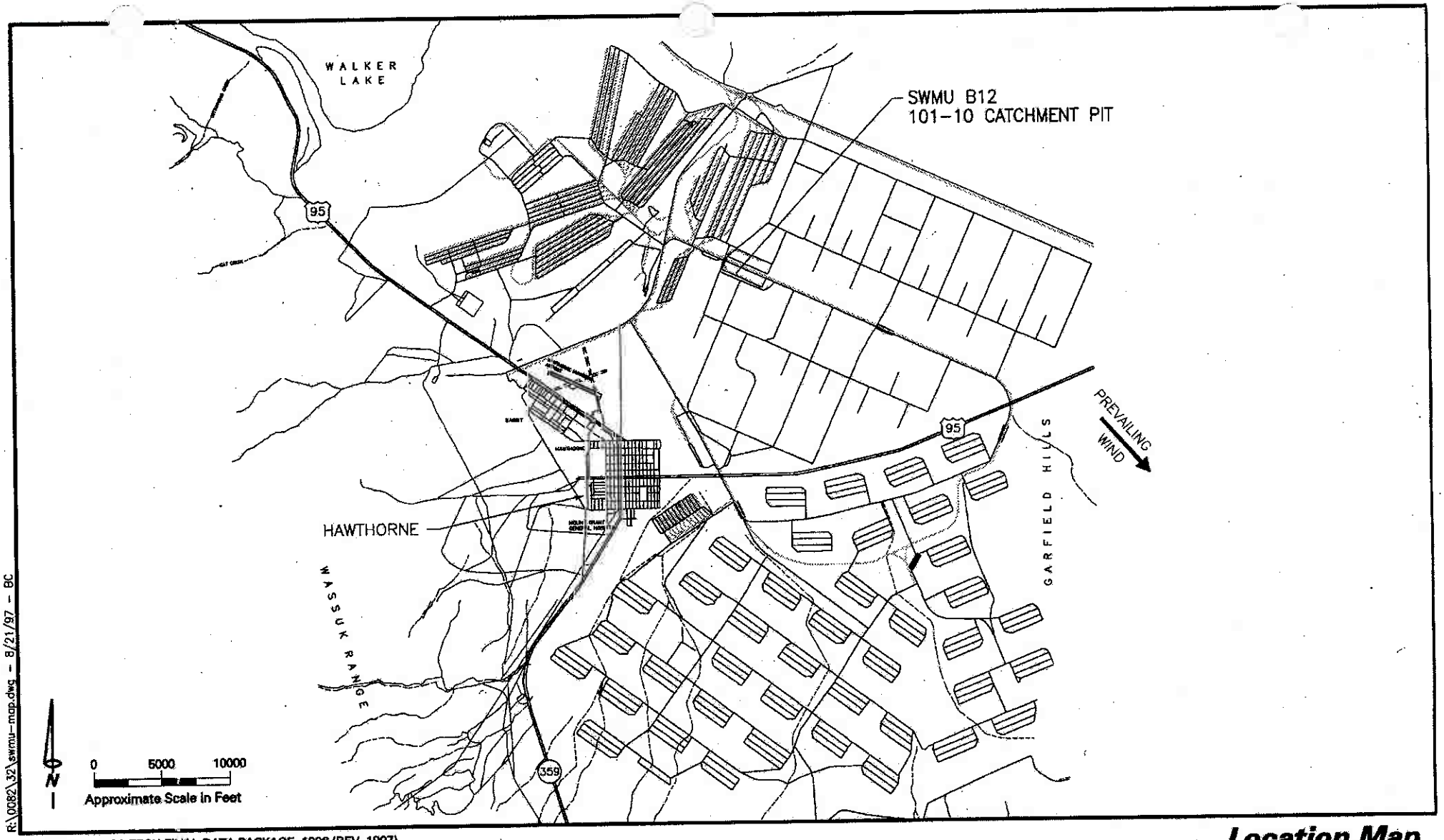
8.0 Public Involvement:

It is the U.S. Department of Defense and Army policy to involve the local community throughout the investigation process at an installation. To initiate this involvement, HWAD has established and maintains a repository library at the local public library. This repository includes final copies of all past studies and other documents regarding environmental issues at HWAD. As future environmental documents are made available to HWAD the repository shall be updated.

HWAD has solicited community participation in establishment of a restoration and advisory board (RAB). To date there has been insufficient response and HWAD has not formed a RAB. HWAD has held open houses to inform the public of on going environmental issues. HWAD shall continue to solicit community involvement, and will establish a RAB should sufficient community interest be obtained.

9.0 Conclusions

The contaminated soil has been removed from SWMU B-12 and has been treated in the composting windrows to levels below clean up goals. SWMU B-12 should be closed with the restrictions that no structure be constructed on the SWMU, that the site remain only for industrial use and documented on the depot site master plan.



R:\0082\32\swmu-map.dwg - 8/21/97 - BC

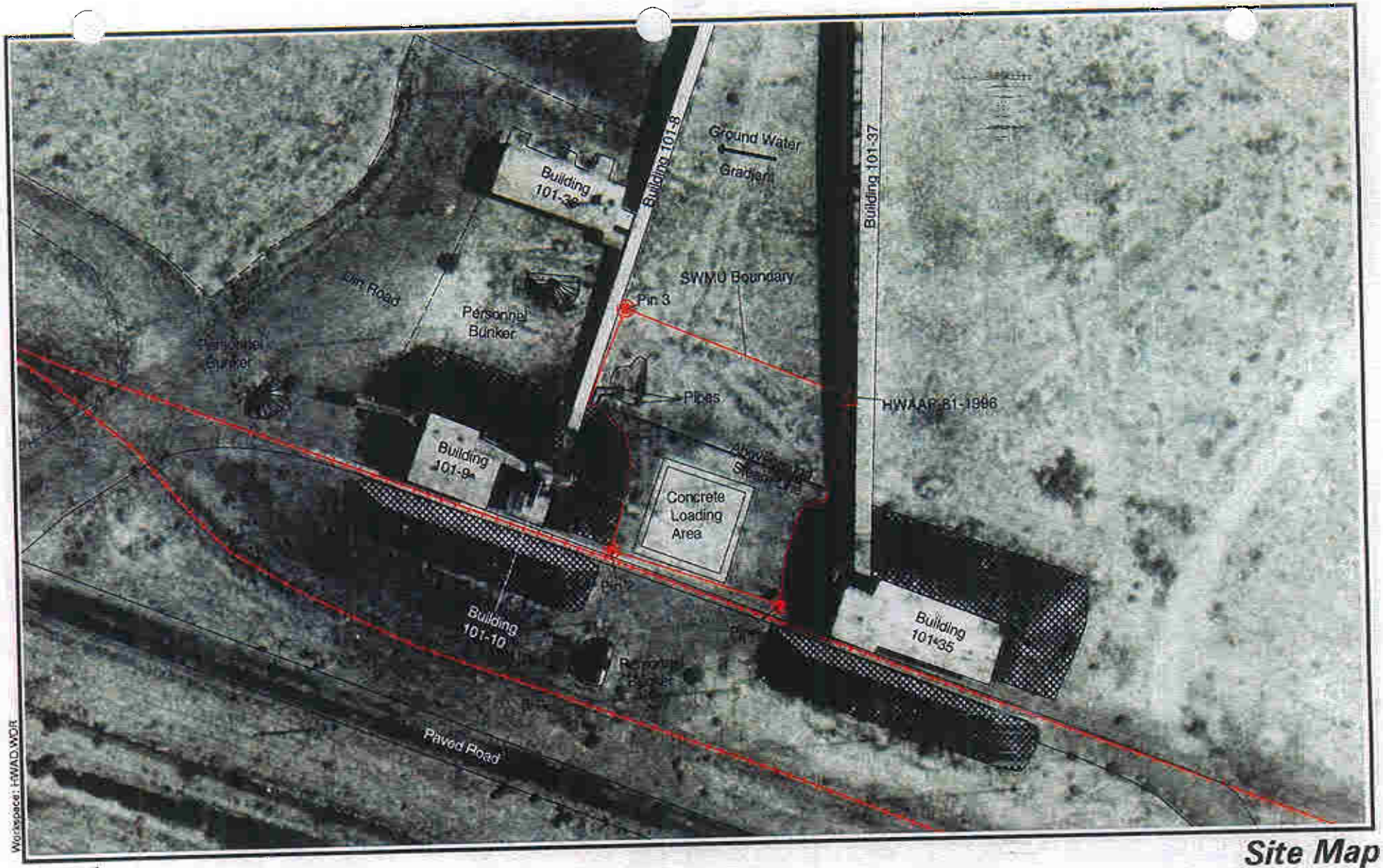
SOURCE: TETRA TECH FINAL DATA PACKAGE, 1996 (REV. 1997)

Location Map
SWMU B12
101-10 Catchment Pit

Hawthorne Army Depot
Hawthorne, Nevada

Figure 1-1

Tetra Tech, Inc.



Workspace: HWAD.WOR

Legend:

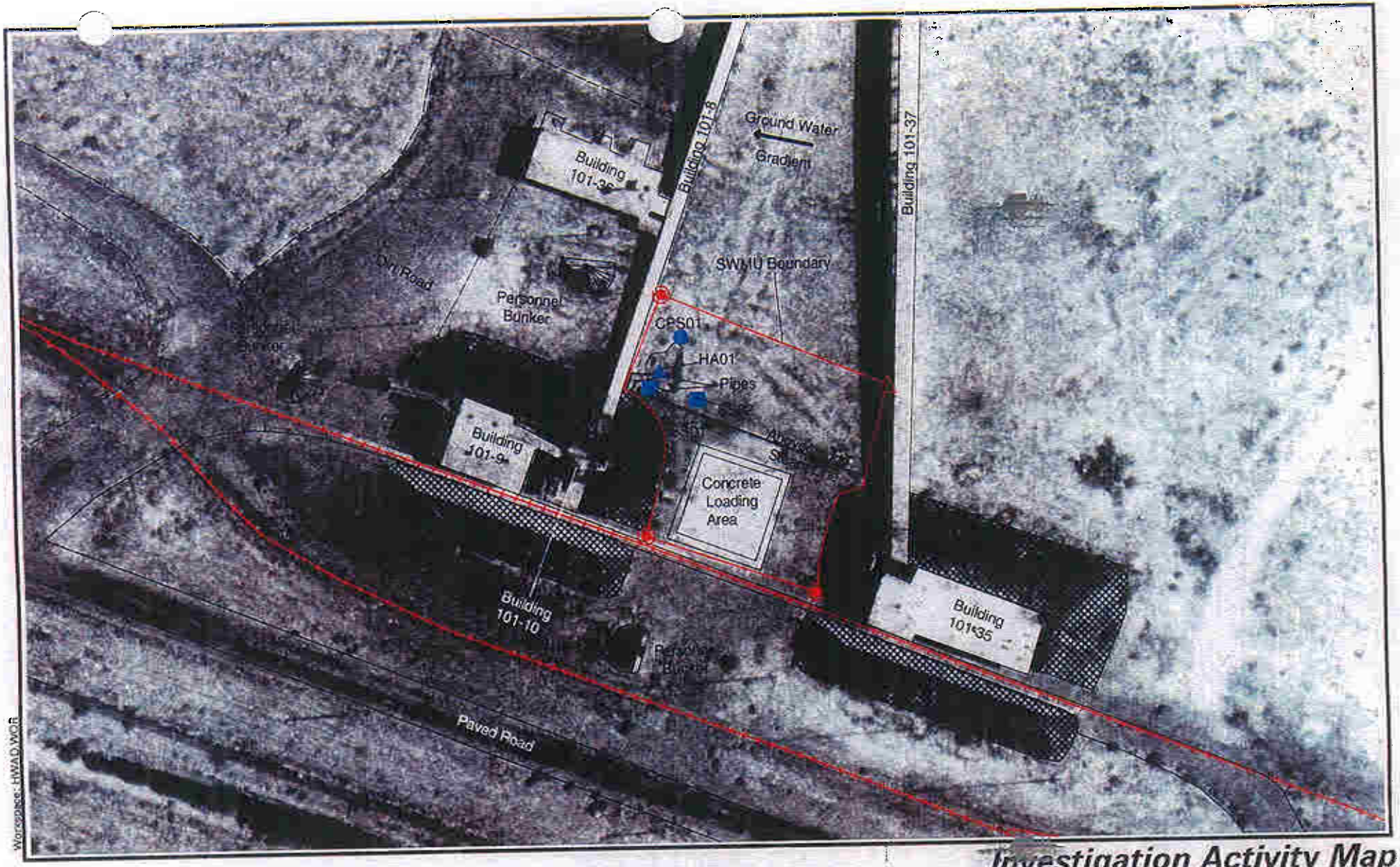
- Boundary Corner Pin
- Explosion Barrier
- Fence
- Railroad
- SWMU Monument

N

0 35 70
Approximate Scale in Feet

Tetra Tech, Inc.

Site Map
SWMU B12
101-10 Catchment Pit
Hawthorne Army Depot
Hawthorne, Nevada
Figure 1-2



Workspace: HWAD.WOR

Legend:

- Boundary Corner Pin
- Hand Auger Location
- Soil Boring Location
- Explosion Barrier
- Fence
- Railroad
- Surface Soil/Sludge Sample
- SWMU Monument

N

0 35 70

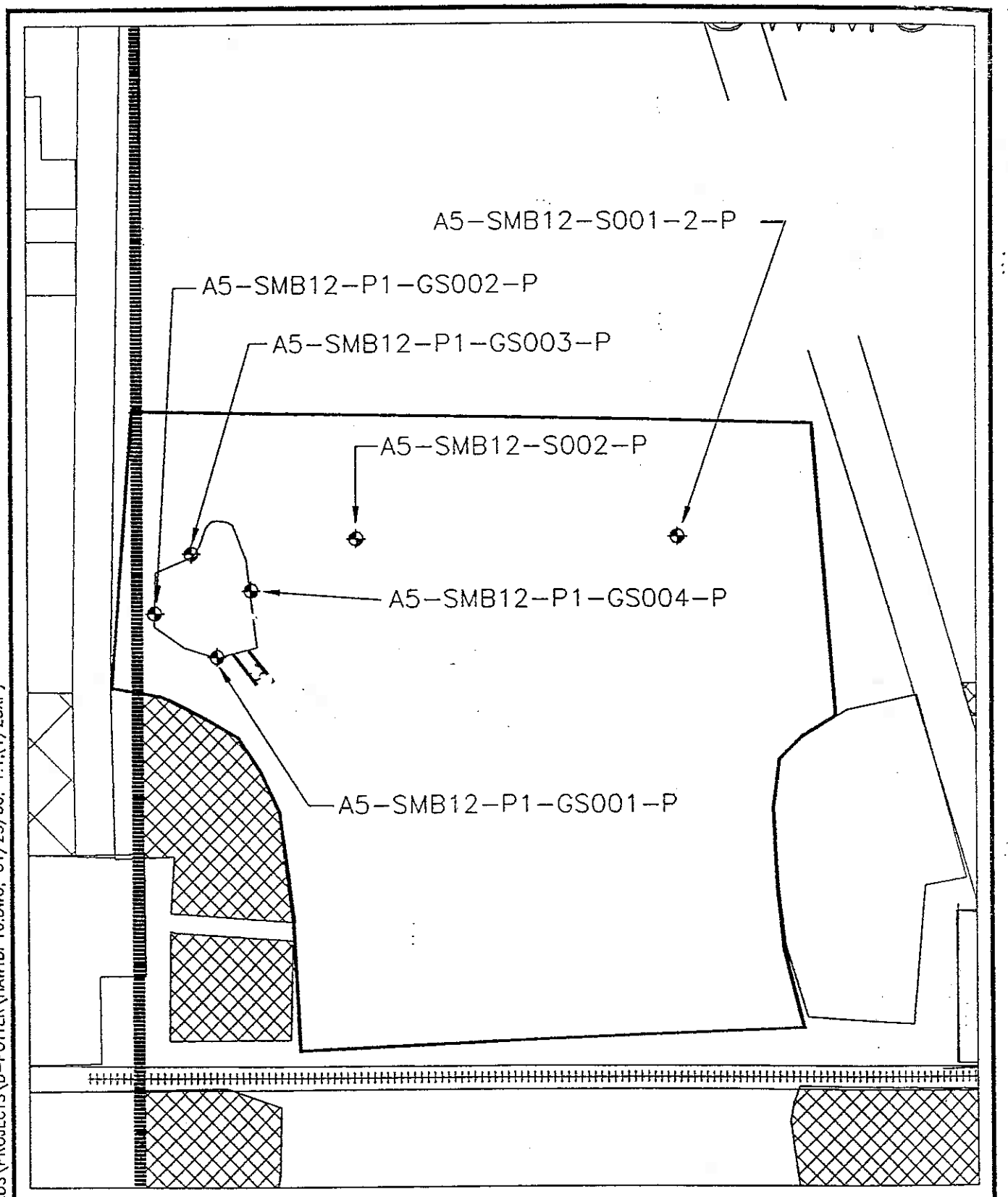
Approximate Scale in Feet

Tetra Tech, Inc.

Investigation Activity Map
SWMU B12
101-10 Catchment Pit

Hawthorne Army Depot
Hawthorne, Nevada

Figure 3-1



DEPARTMENT OF THE ARMY
SACRAMENTO DISTRICT,
CORPS OF ENGINEERS
JANUARY 2000

HAWTHORNE NEVADA

HAWTHORNE ARMY DEPOT
WEST 101 PROJECTION AREA

SITE MAP (AREA 5)-
SOIL SAMPLE LOCATIONS

SCALE: FIGURE:

:DPUBLIC\ENVIRONMENTAL\EDS\PROJECTS\D-POTTER\HAWTDP16.DWG, 01/25/00, 1:1,(1/25XP)

Appendix A

Proposed Closure Goals
Hawthorne Army Depot
Hawthorne, Nevada

Constituent of Concern	Chemical Classification	Carcinogenic (C) or Non-carcinogenic (NC)	HWAD Proposed Closure Goals for Soil (mg/kg)	HWAD Proposed Closure Goal Source
Nitrate	Anion	NC	128,000	Calculated Subpart S[a]
2-Amino-dinitrotoluene	Explosive	NC	-	NA[b]
4-Amino-dinitrotoluene	Explosive	NC	-	NA
1,3-Dinitrobenzene	Explosive	NC	8	Calculated Subpart S
2,4-Dinitrotoluene	Explosive	NC	160	Calculated Subpart S
2,6-Dinitrotoluene	Explosive	NC	80	Calculated Subpart S
HMX	Explosive	NC	4,000	Calculated Subpart S
Nitrobenzene	Explosive	NC	40	Calculated Subpart S
Nitrotoluene (2-, 3-, 4-)	Explosive	NC	800	Calculated Subpart S
RDX	Explosive	NC	64	Calculated Subpart S
Tetryl	Explosive	NC	800	Calculated Subpart S
1,3,5-Trinitrobenzene	Explosive	NC	4	Calculated Subpart S
2,4,6-Trinitrotoluene	Explosive	C	233	Calculated Subpart S
Aluminum	Metal	NC	80,000	Calculated Subpart S
Arsenic (cancer endpoint)	Metal	C & NC	30	Background[c]
Barium and compounds	Metal	NC	5,600	Calculated Subpart S
Beryllium and compounds	Metal	C	1	Background
Cadmium and compounds	Metal	NC	40	Calculated Subpart S
Chromium III and compounds	Metal	NC	80,000	Calculated Subpart S
Lead	Metal	NC	1000	PRG[d]
Mercury and compounds (inorganic)	Metal	NC	24	Calculated Subpart S
Selenium	Metal	NC	400	Calculated Subpart S
Silver and compounds	Metal	NC	400	Calculated Subpart S
Acenaphthene	PAH	NC	4,800	Calculated Subpart S
Benzo[a]anthracene	PAH	C	0.96	Calculated Subpart S
Benzo[a]pyrene	PAH	C	0.10	Detection Limit[e]
Benzo[b]fluoranthene	PAH	C	0.96	Calculated Subpart S
Benzo[k]fluoranthene	PAH	C	10	Calculated Subpart S
Chrysene	PAH	C	96	Calculated Subpart S
Dibenz[ah]anthracene	PAH	C	0.96	Calculated Subpart S
Fluoranthene	PAH	NC	3,200	Calculated Subpart S
Fluorene	PAH	NC	3,200	Calculated Subpart S
Indeno[1,2,3-cd]pyrene	PAH	C	-	NA
Naphthalene	PAH	NC	3,200	Calculated Subpart S
Pyrene	PAH	NC	2,400	Calculated Subpart S
Total Petroleum Hydrocarbons as Diesel (TPH-d)	PAH	C	100	NDEP Level Clean-up[f]
Polychlorinated biphenyls (PCBs)	PCBs	C	25	TSCA[g]
Bis(2-ethylhexyl)phthalate (DEHP)	SVOC	C	1,600	Calculated Subpart S
Bromoform (tribromomethane)	SVOC	C	89	Calculated Subpart S

Proposed Closure Goals
Hawthorne Army Depot
Hawthorne, Nevada

Constituent of Concern	Chemical Classification	Carcinogenic (C) or Non-carcinogenic (NC)	HAAD Proposed Closure Goals for Soil (mg/kg)	HAAD Proposed Closure Goal Source
Butyl benzyl phthalate	SVOC	NC	16,000	Calculated Subpart S
Dibromochloromethane	SVOC	C	83	Calculated Subpart S
Dibutyl-phthalate	SVOC	NC	8,000	Calculated Subpart S
Diethyl phthalate	SVOC	NC	64,000	Calculated Subpart S
Phenanthrene	SVOC		-	NA
Phenol	SVOC	NC	48,000	Calculated Subpart S
Acetone	VOC	NC	800	Calculated Subpart S
Anthracene	VOC	NC	24,000	Calculated Subpart S
Benzene	VOC	C	24	Calculated Subpart S
Bis(2-chloroisopropyl)ether	VOC	C	3,200	Calculated Subpart S
Bromomethane	VOC	NC	112	Calculated Subpart S
Carbon tetrachloride	VOC	C	5	Calculated Subpart S
Chlorobenzene	VOC	NC	1,600	Calculated Subpart S
Chloroform	VOC	C	115	Calculated Subpart S
Chloromethane	VOC	C	538	Calculated Subpart S
Dibromomethane	VOC	C	0.008	Calculated Subpart S
1,2-Dichlorobenzene	VOC	NC	7,200	Calculated Subpart S
1,4-Dichlorobenzene	VOC	C	18,300	Calculated Subpart S
Dichlorodifluoromethane	VOC	C	16,000	Calculated Subpart S
Ethylbenzene	VOC	NC	8,000	Calculated Subpart S
Methylene bromide	VOC	NC	800	Calculated Subpart S
Methylene chloride	VOC	C	4,800	Calculated Subpart S
2-Methylnaphthalene	VOC		-	NA
1,1,2,2-Tetrachloroethane	VOC	C	35	Calculated Subpart S
Tetrachloroethylene (PCE)	VOC	C & NC	800	Calculated Subpart S
Toluene	VOC	NC	16,000	Calculated Subpart S
1,1,1-Trichloroethane	VOC	NC	7,200	Calculated Subpart S
Trichloroethylene (TCE)	VOC	C & NC	480	Calculated Subpart S
Trichlorofluoromethane	VOC	NC	24,000	Calculated Subpart S
1,2,3-Trichloropropane	VOC	C	480	Calculated Subpart S
Vinyl chloride	VOC	C	0.37	Calculated Subpart S
Xylene Total (m-, o-, p-)	VOC	NC	160,000	Calculated Subpart S
2,3,7,8-TCDD	Dioxin	C	0.000005	Calculated Subpart S

[a] RCRA 55 FR 30870

[b] Not available

[c] Highest background concentration detected in 50 background soil samples

[d] Smucker, Stanford J. USEPA Rgion IX, Preliminary Remedial Goals, Second Half, Sep. 1995

[e] Method detection limit for Volatile Organic Compounds by EPA Method 8260 or

. Semi-Volatile Organic Compounds analyzed by EPA Method 8270

[f] Nevada Division of Environmental Protection

[g] Cleanup level for PCB spills in accordance with Toxic Substance and Control Act Spill Policy Guidelines 40 CFR 761

Proposed Excavation Goal (PEG's) by Definitive and Screening * Analysis-
Maximum Concentration of Contaminants
In Soil to Be Left in Place at Depth Below the Surface

Contaminant	Concentration (mg/kg)
2,4,6,-trinitrotoluene (TNT)	800*
2,4-dinitrotoluene (2,4-DNT)	80
2,6-dinitrotoluene (2,6-DNT)	80
1,3,5-trinitrobenzene (1,3,5-TNB)	150
1,3,-drinitrobenzne (1,3-DNB)	NE
2-amino-4,6dinitrotoluene (2-Am-DNT)	NE
4-amino-2,6-dinitrotoluene (4-Am-DNT)	NE
Octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine (HMX)	4000
Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX)	300
Picric acid	7.0
Pentachlorophenol	NE
Nitroaromatics/Nitroamines	<30

Clean-up Goals by Screening* and Definitive Analysis

Contaminant	Concentration (mg/kg)
2,4,6,-trinitrotoluene (TNT)	40*
2,4-dinitrotoluene (2,4-DNT)	2.6
2,6-dinitrotoluene (2,6-DNT)	2.6
1,3,5-trinitrobenzene (1,3,5-TNB)	4
1,3,-drinitrobenzne (1,3-DNB)	8
2-amino-4,6dinitrotoluene (2-Am-DNT)	NE
4-amino-2,6-dinitrotoluene (4-Am-DNT)	NE
Octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine (HMX)	100
Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX)	64
Picric acid	7
Pentachlorophenol	None

NE - not established

Appendix B

NOTES

1. FOR THE LOCATION OF THE FOLLOWING SWMU'S, REFER TO FIGURE 3-6 OF THE "FINAL R.C.R.A. FACILITY INVESTIGATION REPORT OF GROUP "A" SOLID WASTE MANAGEMENT UNITS A-04, B-16, B-21, B-24, B-26, AND H-01".

2. THE "HWAD" MONUMENTS AS SHOWN HEREIN AS "Ⓜ", ARE A 1' X 1' X 2'+ CONCRETE MONUMENT WITH A BRASS CAP STAMPED AS PER SPECIFICATIONS. ALL OF THE OTHER CORNERS ARE MARKED BY A 5/8" RE-BAR WITH A PLASTIC CAP STAMPED "STINCHFIELD PLS 3631" UNLESS NOTED OTHERWISE ON THE MAPS.

3. HORIZONTAL DATUM IS BASED ON NAD 83(1994) AND MORE SPECIFICALLY, NGS STATION "W 2". "W 2" IS A FEDERAL BASE NETWORK CONTROL STATION AND IS LOCATED IN THE APPROXIMATE CENTER OF THIS PROJECT.

4. VERTICAL DATUM IS BASED ON NAVD 29. NAVD 88 ELEVATIONS HAVE BEEN SCALED AND THEREFORE ARE NOT ACCURATE. VERTICAL CONTROL USING GPS WAS USED TO ESTABLISH THE ELEVATIONS OF THE EXISTING CONTROL POINTS AND THE "HWAD" MONUMENTS. THE VALUE OF NGS STATION "W 2" WAS USED AS A BASIS FOR THE VERTICAL CONTROL.

5. COORDINATE VALUES OF EXISTING NGS CONTROL, TRAVERSE POINTS, AND HWAD MONUMENTS ARE STATE PLANE COORDINATES, WEST ZONE.

6. THE COMBINED FACTOR WAS CALCULATED USING THE FOLLOWING FIGURES. THE "MAP SCALE" AT POINT "W 2" IS 0.99990022, THE MEAN ELEVATION OF THE TOTAL PROJECT WAS TAKEN AS 4150.00 FEET ABOVE SEA LEVEL AND THE MEAN RADIUS OF THE EARTH WAS TAKEN AS 20,906,000 FEET. THE SEA LEVEL FACTOR WAS CALCULATED AS FOLLOWS: 20,906000/20,906,000 + 4150.00 = 0.999801532. THE COMBINED FACTOR (CF) WAS CALCULATED AS FOLLOWS: 0.99990022 X 0.999801532 = 0.999701772.

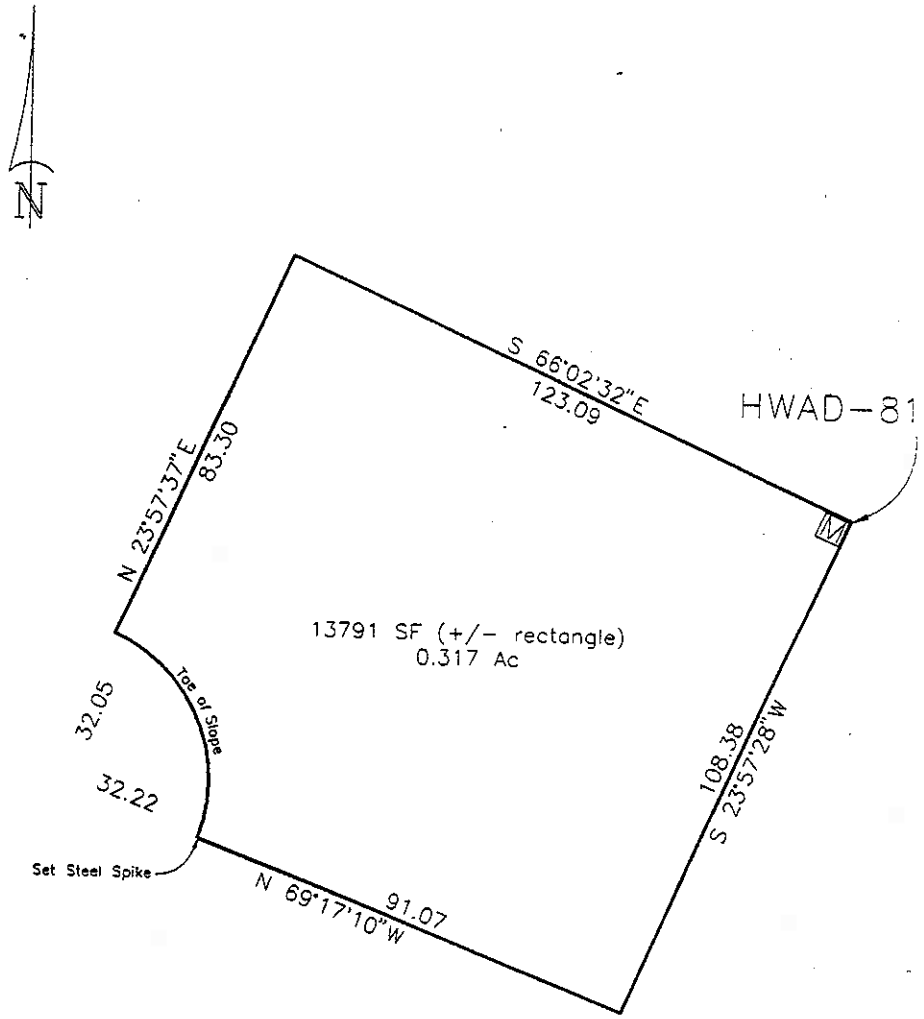
7. GROUND DISTANCE X CF (0.999801532) = GRID DISTANCE.

8. GRID DISTANCE X INVERSE CF (1.00298317) = GROUND DISTANCE.

9. COORDINATE VALUES OF ALL OTHER POINTS INCLUDING SWMU CORNERS OTHER THAN "HWAD" MONUMENTS, REFERENCE POINTS, TEST PIT OR HOLE LOCATIONS ETC., WERE CALCULATED USING GROUND DISTANCES AND ARE THEREFORE NOT TRUE STATE PLANE COORDINATES.

10. DISTANCES AS SHOWN ON THESE SWMU'S ARE HORIZONTAL GROUND DISTANCES.

PROFESSIONAL LAND SURVEYOR
RICHARD A. STINCHFIELD
7/28/97
No.3631



NE COR	N	14512536.727	E	2621842.082	ELEV	4188.169
SE COR	N	14512437.687	E	2621798.074	ELEV	4188.716
S END CURVE	N	14512469.898	E	2621712.894	ELEV	4188.120
NW COR	N	14512587.029	E	2621729.744	ELEV	4187.004

PROFESSIONAL LAND SURVEYOR · STATE OF NEVADA
RICHARD A. STINCHFIELD
No. 3631

30 15 0 30 60 90
SCALE IN FEET

ecology and environment, inc.
International Specialists in the Environment

SWMU B-12

COMSTOCK LAND SURVEYING
777 LA RUE AVENUE, SUITE A
RENO, NEVADA 89509

SWMU B12 Survey Data
Hawthorne Army Depot
Hawthorne, Nevada

SWMU	Point ID	Northing (feet)	Easting (feet)	Elevation
B12	CPS01	1389226.9	497333.3	NE
B12	SS01	1389202.9	497315.1	NE
B12	SS02	1389195.9	497339.4	NE
B12	HA01	1389210.9	497321	NE
B12	Pin 3	1389246.47	497322.37	4187.004
B12	Pin 2	1389131.34	497306.88	4188.120
B12	Pin 1	1389096.28	497390.12	4188.716
B12	HWAAP-81-1996	1389207.11	497440.54	4188.169

Notes:
NE = Not established
Coordinate data based on electronic map file using the NAD 1927 datum.
Elevation data based on surveyors map using NGVD 1929 datum.

Appendix C

Selenium
Method 7740 (ASC)

Sample ID	Location ID	Sample Date	Depth (feet)	Lab	Selenium
					mg/kg
B12-HA1-1-000	HA01	5/2/94	0.5	ASC	<0.52
B12-HA1-1-005	HA01	5/2/94	5	ASC	<0.56
B12-SS1-1-000	SS01	5/2/94	0.5	ASC	<0.5
B12-SS1-2-000	SS02	5/2/94	0.5	ASC	<0.5
B12-CPS1-1-011	CPS01	5/22/94	11	ASC	<0.57
B12-CPS1-1-022	CPS01	5/22/94	22	ASC	<0.55
B12-CPS2-1-011	CPS01	5/22/94	11	ASC	<0.56

Analyses	7
Detections	0
Minimum Concentration	0
Maximum Concentration	0
HWAD - PCG	20
HWAD - PCG Hits	0

Notes:
Zero values listed for maximum and minimum concentrations indicate a nondetect value for that analyte.

Metals
Method 7421 (ASC)

Sample ID	Location ID	Sample Date	Depth (feet)	Lab	Lead
					mg/kg
B12-HA1-1-000	HA01	5/2/94	0.5	ASC	8.6
B12-HA1-1-005	HA01	5/2/94	5	ASC	5.1
B12-SS1-1-000	SS01	5/2/94	0.5	ASC	15
B12-SS1-2-000	SS02	5/2/94	0.5	ASC	26
B12-CPS1-1-011	CPS01	5/22/94	11	ASC	6.1
B12-CPS1-1-022	CPS01	5/22/94	22	ASC	2.4
B12-CPS2-1-011	CPS01	5/22/94	11	ASC	3.3

Analyses	7
Detections	7
Minimum Concentration	2.4
Maximum Concentration	26
HWAD - PCG	100
HWAD - PCG Hits	0

Metals
Method 6010A (ASC)

Sample ID	Location ID	Sample Date	Depth (feet)	Lab	Barium	Beryllium	Cadmium	Chromium Total	Silver	Arsenic	Lead	Selenium
					mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
B12-HA1-1-000	HA01	5/2/94	0.5	ASC	45	<0.52	<0.52	2.1	<1	NA	NA	NA
B12-HA1-1-005	HA01	5/2/94	5	ASC	120	<0.56	<0.56	5	<1.1	1.6	5.1	<0.56
B12-SS1-1-000	SS01	5/2/94	0.5	ASC	48	<0.5	<0.5	2.7	<1	3.1	15	<0.5
B12-SS1-2-000	SS02	5/2/94	0.5	ASC	55	<0.5	<0.5	3.3	<1	2.4	26	<0.5
B12-CPS1-1-011	CPS01	5/22/94	11	ASC	90	0.6	<0.57	9.7	<1.1	11	6.1	<0.57
B12-CPS1-1-022	CPS01	5/22/94	22	ASC	110	<0.55	<0.55	8.4	<1.1	2.5	2.4	<0.55
B12-CPS2-1-011	CPS01	5/22/94	11	ASC	41	<0.56	<0.56	9	<1.1	6.1	3.3	<0.56
Analyses					7	7	7	7	7	6	6	6
Detections					7	1	0	7	0	6	6	0
Minimum Concentration					41	0.6	0	2.1	0	1.6	2.4	0
Maximum Concentration					120	0.6	0	9.7	0	11	26	0
HWAD - PCG					2000	1	20	20	100	100	100	20
HWAD - PCG Hits					0	0	0	0	0	0	0	0

Notes:
NA = Not analyzed
Zero values listed for maximum and minimum concentrations indicate a nondetect value for that analyte.

Nitrogen
Method 353.2 (ASC)

Sample ID	Location ID	Sample Date	Depth (feet)	Lab	Nitrogen Nitrate mg/kg
B12-HA1-1-000	HA01	5/2/94	0.5	ASC	5.7
B12-HA1-1-005	HA01	5/2/94	5	ASC	<1.1
B12-SS1-1-000	SS01	5/2/94	0.5	ASC	80
B12-SS1-2-000	SS02	5/2/94	0.5	ASC	15
B12-CPS1-1-011	CPS01	5/22/94	11	ASC	11
B12-CPS1-1-022	CPS01	5/22/94	22	ASC	<1.1
B12-CPS2-1-011	CPS01	5/22/94	11	ASC	1.6

Analyses	7
Detections	5
Minimum Concentration	1.6
Maximum Concentration	80
HWAD - PCG	128000
HWAD - PCG Hits	0

Arsenic
Method 7060 (ASC)

Sample ID	Location ID	Sample Date	Depth (feet)	Lab	Arsenic
					mg/kg
B12-HA1-1-000	HA01	5/2/94	0.5	ASC	2.4
B12-HA1-1-005	HA01	5/2/94	5	ASC	1.6
B12-SS1-1-000	SS01	5/2/94	0.5	ASC	3.1
B12-SS1-2-000	SS02	5/2/94	0.5	ASC	2.4
B12-CPS1-1-011	CPS01	5/22/94	11	ASC	11
B12-CPS1-1-022	CPS01	5/22/94	22	ASC	2.5
B12-CPS2-1-011	CPS01	5/22/94	11	ASC	6.1

Analyses	7
Detections	7
Minimum Concentration	1.6
Maximum Concentration	11
HWAD - PCG	100
HWAD - PCG Hits	0

Mercury
Method 7471 (ASC)

Sample ID	Location ID	Sample Date	Depth (feet)	Lab	Mercury
					mg/kg
B12-HA1-1-000	HA01	5/2/94	0.5	ASC	<0.1
B12-HA1-1-005	HA01	5/2/94	5	ASC	0.27
B12-SS1-1-000	SS01	5/2/94	0.5	ASC	<0.1
B12-SS1-2-000	SS02	5/2/94	0.5	ASC	0.55
B12-CPS1-1-011	CPS01	5/22/94	11	ASC	<0.11
B12-CPS1-1-022	CPS01	5/22/94	22	ASC	<0.11
B12-CPS2-1-011	CPS01	5/22/94	11	ASC	<0.11

Analyses	7
Detections	2
Minimum Concentration	0.27
Maximum Concentration	0.55
HWAD - PCG	24
HWAD - PCG Hits	0

Explosives
Method 8330 (ASC)

Sample ID	Location ID	Sample Date	Depth (feet)	Lab	2,4,6-TNT	2,4-Dinitrotoluene	2,6-Dinitrotoluene	2-Amino-4,6-DNT	2-Nitrotoluene	3-Nitrotoluene	4-Amino-2,6-DNT	4-Nitrotoluene	HMX
					mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
B12-HA1-1-000	HA01	5/2/94	0.5	ASC	82	<1	<1	2.2 N	<1	<1	<1	<1	<1
B12-HA1-1-005	HA01	5/2/94	5	ASC	1.1	<1	<1	2.2 N	<1	<1	3.4	<1	<1
B12-SS1-1-000	SS01	5/2/94	0.5	ASC	2600	5.1	<1	13 X	<1	<1	<1	<1	86
B12-SS1-2-000	SS02	5/2/94	0.5	ASC	1200	4.8	<1	12 X	<1	<1	<1	<1	170
B12-CPS1-1-011	CPS01	5/22/94	11	ASC	<1	<1	<1	<1	<1	<1	<1	<1	<1
B12-CPS1-1-022	CPS01	5/22/94	22	ASC	<1	<1	<1	<1	<1	<1	<1	<1	<1
B12-CPS2-1-011	CPS01	5/22/94	11	ASC	<1	<1	<1	<1	<1	<1	<1	<1	<1
Analyses					7	7	7	7	7	7	7	7	7
Detections					4	2	0	4	0	0	1	0	2
Minimum Concentration					1.1	4.8	0	2.2	0	0	3.4	0	86
Maximum Concentration					2600	5.1	0	13	0	0	3.4	0	170
HWAD - PCG					233	2.6	80	NE	800	800	NE	800	4000
HWAD - PCG Hits					2	2	0	NE	0	0	NE	0	0

Notes:
NE = Not established
Zero values listed for maximum and minimum concentrations indicate a nondetect value for that analyte.

Explosives
Method 8330 (ASC)

Sample ID	Location ID	Sample Date	Depth (feet)	Lab	m-Dinitrobenzene	Nitrobenzene	RDX	sym-Trinitrobenzene	Tetryl
					mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
B12-HA1-1-000	HA01	5/2/94	0.5	ASC	<1	<1	2.4	0.31 J	<1
B12-HA1-1-005	HA01	5/2/94	5	ASC	<1	<1	<1	<1	<1
B12-SS1-1-000	SS01	5/2/94	0.5	ASC X	<1	<1	930	56 X	<1
B12-SS1-2-000	SS02	5/2/94	0.5	ASC X	<1	<1	1900	70 X	<1
B12-CPS1-1-011	CPS01	5/22/94	11	ASC	<1	<1	1.4	<1	<1
B12-CPS1-1-022	CPS01	5/22/94	22	ASC	<1	<1	0.64 J	<1	<1
B12-CPS2-1-011	CPS01	5/22/94	11	ASC	<1	<1	0.48 J	<1	<1
Analyses					7	7	7	7	7
Detections					0	0	6	3	0
Minimum Concentration					0	0	0.48	0.31	0
Maximum Concentration					0	0	1900	70	0
HWAD - PCG					8	40	64	4	800
HWAD - PCG Hits					0	0	2	2	0

Notes:
NE = Not established
Zero values listed for maximum and minimum concentrations indicate a nondetect value for that analyte.

Picric Acid
Method 8330M (ASC)

Sample ID	Location ID	Sample Date	Depth (feet)	Lab	Picric Acid
					mg/kg
B12-HA1-1-005	HA01	5/2/94	5	ASC	<0.25
B12-SS1-1-000	SS01	5/2/94	0.5	ASC	0.44
B12-SS1-2-000	SS02	5/2/94	0.5	ASC	0.98
B12-CPS1-1-011	CPS01	5/22/94	11	ASC	<0.25
B12-CPS1-1-022	CPS01	5/22/94	22	ASC	<0.25
B12-CPS2-1-011	CPS01	5/22/94	11	ASC	<0.25

Analyses	6
Detections	2
Minimum Concentration	0.44
Maximum Concentration	0.98
HWAD - PCG	NE
HWAD - PCG Hits	NE

Note:
NE = Not established

Appendix D

SWMU B – 12

Windrow Samples

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APCL Analytical Report

Submitted to:
Tetra Tech, Inc. (San Francisco)
Attention: Roy Roenbeck
180 Howard St. Ste. 250
San Francisco CA 94105
Tel: (415)974-1221 Fax: (415)974-5914

Service ID #: 801-992955
Collected by:
Collected on: 04/06-08/99

Received: 04/09/99
Extracted: 04/12/99
Tested: 04/09-13/99
Reported: 04/15/99

Sample Description: Soil and Water
Project Description: W 101 Bioremediation

Analysis of Water and Soil Samples

I . Analysis of Water Samples

Component Analyzed	Method	Unit	PQL	Analysis Result ER-040699-1525-1 99-02955-18	Analysis Result ER-040799-1450-2 99-02955-19
NITROAROMATICS AND NITROAMINES					
Dilution Factor				1.51	3.85
4-AMINO-2,6-DINITROTOLUENE	8330	µg/L	10	<15	<38
2-AMINO-4,6-DINITROTOLUENE	8330	µg/L	10	<16	<38
1,3-DINITROBENZENE	8330	µg/L	4	<6	<15
2,4-DINITROTOLUENE	8330	µg/L	5.7	<8.6	<22
2,6-DINITROTOLUENE	8330	µg/L	9.4	<14	<36
HMX	8330	µg/L	13	<20	<49
NITROBENZENE	8330	µg/L	6.4	<9.6	<24
3-NITROTOLUENE	8330	µg/L	7.9	<12	<30
RDX	8330	µg/L	14	<21	<53
TETRYL	8330	µg/L	4	<6	<15
1,3,5-TRINITROBENZENE	8330	µg/L	7.3	<11	<28
2,4,6-TRINITROTOLUENE	8330	µg/L	6.9	<10	<26
2/4-NITROTOLUENE	8330	µg/L	8.5	<13	<32

II . Analysis of Soil Samples

Component Analyzed	Method	Unit	PQL	Analysis Result A3-WR001-C001-CC002P 99-02955-1	Analysis Result A3-WR001-C002-CC002P 99-02955-2
MOISTURE	ASTM-D2216	%Moisture	0.5	26.9	28.3
NITROAROMATICS AND NITROAMINES					
Dilution Factor				1	1
4-AMINO-2,6-DINITROTOLUENE	8330	mg/kg	0.2	<0.27	<0.28
2-AMINO-4,6-DINITROTOLUENE	8330	mg/kg	0.2	<0.27	<0.28
1,3-DINITROBENZENE	8330	mg/kg	0.25	<0.34	<0.35
2,4-DINITROTOLUENE	8330	mg/kg	0.25	<0.34	<0.35
2,6-DINITROTOLUENE	8330	mg/kg	0.25	<0.34	<0.35
HMX	8330	mg/kg	0.25	<0.34	<0.35
NITROBENZENE	8330	mg/kg	0.25	<0.34	<0.35
3-NITROTOLUENE	8330	mg/kg	0.25	<0.34	<0.35
RDX	8330	mg/kg	0.25	<0.34	<0.35
TETRYL	8330	mg/kg	0.25	<0.34	<0.35
1,3,5-TRINITROBENZENE	8330	mg/kg	0.25	<0.34	<0.35
2,4,6-TRINITROTOLUENE	8330	mg/kg	0.25	<0.34	<0.35
2/4-NITROTOLUENE	8330	mg/kg	0.25	<0.34	<0.35

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APCL Analytical Report

Component Analyzed	Method	Unit	PQL	Analysis Result A3-WR001-C003-CC002P 99-02955-3	Analysis Result A3-WR001-C004-CC002P 99-02955-4
MOISTURE	ASTM-D2216	%Moisture	0.5	27.4	27.2
NITROAROMATICS AND NITROAMINES [a]					
Dilution Factor				1	1
4-AMINO-2,6-DINITROTOLUENE	8330	mg/kg	0.2	<0.28	<0.27
2-AMINO-4,6-DINITROTOLUENE	8330	mg/kg	0.2	<0.28	<0.27
1,3-DINITROBENZENE	8330	mg/kg	0.25	<0.34	<0.34
2,4-DINITROTOLUENE	8330	mg/kg	0.25	<0.34	<0.34
2,6-DINITROTOLUENE	8330	mg/kg	0.25	<0.34	<0.34
HMX	8330	mg/kg	0.25	<0.34	<0.34
NITROBENZENE	8330	mg/kg	0.25	<0.34	<0.34
3-NITROTOLUENE	8330	mg/kg	0.25	<0.34	<0.34
RDX	8330	mg/kg	0.25	0.3J	1.6
TETRYL	8330	mg/kg	0.25	<0.34	<0.34
1,3,5-TRINITROBENZENE	8330	mg/kg	0.25	<0.34	<0.34
2,4,6-TRINITROTOLUENE	8330	mg/kg	0.25	<0.34	0.1J
2/4-NITROTOLUENE	8330	mg/kg	0.25	<0.34	<0.34

Component Analyzed	Method	Unit	PQL	Analysis Result A3-WR002-C001-CC002P 99-02955-5	Analysis Result A3-WR002-C002-CC002P 99-02955-6
MOISTURE	ASTM-D2216	%Moisture	0.5	30.8	32.5
NITROAROMATICS AND NITROAMINES					
Dilution Factor				1	1
4-AMINO-2,6-DINITROTOLUENE	8330	mg/kg	0.2	<0.29	<0.30
2-AMINO-4,6-DINITROTOLUENE	8330	mg/kg	0.2	<0.29	<0.30
1,3-DINITROBENZENE	8330	mg/kg	0.25	<0.36	<0.37
2,4-DINITROTOLUENE	8330	mg/kg	0.25	<0.36	<0.37
2,6-DINITROTOLUENE	8330	mg/kg	0.25	<0.36	<0.37
HMX	8330	mg/kg	0.25	<0.36	<0.37
NITROBENZENE	8330	mg/kg	0.25	<0.36	<0.37
3-NITROTOLUENE	8330	mg/kg	0.25	<0.36	<0.37
RDX	8330	mg/kg	0.25	<0.36	<0.37
TETRYL	8330	mg/kg	0.25	<0.36	<0.37
1,3,5-TRINITROBENZENE	8330	mg/kg	0.25	<0.36	<0.37
2,4,6-TRINITROTOLUENE	8330	mg/kg	0.25	<0.36	<0.37
2/4-NITROTOLUENE	8330	mg/kg	0.25	<0.36	<0.37

Component Analyzed	Method	Unit	PQL	Analysis Result A3-WR002-C003-CC002P 99-02955-7	Analysis Result A3-WR002-C004-CC002P 99-02955-8
MOISTURE	ASTM-D2216	%Moisture	0.5	31.7	33.9

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Component Analyzed	Method	Unit	PQL	Analysis Result A3-WR002-C003-CC002P 99-02955-7	Analysis Result A3-WR002-C004-CC002P 99-02955-8
NITROAROMATICS AND NITROAMINES [a]					
Dilution Factor				1	1
4-AMINO-2,6-DINITROTOLUENE	8330	mg/kg	0.2	<0.29	0.2J
2-AMINO-4,6-DINITROTOLUENE	8330	mg/kg	0.2	<0.29	0.2J
1,3-DINITROBENZENE	8330	mg/kg	0.25	<0.37	<0.38
2,4-DINITROTOLUENE	8330	mg/kg	0.25	<0.37	<0.38
2,6-DINITROTOLUENE	8330	mg/kg	0.25	<0.37	<0.38
HMX	8330	mg/kg	0.25	<0.37	<0.38
NITROBENZENE	8330	mg/kg	0.25	<0.37	<0.38
3-NITROTOLUENE	8330	mg/kg	0.25	<0.37	<0.38
RDX	8330	mg/kg	0.25	<0.37	0.44
TETRYL	8330	mg/kg	0.25	<0.37	<0.38
1,3,5-TRINITROBENZENE	8330	mg/kg	0.25	<0.37	<0.38
2,4,6-TRINITROTOLUENE	8330	mg/kg	0.25	<0.37	0.2J
2/4-NITROTOLUENE	8330	mg/kg	0.25	<0.37	<0.38

Component Analyzed	Method	Unit	PQL	Analysis Result A3-WR002-C005-CC002P 99-02955-9	Analysis Result A3-WR003-C001-CC002P 99-02955-10
MOISTURE	ASTM-D2216	%Moisture	0.5	26.7	27.3
NITROAROMATICS AND NITROAMINES					
Dilution Factor				1	1
4-AMINO-2,6-DINITROTOLUENE	8330	mg/kg	0.2	<0.27	<0.27
2-AMINO-4,6-DINITROTOLUENE	8330	mg/kg	0.2	<0.27	<0.27
1,3-DINITROBENZENE	8330	mg/kg	0.25	<0.34	<0.34
2,4-DINITROTOLUENE	8330	mg/kg	0.25	<0.34	<0.34
2,6-DINITROTOLUENE	8330	mg/kg	0.25	<0.34	<0.34
HMX	8330	mg/kg	0.25	<0.34	<0.34
NITROBENZENE	8330	mg/kg	0.25	<0.34	<0.34
3-NITROTOLUENE	8330	mg/kg	0.25	<0.34	<0.34
RDX	8330	mg/kg	0.25	<0.34	<0.34
TETRYL	8330	mg/kg	0.25	<0.34	<0.34
1,3,5-TRINITROBENZENE	8330	mg/kg	0.25	<0.34	<0.34
2,4,6-TRINITROTOLUENE	8330	mg/kg	0.25	<0.34	<0.34
2/4-NITROTOLUENE	8330	mg/kg	0.25	<0.34	<0.34

Component Analyzed	Method	Unit	PQL	Analysis Result A3-WR003-C002-CC002P 99-02955-11	Analysis Result A3-WR003-C003-CC002P 99-02955-12
MOISTURE	ASTM-D2216	%Moisture	0.5	31.8	27.0

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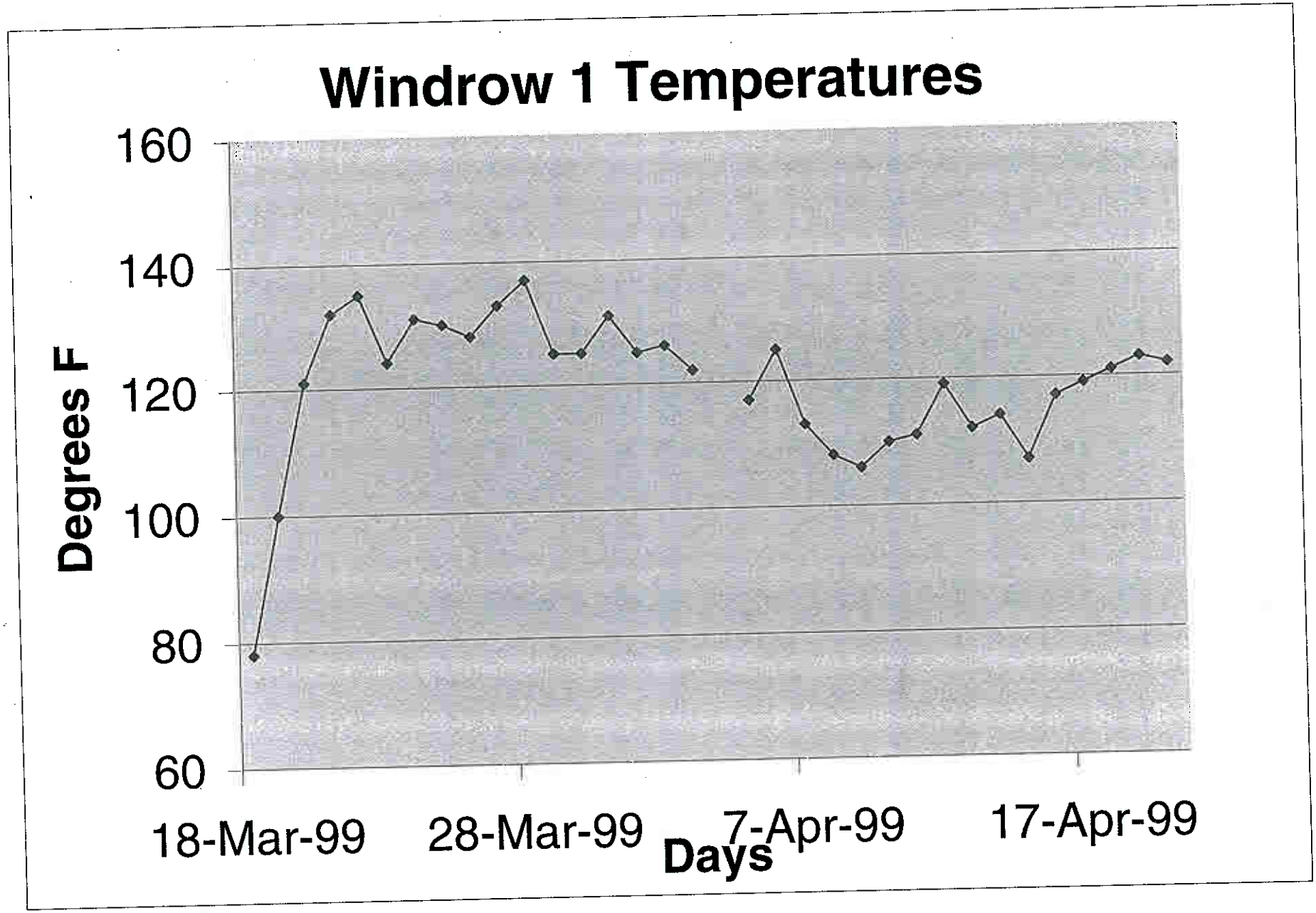
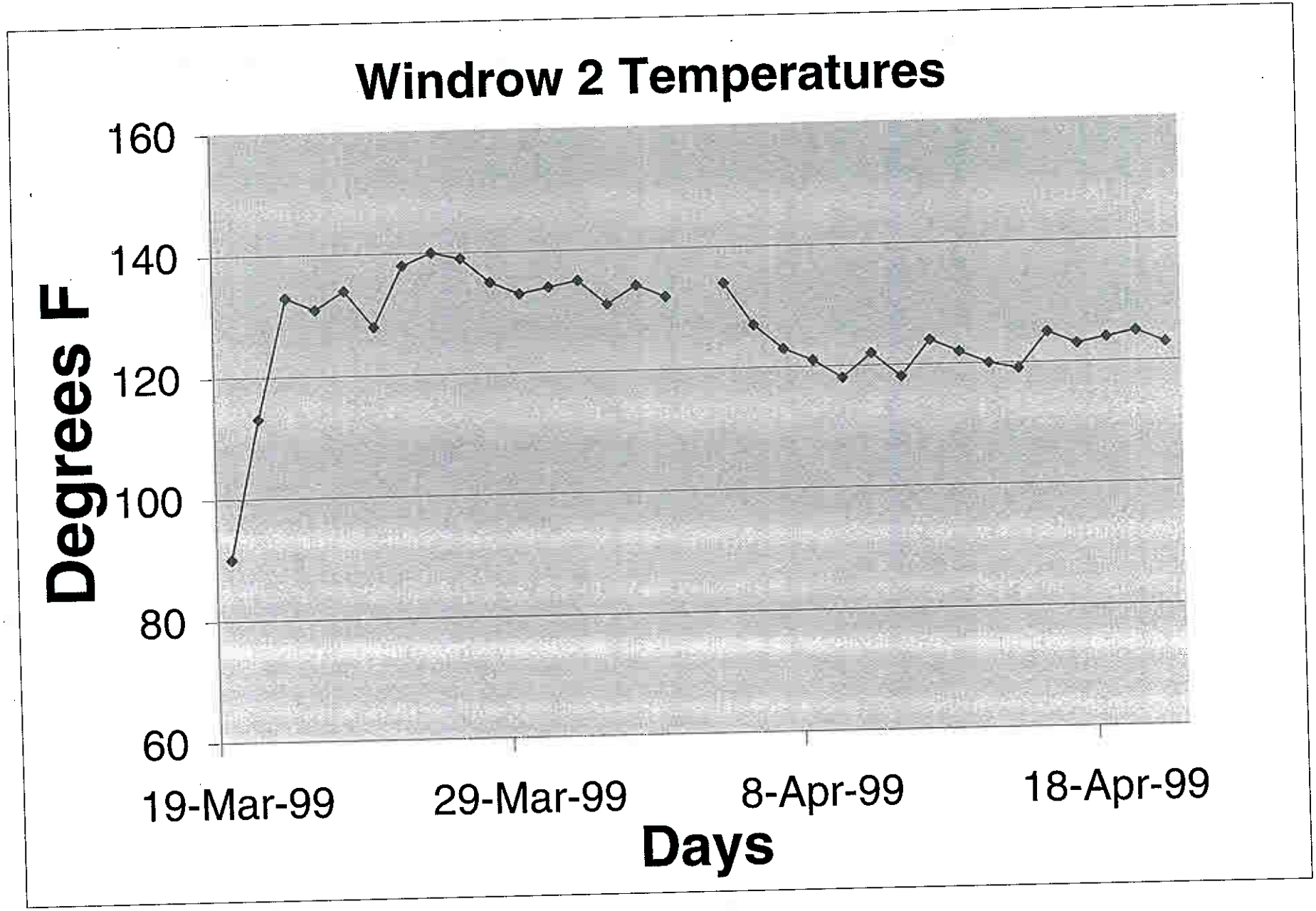
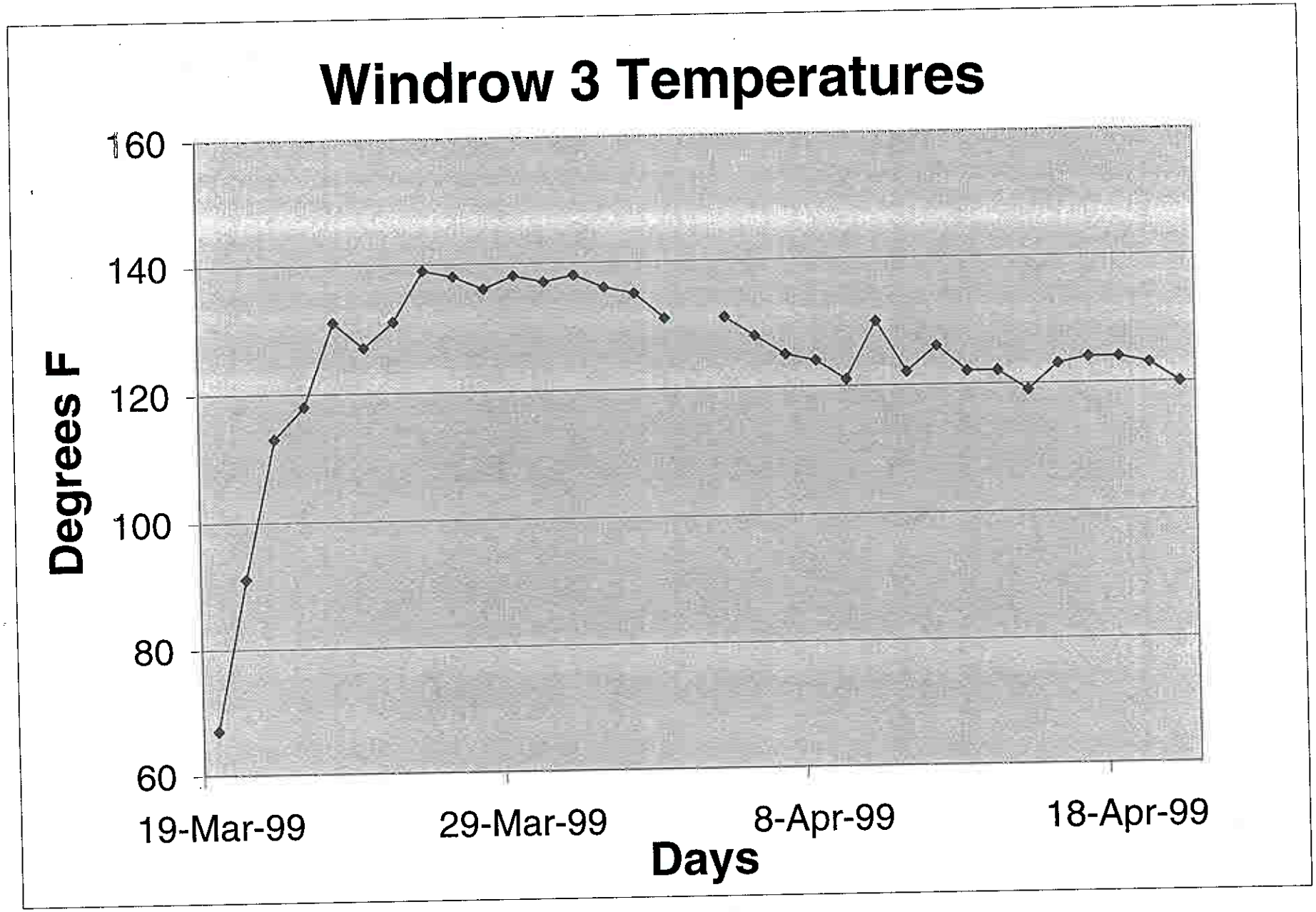
Component Analyzed	Method	Unit	PQL	Analysis Result A3-WR003-C002-CC002P 99-02955-11	Analysis Result A3-WR003-C003-CC002P 99-02955-12
NITROAROMATICS AND NITROAMINES					
Dilution Factor				1	1
4-AMINO-2,6-DINITROTOLUENE	8330	mg/kg	0.2	<0.29	<0.27
2-AMINO-4,6-DINITROTOLUENE	8330	mg/kg	0.2	<0.29	<0.27
1,3-DINITROBENZENE	8330	mg/kg	0.25	<0.37	<0.34
2,4-DINITROTOLUENE	8330	mg/kg	0.25	<0.37	<0.34
2,6-DINITROTOLUENE	8330	mg/kg	0.25	<0.37	<0.34
HMX	8330	mg/kg	0.25	<0.37	<0.34
NITROBENZENE	8330	mg/kg	0.25	<0.37	<0.34
3-NITROTOLUENE	8330	mg/kg	0.25	<0.37	<0.34
RDX	8330	mg/kg	0.25	<0.37	<0.34
TETRYL	8330	mg/kg	0.25	<0.37	<0.34
1,3,5-TRINITROBENZENE	8330	mg/kg	0.25	<0.37	<0.34
2,4,6-TRINITROTOLUENE	8330	mg/kg	0.25	<0.37	<0.34
2/4-NITROTOLUENE	8330	mg/kg	0.25	<0.37	<0.34

Component Analyzed	Method	Unit	PQL	Analysis Result A3-WR003-C004-CC002P 99-02955-13	Analysis Result ~~A3-WR003-C001-CC002P~~ 99-02955-14
MOISTURE	ASTM-D2216	%Moisture	0.5	12.7	37.6
NITROAROMATICS AND NITROAMINES (a)					
Dilution Factor				1	10
4-AMINO-2,6-DINITROTOLUENE	8330	mg/kg	0.2	<0.23	<3.2
2-AMINO-4,6-DINITROTOLUENE	8330	mg/kg	0.2	<0.23	<3.2
1,3-DINITROBENZENE	8330	mg/kg	0.25	<0.29	<4.0
2,4-DINITROTOLUENE	8330	mg/kg	0.25	<0.29	<4.0
2,6-DINITROTOLUENE	8330	mg/kg	0.25	<0.29	<4.0
HMX	8330	mg/kg	0.25	<0.29	15
NITROBENZENE	8330	mg/kg	0.25	<0.29	<4.0
3-NITROTOLUENE	8330	mg/kg	0.25	<0.29	<4.0
RDX	8330	mg/kg	0.25	0.3J	120
TETRYL	8330	mg/kg	0.25	<0.29	<4.0
1,3,5-TRINITROBENZENE	8330	mg/kg	0.25	<0.29	<4.0
2,4,6-TRINITROTOLUENE	8330	mg/kg	0.25	0.1J	11
2/4-NITROTOLUENE	8330	mg/kg	0.25	<0.29	<4.0

Component Analyzed	Method	Unit	PQL	Analysis Result A3-WR008-C002-CC002P 99-02955-15	Analysis Result A3-WR008-C003-CC002P 99-02955-16
MOISTURE	ASTM-D2216	%Moisture	0.5	42.7	32.4


Windrow 1 Temperatures
160
140
120
100
80
60
Degrees F
18-Mar-99
28-Mar-99
7-Apr-99
17-Apr-99
Days


Windrow 2 Temperatures
Degrees F
160
140
120
100
80
60
19-Mar-99
29-Mar-99
8-Apr-99
18-Apr-99
Days


Windrow 3 Temperatures
160
140
120
100
80
60
Degrees F
19-Mar-99
29-Mar-99
8-Apr-99
18-Apr-99
Days

SWMU B – 12

Confirmation Samples

Applied P & Ch Laboratory
13760 Magnolia Ave. Chino CA 91710
Tel: (909) 590-1828 Fax: (909) 590-1498

APCL Analytical Report

Submitted to:
U.S. Army Corps of Engineers
Attention: Cathy Martin
1325 J Street
Sacramento CA 95814-2922
Tel: (916)557-7646 Fax: (916)557-5307

Service ID #: 801-992437
Collected by:
Collected on: 03/11/99

Received: 03/12/99
Extracted: 03/16/99
Tested: 03/15-17/99
Reported: 03/26/99

Sample Description: Soil and Water
Project Description: W.101 Bioremediation

Analysis of Water and Soil Samples

I . Analysis of Water Samples

Component Analyzed	Method	Unit	PQL	Analysis Result ER-031199-0922-1 99-02437-14
NITROAROMATICS AND NITROAMINES				
Dilution Factor				1.69
4-AMINO-2,6-DINITROTOLUENE	SW8330	µg/L	0.6	<1
2-AMINO-4,6-DINITROTOLUENE	SW8330	µg/L	0.5	<0.83
1,3-DINITROBENZENE	SW8330	µg/L	4	<6.7
2,4-DINITROTOLUENE	SW8330	µg/L	5.7	<9.5
2,6-DINITROTOLUENE	SW8330	µg/L	9.4	<16
HMX	SW8330	µg/L	13	<22
NITROBENZENE	SW8330	µg/L	6.4	<11
3-NITROTOLUENE	SW8330	µg/L	7.9	<13
RDX	SW8330	µg/L	14	<23
TETRYL	SW8330	µg/L	4	<6.7
1,3,5-TRINITROBENZENE	SW8330	µg/L	7.3	<12
2,4,6-TRINITROTOLUENE	SW8330	µg/L	6.9	<12
2/4-NITROTOLUENE	SW8330	µg/L	8.5	<14

II . Analysis of Soil Samples

Component Analyzed	Method	Unit	PQL	Analysis Result A5-SMB12-P1-GS001-P 99-02437-1	A5-SMB12-P1-GS002-P 99-02437-2
MOISTURE	ASTM-D2216	%Moisture	0.5	3.9	2.5
NITROAROMATICS AND NITROAMINES [a]					
Dilution Factor				10	1
4-AMINO-2,6-DINITROTOLUENE	SW8330	mg/kg	0.17	10	0.36
2-AMINO-4,6-DINITROTOLUENE	SW8330	mg/kg	0.24	10	0.36
1,3-DINITROBENZENE	SW8330	mg/kg	0.25	<2.6	<0.26
2,4-DINITROTOLUENE	SW8330	mg/kg	0.09	<0.94	<0.092
2,6-DINITROTOLUENE	SW8330	mg/kg	0.05	<0.52	<0.051
HMX	SW8330	mg/kg	0.25	16	<0.26
NITROBENZENE	SW8330	mg/kg	0.24	<2.5	<0.25
3-NITROTOLUENE	SW8330	mg/kg	0.25	<2.6	<0.26
RDX	SW8330	mg/kg	0.25	54	0.86
TETRYL	SW8330	mg/kg	0.19	<2.0	<0.19
1,3,5-TRINITROBENZENE	SW8330	mg/kg	0.24	5.4	<0.25
2,4,6-TRINITROTOLUENE	SW8330	mg/kg	0.25	105	0.2J
2/4-NITROTOLUENE	SW8330	mg/kg	0.25	<2.6	<0.26

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APCL Analytical Report

Component Analyzed	Method	Unit	PQL	Analysis Result A5-SMB12-P1-GS003-P 99-02437-3	Analysis Result A5-SMB12 P1-GS004-P 99-02437-4
MOISTURE	ASTM-D2216	%Moisture	0.5	2.9	4.2
NITROAROMATICS AND NITROAMINES [a]					
Dilution Factor				1	10
4-AMINO-2,6-DINITROTOLUENE	SW8330	mg/kg	0.17	<0.18	<1.8
2-AMINO-4,6-DINITROTOLUENE	SW8330	mg/kg	0.24	<0.25	<2.5
1,3-DINITROBENZENE	SW8330	mg/kg	0.25	<0.26	<2.6
2,4-DINITROTOLUENE	SW8330	mg/kg	0.09	<0.093	<0.94
2,6-DINITROTOLUENE	SW8330	mg/kg	0.05	<0.051	<0.52
HMX	SW8330	mg/kg	0.25	0.87	3.3
NITROBENZENE	SW8330	mg/kg	0.24	<0.25	<2.5
3-NITROTOLUENE	SW8330	mg/kg	0.25	<0.26	<2.6
RDX	SW8330	mg/kg	0.25	6.23	25
TETRYL	SW8330	mg/kg	0.19	<0.20	<2.0
1,3,5-TRINITROBENZENE	SW8330	mg/kg	0.24	0.35	4.2
2,4,6-TRINITROTOLUENE	SW8330	mg/kg	0.25	3.2	61
2/4-NITROTOLUENE	SW8330	mg/kg	0.25	<0.26	<2.6

Component Analyzed	Method	Unit	PQL	Analysis Result A5-SMB12-S001-2-P 99-02437-5	Analysis Result A5-SMB12-S001-3-P 99-02437-6
MOISTURE	ASTM-D2216	%Moisture	0.5	3.6	3.7
NITROAROMATICS AND NITROAMINES [a]					
Dilution Factor				1	1
4-AMINO-2,6-DINITROTOLUENE	SW8330	mg/kg	0.17	<0.18	<0.18
2-AMINO-4,6-DINITROTOLUENE	SW8330	mg/kg	0.24	<0.25	<0.25
1,3-DINITROBENZENE	SW8330	mg/kg	0.25	<0.26	<0.26
2,4-DINITROTOLUENE	SW8330	mg/kg	0.09	<0.093	<0.093
2,6-DINITROTOLUENE	SW8330	mg/kg	0.05	<0.052	<0.052
HMX	SW8330	mg/kg	0.25	0.66	0.47
NITROBENZENE	SW8330	mg/kg	0.24	<0.25	<0.25
3-NITROTOLUENE	SW8330	mg/kg	0.25	<0.26	<0.26
RDX	SW8330	mg/kg	0.25	4.4	4.0
TETRYL	SW8330	mg/kg	0.19	<0.20	<0.20
1,3,5-TRINITROBENZENE	SW8330	mg/kg	0.24	0.29	0.28
2,4,6-TRINITROTOLUENE	SW8330	mg/kg	0.25	<0.26	<0.26
2/4-NITROTOLUENE	SW8330	mg/kg	0.25	<0.26	<0.26

Component Analyzed	Method	Unit	PQL	Analysis Result A6-SMB14-P1-GS001-P 99-02437-7	Analysis Result A6-SMB14-P1-GS002-P 99-02437-8
MOISTURE	ASTM-D2216	%Moisture	0.5	1.5	1.6

Appendix E

B12, Close up of soil staining around pit.

B12, View toward pit and surrounding area w/stained soil.

SWMU B- 12 September 1999