

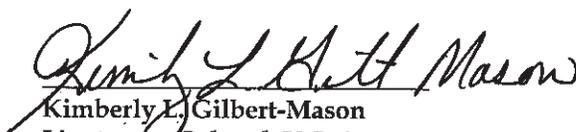
Closure Decision Document SWMU K05

June 2009

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

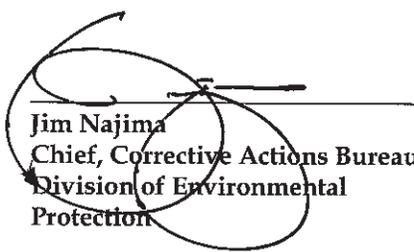
16 June 2009
Date



Kimberly L. Gilbert-Mason
Lieutenant Colonel, U.S. Army
Commanding

State of Nevada

July 16, 2009
Date



Jim Najima
Chief, Corrective Actions Bureau
Division of Environmental
Protection

REVISED FINAL

**Closure Decision Document for
SWMU K05: LUST Site at Building 117-3
Hawthorne Army Depot
Hawthorne, Nevada**

**Facility I.D. Number 9-000031
Site ID #J-000813
Contract No. W91ZLK-05-D-0011
Delivery Order 0002**

Prepared for:
U.S. Army Environmental Center



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for
Plexus Scientific Corporation



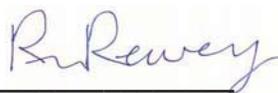
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June 2009

**Closure Decision Document
SWMU K05: LUST Site at Building 117-3**

**Hawthorne Army Depot
Hawthorne, Nevada**

June 2009

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Acronyms and Abbreviations

µg/L	micrograms per liter
bgs	below ground surface
CAP	Corrective Action Plan
FID	flame ionization detector
HWAAP	Hawthorne Army Ammunition Plant
HWAD	Hawthorne Army Depot
LUST	Leaking Underground Storage Tank
mg/kg	milligrams per kilogram
mg/L	milligrams per liter
NAC	Nevada Administrative Code
NDEP	Nevada Division of Environmental Protection
NFA	no further action
PID	photoionization detector
ppm	parts per million
PVC	polyvinyl chloride
SSTL	site-specific target level
SVOC	semivolatile organic compound
SWMU	Solid Waste Management Unit
TPH	total petroleum hydrocarbons
UST	underground storage tank
VEW	vapor extraction well
VOC	volatile organic compound
WADF	Western Area Demilitarization Facility

1.0 Introduction

This Closure Decision Document describes the rationale for the proposed closure of the Solid Waste Management Unit (SWMU) Hawthorne Army Ammunition Plant (HWAAP)-K05, Leaking Underground Storage Tank (LUST) Site at Building 117-3, hereafter referred to as SWMU K05, at Hawthorne Army Depot (HWAD), Hawthorne, Nevada (Figure 1).

A Final Corrective Action Plan (CAP) for SWMU K05 (CH2M HILL, 2007) was prepared and approved by the Nevada Division of Environmental Protection (NDEP) on May 7, 2007 (NDEP, 2007). The Final CAP stated that the remedy is in place for SWMU K05, and recommended additional site characterization be performed to confirm that only low levels of total petroleum hydrocarbons (TPH) exist at the site and that the site is ready for closure. The additional site characterization activities have been completed and document that the site is ready for closure. The following paragraphs provide a brief overview of the site history, physical setting, investigation history, summary of the additional site characterization activities, conclusions, and decommissioning activities completed. Additional background information is provided in the Final CAP for SWMU K05 (CH2M HILL, 2007).

2.0 Site History

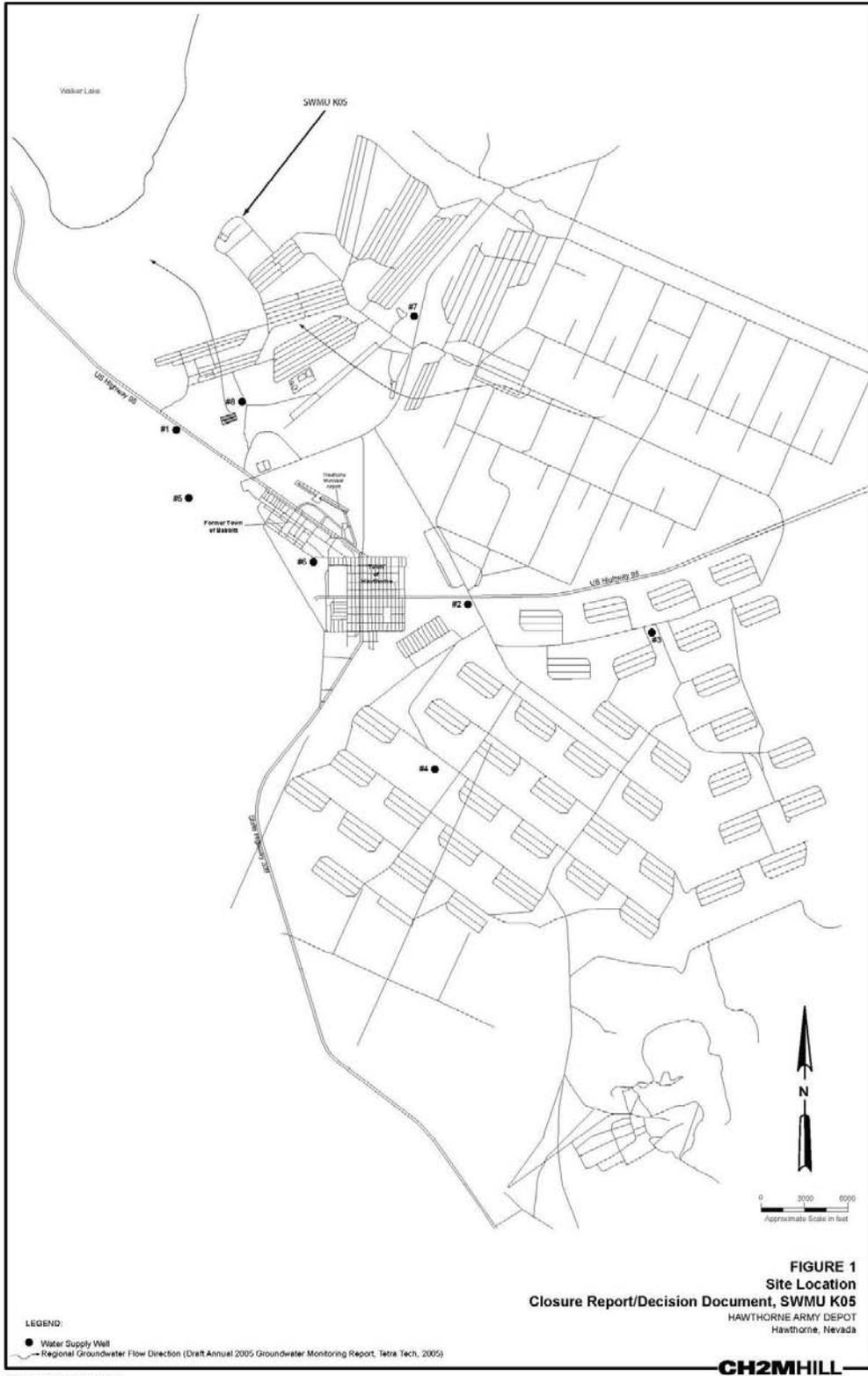
SWMU K05 is located in the Western Area Demilitarization Facility (WADF) of HWAD, northwest of Building 117-3 (Figure 2). In 1976, a diesel fuel underground storage tank (UST) system, consisting of a 10,000-gallon UST and a 5,000-gallon UST, was installed at SWMU K05 to support nearby operations on the installation. Releases of fuel from the USTs or related piping were reported in 1984 and 1993.

3.0 Physical Setting

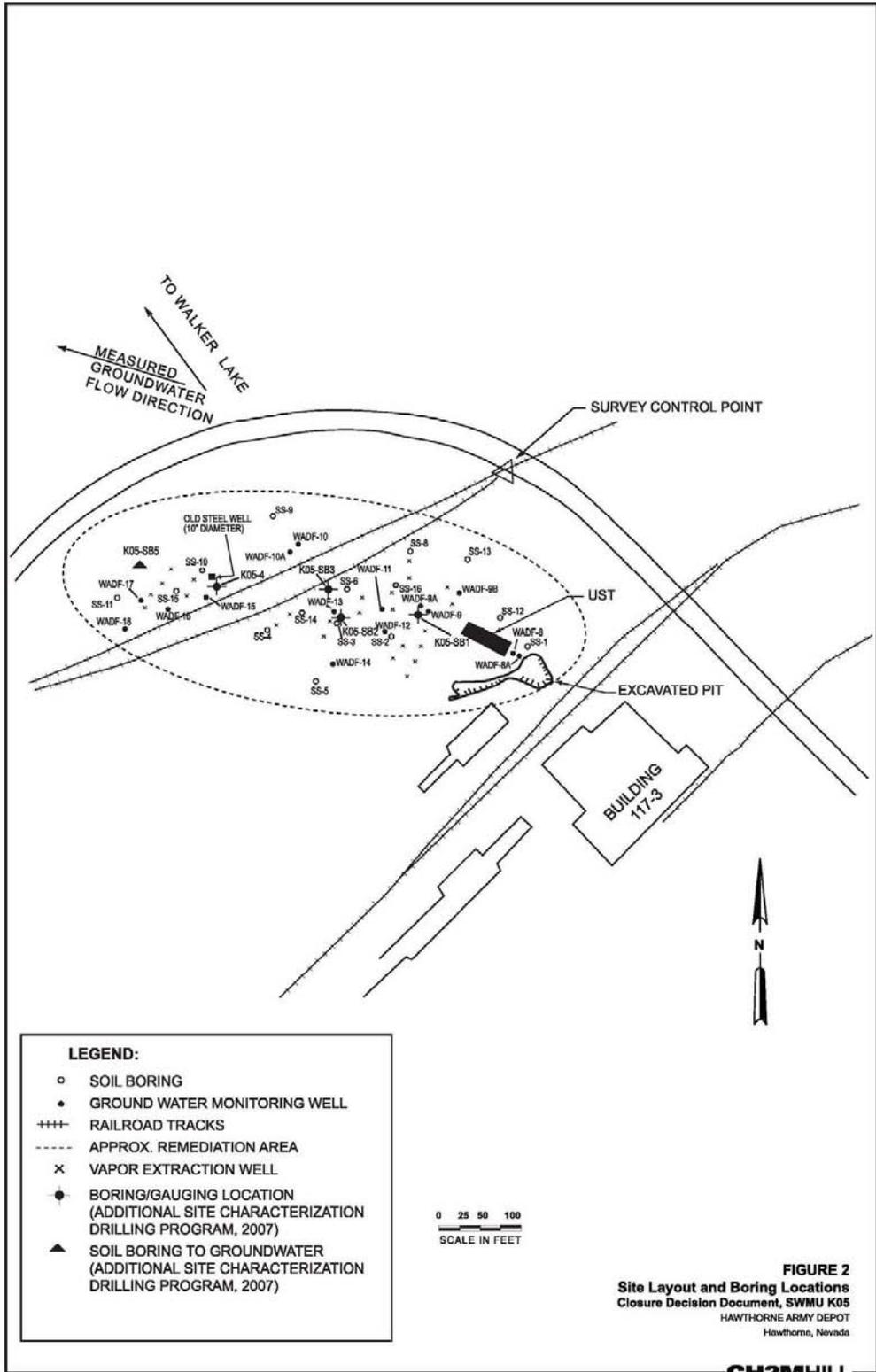
The site is presented in detail on Figure 2. The UST excavation is bordered by railroad tracks to the southeast, an industrial structure to the south, a dispenser island to the east that is believed to be operational and serviced by the remaining 5,000-gallon UST, and stockpiles of soil to the northwest. Vegetated earth covers the ground surface at the site.

Boring logs from 1985 (USACE, 2004) indicate that the groundwater table was 14.2 to 15.6 feet below ground surface (bgs) at WADF-8 and WADF-9A, respectively. The groundwater levels dropped approximately 3 feet from 1985 to 1994, and another foot between 1994 and 2004. The most recent groundwater levels, measured in November 2006 and September 2007, indicate that groundwater at the site is 18.18 to 21.07 feet bgs. Groundwater flow at the site is toward the northwest.

Boring logs from 1985 and 2007 indicate that the soil at the site consists primarily of sands and gravels. Silty clay was observed from 20 to 25 feet and 13 to 19 feet bgs at borings WADF-8 and WADF-9A, respectively. At K05-SB5, the most downgradient boring, silty sand and sand were observed from 4 to 10 feet bgs. The water table was encountered between 20 to 22 feet bgs in a silty clay.



DEN/ES/12006001/figure1_1025_021005



350552_FigureC-2_Bldg.aport_SWMU_K05_5-13-06

SWMU K05 is approximately 2.6 miles downgradient of water supply well #7 (currently used only as a non-potable water source [the well will not be used as a potable water source due to the poor water quality]), 2.4 miles sidegradient of water supply well #8 (currently not used as a potable water source), 2.8 miles sidegradient of water supply well #1 (infrequently used as a potable water source), and 1.4 miles upgradient of Walker Lake.

4.0 Investigation History

In 1984, a release was reported from the piping between the USTs and Building 117-3. The date and duration of the release are unknown, although inventory records indicate the release totaled an estimated 1,300 gallons of #2 diesel fuel.

In 1985, six groundwater quality monitoring wells (WADF-8, WADF-8A, WADF-9, WADF-9A, WADF-10, and WADF-10A) were installed at the site. Groundwater samples collected from these wells confirmed that hydrocarbon contamination and free product had reached the groundwater. In 1989, another eight monitoring wells (WADF-11 through WADF-18) were installed at the site. The monitoring well locations are shown on Figure 2.

In 1993, a 60-gallon overfill was reported at the 10,000-gallon UST. Upon excavation, an open line was discovered at the top of the UST that was likely the source of small spills that occurred each time the tank was filled over the course of the preceding 17 years. The 10,000-gallon UST was excavated and removed from the site, and 1,870 cubic yards of excavated, fuel-impacted soil were stockpiled onsite northwest of the excavation (DZHC, 1996). In 1993-1994, as part of a geohydrologic study, 16 soil borings (SS-1 through SS-16) were advanced at the site; soil boring SS-7 was converted to groundwater quality monitoring well WADF-9B (DZHC, 1996). The boring and monitoring well locations are shown on Figure 2.

A passive bioventing system was installed onsite in 1996 to treat a portion of the impacted soil. In 1997, approximately 1,870 cubic yards of impacted soils were relocated to SWMU K05 where an active bioventing system was installed to remediate diesel-contaminated soil consolidated from several LUST sites at HWAD (Tetra Tech, 1998).

5.0 Additional Site Characterization Activities

Additional site characterization activities were performed at SWMU K05 from September 18 through September 21, 2007. Four borings (K05-SB-1, K05-SB-2, K05-SB-3, and K05-SB-5) were advanced using a direct-push drill rig at the locations shown on Figure 2; boring K05-SB-4 was not advanced due to physical access restrictions. However, boring K05-SB-4 was successfully drilled in December 2007. The soil borings were field screened from ground surface to the water table using a photoionization detector (PID). Soil samples were collected from the groundwater table, and additional samples were collected at select intervals based on PID readings. These collected samples were submitted to TestAmerica, Inc. (formerly Severn Trent Laboratories, Inc.) in Denver, Colorado, for TPH-diesel analysis.

Borings K05-SB-1 through K05-SB-3 were completed as temporary gauging wells by installing 2-inch-diameter Schedule 40 polyvinyl chloride (PVC) well risers and 10-foot flush-threaded 10-slot PVC well screen sections. An oil water interface probe was used to

measure the depth to water and/or depth to free product in the temporary wells. Boring K05-SB-5 was not converted to a temporary gauging well due to the borehole collapsing; however, soil samples were continuously collected and submitted for laboratory analysis from this borehole.

On December 4, 2007, boring K05-SB-4 was advanced using a rotosonic drill rig at the location shown on Figure 2. The boring was completed as a temporary gauging well by installing 2-inch-diameter Schedule 40 PVC well risers and a 10-foot flush-threaded 10-slot PVC well screen section. An oil-water interface probe was used to measure the depth to water and/or depth to free product. The boring was field screened from ground surface to the water table using a PID/flame ionization detector (FID) instrument. Samples were collected at the groundwater table and 1 foot above the water table. The collected samples were submitted to TestAmerica, Inc. in Denver for TPH-diesel and TPH-motor oil analyses.

All borings and temporary wells were abandoned following soil sampling and/or groundwater gauging activities.

6.0 Additional Site Characterization Results

Soil lithology and field screening results are summarized on the boring logs included in Appendix A. The soil samples collected at SWMU K05 did not exhibit visual staining or petroleum odors. The two highest PID readings at SWMU K05 were 20.1 parts per million (ppm) from boring K05-SB-1 at 15 to 16 feet bgs and 32.1 ppm from K05-SB-2 at 14 to 16 feet bgs. Elevated PID readings were not detected at the groundwater table.

Temporary wells K05-SB-1 through K05-SB-3 were gauged following installation activities and allowed to stabilize overnight. Temporary well K05-SB-4 was allowed to stabilize for 1 hour. Boring K05-SB-5 was drilled to the water table; however, a temporary well was not installed because the borehole collapsed. Soil samples were collected throughout the depth of borehole K05-SB-5 and at the water table. Free product was not detected in any of the temporary gauging wells. Groundwater levels in the temporary gauging wells ranged from 18.16 to 18.45 feet bgs. Based on observations during soil sampling activities, the groundwater at boring K05-SB-5 was estimated to be 20 to 22 feet bgs. Depth-to-water measurements are summarized on the boring logs included in Appendix A.

Analytical soil sample results are summarized in Table 1, and the laboratory and data validation reports are included in Appendix B. TPH-diesel was not detected above the Tier 2 site-specific target level (SSTL) of 3,000 milligrams per kilogram (mg/kg) (based on a conservative fuel saturation value for diesel in a coarse-grain soil sample [CH2M HILL, 2007]) in any of the soil samples collected from SWMU K05. Analytical results in samples collected from K05-SB-1 and K05-SB-2 ranged from 300 to 780 mg/kg. Analytical results in samples collected from K05-SB-3, K05-SB-4, and K05-SB-5 were below detection limits for TPH-diesel. The detection limits for the non-detects ranged from 4.2 to 6.1 mg/kg.

TABLE 1
 Additional Site Characterization Soil Sampling Results, SWMU K05

Collection Date	Boring	Depth (feet bgs)	TPH-Diesel (mg/kg)	TPH-Motor Oil (mg/kg)	
September 21, 2007	SB-1	15-17	780	--	
		14-16	300	--	
	SB-2	16-18	560	--	
		18-20	<5.7	--	
		SB-3	15-18	<5.4	--
			18-20	<4.4	--
		SB-5	0-2	<4.2	--
			2-4	<4.9	--
	4-6		<4.2	--	
	6-8		<4.4	--	
	8-12		<4.6	--	
	12-14		<5.1	--	
	December 4, 2007	SB-4	14-18	<4.6	--
			18-22	<6.1	--
16-17			<4.4	<4.4	
17-18			<4.3	<4.3	

Notes:
 -- : Not analyzed
 <: Not detected above the reporting limit
 bgs: below ground surface
 mg/kg: milligram per kilogram

7.0 Conclusions

Based on historical and additional site characterization data, closure has been documented at the site. The soil sampling confirms that only low levels of TPH-diesel (i.e., non-detect or below SSTLs) remain in the soil and product has not been seen in the 2004, 2006, and 2007 sampling events.

The remedy is complete at K05 as evidenced by the recent additional site characterization results. Closure is requested following Nevada Administrative Code (NAC) 459.9973 (1) guidelines, under which the following issues were addressed:

- a. Depth of groundwater: 18 to 22 feet bgs.
- b. Distance to irrigation or drinking water wells: Water supply well #7 (currently used only as a non-potable water source [the well will not be used as a potable water source due to the poor water quality]) is 2.6 miles southeast of SWMU K05 (upgradient to groundwater flow), water supply well #8 (currently not used as a potable water source) is 2.4 miles south of SWMU K05 (sidegradient to groundwater flow), and water supply well #1 (infrequently used as a potable water source) is 2.8 miles southwest of SWMU K05 (sidegradient to groundwater flow).
- c. Type of contaminated soil: fine-to-coarse sand, silt, and clay.

- d. Annual precipitation: 4.6 inches.
- e. Type of waste/substance released: Diesel fuel.
- f. Extent of contamination: In 1994, soil samples were collected from 16 locations at various depths and analyzed for TPH-diesel, volatile organic compounds (VOCs), and total semivolatile organic compounds (SVOCs). VOCs and SVOCs were not detected. The highest concentration of TPH-diesel, 3,900 mg/kg, was detected in boring SS-3 from 16 to 16.5 feet bgs. However, free product has never been detected in monitoring well WADF-13, located 20 feet north of boring SS-3. Concentrations of TPH-diesel in excavated stockpiled soil ranged from 1,300 to 5,000 mg/kg. No VOCs, however, were detected in the excavated stockpiled soil.

In 1994, free product was measured in five of the monitoring wells, two of which (WADF-9 and WADF-15) contained free product in excess of the action level of 0.5 inches. However, free product was not measured in these wells during sampling events conducted in 2004 and 2006. In 1994, TPH-diesel was detected in groundwater collected from the monitoring wells sampled. Wells WADF-10A, WADF-13, and WADF-16 recorded the highest concentrations of TPH-diesel, at 90, 200, and 251 milligrams per liter (mg/L), respectively. Naphthalene was quantitatively estimated at 21 micrograms per liter ($\mu\text{g/L}$) in groundwater from monitoring well WADF-9, above the action level of 6.2 $\mu\text{g/L}$, and at 1 J $\mu\text{g/L}$ in WADF-9A, an estimated value below the action level. However, naphthalene was not detected in samples collected from the nine other monitoring wells. No other VOCs or SVOCs were detected above the action level. In 2004, groundwater samples were collected from five monitoring wells (WADF-8A, WADF-9, WADF-14, WADF-17, and WADF-21). TPH-diesel was detected only in WADF-9 at 5,000 $\mu\text{g/L}$, and no free product was found.

In September and December 2007, additional soil sampling was performed at five borings drilled to the water table. No product was observed at the water table. Thirteen of the 16 samples were below method detection limits for TPH-diesel (less than 4.2 to 6.1 mg/kg). The three detections ranged from 300 to 780 mg/kg, all below the conservative Tier 2 SSTL for TPH-diesel.

- g. Present and potential use of the land: Industrial (present and future). Significant changes in future land use (e.g., residential use) may require a reassessment of the results and conclusions of the Final CAP and this Closure Decision Document.
- h. Preferred routes of migration: Downward migration of fuel in soil into groundwater and lateral movement in groundwater. However, due to the drop in the groundwater table associated with the decreasing water levels of Walker Lake, the depth to groundwater, and the dry conditions (4.6 inches per year precipitation and an evapotranspiration potential of 45 inches per year), further migration of contamination in the soil column and in groundwater beyond the SWMU's boundaries is likely insignificant.
- i. Structures and impediments: No buildings exist onsite. An excavated pit is bordered by railroad tracks to the southeast, an industrial structure to the south, and a dispenser island to the east that is believed to be operational and serviced by the remaining 5,000-gallon UST (Figure 2).

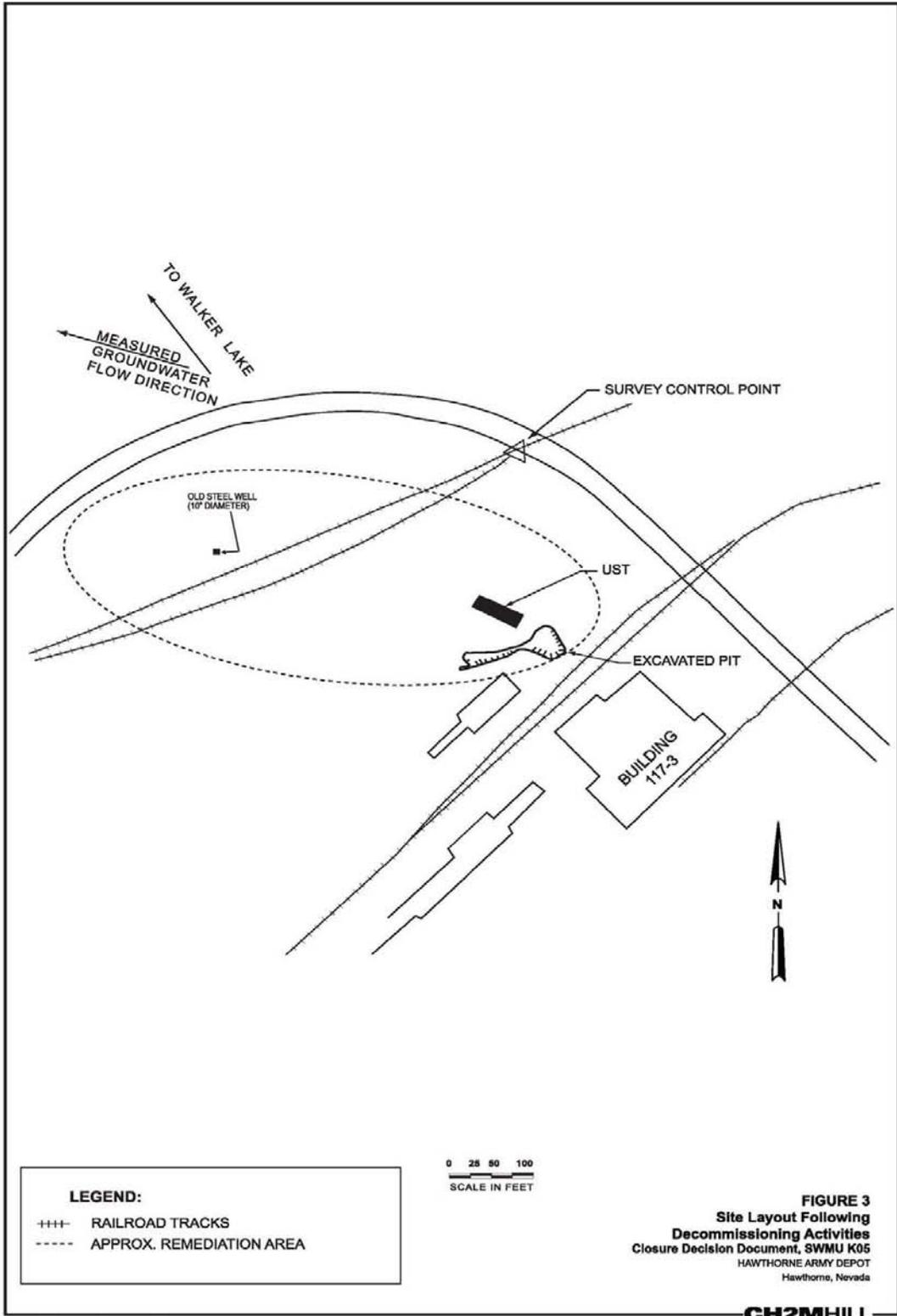
- j. Potential fire, vapor, or explosion: None.
- k. Other factors: The combination of source excavation and removal, bioventing (i.e., wind-driven turbine VEW system), and natural biological degradation in the groundwater significantly reduced the TPH concentrations and removed free product from the site. A 98 percent reduction in dissolved TPH was recorded over the past decade. Soil sampling from 2007 confirmed Response Complete. As a result, and at the direction of NDEP as stated in the Final Closure Report/Decision Document approval letter dated August 15, 2008, the bioventing system was decommissioned.

Over the last 12 years, the combination of source excavation and removal, bioventing, and natural biological degradation in the groundwater significantly reduced the TPH concentrations in groundwater and removed free product from the site. With the exception of the dispenser island and Building 117-3 nearby, the area occupied by the SWMU K05 is visited infrequently and never for extended periods. The current and reasonably anticipated future use of the HWAD is as a secured industrial military facility and training grounds. Under these exposure conditions, exposure to contamination (i.e., incidental direct contact with soil or consumption of groundwater) by receptors is limited or non-existent. However, significant changes in future land use (e.g., residential use) may require a reassessment of the results and conclusions of the Final CAP and this Closure Decision Document.

Based on current and likely future land use, the potential pathways include exposure to soils in the top 10 feet via excavation activities and potential contribution to groundwater for soils near the water table (i.e., within 10 feet). However, TPH concentrations (non-detect to 7.1 mg/kg) in soil samples collected from 0 to 10 feet bgs are less than the soil action level. In addition, no free product was seen in any of the five groundwater samples collected at the site in 2004 or in the most recent samples collected in November 2006.. Additional site characterization was performed in September and December 2007, as required in the Final CAP, and confirmed that only low levels of TPH exist (non-detect or below Tier 2 SSTL) at the site and that the site is ready for closure with NFA. Free product was not observed during the September 2007 and December 2007 soil sampling events.

8.0 Decommissioning Activities

Decommissioning activities at SWMU K05 were performed between March 10 and March 17, 2009 and included the abandonment of fifteen groundwater monitoring wells, thirty six pairs of passive vent wells connected by subsurface piping, seven individual passive vent wells, and the grading of twelve soil stockpiles. An updated Site Layout for SWMU K05 is included in Figure 3. Decommissioning activities were performed by WDC Exploration and Wells of Zamora, California in accordance with the Well Decommissioning Variance approved by the Division of Water Resources in September 2008 (Appendix C) and NDEP's approval to grade the SWMU K05 soil stockpiles in place based on soil profile analytical results (Appendix D). Walker Lake Disposal, Inc. of Mineral County, Nevada was subcontracted to transport and dispose of all the debris generated during decommissioning activities.



359552_FigureC-3_SiteLayout_SWMU_K05_5-16-09

The grout-in-place abandonment method was used to abandon the fifteen groundwater monitoring wells (WADF-8, 8A, 9, 9A, 9B, 10, 10A, and 11 - 18) at SWMU K05. Prior to the start of abandonment activities, the depth to water and total depth of each well was measured by CH2M HILL oversight personnel. The grout-in-place method was performed by placing a tremie pipe (1.5-inch-diameter) inside the well casing and pumping grout composed of a bentonite mixture through the tremie pipe to the bottom of the well. The tremie pipe was slowly withdrawn keeping the bottom of the pipe below the level of the grout until the well casing was filled to ground surface. Following grout placement within the casing, a John Deere 310E backhoe was used to excavate/remove the concrete pads, protective covers, and well casings (to at least 5-feet bgs). Once the surface completions were removed, the top of the remaining well casings were capped with concrete and backfilled with surrounding clean soil. Photographs of SWMU K05 before and after the decommissioning activities were completed are included in Figure 4.

The grout-in-place abandonment method was used to abandon the thirty six pairs of passive vent wells and seven individual passive vent wells installed in the twelve soil stockpiles located at the SWMU K05 site. The grout-in-place method was performed by placing a tremie pipe (1.5-inch-diameter) inside the well casing and pumping grout composed of a cement/bentonite or bentonite mixture through the tremie pipe to the bottom of the well as described above in the groundwater monitoring well abandonment procedure. Following grout placement within the casing, the backhoe was used to excavate and remove the 4-inch-diameter PVC well casings to approximately 1 foot below the surrounding grade.

The twelve soil stockpiles located at SWMU K05 were graded in place using the backhoe following the abandonment of the groundwater monitoring wells and passive vent wells described above. Initially, the backhoe excavator bucket was used to knock down each soil stockpile in an effort to minimize dust generation. Once the stockpiles had been partially leveled, the backhoe loader bucket was used to rough-grade the site to match the surrounding area (Figure 4).

The debris generated during decommissioning activities at SWMU K05 (PVC pipe and concrete) was placed into one of two 20-cubic-yard roll-off containers with similar debris generated during decommissioning activities conducted at four other sites at HWAD (B20, J03, K03a, and K03d). Upon completion of the decommissioning activities at all of the sites, the debris roll-off containers were transported by truck to the HWAD construction debris landfill for disposal, and the roll-off container with the metal debris was transported by truck to a local metal recycler.

Prior to CH2M HILL demobilizing from the facility, HWAD conducted a site inspection of SWMU K05 and found no outstanding issues at that time. Therefore, based on the above-described decommissioning activities conducted at SWMU K05, and in addition to the request for closure, Response Complete is requested for this site.



Figure 4: Photographs of SWMU K05 before (top photograph) and after (bottom photograph) completion of decommissioning activities.

9.0 References

CH2M HILL, 2007. *Final Corrective Action Plan for K05: LUST Site at Building 117-3*. April.

Day and Zimmerman (DZHC), 1996. *Hawthorne Army Depot Installation Restoration Program – Feasibility Study for the Solid Waste Management Unit Building 117-3 LUST Site, Hawthorne, Nevada*. August.

Nevada Division of Environmental Protection (NDEP), 2007. “Approval of Final Report, Corrective Action Plan for K05: LUST Site at Building 117-3, Hawthorne Army Depot, April 2007.” Letter dated May 7, 2007.

Tetra Tech, Inc., 1998. *Final Report Enhanced Bioremediation Pilot Test Building 70 Diesel Spill Site, Hawthorne Army Depot, Hawthorne, Nevada*. April.

U.S. Army Corps of Engineers (USACE), 2004. *Work Plan Solid Waste Management Unit K05 Building 117-3 Site Remedial Investigation, Hawthorne Army Depot, Hawthorne, Nevada*. September.

APPENDIX A
Soil Boring Logs



PROJECT NUMBER
350552

BORING NUMBER
K05-SB1

SOIL BORING LOG

PROJECT : Hawthorne Army Depot LOCATION: Hawthorne, NV

GPS Coordinates: N 38° 35.809', W 118° 39.295', Elev 4005' DRILLING CONTRACTOR : Boart Longyear (Tony Hansen & Lou Kohn)

DRILLING METHOD AND EQUIPMENT USED : Geoprobe DATE: 09/18/07 to 09/19/07

WATER LEVELS : 18.18' bg START: 09/18/07 @ 0830 END: 09/19/07 @ 0940 LOGGER : R. Rewey

DEPTH BELOW SURFACE (FT)		RECOVERY (IN)		SOIL DESCRIPTION	COMMENTS
INTERVAL (FT)		#	TYPE	SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY, OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY.	DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, AND INSTRUMENTATION
					<u>MiniRae 2000 - PID</u> <u>Headspace (ppm)</u>
		4		SAND, well graded 0-1', fine 1-3'	0.5
				SILTY SAND, trace clay	0.5
5		5		CLAYEY SILT, 2" sand lens at 9.5'	0.9
					1.1
		NR		No Recovery, soil core stuck in core barrel	
15					(PID reading from end of core barrel) 1.9
		2		CLAYEY SILT AND SAND, dark 1" sand lens at 16', wet	Collect K05-SB1-15-17 for TPH-d & sieve 20.1
					16.6
		2		SAND, well graded 0-1', fine 1-3', medium to coarse 17-19', coarse 19-21', loose, moist to wet, 1" clayey silt lens at 21'	1.6
20		2			1.7



PROJECT NUMBER
350552

BORING NUMBER
K05-SB2

SOIL BORING LOG

PROJECT : Hawthorne Army Depot LOCATION: Hawthorne, NV

GPS Coordinates: N 38° 35.827', W 118° 39.346', Elev 4005' DRILLING CONTRACTOR : Boart Longyear (Tony Hansen & Lou Kohn)

DRILLING METHOD AND EQUIPMENT USED : Geoprobe DATE: 9/19/2007

WATER LEVELS : 18.45' bg START: 1015 END: 1400 LOGGER : R. Rewey

DEPTH BELOW SURFACE (FT)		SOIL DESCRIPTION		COMMENTS
DEPTH (FT)	INTERVAL (FT)	RECOVERY (IN)	SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY, OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY.	DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, AND INSTRUMENTATION
		#/TYPE		
5	1.5		SAND, very fine to fine trace medium 0-2', coarse to medium 2-4', trace clayey silt at 3.5'	0.3
	2			0.3
5	2		CLAYEY SILT	1.1
				0.8
	1		SILTY SAND, fine, some gravel	1.9
10	0.5		SAND, very fine sand at 8', well graded 8-10	0.6
	1		CLAYEY SILT, sand lens at 12'	1
15	1		SAND, fine and coarse, rust and gray colored 13-15', gray green, medium to coarse, wet 15-17	Collect K05-SB2-14-16 for TPH-d 32.1
	1			Collect K05-SB2-16-18 for TPH-d 6
	2		CLAYEY SILT, brown/green 17-18', some sand at 18-20	7.4
20			SAND, coarse	Collect K05-SB2-18-20 for TPH-d 1.8
	1.5			CLAYEY SILT



PROJECT NUMBER
350552

BORING NUMBER
K05-SB3

SOIL BORING LOG

PROJECT : Hawthorne Army Depot LOCATION: Hawthorne, NV

GPS Coordinates: N 38° 35.818', W 118° 39.299' DRILLING CONTRACTOR : Boart Longyear (Tony Hansen & Lou Kohn)

DRILLING METHOD AND EQUIPMENT USED : Geoprobe DATE: 9/19/2007

WATER LEVELS : 18.35' bg START: 1430 END: 1620 LOGGER : R. Rewey

DEPTH BELOW SURFACE (FT)		RECOVERY (IN)		SOIL DESCRIPTION	COMMENTS
INTERVAL (FT)			#/TYPE	SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY, OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY.	DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, AND INSTRUMENTATION
	2			SAND, well graded, light brown	1.3
	2				1.3
5	2			CLAYEY SILT, tan 2-4', gray green 4-6', brown 6-6.5'	1.3
	2			SAND, coarse	1.3
				CLAYEY SILT, brown	
10	1			SANDY SILT, trace clay	1.3
	1.5				1.3
	1				1.2
15	1			SAND, medium to coarse, trace clay, rust colored lens throughout, damp at 15', wet at 18'	0.6
	1				Collect K05-SB3-15-18 for TPH-d 0.6
	1				Collect K05-SB3-18-20 for TPH-d 0.7
20				EOB @ 20' bg. Install temporary 1" diameter PVC casing with 10' screen section using 3" diameter steel casing	



PROJECT NUMBER
350552

BORING NUMBER
K05-SB4

SOIL BORING LOG

PROJECT : Hawthorne Army Depot LOCATION: Hawthorne, NV

GPS Coordinates: N 38° 35.823', W 118° 39.328' DRILLING CONTRACTOR : Boart Longyear (Gerardo)

DRILLING METHOD AND EQUIPMENT USED : Geoprobe DATE: 12/4/2008

WATER LEVELS : 18.20 START: 0730 END: 1030 LOGGER : N. De

DEPTH BELOW SURFACE (FT)		SOIL DESCRIPTION		COMMENTS
INTERVAL (FT)	RECOVERY (IN)	#/TYPE	SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY, OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY.	DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, AND INSTRUMENTATION PID / FID (ppm)
			Topsoil	0
5			SM - fine grained silty sand, consolidated, slightly compacted, dry	0
			SC - clayey sand with silt (fine), trace fine gravel, low plasticity, slight consolidation	0
			SP - poorly sorted coarse sand with fine gravel, trace silt, moist	0
			CL - fine grained silty clay	0
			SP - poorly sorted fine sand with gravel and cobbles (2-3 inches), loose	0
15			SW - well sorted fine sand with silt, moist, loose	0
			ML - very fine silty sand with trace clay, no plasticity, consolidated, moist	K05-SB4-16-17 K05-SB4-17-18 0
20			CL - silty clay (lean), 80% clay, very dense, very firm, moderate plasticity, wet	0



PROJECT NUMBER
350552

BORING NUMBER
K05-SB5

SOIL BORING LOG

PROJECT : Hawthorne Army Depot LOCATION: Hawthorne, NV

GPS Coordinates: N 38° 35.827', W 118° 39.346' DRILLING CONTRACTOR : Boart Longyear (Tony Hansen & Lou Kohn)

DRILLING METHOD AND EQUIPMENT USED : Geoprobe DATE: 9/20/2007

WATER LEVELS : 20-22' START: 0730 END: 1030 LOGGER : R. Rewey

DEPTH BELOW SURFACE (FT)		SOIL DESCRIPTION		COMMENTS
DEPTH (FT)	INTERVAL (FT)	RECOVERY (IN)	SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY, OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY.	DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, AND INSTRUMENTATION
		#/TYPE		
5	1.5		SILTY SAND, fine	Collect K05-SB5-0-2 0
	1.5		CLAYEY SILT, some sand	Collect K05-SB5-2-4 0
5	1		SILTY SAND, fine, trace clay, (track gravel 6-8')	Collect K05-SB5-4-6 0
	2			Collect K05-SB5-6-8
	1.5			Collect K05-SB5-8-12 0.4
10	1.5		SAND, medium to coarse	Collect K05-SB5-8-12 0.4
	1.5		SILTY CLAY, moist	Collect K05-SB5-8-12 1.2
	1.5			Collect K05-SB5-12-14 1
	1.5		CLAYEY SILT, (and sand from 14-16')	Collect K05-SB5-14-18 1.3
15	0.5		SILTY CLAY, moist	Collect K05-SB5-12-14 1
	0.5			Collect K05-SB5-14-18 1.3
	0.5		SAND, medium to coarse	Collect K05-SB5-8-12 0.4
	0.5			Collect K05-SB5-12-14 1
20	0.5		SILTY CLAY, gray green, wet from 20-22'	Collect K05-SB5-18-22 0.7
	0.5			Collect K05-SB5-18-22 0.7
	0.5			Collect K05-SB5-18-22 0.8

MiniRae 2000 - PID
Headspace (ppm)

APPENDIX B

Soil Sampling Analytical Results and Data
Quality Validation Reports
(Presented on CD)

APPENDIX C

Well Decommissioning Variance



**DEPARTMENT OF CONSERVATION AND NATURAL RESOURCES
DIVISION OF WATER RESOURCES**

901 S. Stewart Street, Suite 2002
Carson City, Nevada 89701
(775) 684-2800 • Fax (775) 684-2811
water.nv.gov

Waiver Correspondence 2008

September 19, 2008

CH2MHILL
Attn: Oscar Sorensen
9193 So. Jamaica Street
Englewood, CO 80112

RE: Vadose Zone Well Plugging, Hawthorne Army Depot

Dear Mr. Sorensen:

This will acknowledge your waiver request, dated September 8, 2008, received by this office September 15, 2008

Division of Water Resources Staff have reviewed your proposal and, as Provided in Section 534.450 of the Regulation for Water Well and Related Drilling as adopted under Chapter 534 of the Nevada Administrative Code, and for good cause shown, authorization is herewith **granted** to complete the subject well plugging and abandonment as described in your September 8, 2008 letter.

It is expressly understood this authorization does not relieve the operator of the permitting requirements of other state, federal and local agencies.

If you have any questions, please contact this office, (775) 684-2800.

Sincerely,

Wm Hamilton Reed, RPG, PE
Staff Engineer

WHR/sg



CH2MHILL

CH2M HILL

9193 S. Jamaica Street

Englewood, CO 80112

Tel 720.286.0241

Fax 720.286.9230

September 8, 2008

Division of Water Resources
Attn: Hamilton Reed
901 S. Stewart Street, Suite 2002
Carson City Nevada 89701

Subject: Well Decommissioning Variance Request
Hawthorne Army Depot
Hawthorne, Nevada

Dear Mr. Reed:

This well-abandonment variance request has been prepared based on discussions between Rebecca Rewey (CH2M HILL) and yourself on June 4, 2008 regarding required well abandonment procedures for a project at the Hawthorne Army Depot (HWAD) in Hawthorne, Nevada. During the phone call, well abandonment options for passive vent wells at Solid Waste Management Unit (SWMU) K05 were discussed. This letter expands the request for a variance to Nevada Administrative Code (NAC) 534.420 to include wells associated with remediation systems in SWMUs B20, J03, K03d in addition to SWMU K05, which was specifically discussed on the June 4 phone call.

The remediation systems consist of passive vent wells, vapor monitoring wells, air injection wells, horizontal injection lines, background vadose zone monitoring wells, and soil moisture probes. The remediation system wells either (1) do not meet the definition of a "well" as defined in Nevada Administrative Code (NAC) 534.220 as they were not used for "measuring, testing or sampling the underground strata or producing groundwater" or (2) do not pose a threat to groundwater. This letter presents well-construction details for the various remediation systems and proposes alternate decommissioning activities to those described in NAC 534.420.

Remediation System Design Summary

SWMU B20 Passive Vapor Extraction Well System Design

The passive vapor extraction well system at SWMU B20 consists of four vertical passive vent wells constructed of 2-inch-diameter PVC casing and 0.010-inch slotted screen to a maximum depth of 100-feet below grade (Figure 1). Aboveground, each passive vent well is connected to a ball valve, a sample port, and an 8-inch-diameter PVC stack pipe with a wind-driven turbine. The groundwater at this site ranges from approximately 129-feet to 134-feet below ground surface (bgs).

SWMU J03 Enhanced Bioremediation System Design

The enhanced bioremediation system at SWMU J03 consists of horizontal and vertical air injection lines, vapor monitoring wells, and soil moisture probes. The groundwater at this site is approximately 104-feet bgs.

Horizontal injection lines (Figure 2), each approximately 80 feet in length, consist of 1-inch diameter schedule-40 PVC screen with 0.010-inch-diameter slots; two lines are located at 10-foot bgs and two are located at 22-foot bgs. Vertical air-injection wells (Figures 3 and 4) at SWMU J03 are constructed of 2-inch diameter, schedule-40 PVC casing with 0.010-inch slot screen; screens are set at various target depths.

Each vapor monitoring well (Figure 5) consists of three ¼-inch diameter polyethylene piping with a 6-inch long schedule-40, 0.010-inch slotted, 1-inch diameter PVC screen, set at 59.5-, 30-, and 15-foot bgs.

Soil-moisture probes (Figure 6) consist of wire leads attached to 7/8-inch diameter gypsum soil-moisture blocks. The soil-moisture probes were installed in 8-inch diameter boreholes at depths of 5-, 15-, and 30-foot bgs. The boreholes were backfilled with native material, finished with a 3-foot tall, two-inch-diameter PVC pipe and cemented in place.

SWMU K03d Enhanced Bioremediation System Design

The enhanced bioremediation system at SWMU K03d consists of horizontal manifold lines, an air-injection well, a background vadose zone monitoring well, and a vapor-monitoring well. The groundwater at this site is approximately 121-feet bgs.

The horizontal manifold lines (Figure 7) are constructed of 1-inch diameter schedule-40 PVC screened pipe with 0.010-inch slots at approximately 10 feet below grade. Each screened horizontal manifold is connected to a 1-inch-diameter solid PVC riser pipe (Figure 8). Each riser pipe is connected to the main air injection well via above ground piping.

The main air injection well (similar to Figure 4) is constructed of 2-inch-diameter schedule-40 PVC casing with 0.010-inch slot screen from 15-to 60-foot bgs. The well was sealed with bentonite chips and bentonite/cement grout and finished with a flush-mount steel cover.

The background vadose zone monitoring well (Figure 9) was constructed of 1-inch diameter schedule-40 PVC and 0.010-inch slot screen from 33-to 38-foot bgs. The well was sealed with bentonite chips and bentonite/cement grout and finished with a stickup steel cover.

The vapor monitoring well (similar to Figure 5) consists of three ¼-inch diameter polyethylene tubes with a 6-inch long schedule-40, 0.010-inch slot, 1-inch-diameter PVC screen, set at 16-, 31-, and 46-foot bgs.

SWMU K05 Passive Bioventing System Design

The passive bioventing system at SWMU K05 consists of pairs of vertical passive vent wells which may be connected by horizontal perforated pipe. Each vent well is constructed of 4- to 6-inch diameter PVC casing and screen. The depths of the wells range from 13- to 15-foot bgs; the screen interval and slot size are not known (Figure 10). The groundwater at this site is approximately 19-feet bgs.

Decommissioning Activities

Passive Vent Wells, Horizontal Injection Lines, Air Injection Wells, and Background Vadose Zone Monitoring Wells

Due to the distance between the bottom of the perforated PVC casing and groundwater table at each of the SWMUs, CH2M HILL proposes to abandon the passive vent wells (including horizontal conveyance pipe if present at SWMU K05), horizontal injection lines, air injection wells, and background vadose zone monitoring wells by:

1. Injecting bentonite grout or concrete into the PVC casing,
2. Removing the above ground conveyance piping (if any), removing the flush mount or stick up protective cover, and removing the PVC casing to at least 1 foot below grade, and
3. Placing a concrete cap/seal over the vertical opening.

Vapor Monitoring Well Decommissioning Activities

Due to the narrow diameter (1/4-inch diameter flexible tubing) and shallow depths of the vapor monitoring wells at SWMUs J03 and K03d, CH2M HILL proposes to abandon these wells by removing the flush mount cover and piping to 1-foot bgs and placing a concrete seal/cap over the vertical openings.

Soil Moisture Probe Decommissioning Activities

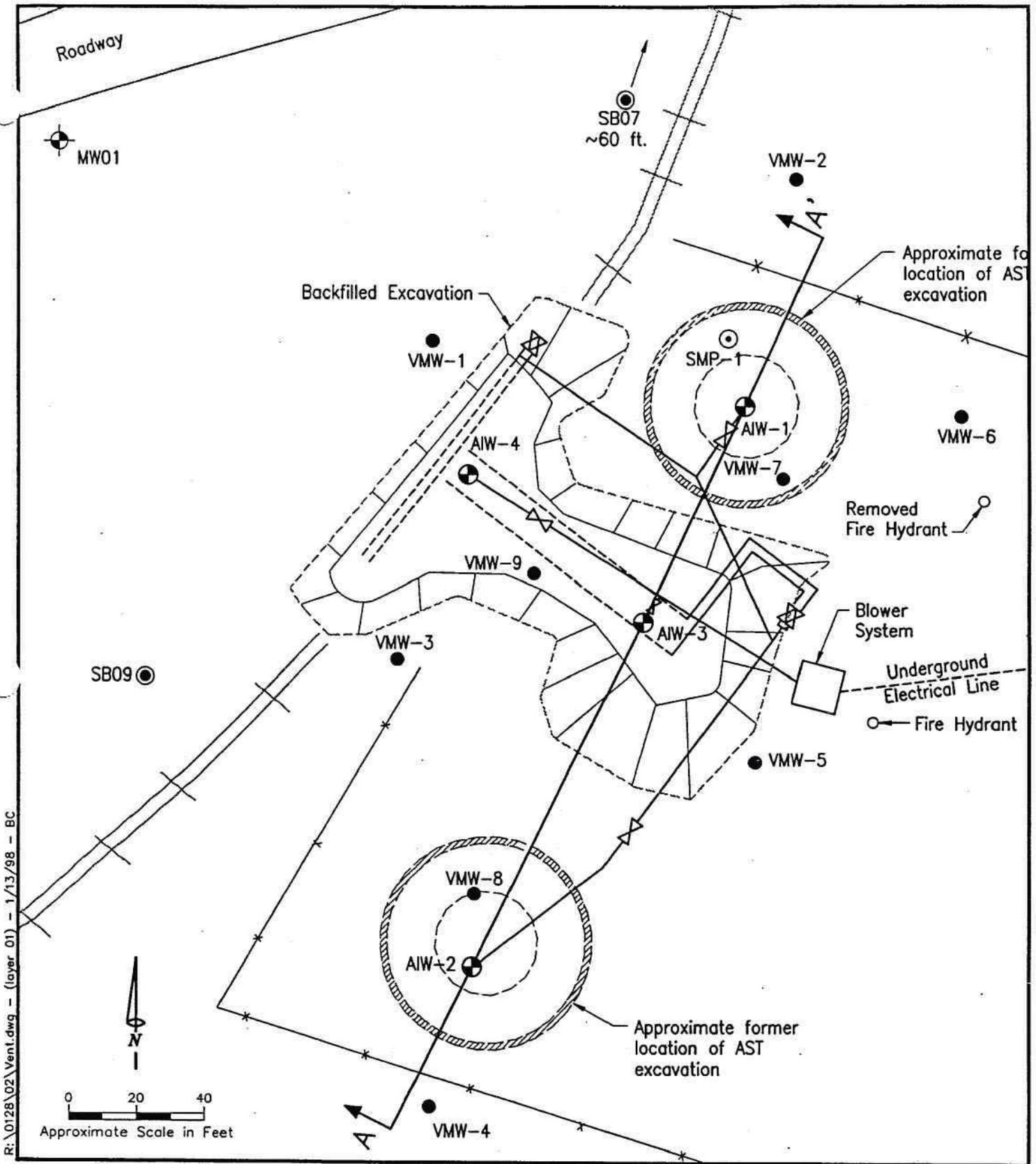
Due to the shallow depths and type of construction of the soil moisture monitoring points at SWMU J03 (lead wires buried in native-soil-filled PVC casing [Figure 6]), CH2M HILL proposes to remove the 3-foot stickup, but to leave the casing and buried wire in place.

Please contact me at 720-286-0241 or via email (oscar.sorensen@ch2m.com) with approval of this plan or if you have any questions or comments.

Sincerely,

CH2M HILL

Project Manager
Oscar Sorensen



R:\0128\02\Vent.dwg - (layer 01) - 1/13/98 - BC

LEGEND	
	R.R. tracks
	Fence
	Underground PVC Line (slotted, 0.01 inch slots)
	Aboveground PVC Line
	Air Flow Control Valve
	Vapor Monitoring Well
	Air Injection Well
	Soil Moisture Monitoring Probe
	Monitoring Well
	Soil Boring Installed in 1994
	Cross Section (Figure 3-2)

Enhanced Bioremediation System Layout

Hawthorne Army Depot
Hawthorne, Nevada

Note: Only four of the eight total horizontal lines are shown.



FIGURE 2

8 inch Throat, Turbine
Galvanized Steel

Sch. 80 8-inch PVC
Stack Pipe, Painted
Yellow

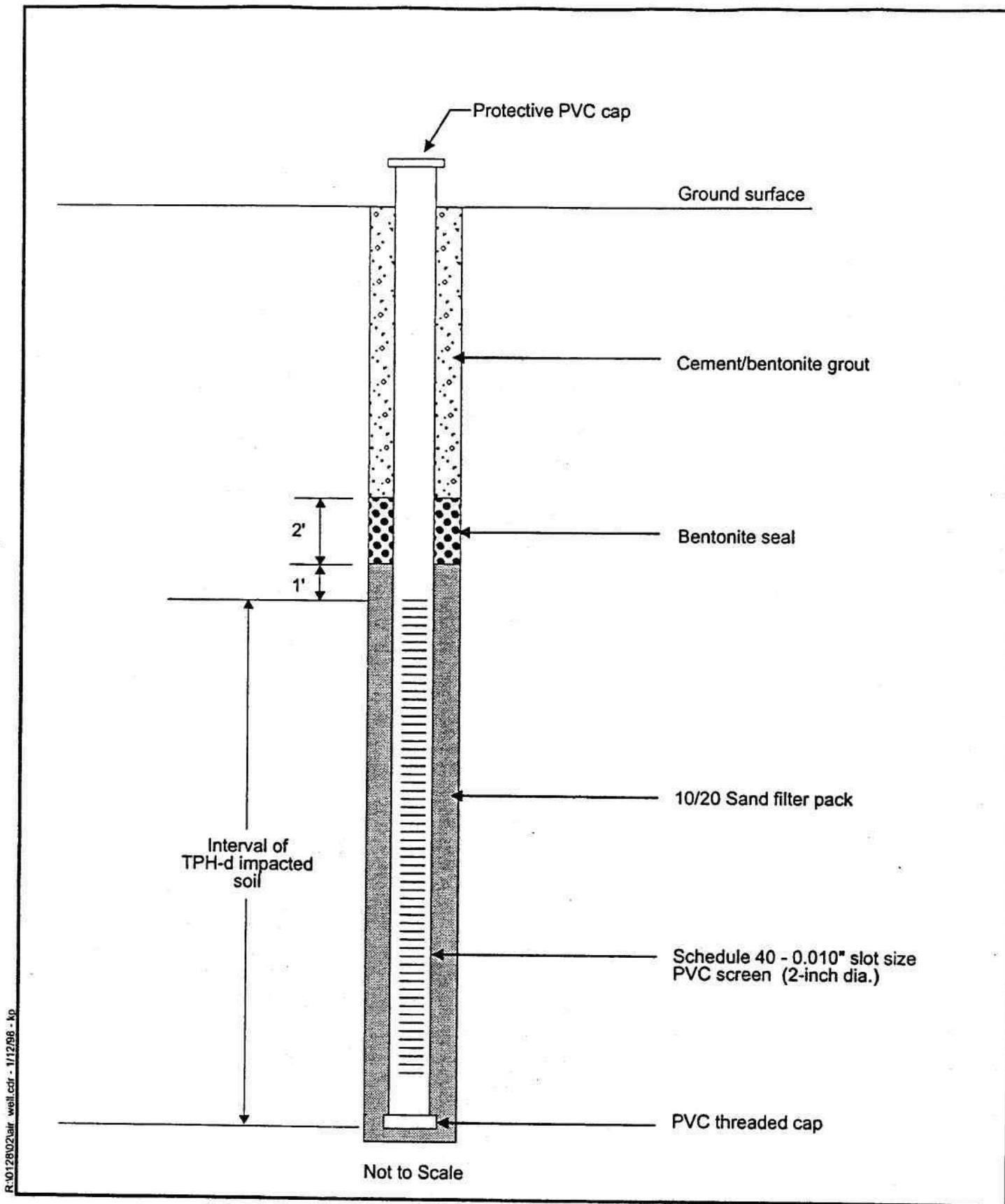
5 ft.

(2-foot diameter minimum)

1-inch diameter PVE piping for
horizontal system and 2-inch diameter
PCE piping when attached to vertical
well casing.

R:\008245\Attic.cdr - 1/21/98 - BC

Attic Turbine Wind Powered Bioventing System Design



R:012802air_well.cdr - 1/12/98 - kp

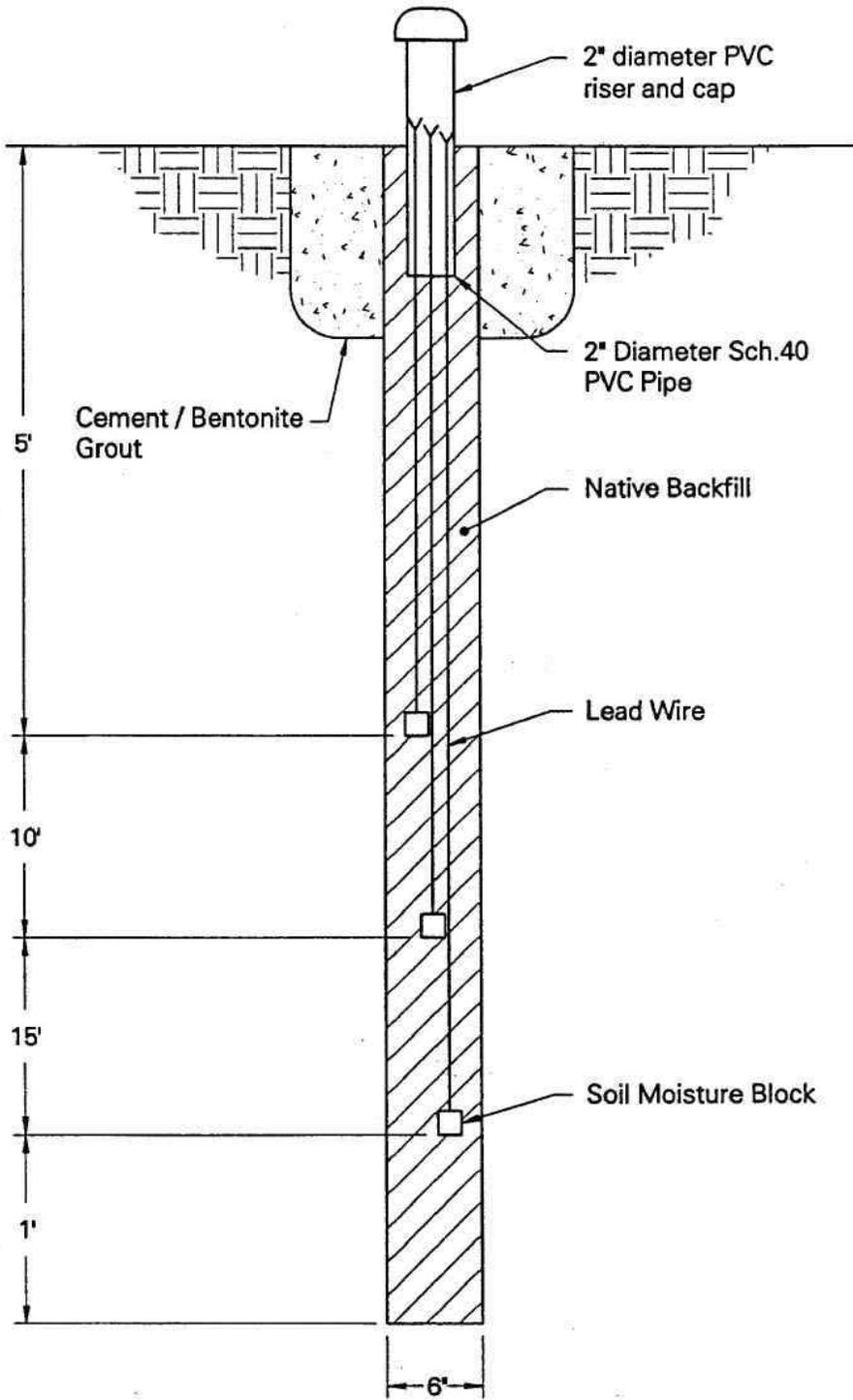
Note: Construction depths for each of the air injection wells vary.

Typical Air Injection Well Construction



Hawthorne Army Depot
Hawthorne, Nevada

FIGURE 4



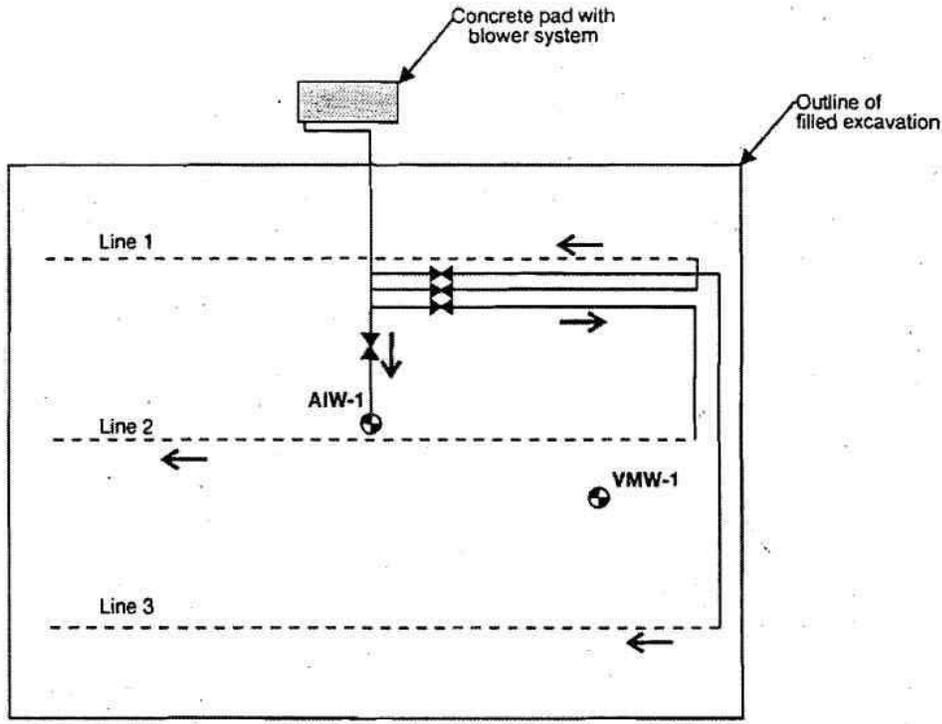
Not to Scale

Soil Moisture Probe Construction

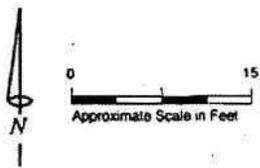
Hawthorne Army Depot
Hawthorne, Nevada



Note: The background monitoring well (BMW-1) is located 212 feet north-northwest of AIW-1



Note: Surface of filled excavation was covered with plastic sheeting, and the sheeting was overlaid with six inches of clean soil.



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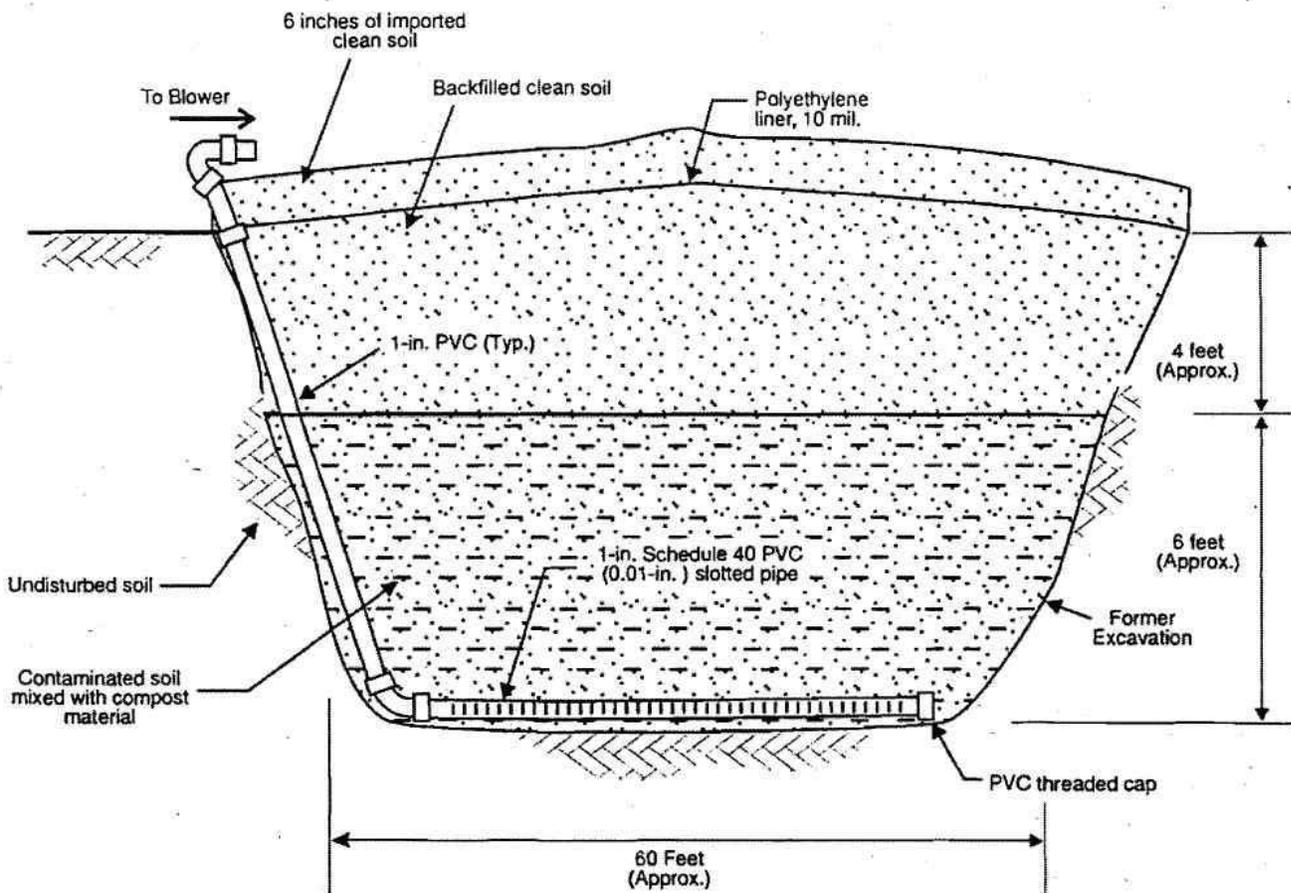
- Legend:**
- ⊕ AIW-1 Air injection well
 - ⊕ VMW-1 Vapor monitoring well
 - Air flow direction
 - - - - - Underground PVC line
 - Above ground PVC line
 - ⊘ Air flow control valve

Piping Layout of Enhanced Bioremediation System

Hawthorne Army Depot
Hawthorne, Nevada



FIGURE 7



Note: View is looking to the south.
Not to scale.

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Horizontal Enhanced Bioremediation System Schematic



Hawthorne Army Depot
Hawthorne, Nevada

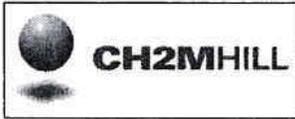
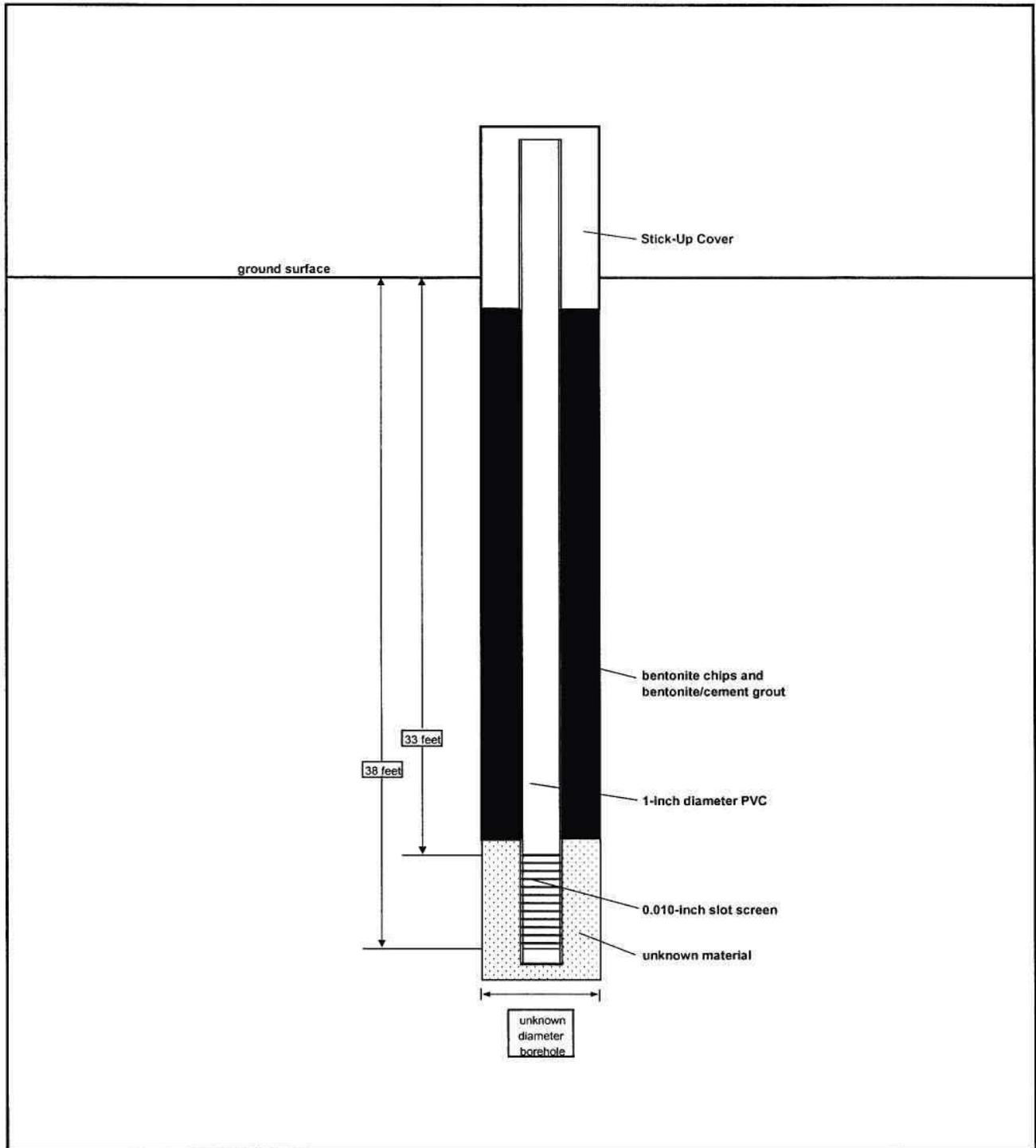


Figure 9 - Background Vadose Zone Monitoring Well

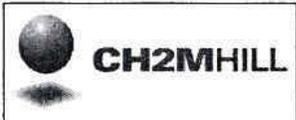
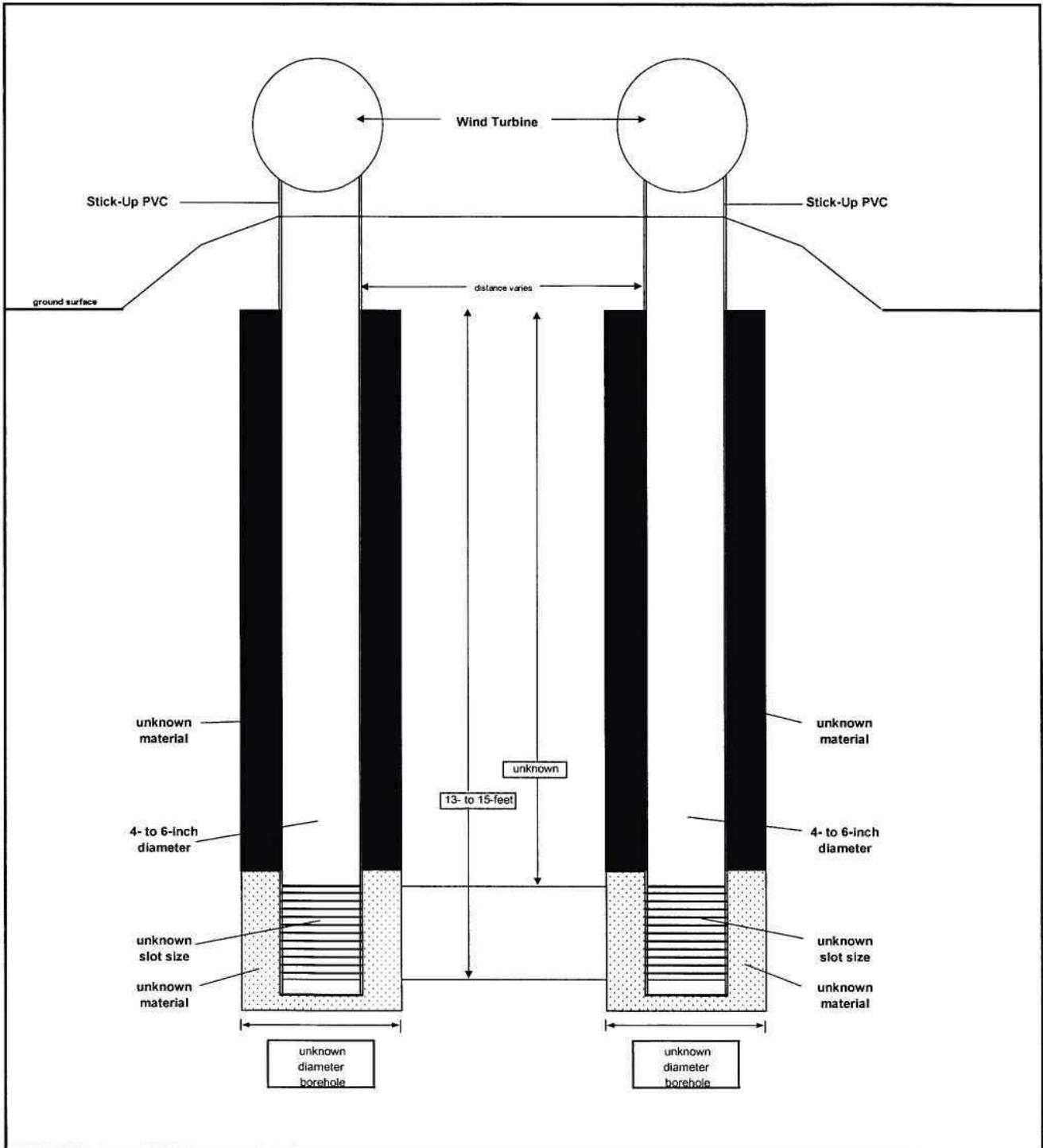


Figure 10 - Passive Bioventing System at SWMU K05

APPENDIX D

SWMU K05 Soil Pile Profile Summary Letter and Decommissioning Approval



CH2M HILL
9193 So a ai a S ree
E e ood CO 80112 5946
Tel 720.286.0241
Fax 720-286-9830

January 23, 2009

Ms. Raquel M.K. Diedrichsen
Nevada Division of Environmental Protection
901 South Stewart Street, Suite 4001
Carson City, NV 89701

Subject: SWMU K05 Soil Pile Profile Summary and Proposed Decommissioning

Dear Ms. Diedrichsen:

This letter report documents the results of the soil pile profile sampling conducted in October 2008 at Solid Waste Management Unit (SMWU) Hawthorne Army Ammunition Plant (HAAP) K05, LUST Site at Building 117-3, hereafter referred to as SWMU K05, at the Hawthorne Army Depot (HWAD) in Hawthorne, Nevada. The soil pile profile sampling was conducted at the request of the Nevada Division of Environmental Protection (NDEP) in the letter to Kevin Shannon dated August 15, 2008 (NDEP, 2008) approving the Closure Report/Decision Document SWMU K05: LUST Site at Building 117-3, Hawthorne Army Depot, Hawthorne Nevada (CH2M HILL, 2008). The purpose of the sampling effort is to determine disposal options for the soil piles.

As requested, one five-point composite sample was collected from each of twelve soil stockpiles at SWMU K05 and analyzed for TPH-Diesel. The samples were collected October 29, 2008 and were analyzed at Test America Laboratories, Inc. in Denver, Colorado by Method SW8015B. Diesel-range organics were detected in 4 of the 12 samples, but at concentrations well below the Nevada Administrative Code (NAC) 459 regulated 100 mg/kg action level for TPH in soils (refer to Table 1 and the attached Executive Summary from Test America Laboratories). Due to the low concentrations reported, the proposed disposal method for the soil piles at SWMU K05 is to grade them in place.

Pending approval of this proposal for grading the soil piles in place at SWMU K05, the decommissioning activities will be completed and a Closure Decision Document and signature page will be submitted to NDEP.

Sincerely,

CH2M HILL

A handwritten signature in blue ink, appearing to read "Oscar E. Sorensen".

Oscar E. Sorensen
Project Manager

Table 1
Summary of Soil Pile Profile Sampling Analytical Results, October 29, 2008

SWMU K05 Soil Piles Profile Sampling Summary/Proposed Disposal Letter Report

Soil Sample	TPH-d (mg/kg)
K05-SP-01	ND
K05-SP-02	ND
K05-SP-03	ND
K05-SP-04	ND
K05-SP-05	11
K05-SP-06	ND
K05-SP-07	ND
K05-SP-08	ND
K05-SP-09	ND
K05-SP-10	16
K05-SP-11	2.4 J
K05-SP-12	12

Notes:

TPH-d: Total Petroleum Hydrocarbons - diesel species

ND: Not detected above method detection limit

J: Samples qualified with a "J" indicate that the reported value is an estimate because the detected concentration was below the PQL.

The NAC 459 action level for TPH in soils is 100 mg/kg; no samples exceed this action level.

EXECUTIVE SUMMARY - Detection Highlights

D8J310304

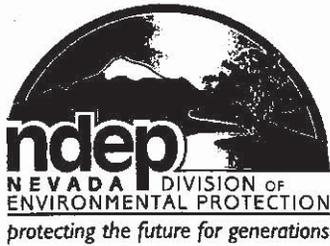
<u>PARAMETER</u>	<u>RESULT</u>	<u>REPORTING LIMIT</u>	<u>UNITS</u>	<u>ANALYTICAL METHOD</u>
K05-SP-01 10/29/08 12:30 001				
Percent Moisture	1.4	0.10	%	ASTM D 2216-90
K05-SP-02 10/29/08 12:45 002				
Percent Moisture	1.5	0.10	%	ASTM D 2216-90
K05-SP-03 10/29/08 12:55 003				
Percent Moisture	1.3	0.10	%	ASTM D 2216-90
K05-SP-04 10/29/08 13:05 004				
Percent Moisture	1.3	0.10	%	ASTM D 2216-90
K05-SP-05 10/29/08 13:15 005				
Diesel Range Organics (C10-C28)	11	4.1	mg/kg	SW846 8015B
Percent Moisture	1.3	0.10	%	ASTM D 2216-90
K05-SP-06 10/29/08 13:25 006				
Percent Moisture	1.5	0.10	%	ASTM D 2216-90
K05-SP-07 10/29/08 13:35 007				
Percent Moisture	1.4	0.10	%	ASTM D 2216-90
K05-SP-08 10/29/08 13:45 008				
Percent Moisture	1.3	0.10	%	ASTM D 2216-90
K05-SP-09 10/29/08 14:25 009				
Percent Moisture	1.6	0.10	%	ASTM D 2216-90
K05-SP-10 10/29/08 14:05 010				
Diesel Range Organics (C10-C28)	16	4.0	mg/kg	SW846 8015B
Percent Moisture	1.2	0.10	%	ASTM D 2216-90

(Continued on next page)

EXECUTIVE SUMMARY - Detection Highlights

D8J310304

<u>PARAMETER</u>	<u>RESULT</u>	<u>REPORTING LIMIT</u>	<u>UNITS</u>	<u>ANALYTICAL METHOD</u>
K05-SP-11 10/29/08 13:55 011				
Diesel Range Organics (C10-C28)	2.4 J	4.0	mg/kg	SW846 8015B
Percent Moisture	1.1	0.10	%	ASTM D 2216-90
K05-SP-12 10/29/08 14:15 012				
Diesel Range Organics (C10-C28)	12	4.1	mg/kg	SW846 8015B
Percent Moisture	1.7	0.10	%	ASTM D 2216-90



STATE OF NEVADA

Department of Conservation & Natural Resources

DIVISION OF ENVIRONMENTAL PROTECTION
BUREAU OF CORRECTIVE ACTIONS

P: 775.687.9368 F: 775.687.8335

Jim Gibbons, Governor

Allen Biaggi, Director

Leo M. Drozdoff, P.E., Administrator

February 9, 2009

Mr. Kevin Shannon
Hawthorne Army Depot
1 South Maine Avenue, Building 5
Hawthorne, NV 89415-9404

RE: Approval of Letter Report for SWMU K05 Soil Pile Data and Proposed Decommissioning, Hawthorne Army Depot, January 2009

Dear Mr. Shannon:

The Nevada Division of Environmental Protection, Bureau of Corrective Actions (NDEP) has reviewed Hawthorne Army Depot's (HWAD's) letter report, SWMU K05 Soil Pile Profile Summary and Proposed Decommissioning, received on February 2, 2009. The report summarizes the results of soil pile profile sampling conducted at SWMU K05 in October 2008 to determine disposal options for stockpiled soil.

One five-point composite sample was collected from each of the twelve soil stockpiles. The soil samples were analyzed for TPH-Diesel by Method 8015B. Diesel-range organics were detected in 4 of the 12 samples at 11 mg/kg, 16 mg/kg, 2.4J mg/kg, and 12 mg/kg, all of which are below the action level of 100 mg/kg TPH in soil. The Hawthorne Army Depot proposes to grade the twelve soil stockpiles in place at SWMU K05.

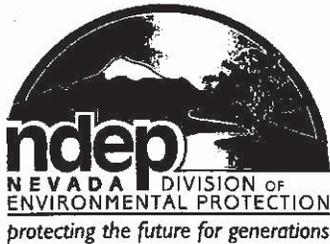
The NDEP concurs with the proposal to grade the soil stockpiles in place at SWMU K05. **The SWMU K05 Soil Pile Data and Proposed Decommissioning letter report is approved.** If you should have any questions or wish to discuss any of these items, please feel free to contact me at (775) 687-9443 or rdiedrichsen@ndep.nv.gov.

Sincerely,

Raquel M.K. Diedrichsen
Department of Defense Branch
Bureau of Corrective Actions

cc: Scott Smale, Supervisor, Department of Defense Branch, Bureau of Corrective Actions, NDEP
Lisa A. Huston, Environmental Manager, Hawthorne Army Depot, 1 South Maine Avenue, Building 1, Hawthorne, NV 89415
Jeff Armstrong, US Army Environmental Command, 5179 Hoadley Road, APG, MD 21010
Guy Romine, IMAE-CDS, 19932 SE Foster Road, Boring, OR 97089
Patrick Reilley, Plexus Scientific, Project Manager, 4501 Ford Ave., Suite 1200, Alexandria, VA 22302





STATE OF NEVADA

Department of Conservation & Natural Resources

DIVISION OF ENVIRONMENTAL PROTECTION
BUREAU OF CORRECTIVE ACTIONS

P: 775.687.9368 F: 775.687.8335

Jim Gibbons, Governor

Allen Biaggi, Director

Leo M. Drozdoff, P.E., Administrator

February 9, 2009

Mr. Kevin Shannon
Hawthorne Army Depot
1 South Maine Avenue, Building 5
Hawthorne, NV 89415-9404

RE: Approval of Letter Report for SWMU K05 Soil Pile Data and Proposed Decommissioning, Hawthorne Army Depot, January 2009

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One five-point composite sample was collected from each of the twelve soil stockpiles. The soil samples were analyzed for TPH-Diesel by Method 8015B. Diesel-range organics were detected in 4 of the 12 samples at 11 mg/kg, 16 mg/kg, 2.4J mg/kg, and 12 mg/kg, all of which are below the action level of 100 mg/kg TPH in soil. The Hawthorne Army Depot proposes to grade the twelve soil stockpiles in place at SWMU K05.

The NDEP concurs with the proposal to grade the soil stockpiles in place at SWMU K05. **The SWMU K05 Soil Pile Data and Proposed Decommissioning letter report is approved.** If you should have any questions or wish to discuss any of these items, please feel free to contact me at (775) 687-9443 or rdiedrichsen@ndep.nv.gov.

Sincerely,

Raquel M.K. Diedrichsen
Department of Defense Branch
Bureau of Corrective Actions

cc: Scott Smale, Supervisor, Department of Defense Branch, Bureau of Corrective Actions, NDEP
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