Decision Document

Solid Waste Management Unit B-14
Building 101-29/36 Catchment Pit
Hawthorne Army Depot
Hawthorne, Nevada

August 2000

Hawthorne Army Depot

Decision Document SWMU B-14

August 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

19 SEP 2000

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

State of Nevada

9 March 2001

Paul Liebendorfer
Chief, Bureau of Federal Facilities

Decision Document

Solid Waste Management Unit B-14
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Decision Document
SWMU B-14
Building 101-29/36 Catchment Pit
HAWTHORNE ARMY DEPOT
HAWTHORNE, NEVADA

1.0 Introduction:

This decision document describes the rationale for the proposed closure of SWMU B-14, building 101-29/36 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 B14 is in HWAD's central magazine are, on the southwest side of the 101 Production Area (Figure 1-1). This SWMU is an inactive unlined catchment pit located between Building 101-29 and Building 101-36, and 280 feet south of the ramp Building 101-56. The pit measures 90 feet long by 35 feet wide and is up to 10 feet deep. The sidewalls of the pit have been partially eroded. A discharge pipe enters the catchment pit from the north side and appears to be connected with the settling tank north of SWMU B14 (Figure 1-2). No visible piles of dredged soil were noted at this SWMU (E&E 1995).

The USACE, HWAD, and the NDEP agreed to define the boundaries of each SWMU using annotated monuments and survey pins. As part of Tt's 1997 field investigations, a survey monument was constructed and surveyed at SWMU B14. A brass survey pin on the monument designates the monument number HWAAP-83-1996 and the SWMU number B14. Three corner pins were set and surveyed to define the SWMU boundary, with the monument as the westernmost corner. The location of these corner markers and the SWMU boundary are shown on Figure 1-2, and the survey data is presented in Appendix B.

The USAEHA estimated the depth to ground water in the vicinity of SWMU B14 at approximately 120 feet below ground surface (bgs) in 1987 and 1988 (USAEHA 1988).

3.0 Site Conditions

The SWMU B14 catchment pit reportedly operated from 1940 to the early 1970s and received large amounts of wastewater containing TNT and cyclotrimethlyenetrinitramine (RDX).

Soils encountered during E&E's investigation of SWMU B14 consisted mostly of fine to coarse silty sands with gravel stained soil was observed in the catchment pit during E&E's site visit in 1992, but no visual evidence of concentrated explosives was observed in either the surface, near-surface, or subsurface soil samples collected during this investigation (E&E 1995).

Based on the past uses of the pit and on observations made during the previous site inspections, the target analytes at this SWMU are known to be explosives and metals.

4.0 INVESTIGATIONS

Site inspections of SWMU B14 were conducted by the USAEHA (1988), Jacobs Engineering (1988), and RAI (1992). During these inspections, stained soil was noted in 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 B14 included collecting and analyzing both surface and subsurface soil samples. Three surface soil samples and three near-surface samples were collected from the three hand auger sample locations HA01 through HA03. These sample locations are all within the catchment pit, as shown on Figure 3-1. The surface samples were collected at a depth of approximately six to 12 inches, and the near-surface samples were collected using a hand auger at a depth of five feet beneath the bottom of the pit (E&E 1995).

The subsurface investigation at SWMU B14 consisted of two CPT soundings, each with an adjacent sample boring, drilled on the downgradient (northwest) side of the catchment pit, shown on Figure 3-1. The soundings at CPS01 and CPS02 were advanced to depths of 76 and 38 feet, respectively.
In January 1999 question began to surface about the validity of the field screen tests and the concept that red stained soil was TNT contaminated soil. The USACE conducted soil sampling of the SWMU to determine if the field screen tests were correct.

5.0 Investigation Results

Analysis of the five surface and near-surface soil samples that E&E collected during this remedial investigation detected arsenic (1.6 mg/kg to 7.1 mg/kg), barium (33 mg/kg to 130 mg/kg), total chromium (2.7 mg/kg to 6.4 mg/kg), and lead (2.6 mg/kg to 17 mg/kg) in all of the samples. Beryllium (0.52 mg/kg) only was detected in the surface soil sample at location HA02. Mercury (0.23 mg/kg to 0.82 mg/kg) was detected in both of the surface samples collected at HA01 and HA02.

The seven explosives, TNT, 2,4-DNT, 2,6-DNT, 2-amino-4,6-DNT, 4-amino-2,6-DNT, RDX, and TNB, were detected in the five surface and near-surface samples analyzed. TNT and 4-amino-2,6-DNT were detected in all the samples, with concentrations ranging from 0.39 mg/kg to 8.9 mg/kg, and 0.63 mg/kg to 14 mg/kg, respectively. Sym-trinitrotoluene (TNB) (0.23 mg/kg to 0.73 mg/kg) was detected in all of the samples except sample B14-HA1-3-005, and 2,amino-4,6-DNT (0.81 mg/kg to 9.5 mg/kg) was detected in all of the samples except B14-HA1-1-005. 2,4-DNT, 2,6-DNT, and RDX were detected only in sample B14-HA1-1-000 at concentrations of 0.41 mg/kg, 0.57 mg/kg, and 1.1 mg/kg, respectively (E&E 1995).

With the exception of mercury, the same metals detected in the surface and near-surface soil samples also were detected at similar concentrations in the subsurface samples. Mercury was not detected in any of these subsurface samples. Chromium was detected at a higher concentration of 92 mg/kg in the 23-foot sample collected at location CPS02 but, was reported at a concentration of only 15 mg/kg in the duplicate of this sample. Beryllium was detected at 0.75 mg/kg and 1.0 mg/kg in the two samples collected at depths of 23 feet and 31 feet bgs at location CPS01 (E&E 1995).

TNT (0.17 mg/kg to 0.88 mg/kg) was detected in all six of the subsurface soil samples except B14-CPS1-1-007. TNB (0.88 mg/kg to 45 mg/kg) was detected in all of these soil samples except B14-CPS1-1-007 and B14-CPS1-1-011. 2-amino-4,6-DNT (1.6 mg/kg to 2.5 mg/kg) and RDX (0.73 mg/kg to 2.8 mg/kg) were detected in the same three subsurface soil samples (E&E 1995).

Metals did not pose a problem for this SWMU; however, the TNT field screen tests indicated TNT levels in excess of 30,000 ppm in the B-14 pit area. The January 1999 testing of TNT in the same area resulted in a TNT level of 2,500 ppm. This made the requirement for remediation of the soil for TNT contamination.

6.0 Remediation

The explosives contaminated soil from SWMU B-14 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-14 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-14 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-14 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-14 and has been treated in the composting windrows to levels below clean up goals. SWMU B-14should 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.

10.0 REFERENCES

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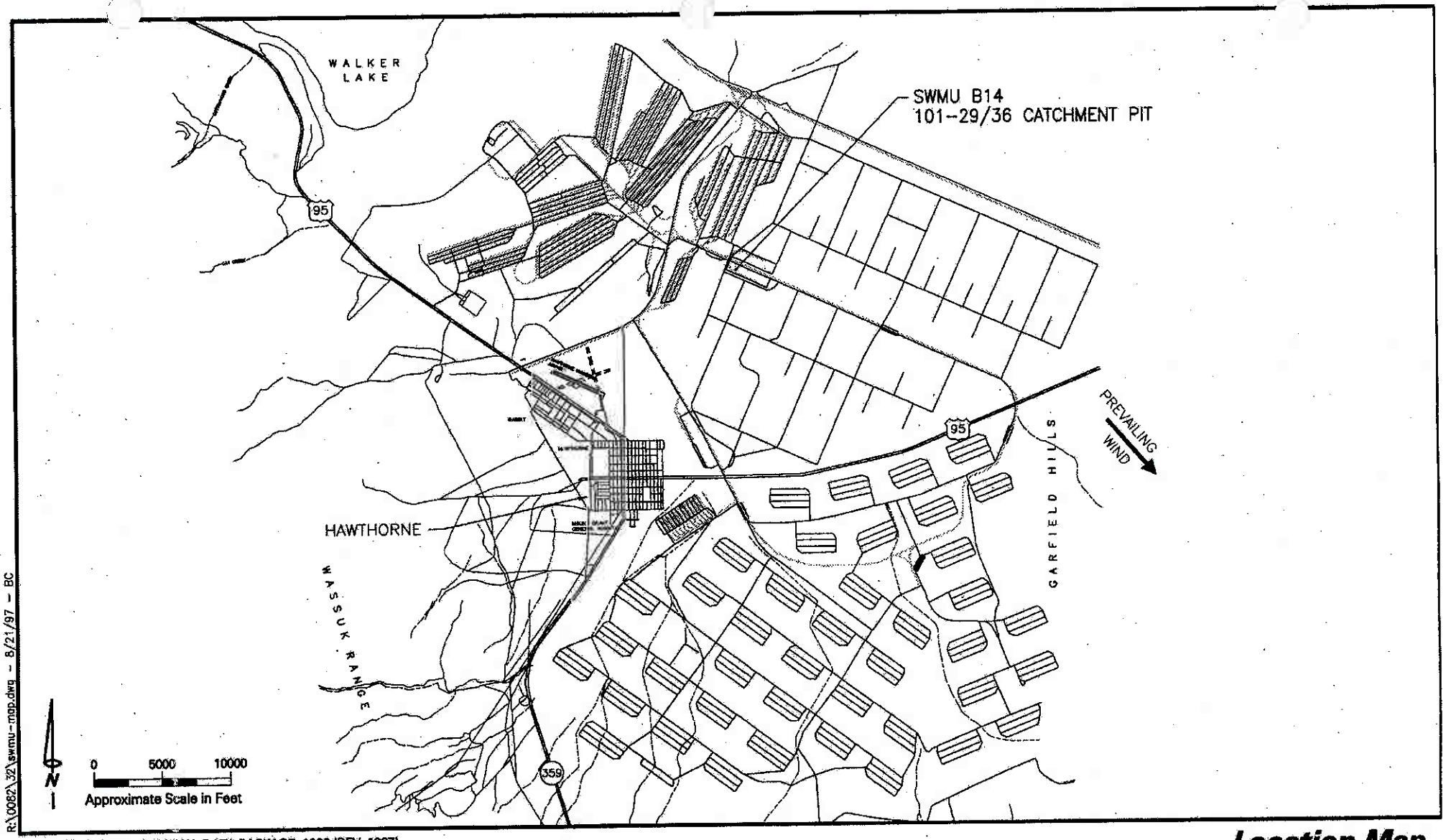


R:\0082\32\swmu-map.dwg - 8/21/97 - BC

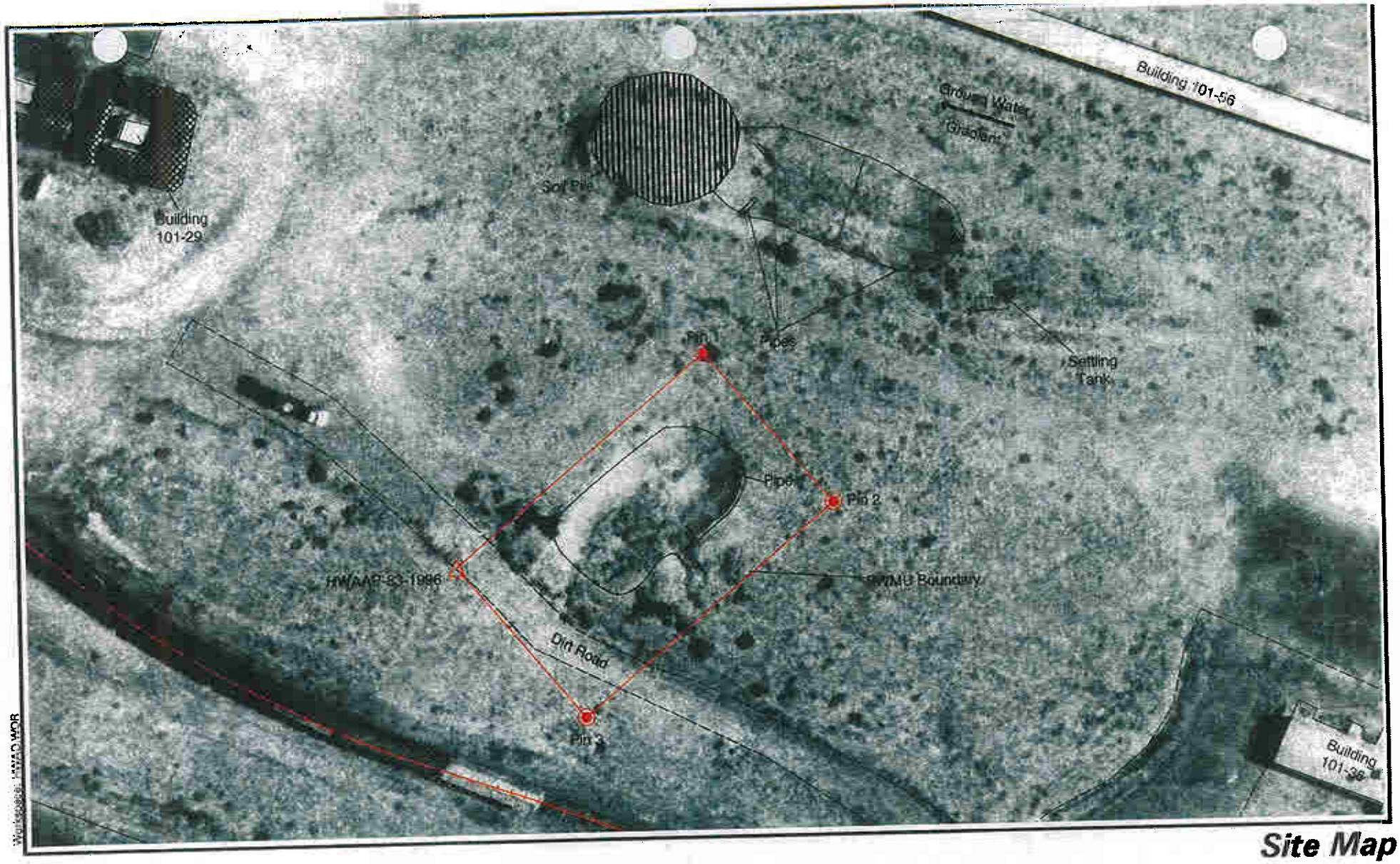
SOURCE: TETRA TECH FINAL DATA PACKAGE, 1996 (REV. 1997)

Location Map
SWMU B14
101-29/36 Catchment Pit

Hawthorne Army Depot
Hawthorne, Nevada

Tetra Tech, Inc.

Figure 1-1



Legend:

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

N

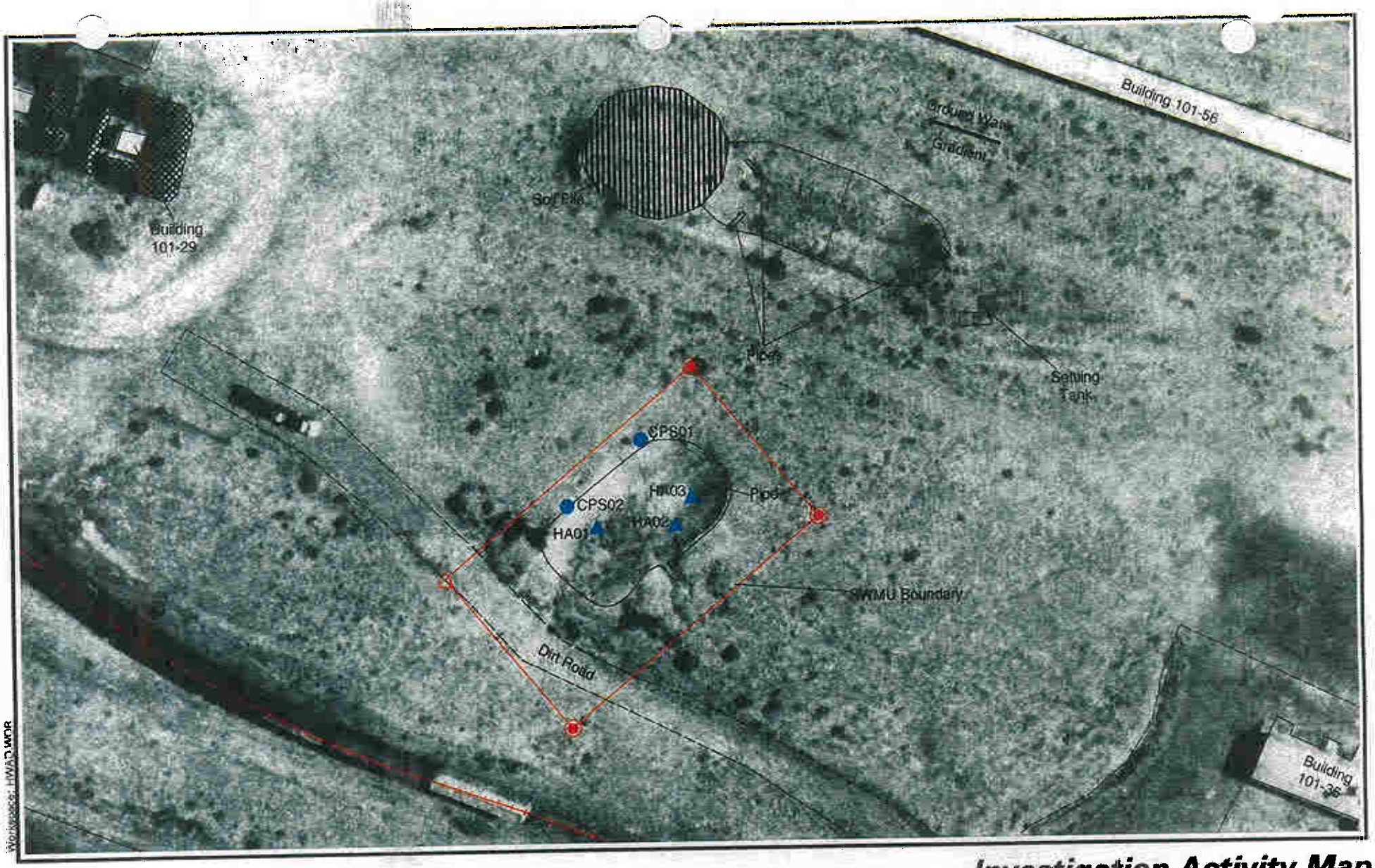
0 35 70
Approximate Scale in Feet

Tetra Tech, Inc.

Site Map
SWMU B14
101-29/36 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
- Railroad
- SWMU Monument

N

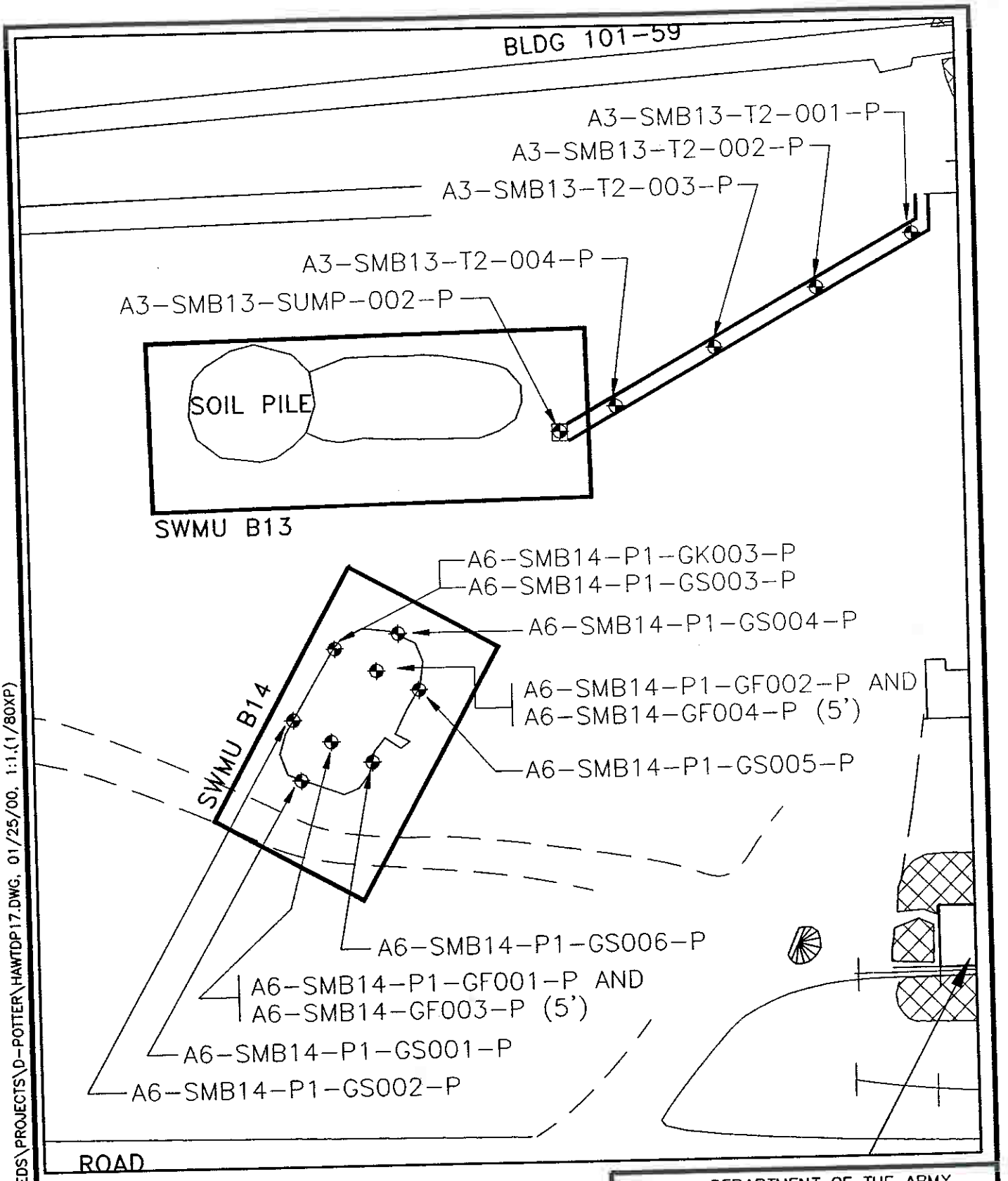
0 35 70
Approximate Scale in Feet

Tetra Tech, Inc.

Investigation Activity Map
SWMU B14
101-29/36 Catchment Pit

Hawthorne Army Depot
Hawthorne, Nevada

Figure 3-1



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

HAWTHORNE NEVADA

HAWTHORNE ARMY DEPOT
WEST 101 PROJECTION AREA

SITE MAP (AREA 6)-
SOIL SAMPLE LOCATIONS

SCALE: 1" = 80'

FIGURE: 4

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 Region IX, Preliminary Remedial Goals, Second Half, Sep. 1995

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

[f] Semi-Volatile Organic Compounds analyzed by EPA Method 8270

[g] Nevada Division of Environmental Protection

[h] 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 "M", 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.

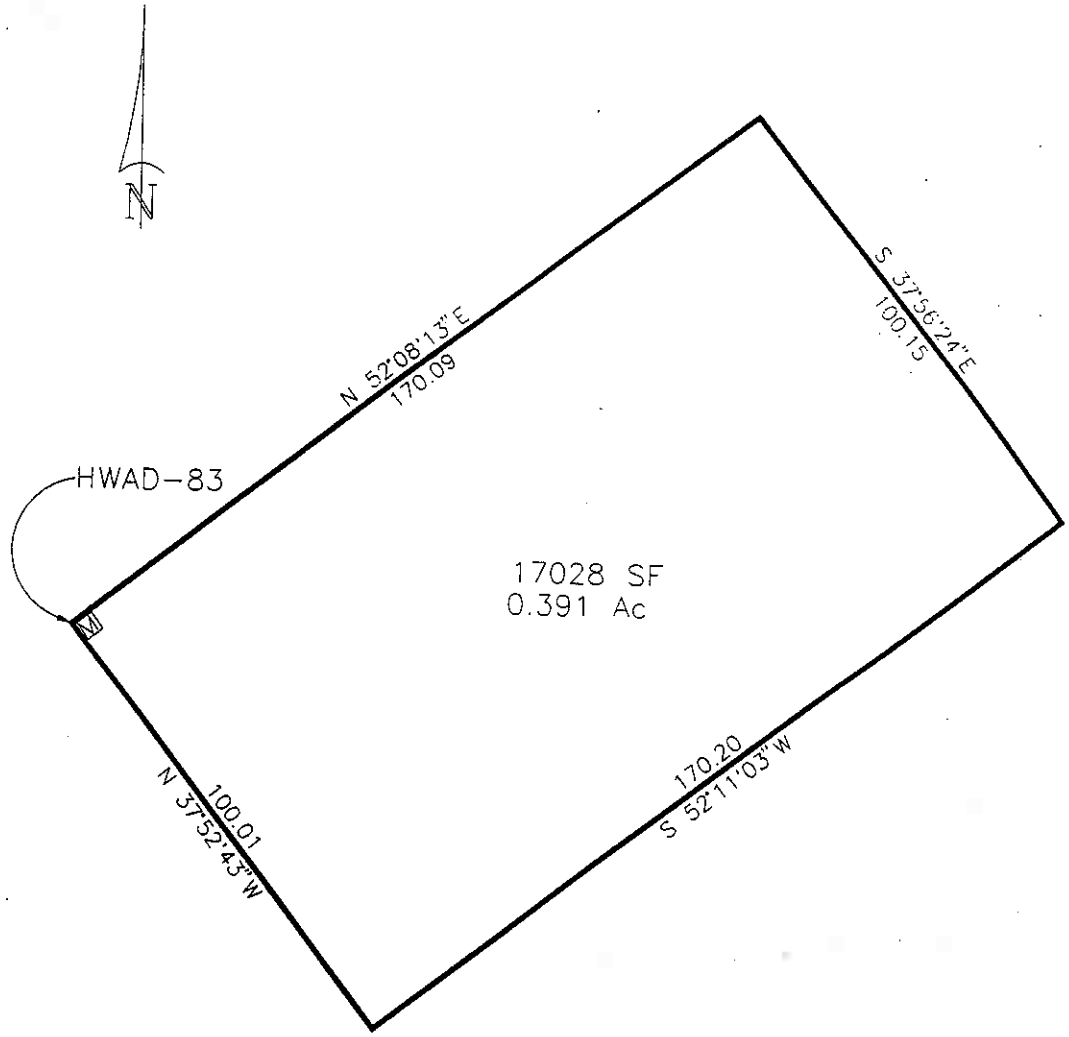
8. GRID DISTANCE X INVERSE CF (1.00298317) = GROUND DISTANCE.

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

ecology and environment, inc.	GENERAL NOTES HAWTHORNE ARMY DEPOT	COMSTOCK LAND SURVEYIN 777 LA RUE AVENUE, SUITE A



NW COR	N	14512771.899	E	2621252.280	ELEV 4184.666
NE COR	N	14512876.296	E	2621386.562	ELEV 4184.742
SE COR	N	14512797.312	E	2621448.138	ELEV 4184.929
SW COR	N	14512692.960	E	2621313.685	ELEV 4184.389

PROFESSIONAL LAND SURVEYOR
RICHARD A. STINCHFIELD
7/21/97
No.3631
STATE OF NEVADA

30 15 0 30 60 90

SCALE IN FEET

ecology and environment, inc.
International Specialists in the Environment

SHEET 14 OF 36

SWMU B-14

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

SWMU B14 Survey Data
Hawthorne Army Depot
Hawthorne, Nevada

SWMU	Point ID	Northing (feet)	Easting (feet)	Elevation
B14	CPS02	1389461.25	496913.06	NE
B14	CPS01	1389494.25	496953.46	NE
B14	HA03	1389464.25	496977.86	NE
B14	HA02	1389450.25	496968.96	NE
B14	HA01	1389450.25	496927.96	NE
B14	Pin 3	1389346.93	496909.16	4184.389
B14	Pin 2	1389451.28	497043.61	4184.929
B14	Pin 1	1389530.27	496982.03	4184.742
B14	HWAAP-83-1996	1389425.87	496847.75	4184.666

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

Nitrogen
Method 353.2 (ASC)

Sample ID	Location ID	Sample Date	Depth (feet)	Lab	Nitrogen Nitrate
					mg/kg
B14-HA1-1-000	HA01	5/2/94	0.5	ASC	7
B14-HA1-1-005	HA01	5/2/94	2.5	ASC	4.2
B14-HA1-2-000	HA02	5/2/94	0.5	ASC	6
B14-HA1-2-005	HA02	5/2/94	5	ASC	1.8
B14-HA1-3-005	HA03	5/2/94	3	ASC	5

Analyses	5
Detections	5
Minimum Concentration	1.8
Maximum Concentration	7
HWAD - PCG	128000
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
B14-HA1-1-000	HA01	5/2/94	0.5	ASC	52	<0.5	<0.5	3.3	<1	NA	NA	NA
B14-HA1-1-005	HA01	5/2/94	2.5	ASC	33	<0.51	<0.51	2.7	<1	3.3	4	<0.51
B14-HA1-2-000	HA02	5/2/94	0.5	ASC	130	0.52	<0.52	6	<1	7.1	17	<0.52
B14-HA1-2-005	HA02	5/2/94	5	ASC	91	<0.52	<0.52	6.4	<1	2.3	5.7	<0.52
B14-HA1-3-005	HA03	5/2/94	3	ASC	33	<0.52	<0.52	2.9	<1	1.6	2.9	<0.52
B14-CPS1-1-007	CPS01	5/24/94	7	ASC	75	<0.52	<0.52	4.4	<1	15	2.9	<0.52
B14-CPS1-1-011	CPS01	5/24/94	11	ASC	53	<0.5	<0.5	1.5	<1	8	1.2	<0.5
B14-CPS1-2-016	CPS02	5/24/94	16	ASC	180	<0.62	<0.62	5.2	<1.2	8.7	8.3	<0.62
B14-CPS1-2-023	CPS02	5/24/94	23	ASC	63	<0.51	<0.51	92	<1	2.6	1.7	<0.51
B14-CPS1-2-031	CPS02	5/24/94	31	ASC	190	1	<0.65	7.5	<1.3	18	20	<0.65
B14-CPS2-2-023	CPS02	5/24/94	23	ASC	180	0.75	<0.59	15	<1.2	9.6	14	<0.59
Analyses					11	11	11	11	11	10	10	10
Detections					11	3	0	11	0	10	10	0
Minimum Concentration					33	0.52	0	1.5	0	1.6	1.2	0
Maximum Concentration					190	1	0	92	0	18	20	0
HWAD - PCG					2000	1	20	20	100	100	100	20
HWAD - PCG Hits					0	1	0	1	0	0	0	0

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

Arsenic
Method 7060 (ASC)

Sample ID	Location ID	Sample Date	Depth (feet)	Lab	Arsenic
					mg/kg
B14-HA1-1-000	HA01	5/2/94	0.5	ASC	4.6
B14-HA1-1-005	HA01	5/2/94	2.5	ASC	3.3
B14-HA1-2-000	HA02	5/2/94	0.5	ASC	7.1
B14-HA1-2-005	HA02	5/2/94	5	ASC	2.3
B14-HA1-3-005	HA03	5/2/94	3	ASC	1.6
B14-CPS1-1-007	CPS01	5/24/94	7	ASC	15
B14-CPS1-1-011	CPS01	5/24/94	11	ASC	8
B14-CPS1-2-016	CPS02	5/24/94	16	ASC	8.7
B14-CPS1-2-023	CPS02	5/24/94	23	ASC	2.6
B14-CPS1-2-031	CPS02	5/24/94	31	ASC	18
B14-CPS2-2-023	CPS02	5/24/94	23	ASC	9.6

Analyses	11
Detections	11
Minimum Concentration	1.6
Maximum Concentration	18
HWAD - PCG	100
HWAD - PCG Hits	0

Lead
Method 7421 (ASC)

Sample ID	Location ID	Sample Date	Depth (feet)	Lab	Lead
					mg/kg
B14-HA1-1-000	HA01	5/2/94	0.5	ASC	5.7
B14-HA1-1-005	HA01	5/2/94	2.5	ASC	4
B14-HA1-2-000	HA02	5/2/94	0.5	ASC	17
B14-HA1-2-005	HA02	5/2/94	5	ASC	5.7
B14-HA1-3-005	HA03	5/2/94	3	ASC	2.9
B14-CPS1-1-007	CPS01	5/24/94	7	ASC	2.9
B14-CPS1-1-011	CPS01	5/24/94	11	ASC	1.2
B14-CPS1-2-016	CPS02	5/24/94	16	ASC	8.3
B14-CPS1-2-023	CPS02	5/24/94	23	ASC	1.7
B14-CPS1-2-031	CPS02	5/24/94	31	ASC	20
B14-CPS2-2-023	CPS02	5/24/94	23	ASC	14

Analyses	11
Detections	11
Minimum Concentration	1.2
Maximum Concentration	20
HWAD - PCG	100
HWAD - PCG Hits	0

Mercury
Method 7471 (ASC)

Sample ID	Location ID	Sample Date	Depth (feet)	Lab	Mercury
					mg/kg
B14-HA1-1-000	HA01	5/2/94	0.5	ASC	0.23
B14-HA1-1-005	HA01	5/2/94	2.5	ASC	<0.1
B14-HA1-2-000	HA02	5/2/94	0.5	ASC	0.82
B14-HA1-2-005	HA02	5/2/94	5	ASC	<0.1
B14-HA1-3-005	HA03	5/2/94	3	ASC	<0.1
B14-CPS1-1-007	CPS01	5/24/94	7	ASC	<0.1
B14-CPS1-1-011	CPS01	5/24/94	11	ASC	<0.1
B14-CPS1-2-016	CPS02	5/24/94	16	ASC	<0.12
B14-CPS1-2-023	CPS02	5/24/94	23	ASC	<0.1
B14-CPS1-2-031	CPS02	5/24/94	31	ASC	<0.13
B14-CPS2-2-023	CPS02	5/24/94	23	ASC	<0.12

Analyses	11
Detections	2
Minimum Concentration	0.23
Maximum Concentration	0.82
HWAD - PCG	24
HWAD - PCG Hits	0

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

Selenium
Method 7740 (ASC)

Sample ID	Location ID	Sample Date	Depth (feet)	Lab	Selenium
					mg/kg
B14-HA1-1-000	HA01	5/2/94	0.5	ASC	<0.5
B14-HA1-1-005	HA01	5/2/94	2.5	ASC	<0.51
B14-HA1-2-000	HA02	5/2/94	0.5	ASC	<0.52
B14-HA1-2-005	HA02	5/2/94	5	ASC	<0.52
B14-HA1-3-005	HA03	5/2/94	3	ASC	<0.52
B14-CPS1-1-007	CPS01	5/24/94	7	ASC	<0.52
B14-CPS1-1-011	CPS01	5/24/94	11	ASC	<0.5
B14-CPS1-2-016	CPS02	5/24/94	16	ASC	<0.62
B14-CPS1-2-023	CPS02	5/24/94	23	ASC	<0.51
B14-CPS1-2-031	CPS02	5/24/94	31	ASC	<0.65
B14-CPS2-2-023	CPS02	5/24/94	23	ASC	<0.59

Analyses	11
Detections	0
Minimum Concentration	0
Maximum Concentration	0
HWAD - PCG	20
HWAD - PCG Hits	0

Note:
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	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	m-Dinitrobenzene	Nitrobenzene
					mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
B14-HA1-1-000	HA01	5/2/94	0.5	ASC	0.93 J	0.41 J	0.57 J	3.9	<1	<1	5.1	<1	<1	<1	<1
B14-HA1-1-005	HA01	5/2/94	2.5	ASC	0.41 J	<1	<1	<1	<1	<1	1.1	<1	<1	<1	<1
B14-HA1-2-000	HA02	5/2/94	0.5	ASC	8.9	<1	<1	9.5	<1	<1	14	<1	<1	<1	<1
B14-HA1-2-005	HA02	5/2/94	5	ASC	0.39 JN	<1	<1	0.81 JN	<1	<1	0.63 JN	<1	<1	<1	<1
B14-HA1-3-005	HA03	5/2/94	3	ASC	5	<1	<1	1.6 N	<1	<1	1 N	<1	<1	<1	<1
B14-CPS1-1-007	CPS01	5/24/94	7	ASC	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
B14-CPS1-1-011	CPS01	5/24/94	11	ASC	0.3 J	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
B14-CPS1-2-016	CPS02	5/24/94	16	ASC	0.88 J	<1	<1	2.5	<1	<1	<1	<1	<1	<1	<1
B14-CPS1-2-023	CPS02	5/24/94	23	ASC	0.19 J	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
B14-CPS1-2-031	CPS02	5/24/94	31	ASC	0.17 J	<1	<1	1.6	<1	<1	<1	<1	<1	<1	<1
B14-CPS2-2-023	CPS02	5/24/94	23	ASC	0.64 J	<1	<1	2	<1	<1	<1	<1	<1	<1	<1
Analyses					11	11	11	11	11	11	11	11	11	11	11
Detections					10	1	1	7	0	0	5	0	0	0	0
Minimum Concentration					0.17	0.41	0.57	0.81	0	0	0.63	0	0	0	0
Maximum Concentration					8.9	0.41	0.57	9.5	0	0	14	0	0	0	0
HWAD - PCG					233	2.6	80	NE	800	800	NE	800	4000	8	40
HWAD - PCG Hits					0	0	0	NE	0	0	NE	0	0	0	0

Note:
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	RDX	sym-Trinitrobenzene	Tetryl
					mg/kg	mg/kg	mg/kg
B14-HA1-1-000	HA01	5/2/94	0.5	ASC	1.1	0.39 J	<1
B14-HA1-1-005	HA01	5/2/94	2.5	ASC	<1	0.7 J	<1
B14-HA1-2-000	HA02	5/2/94	0.5	ASC	<1	0.73 J	<1
B14-HA1-2-005	HA02	5/2/94	5	ASC	<1	0.23 JN	<1
B14-HA1-3-005	HA03	5/2/94	3	ASC	<1	<1	<1
B14-CPS1-1-007	CPS01	5/24/94	7	ASC	<1	<1	<1
B14-CPS1-1-011	CPS01	5/24/94	11	ASC	<1	<1	<1
B14-CPS1-2-016	CPS02	5/24/94	16	ASC	0.73 J	45	<1
B14-CPS1-2-023	CPS02	5/24/94	23	ASC	<1	0.88 J	<1
B14-CPS1-2-031	CPS02	5/24/94	31	ASC	2.4	7.9	<1
B14-CPS2-2-023	CPS02	5/24/94	23	ASC	2.8	19	<1
Analyses					11	11	11
Detections					4	8	0
Minimum Concentration					0.73	0.23	0
Maximum Concentration					2.8	45	0
HWAD - PCG					64	4	800
HWAD - PCG Hits					0	3	0

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

Picric Acid
Method 8330M (ASC)

Sample ID	Location ID	Sample Date	Depth (feet)	Lab	Picric Acid
					mg/kg
B14-HA1-1-000	HA01	5/2/94	0.5	ASC	<0.25
B14-HA1-1-005	HA01	5/2/94	2.5	ASC	<0.25
B14-HA1-2-000	HA02	5/2/94	0.5	ASC	<0.25
B14-HA1-2-005	HA02	5/2/94	5	ASC	<0.25
B14-HA1-3-005	HA03	5/2/94	3	ASC	<0.25
B14-CPS1-1-007	CPS01	5/24/94	7	ASC	<0.25
B14-CPS1-1-011	CPS01	5/24/94	11	ASC	<0.25
B14-CPS1-2-016	CPS02	5/24/94	16	ASC	<0.25
B14-CPS1-2-023	CPS02	5/24/94	23	ASC	<0.25
B14-CPS1-2-031	CPS02	5/24/94	31	ASC	<0.25
B14-CPS2-2-023	CPS02	5/24/94	23	ASC	<0.25

Analyses	11
Detections	0
Minimum Concentration	0
Maximum Concentration	0
HWAD - PCG	NE
HWAD - PCG Hits	NE

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

pH
Method 9045 (ASC)

Sample ID	Location ID	Sample Date	Depth (feet)	Lab	pH
					S.U.
B14-HA1-1-000	HA01	5/2/94	0.5	ASC	8.5
B14-HA1-1-005	HA01	5/2/94	2.5	ASC	8.8
B14-HA1-2-000	HA02	5/2/94	0.5	ASC	7.4
B14-HA1-2-005	HA02	5/2/94	5	ASC	7.8
B14-HA1-3-005	HA03	5/2/94	3	ASC	8.3
B14-CPS1-1-007	CPS01	5/24/94	7	ASC	NA
B14-CPS1-1-011	CPS01	5/24/94	11	ASC	NA
B14-CPS1-2-016	CPS02	5/24/94	16	ASC	NA
B14-CPS1-2-023	CPS02	5/24/94	23	ASC	NA
B14-CPS1-2-031	CPS02	5/24/94	31	ASC	NA
B14-CPS2-2-023	CPS02	5/24/94	23	ASC	NA

Analyses	5
Detections	5
Minimum Concentration	7.4
Maximum Concentration	8.8
HWAD - PCG	NE
HWAD - PCG Hits	NE

Notes:
NA = Not analyzed
NE = Not established

Nitrate Nitrite
Method 9200 (ASC)

Sample ID	Location ID	Sample Date	Depth (feet)	Lab	Nitrate-Nitrogen
					mg/kg
B14-CPS1-1-007	CPS01	5/24/94	7	ASC	6.6
B14-CPS1-1-011	CPS01	5/24/94	11	ASC	3.5
B14-CPS1-2-016	CPS02	5/24/94	16	ASC	1.8
B14-CPS1-2-023	CPS02	5/24/94	23	ASC	24
B14-CPS1-2-031	CPS02	5/24/94	31	ASC	3.2
B14-CPS2-2-023	CPS02	5/24/94	23	ASC	6.6

Analyses	6
Detections	6
Minimum Concentration	1.8
Maximum Concentration	24
HWAD - PCG	128000
HWAD - PCG Hits	0

Moisture
Method ASTM D2216 (ASC)

Sample ID	Location ID	Sample Date	Depth (feet)	Lab	Solids - Total
					Percent
B14-HA1-1-000	HA01	5/2/94	0.5	ASC	99
B14-HA1-1-005	HA01	5/2/94	2.5	ASC	98
B14-HA1-2-000	HA02	5/2/94	0.5	ASC	97
B14-HA1-2-005	HA02	5/2/94	5	ASC	96
B14-HA1-3-005	HA03	5/2/94	3	ASC	97
B14-CPS1-1-007	CPS01	5/24/94	7	ASC	NA
B14-CPS1-1-011	CPS01	5/24/94	11	ASC	NA
B14-CPS1-2-016	CPS02	5/24/94	16	ASC	NA
B14-CPS1-2-023	CPS02	5/24/94	23	ASC	NA
B14-CPS1-2-031	CPS02	5/24/94	31	ASC	NA
B14-CPS2-2-023	CPS02	5/24/94	23	ASC	NA

Analyses	5
Detections	5
Minimum Concentration	96
Maximum Concentration	99
HWAD - PCG	NE
HWAD - PCG Hits	NE

Notes:
NA = Not analyzed
NE = Not established

Appendix D

Windrow Confirmation Samples

SWMU B-14

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

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	<15	<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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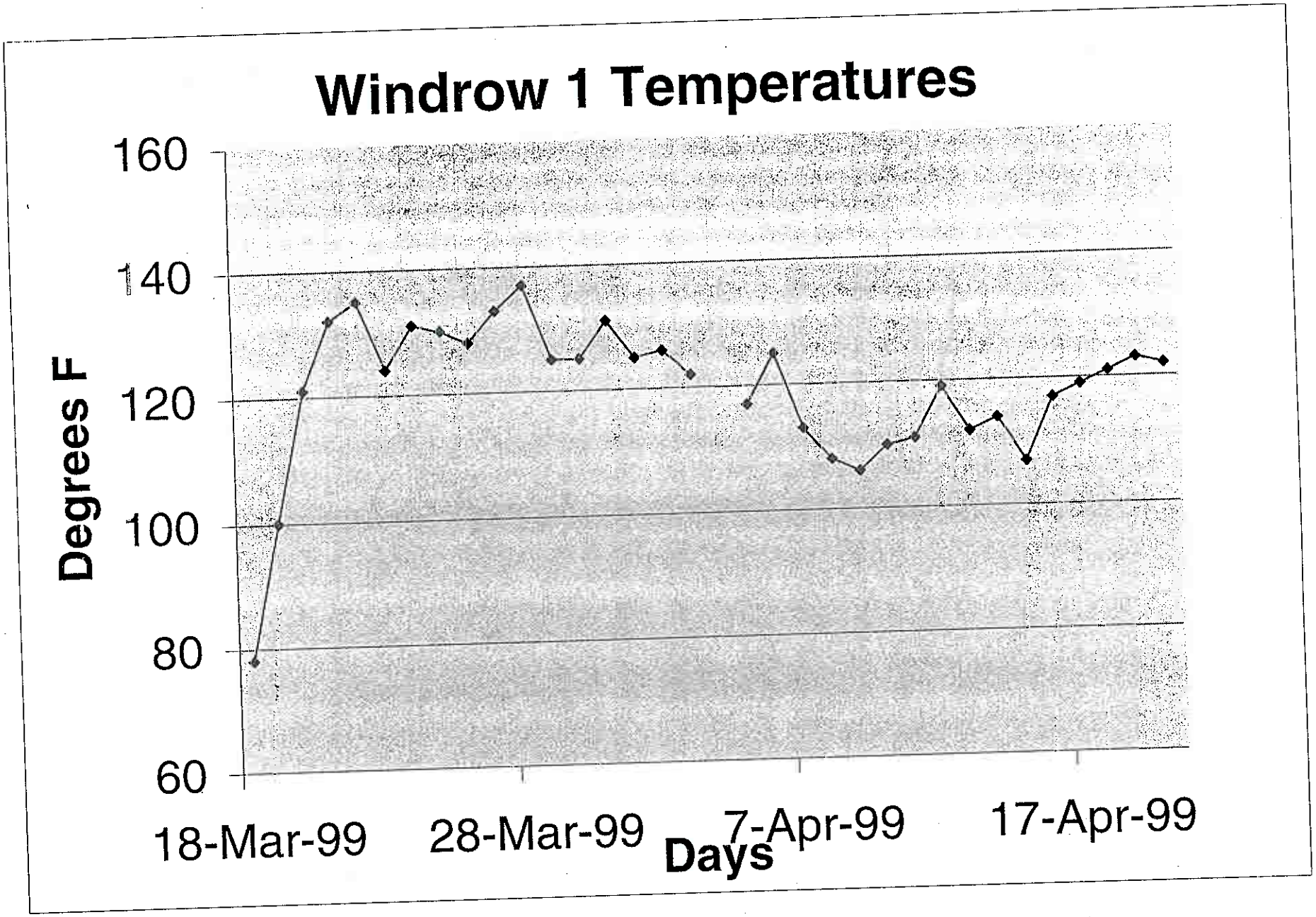
Component Analyzed	Method	Unit	PQL	Analysis Result A3-WR003-C002-CC002P 99-02955-11	Analysis Result A3-WR003-C003-CC002P 99-02955-12
NITROAROMATICS AND NITROAMINES					
Dilution Factor				1	1
4-AMINO-2,6-DINITROTOLUENE	8330	mg/kg	0.2	<0.29	<0.27
2-AMINO-4,6-DINITROTOLUENE	8330	mg/kg	0.2	<0.29	<0.27
1,3-DINITROBENZENE	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-WR008-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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100
80
60
Degrees F
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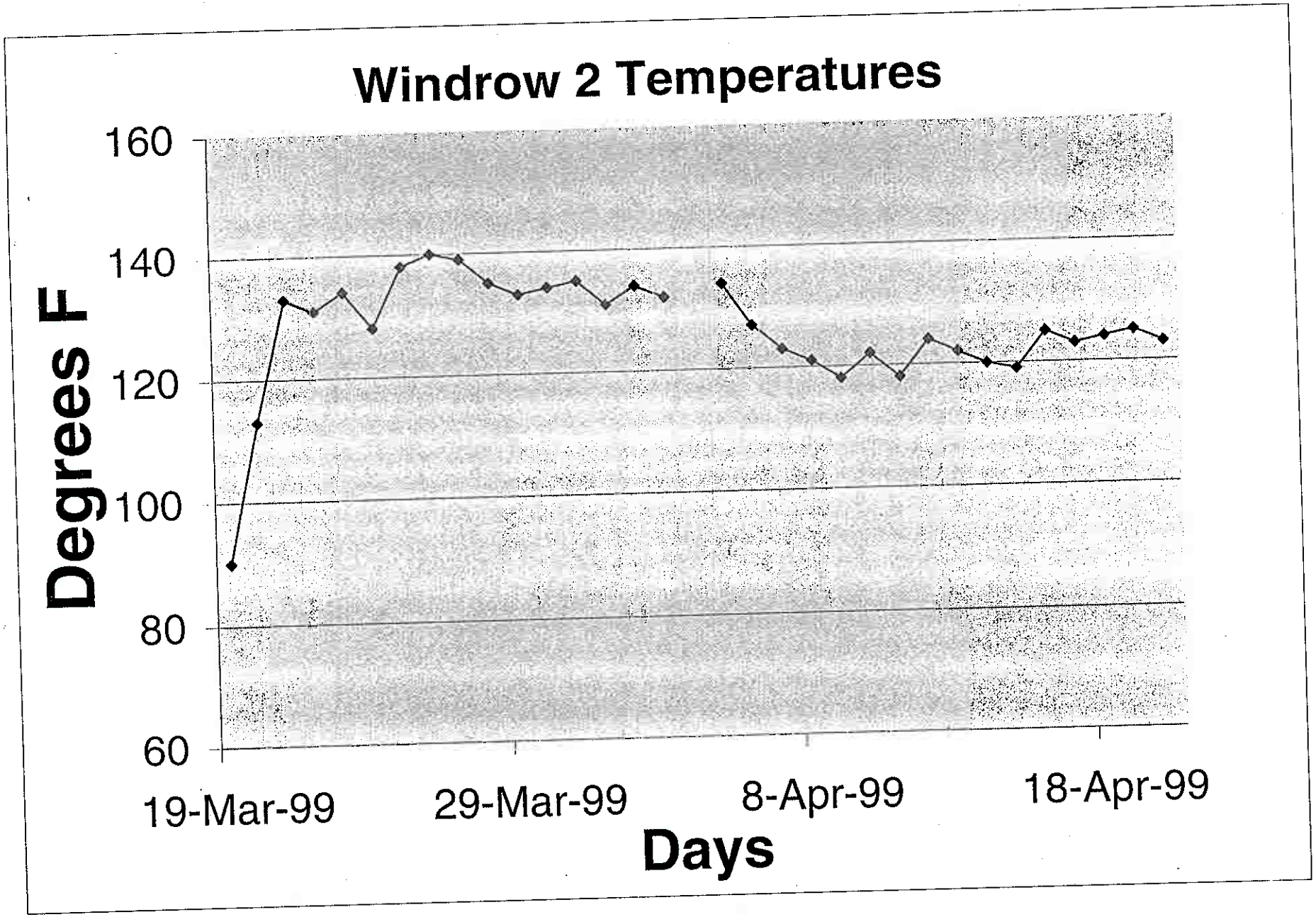
28-Mar-99
7-Apr-99
17-Apr-99
Days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Degrees F
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80
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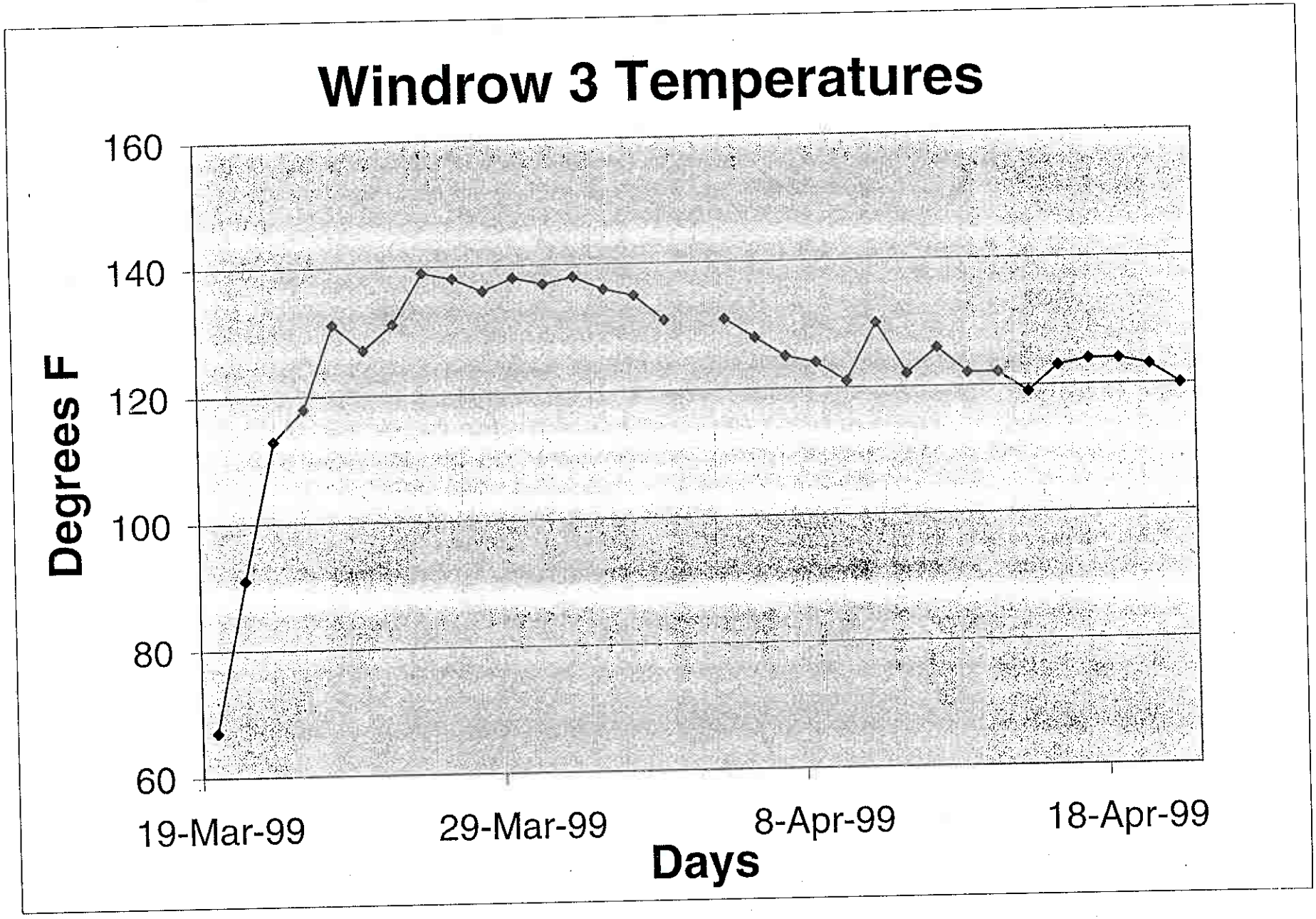
29-Mar-99
8-Apr-99
18-Apr-99
Days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160
140
120
100
80
60
Degrees F
19-Mar-99
29-Mar-99
8-Apr-99
18-Apr-99
Days

Confirmation Soil Samples

SWMU B-14

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Component Analyzed	Method	Unit	PQL	Analysis Result ~~A8-WR004-C003-GC001-P~~ 99-02676-3	~~A3-WR004-C004-GC001-P~~ 99-02676-4
MOISTURE	ASTM-D2216	%Moisture	0.5	24.7	31.1
NITROAROMATICS AND NITROAMINES [a]					
Dilution Factor				50	50
4-AMINO-2,6-DINITROTOLUENE	SW8330	mg/kg	0.17	22	20
2-AMINO-4,6-DINITROTOLUENE	SW8330	mg/kg	0.24	15J	12J
1,3-DINITROBENZENE	SW8330	mg/kg	0.25	<17	<18
2,4-DINITROTOLUENE	SW8330	mg/kg	0.09	<6.0	<6.5
2,6-DINITROTOLUENE	SW8330	mg/kg	0.05	<3.3	<3.6
HMX	SW8330	mg/kg	0.25	58	45
NITROBENZENE	SW8330	mg/kg	0.24	<16	<17
3-NITROTOLUENE	SW8330	mg/kg	0.25	<17	<18
RDX	SW8330	mg/kg	0.25	402	330
TETRYL	SW8330	mg/kg	0.19	<13	<14
1,3,5-TRINITROBENZENE	SW8330	mg/kg	0.24	15J	10J
2,4,6-TRINITROTOLUENE	SW8330	mg/kg	0.25	93	49
2/4-NITROTOLUENE	SW8330	mg/kg	0.25	<17	<18

Component Analyzed	Method	Unit	PQL	Analysis Result A6-SMB14-P1-GF004-P 99-02676-5	A6-SMB14-P1-GK003-P 99-02676-6
MOISTURE	ASTM-D2216	%Moisture	0.5	12.6	3.1
NITROAROMATICS AND NITROAMINES [a]					
Dilution Factor				1	1
4-AMINO-2,6-DINITROTOLUENE	SW8330	mg/kg	0.17	0.85	1.1
2-AMINO-4,6-DINITROTOLUENE	SW8330	mg/kg	0.24	1.4	1.5
1,3-DINITROBENZENE	SW8330	mg/kg	0.25	<0.29	<0.26
2,4-DINITROTOLUENE	SW8330	mg/kg	0.09	0.1J	<0.093
2,6-DINITROTOLUENE	SW8330	mg/kg	0.05	<0.057	<0.052
HMX	SW8330	mg/kg	0.25	<0.29	<0.26
NITROBENZENE	SW8330	mg/kg	0.24	<0.27	<0.25
3-NITROTOLUENE	SW8330	mg/kg	0.25	<0.29	<0.26
RDX	SW8330	mg/kg	0.25	0.3J	<0.26
TETRYL	SW8330	mg/kg	0.19	<0.22	<0.20
1,3,5-TRINITROBENZENE	SW8330	mg/kg	0.24	0.1J	<0.25
2,4,6-TRINITROTOLUENE	SW8330	mg/kg	0.25	1.4	0.49
2/4-NITROTOLUENE	SW8330	mg/kg	0.25	<0.29	<0.26

PQL: Practical Quantitation Limit. MDL: Method Detection Limit. CRDL: Contract Required Detection Limit
N.D.: Not Detected or less than the practical quantitation limit. "-": Analysis is not required.
J: Reported between PQL and MDL.
† All results are reported on dry basis for soil samples.
Listed Dilution Factors (DF) are relative to the method default DF. All unlisted DFs are 1.0
[a] Positive results had been confirmed by second column.

Respectfully submitted,

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Component Analyzed	Method	Unit	PQL	Analysis Result A6-SMB14-P1-GS001-P 99-02437-7	A6-SMB14-P1-GS002-P 99-02437-8
NITROAROMATICS AND NITROAMINES [a]					
Dilution Factor				1	10
4-AMINO-2,6-DINITROTOLUENE	SW8330	mg/kg	0.17	9.77	6.2
2-AMINO-4,6-DINITROTOLUENE	SW8330	mg/kg	0.24	7.89	7.2
1,3-DINITROBENZENE	SW8330	mg/kg	0.25	<0.25	<2.5
2,4-DINITROTOLUENE	SW8330	mg/kg	0.09	0.23	<0.91
2,6-DINITROTOLUENE	SW8330	mg/kg	0.05	<0.051	<0.51
HMX	SW8330	mg/kg	0.25	<0.25	<2.5
NITROBENZENE	SW8330	mg/kg	0.24	<0.24	<2.4
3-NITROTOLUENE	SW8330	mg/kg	0.25	<0.25	<2.5
RDX	SW8330	mg/kg	0.25	<0.25	<2.5
TETRYL	SW8330	mg/kg	0.19	<0.19	<1.9
1,3,5-TRINITROBENZENE	SW8330	mg/kg	0.24	<0.24	2J
2,4,6-TRINITROTOLUENE	SW8330	mg/kg	0.25	0.97	96
2/4-NITROTOLUENE	SW8330	mg/kg	0.25	<0.25	<2.5

Component Analyzed	Method	Unit	PQL	Analysis Result A6-SMB14-P1-GS003-P 99-02437-9	A6-SMB14-P1-GS004-P 99-02437-10
MOISTURE	ASTM-D2216	%Moisture	0.5	1.5	2.1
NITROAROMATICS AND NITROAMINES [a]					
Dilution Factor				1	1
4-AMINO-2,6-DINITROTOLUENE	SW8330	mg/kg	0.17	4.04	10.1
2-AMINO-4,6-DINITROTOLUENE	SW8330	mg/kg	0.24	4.2	9.07
1,3-DINITROBENZENE	SW8330	mg/kg	0.25	<0.25	<0.26
2,4-DINITROTOLUENE	SW8330	mg/kg	0.09	<0.091	0.2
2,6-DINITROTOLUENE	SW8330	mg/kg	0.05	<0.051	<0.051
HMX	SW8330	mg/kg	0.25	<0.25	1.1
NITROBENZENE	SW8330	mg/kg	0.24	<0.24	<0.25
3-NITROTOLUENE	SW8330	mg/kg	0.25	<0.25	<0.26
RDX	SW8330	mg/kg	0.25	<0.25	<0.26
TETRYL	SW8330	mg/kg	0.19	<0.19	<0.19
1,3,5-TRINITROBENZENE	SW8330	mg/kg	0.24	<0.24	<0.25
2,4,6-TRINITROTOLUENE	SW8330	mg/kg	0.25	11.1	6.07
2/4-NITROTOLUENE	SW8330	mg/kg	0.25	<0.25	<0.26

Component Analyzed	Method	Unit	PQL	Analysis Result A6-SMB14-P1-GS005-P 99-02437-11	A6-SMB14-P1-GS006-P 99-02437-12
MOISTURE	ASTM-D2216	%Moisture	0.5	3.4	1.5

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Component Analyzed	Method	Unit	PQL	Analysis Result A6-SMB14-P1-GS005-P 99-02437-11	Analysis Result A6-SMB14-P1-GS006-P 99-02437-12
NITROAROMATICS AND NITROAMINES [a]					
Dilution Factor				1	1
4-AMINO-2,6-DINITROTOLUENE	SW8330	mg/kg	0.17	10.6	5.48
2-AMINO-4,6-DINITROTOLUENE	SW8330	mg/kg	0.24	10.3	5.25
1,3-DINITROBENZENE	SW8330	mg/kg	0.25	<0.26	<0.25
2,4-DINITROTOLUENE	SW8330	mg/kg	0.09	0.1	0.20
2,6-DINITROTOLUENE	SW8330	mg/kg	0.05	<0.052	<0.051
HMX	SW8330	mg/kg	0.25	1.2	0.70
NITROBENZENE	SW8330	mg/kg	0.24	<0.25	<0.24
3-NITROTOLUENE	SW8330	mg/kg	0.25	<0.26	<0.25
RDX	SW8330	mg/kg	0.25	<0.26	<0.25
TETRYL	SW8330	mg/kg	0.19	<0.20	<0.19
1,3,5-TRINITROBENZENE	SW8330	mg/kg	0.24	<0.25	0.35
2,4,6-TRINITROTOLUENE	SW8330	mg/kg	0.25	6.54	5.10
2/4-NITROTOLUENE	SW8330	mg/kg	0.25	<0.26	<0.25

Component Analyzed	Method	Unit	PQL	Analysis Result A6-SMB14-P1-GS007-P 99-02437-13
MOISTURE	ASTM-D2216	%Moisture	0.5	2.6
NITROAROMATICS AND NITROAMINES [a]				
Dilution Factor				1
4-AMINO-2,6-DINITROTOLUENE	SW8330	mg/kg	0.17	10.1
2-AMINO-4,6-DINITROTOLUENE	SW8330	mg/kg	0.24	8.87
1,3-DINITROBENZENE	SW8330	mg/kg	0.25	<0.26
2,4-DINITROTOLUENE	SW8330	mg/kg	0.09	0.23
2,6-DINITROTOLUENE	SW8330	mg/kg	0.05	<0.051
HMX	SW8330	mg/kg	0.25	1.8
NITROBENZENE	SW8330	mg/kg	0.24	<0.25
3-NITROTOLUENE	SW8330	mg/kg	0.25	<0.26
RDX	SW8330	mg/kg	0.25	<0.26
TETRYL	SW8330	mg/kg	0.19	<0.20
1,3,5-TRINITROBENZENE	SW8330	mg/kg	0.24	<0.25
2,4,6-TRINITROTOLUENE	SW8330	mg/kg	0.25	1.3
2/4-NITROTOLUENE	SW8330	mg/kg	0.25	<0.26

PQL: Practical Quantitation Limit. MDL: Method Detection Limit. CRDL: Contract Required Detection Limit
N.D.: Not Detected or less than the practical quantitation limit. "-": Analysis is not required.
J: Reported between PQL and MDL.
† All results are reported on dry basis for soil samples.
Listed Dilution Factors (DF) are relative to the method default DF. All unlisted DFs are 1.0
[a] Positive results had been confirmed by second column.

Respectfully submitted,

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Appendix E

B14, Facing northeast towards impoundment. A 4" galvanized discharge pipe on northeast slope. Bldg. 101-56 in background. #R7-N1, 9/30/94

B14, Facing northwest towards impoundment. Bldg. 101-26 in background northwest of impoundment. #R7-N2, 9/30/94

SWMU B- 14 September 1999