

**ACTION MEMORANDUM
ENGINEERING EVALUATION/COST ANALYSIS**

**NAVAL WEAPONS STATION - EARLE
COLTS NECK, NEW JERSEY**

Issued:

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Prepared for:

**Naval Facilities Engineering Command
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**REMEDIAL ACTION CONTRACT N62472-94-D-0398
DELIVERY ORDER NO. 0017**

**ACTION MEMORANDUM
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**NAVAL WEAPONS STATION - EARLE
COLTS NECK, NEW JERSEY**

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**UNITED STATES
NAVAL WEAPONS STATION EARLE
COLTS NECK, NEW JERSEY**

This announces that an Action Memorandum, Engineering Evaluation and Cost Analysis (EE/CA) for the excavation and removal of pipe, sludge and concrete at the Naval Weapons Station Earle Site 26 under the Navy's Installation Restoration Program has been drafted. The Northern Division of the Naval Facilities Engineering Command, the lead agency for the site remedial activity, has recommended the removal of piping, in-ground concrete tanks, and sludge associated with the former leaching system at Building GB-01 due to contamination by solvents in order to minimize the potential additional migration of contaminants to the groundwater. The remedial alternative involves the excavation of the concrete tanks, piping and sludge inside the tanks for off-site disposal. No post excavation sampling will be conducted because the final remedy for the area shall be air sparging/soil vapor extraction. Naval Weapons Station Earle will consider written and verbal comments on all the proposed alternatives before final selection of the remedial alternative and the issuance of a Decision Document reflecting this choice. Written comments must be postmarked by December 6, 1997.

The Action Memorandum and EE/CA for this site may be reviewed at the repository listed below:

Monmouth County Library
Eastern Branch
Government Repository
Route 35
Shrewsbury, New Jersey 07701

Written comments on the proposed alternatives should be sent to:

Commanding Officer
Attn: Code 043
Naval Weapons Station Earle
Colts Neck, New Jersey 07722-5014

**ACTION MEMORANDUM
SITE 26**

I. PURPOSE

The purpose of this Action Memorandum is to request and document approval of the proposed removal and disposal action described herein for Site 26, Building GB-01, at the Naval Weapons Station Earle (NAVWPNSTA), located in Monmouth County, New Jersey. The removal will be conducted by Foster Wheeler Environmental Corporation (Navy Contractor).

II. SITE CONDITIONS AND BACKGROUND

A. Site Description

1. Removal Site Evaluation

The groundwater at Site 26 is contaminated with TCE and 1,2-DCE. The source of trichloroethene (TCE) and other volatile organic compounds in the groundwater at Site 26 is apparently from a leaching system located on the northwest side of Building GB-01. The leaching system originates from drains inside Building GB-01 and exits through a two-inch diameter galvanized pipe underground and on the northwest side of Building GB-01. The two-inch pipe opens up into a four-inch diameter pipe, which runs for approximately ten feet prior to discharging into an in-ground concrete grease trap. The grease trap, constructed of six-inch thick concrete, is approximately five feet by three feet and three feet deep. The four-inch diameter pipe runs north from the grease trap approximately ten feet to discharge into the in-ground concrete leach tank. The in-ground leach tank is also constructed of six-inch thick concrete and is approximately seven feet by seven feet and five feet deep. There are apparently sludges in the bottoms of the grease trap and leach tank which contain elevated concentrations of volatile organics.

2. Physical Location

Site 26 is located north of Building GB-01 at the intersection of Macassar and Midway Roads.

3. Site Characteristics

Topographically, Site 26 is a relatively flat area, approximately 200 feet by 200 feet, located northwest and southwest of Building GB-01. Groundwater is the migration pathway of concern at the site. The depth to groundwater at Site 26 is approximately 13 to 16 feet below grade and groundwater flow is to the southwest. The site is underlain by sand and gravel of the upland gravel and fine to coarse grained sands of the Kirkwood Formation. The objective of this removal action is to remove piping, in-ground concrete

tanks, and sludge which are the source of TCE and 1,2-DCE groundwater contamination at the site. The removal action is an interim remedy to remove the source area. A final remedial action shall be employed at a later time to address the groundwater contamination at the site.

4. Release or Threatened Release into the Environment of a Hazardous Substance, Pollutant, or Contaminant

TCE and related chlorinated organic compounds have impacted the groundwater at Site 26. The source of the groundwater contamination appears to be the septic system leach tank. A TCE, 1,2-DCE and related compound plume was delineated in the groundwater southwest of Building GB-01. The groundwater contamination plume is approximately 350 feet by 130 feet. The vertical migration of the contaminated groundwater plume appears to have been limited by a 14 feet thick clay layer at a depth of 25 to 40 feet below grade at Site 26. The TCE and 1,2-DCE concentrations in the shallow aquifer exceed NJDEP's Groundwater Quality Standards (GWQS).

5. National Priority List (NPL) Status

NAVWPNSTA Earle (Colts Neck, New Jersey) was listed as an "NPL" site in August 1990. A Federal Facilities Agreement between the Department of the Navy and the United States Environmental Protection Agency (USEPA), Region II was finalized in February 1991. In accordance with Navy policy to include the members of the public in discussions concerning site clean up decisions, NAVWPNSTA Earle established a "Restoration Advisory Board" (RAB) comprised of community members, representatives of the USEPA, New Jersey Department of Environmental Protection (NJDEP) and the Navy. The RAB was officially formed in February 1995, and meets regularly after normal business hours to allow the working public more of an opportunity for involvement in site specific discussions. Prior to RAB formation, a Technical Review Committee (TRC) met during normal business hours; representatives of the local municipalities and regulatory agencies attended TRC meetings. This proposed action at Site 26 has been discussed with the NAVWPNSTA Earle RAB.

The proposed excavation and removal of piping, tanks and sludge at Site 26 constitutes a non-time critical removal action as defined in the National Contingency Plan (NCP).

6. Maps Pictures and Other Graphic Representations

Maps of the sites are included with the analytical data in Appendix A of this Action Memorandum.

B. Other Actions Addressing Site 26

1. Previous Action

An Initial Assessment Study was conducted at Site 26 in 1982, a Site Inspection Study (SI) was conducted in 1986, a Phase I Remedial Investigation (RI) was conducted in 1993, and a Phase II RI was completed in 1996.

2. Current Action

The Final Remedial Investigation Report was submitted in July 1996 and is undergoing comment.

C. State and Local Authorities' Rule

1. State and Local Actions

The Site is located in a secured area and requires a permit for entry. The permit can only be obtained from the NAVWPNSTA Earle Security Office.

2. Potential for Continued State/Local Response

The Navy will lead the remedial action under cooperative agreement with the USEPA. However, recommendations and comments made by state and local authorities will be considered before the Decision Document is issued.

III. THREATS TO PUBLIC HEALTH OR WELFARE OR THE ENVIRONMENT, AND STATUTORY AND REGULATORY AUTHORITIES

A. Threats to Public Health or Welfare

TCE and 1,2-DCE in the groundwater pose a potential threat to future residential receptors exposed to groundwater. The site is located in a secure area and is not accessible to the general public.

B. Threats to the Environment

No significant contaminant migration is expected via overland runoff since the leaching system is located below grade. No wetlands or sensitive habitats are in the vicinity of Site 26.

IV. ENDANGERMENT DETERMINATION

Actual or threatened releases of pollutants and contaminants from the Site, if not addressed by implementing the response action selected for this Action Memorandum,

may present an imminent and substantial endangerment to public health, or welfare, or the environment.

V. PROPOSED ACTION AND ESTIMATED COSTS

A. Proposed Actions

1. Proposed Action Description

The piping, in-ground concrete tanks and any sludge in the tanks will be excavated with a Case 580 backhoe, or equivalent. The piping shall be loaded into a lined roll-off container. The sludge shall be removed from the concrete tanks and placed in drums. The concrete tanks shall be broken into pieces no larger than two feet by two feet and loaded into a lined roll-off container. In accordance with the Resource Conservation and Recovery Act, the sludge and concrete will be subjected to the Toxicity Characteristic Leachate Procedure (TCLP) testing prior to removing the material from the site in order to ensure all materials are disposed at proper disposal facilities in accordance with all applicable regulations.

2. Contribution to Remedial Performance

This proposed removal action is only an interim response to remove the source of the groundwater contamination. An additional remedial action shall be employed to remedy the groundwater contamination.

3. Description of Alternative Technologies

Alternative technologies have been considered. Excavation and off-site disposal is the most effective and least expensive action.

4. Engineering Evaluation/Cost Analysis (EE/CA)

An Engineering Evaluation and Cost Analysis has been prepared (Appendix B) and contains a discussion of alternatives considered before proposing this remedial action.

5. Applicable or Relevant and Appropriate Requirements (ARARs)

Final attainment of all chemical-specific ARARs is not required because this removal action is an interim response. A larger air sparging/soil vapor extraction system is proposed for the final remedial alternative. All applicable regulations will be met regarding off-site transportation/disposal of wastes. This removal action will not be impacted by any location-specific ARARs.

6. Project Schedule

The planned removal action will occur from December 15, 1997 through December 23, 1997.

B. Estimated Costs

The costs of the removal action is approximately \$64,600. A detailed cost estimate is provided in the EE/CA.

VI. EXPECTED CHANGE IN THE SITUATION SHOULD ACTION BE DELAYED OR NOT TAKEN

A delay in action would further increase the possibility of continued groundwater contamination from the source area as well as result in an increase in project cost.

VII. OUTSTANDING POLICY ISSUES

There are no outstanding policy issues that have not been discussed.

VIII. ENFORCEMENT

This removal action will be performed properly and in accordance with this Action Memorandum.

XI. RECOMMENDATION

This decision document represents the selected removal action for Site 26, at NAVWPNSTA Earle, Colts Neck, Monmouth County, New Jersey, developed in accordance with the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA), as amended, and not inconsistent with the National Contingency Plan (NCP). This decision is based on the administrative record for Site 26.

APPENDIX A
ANALYTICAL RESULTS

06/17/96

TABLE 25-5a

COMPARISON OF SUBSURFACE SOIL ANALYTICAL DATA TO ARARS AND TBCs - SITE 26
NWS EARLE, COLTS NECK, NEW JERSEY

FINAL

Page 2

SAMPLE NUMBER:	26SBDEC95-01	26SBDEC95-02	---	---	---	---	ARARS & TBCs			
	LOCATION:	26SBDEC95-01	26SBDEC95-02	---	---	---	---	NJDEP Soil Residential Direct Contact Cleanup Criteria	NJDEP Soil Non-Residential Direct Contact Cleanup Criteria	NJDEP Soil Impact to Groundwater Cleanup Criteria
DATA SOURCE:	1995 RI, Dec.	1995 RI, Dec.								
INORGANICS	mg/kg	mg/kg						mg/kg	mg/kg	mg/kg
aluminum	n/a	n/a					-	-	-	-
antimony	n/a	n/a					14.0	340	-	-
arsenic	n/a	n/a					20.0	20.0	-	-
barium	n/a	n/a					700	47000	-	-
beryllium	n/a	n/a					1.00	1.00	-	-
cadmium	n/a	n/a					1.00	100	-	-
calcium	n/a	n/a					-	-	-	-
chromium, total	n/a	n/a					-	500	-	-
copper	n/a	n/a					600	600	-	-
iron	n/a	n/a					-	-	-	-
lead	n/a	n/a					400	600	-	-
magnesium	n/a	n/a					-	-	-	-
manganese	n/a	n/a					-	-	-	-
mercury	n/a	n/a					14.0	270	-	-
nickel	n/a	n/a					250	2400	-	-
potassium	n/a	n/a					-	-	-	-
silver	n/a	n/a					110	4100	-	-
sodium	n/a	n/a					-	-	-	-
thallium	n/a	n/a					2.00	2.00	-	-
vanadium	n/a	n/a					370	7100	-	-
zinc	n/a	n/a					1500	1500	-	-
VOLATILES	ug/kg	ug/kg					ug/kg	ug/kg	ug/kg	
1,2-dichloroethene (total)	3.0 J	140					79000	1000000	1000	
methylene chloride	11.0 U	2.0 J					49000	210000	1000	
trichloroethene	2.0 J	74.0					23000	54000	1000	

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COMPARISON OF SUBSURFACE SOIL ANALYTICAL DATA TO ARARS AND TBCs - SITE 26
NWS EARLE, COLTS NECK, NEW JERSEY

SAMPLE NUMBER: LOCATION: DATA SOURCE:	26SB01-02	26SB02-04	26SB03-04	26SB03-06	26SB04-02	26SB04-06	ARARS & TBCs		
	26SB01	26SB02	26SB03	26SB03	26SB04	26SB04	NJDEP Soil Residential Direct Contact Cleanup Criteria	NJDEP Soil Non-Residential Direct Contact Cleanup Criteria	NJDEP Soil Impact to Groundwater Cleanup Criteria
	1995 RI								
INORGANICS	mg/kg	mg/kg	mg/kg						
aluminum	3350	668	1780	557	2300	1280	-	-	-
antimony	0.56 U	0.55 U	0.55 U	0.66	0.61	0.59 U	14.0	340	-
arsenic	1.0 J	0.59 J	3.1 J	0.56 UJ	2.7 J	0.59 UJ	20.0	20.0	-
barium	3.4 J	213 J	2.3 J	1.1 J	2.2 J	2.3 J	700	47000	-
beryllium	0.13	0.25	0.16	0.13	0.16	0.14	1.00	1.00	-
cadmium	0.040	0.068	1.2 E	0.077	0.81	0.20	1.00	100	-
calcium	163	169	63.7	28.7	76.2	32.9	-	-	-
chromium, total	6.4	2.7	7.8	2.2	6.6	3.3	-	500	-
copper	0.59	1.6	2.3	0.088 U	0.94	0.52	600	600	-
iron	3270 J	2240 J	6550 J	961 J	4560 J	1740 J	-	-	-
lead	2.3 J	1.7 J	1.4 J	0.55 J	1.2 J	1.0 J	400	600	-
magnesium	59.0	31.1	52.9	17.3	58.2	29.7	-	-	-
manganese	1.9 J	1.2 J	1.6 J	1.1 J	1.0 J	1.4 J	-	-	-
mercury	0.064 J	0.0070 U	0.0072 U	0.0073 U	0.0068 U	0.0077 U	14.0	270	-
nickel	0.78	0.24	0.50	0.38	0.32	0.29	250	2400	-
potassium	95.2	77.7	185	55.2 U	185	118	-	-	-
silver	0.14 U	0.14 U	2.4	1.0	1.3	0.64	110	4100	-
sodium	160	146	103	144	98.6	131	-	-	-
thallium	0.67 U	0.92 J	0.87 J	0.70 J	0.68 U	0.71 U	2.00	2.00	-
vanadium	5.7	2.5	8.1	1.2	6.2	1.9	370	7100	-
zinc	3.1 J	89.3 J	12.8 J	0.50 UJ	1.6 J	0.52 UJ	1500	1500	-
VOLATILES	ug/kg	ug/kg	ug/kg						
1,2-dichloroethene (total)	11.0 U	12.0 U	79000	1000000	1000				
methylene chloride	11.0 UJ	12.0 UJ	49000	210000	1000				
trichloroethene	11.0 U	12.0 U	23000	54000	1000				

TABLE 25-7a

COMPARISON OF GROUNDWATER ANALYTICAL DATA TO ARARS AND TBCs - SITE 26
NWS EARLE, COLTS NECK, NEW JERSEY

SAMPLE NUMBER: LOCATION: DATA SOURCE:	26GW01	26GW02	26GW03	26GW04	26GW05	26GW06	ARARS & TBCs		
	26GW01	26GW02	26GW03	26GW04	26GW05	26GW06	Maximum Contaminant Level (MCL)	Drinking Water Health Advisory (Lowest Criterion Shown)	NJDEP Groundwater Quality Standard
	1995 RI	1995 RI	1995 RI	1995 RI	1995 RI	1995 RI			
INORGANICS	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
aluminum	614 E J	927 E J	406 E J	328 E	501 E J	460 E J	-	-	200
barium	518	464	475	13.2	89.6	46.9	2000	2000 a	2000
cadmium	0.52	0.42	0.38 U	4.4 E	0.52	0.38 U	5.00	5.00 e	4.00
calcium	17800	3540	7010	4600	6590	11100	-	-	-
chromium, total	1.3	1.2	1.4	1.0 U	1.0 U	1.0 U	100	100 a	100
cobalt	2.9	0.92	0.60 U	1.2	5.0	5.8	-	-	-
copper	8.7	13.8	9.2	4.0	0.82	0.81	1300	-	1000
iron	4740 E J	828 E J	719 E J	90.8	284	373 E	-	-	300
lead	2.6	1.5 U	1.5 U	1.5 UJ	1.5 U	1.5 U	15.0	-	10.0
magnesium	2170	636	2120	724	923	1920	-	-	-
manganese	106 E J	10.6	3.3	11.0	87.5 E	155 E	-	-	50.0
mercury	0.012	0.021	0.014	0.11 J	0.080	0.083	2.00	2.00 b	2.00
nickel	0.75 U	1.0	0.81	0.75 U	0.75 U	0.75 U	100	100 a	100
potassium	3640	1100	362	569	1350	1290	-	-	-
silver	0.94 U	0.94 U	0.94 U	3.3	0.94 U	0.94 U	-	100 a	-
sodium	4580	3250	2650	3910	2360	12500	-	-	50000
vanadium	1.6	1.0	0.81	0.61 U	0.61 U	0.61 U	-	-	-
zinc	326	326	280	8.3 R	180	100	-	2000 a	5000
VOLATILES	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
1,1-dichloroethene	3.0 E J	10.0 U	7.00	7.00 a	2.00				
1,2-dichloroethene (total)	2000 E	10.0 U	70.0 a	70.0 a	10.0				
chloroform	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U	1.0 J	100	100 e	6.00
tetrachloroethene	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U	1.0 J	5.00	1000 e	1.00
trichloroethene	1700 E	10.0 U	10.0 U	10.0 U	10.0 U	1.0 J	5.00	-	1.00

**Table 25-2
Site 26 Soil Boring Characteristics Summary
NWS Earle Colts Neck, New Jersey**

Soil Boring Number	Total Depth⁽¹⁾ (feet)	Ground Surface Elevation⁽²⁾	Laboratory Sample Number	Laboratory Sample Depth Interval⁽¹⁾ (feet)	Analytical Parameters⁽³⁾
26 SB 01	10	146.50	26 SB01-02	2 to 4	TCL VOC, TAL metals, and explosives
26 SB 02	10	146.70	26 SB02-04	4 to 6	TCL VOC, TAL metals, and explosives
26 SB 03	8	144.40	26 SB03-04	4 to 6	TCL VOC, TAL metals, and explosives
			26 SB03-06	6 to 8	
26 SB 04	8	144.20	26 SB04-02	2 to 4	TCL VOC, TAL metals, and explosives
			26 SB04-06	6 to 8	
26 SBDEC95 01	10	146.80	26 SBDEC95-01	8 to 10	TCL VOC
26 SBDEC95 02	12	146.40	26 SBDEC95-02	10 to 12	TCL VOC

(1) In feet below grade

(2) In feet above mean sea level

(3) TCL VOC - Target Compound List Volatile Organic Compound; TAL metals - Target Analyte List

Table 25-3
Site 26 - Monitoring Well Characteristics Summary
NWS Earle, Colts Neck, New Jersey

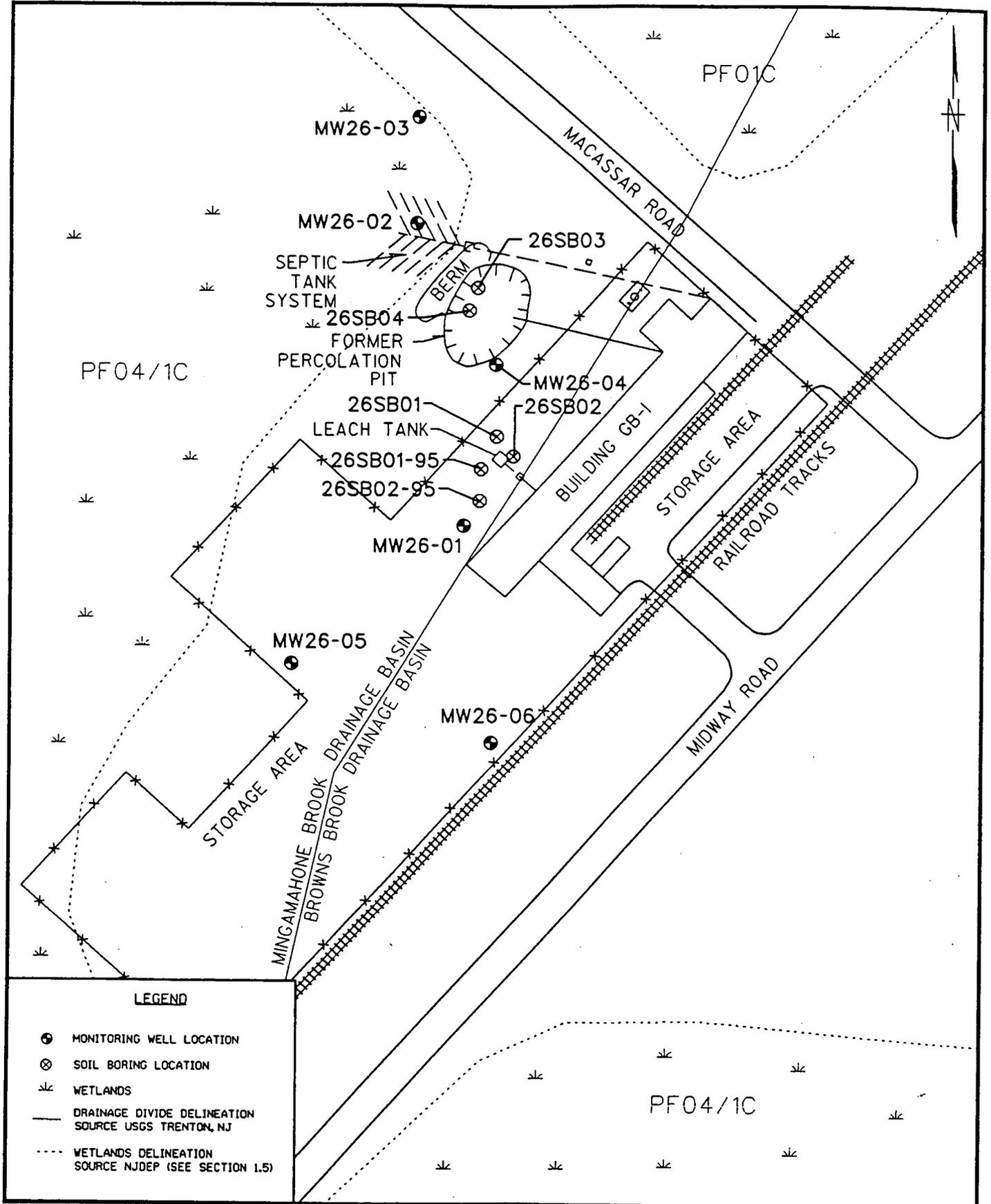
Monitoring Well Number	Total Depth ⁽¹⁾ (feet)	Ground Surface Elevation ⁽²⁾			Diameter (inches)	Screened Interval Depth ⁽¹⁾ (feet)	Filter Pack Interval Depth ⁽¹⁾ (feet)	Date Installed
		Top of Concrete Pad	Top of PVC Riser	Top of Standpipe				
MW26-01	24	NS	148.76	NS	4	9 - 24	7 - 24	1/29/86
MW26-02	22	NS	148.51	NS	4	7 - 22	5 - 22	1/27/86
MW26-03	22	NS	149.35	NS	4	7 - 22	5 - 22	1/28/86
MW26-04	15	147.90	149.96	150.09	4	5 - 15	3 - 15.3 ⁽³⁾	1/15/91
MW26-05	19	149.68	148.68	150.23	2	9 - 19	7 - 19	7/6/95
MW26-06	16	144.94	146.82	147.38	2	6 - 16	4 - 16	7/6/95

Note: All wells were constructed with Schedule 40 polyvinyl chloride (PVC) well casing.

- (1) In feet below grade. Reading obtained during monitoring well installation. See Table 25-4 for more accurate measurements.
- (2) In feet above mean sea level.
- (3) Filter pack extends beneath screened interval.
- (NS) Not surveyed.

APPENDIX B

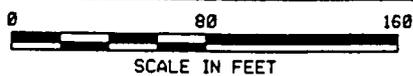
FIGURES

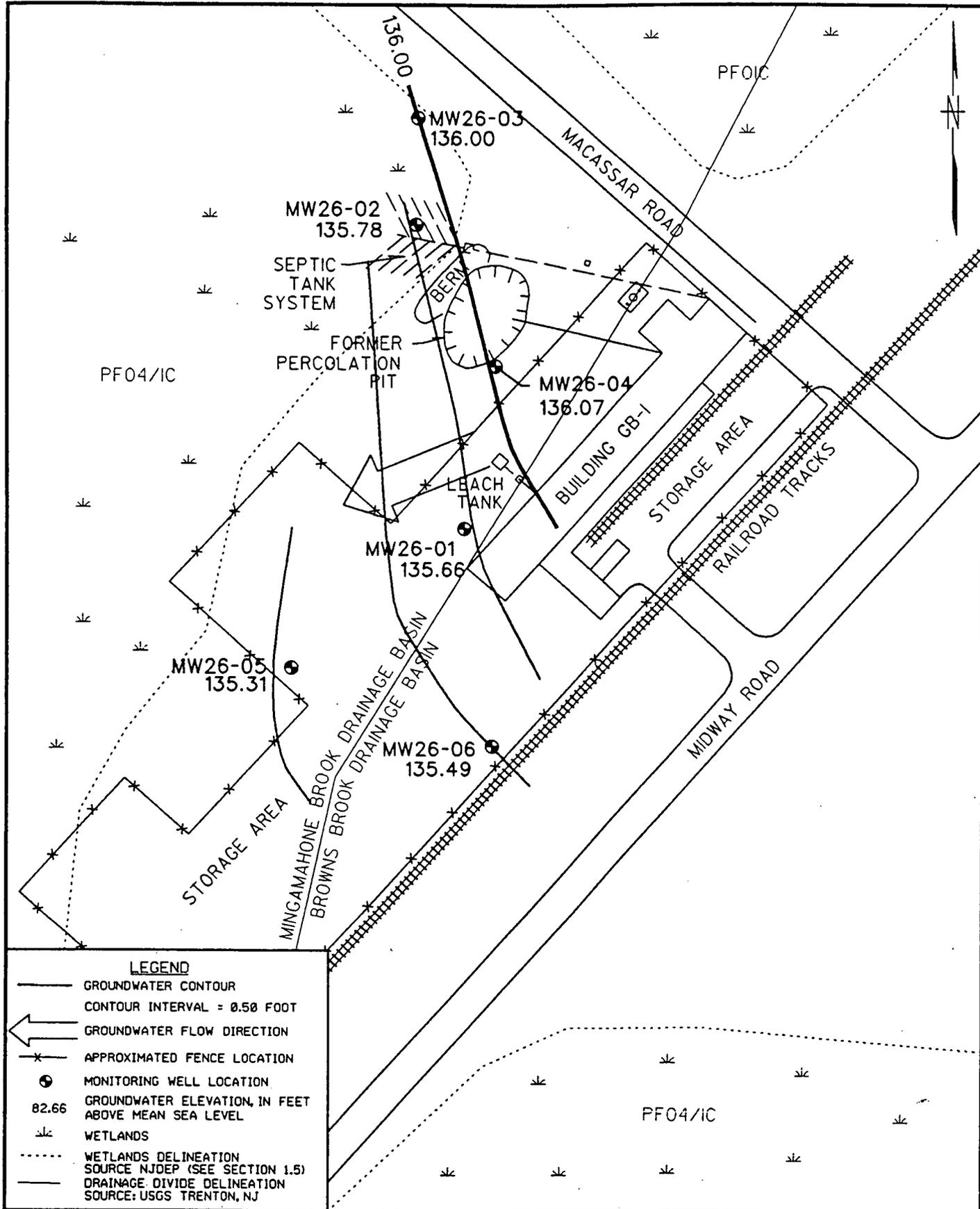


SAMPLE LOCATIONS

SITE 26 - EXPLOSIVE 'D' WASHOUT AREA

FIGURE 25-1





GROUNDWATER CONTOUR MAP AUGUST 7, 1995

FIGURE 25-3

SITE 26 - EXPLOSIVE 'D' WASHOUT AREA



APPENDIX C

ENGINEERING EVALUATION/COST ANALYSIS

ENGINEERING EVALUATION/COST ANALYSIS
EXCAVATION AND REMOVAL OF SEPTIC DRAIN LINE
AT BUILDING GB-01
NAVAL WEAPONS STATION EARLE
COLTS NECK, NEW JERSEY
INSTALLATION RESTORATION SITE 26

Prepared by:
Michael Heffron, P.G.
Delivery Order Manager
Foster Wheeler Environmental Corporation
November 3, 1997

1.0 EXECUTIVE SUMMARY

An Engineering Evaluation/Cost Analysis (EE/CA) is a comparative analysis of remedial options for a National Priority List (NPL) site. The EE/CA develops, evaluates and selects alternatives that will provide an effective interim remedy which is consistent with anticipated final remedial goals.

Naval Weapons Station (NAVWPNSTA) Earle, Site 26 has a septic system north of Building GB-01 that was apparently used to dispose of solvents used in the reconditioning of munition casings and shells. Spent solvents and wastewaters were discharged inside Building GB-01 and drained from receptacles inside the building to the leaching system. Trichloroethene (TCE) and 1,2 dichloroethene (1,2-DCE) were the solvents apparently disposed in the leaching system. The leaching system consists of underground piping leading from Building GB-01 north to a leaching field. The piping system contains an in-ground concrete grease trap and leaching tank. The analytical results of soils and groundwater in the leaching system area revealed elevated concentrations of TCE and 1,2-DCE above the New Jersey Department of Environmental Protection (NJDEP) Groundwater Quality Standards (GWQS).

The objective of the removal action is to remove the piping and in-ground concrete tanks associated with the leaching system in order to remove the source of the groundwater contamination and any below grade obstructions that would impeded the final site remedy (air sparging/soil vapor extraction). The removal action will serve to eliminate any future discharges of materials from inside the building to the leach field. This action is consistent with Navy Policy to clean Site 26 in an environmentally acceptable manner.

Site 26 is currently located in a secured area. There is no near term or long term plan to convert this area to residential use; the current military-unique land use in the area of Site 26 is expected to prevail.

This EE/CA has been prepared to provide documentation in the NAVWPNSTA Earle administrative record for the removal action selection at Site 26. Following a 30 day public comment period, a responsiveness summary will be prepared to address any concerns that may arise.

2.0 SITE CHARACTERIZATION AND BACKGROUND

2.1 Site Description and Background

Site 26 is located north of Building GB-01, which is located at the intersection of Macassar and Midway Roads. Two railroad lines run from the southwest to northeast adjacent to the southern side of Building GB-01. The site is fenced and the ground surface is relatively flat. The leaching system is located on the northwest side of Building GB-01. The leaching system originates from drains inside Building GB-01 and

exits through a two-inch diameter galvanized pipe underground and on the northwest side of Building GB-01. The two-inch pipe opens up into a four-inch diameter pipe, which runs for approximately ten feet prior to discharging into an in-ground concrete grease trap. The grease trap is approximately five feet by three feet and three feet deep. Four inch diameter pipe runs north from the grease trap ten feet to discharge into the in-ground concrete leach tank. The leach tank is approximately seven feet by seven feet and seven feet deep.

2.2 Previous Removal Actions

There has been no known previous removal action at Site 26.

2.3 Source, Nature and Extent of Contamination

An Initial Assessment Study was conducted at Site 26 in 1982, a Site Inspection Study (SI) was conducted in 1986, a Phase I Remedial Investigation (RI) was conducted in 1993, and a Phase II RI. Building GB-01 was reportedly used for the reconditioning of munition shells and casings. Solvents were apparently used in the reconditioning process and the spent solvents and wastewaters were discarded into drains/receptacles inside the building which drained into the leaching system on the northwestern side of the building. The wastewaters drained into the leach field and TCE and 1,2-DCE leached into the surrounding soils and groundwater.

2.4 Analytical Data

Analytical results of soil samples near the leach tank revealed TCE (up to 74 ug/kg) and 1,2-DCE (up to 140 ug/kg).

2.5 Site Risk Assessment

Concentrations of TCE and 1,2-DCE in the groundwater are above the federal Maximum Contamination Levels (MCLs) for drinking water and the NJDEP's Groundwater Quality Standards (GWQS). Site 26 is located in a restricted area of the base and is fenced; therefore, any immediate human health risks would be minimal. No significant ecological contamination migration pathways exist at the site. Site 26 is relatively small and consists of turf grass or developed areas such as open storage or vehicle parking areas. No wetlands, sensitive habitats, or threatened or endangered species of any kind exist in the vicinity of Site 26. There are no surface waters present near the site.

3.0 IDENTIFICATION OF REMOVAL ACTION OBJECTIVES

3.1 Statutory Limits on Removal Actions

Removal actions are generally limited by statute to a maximum cost of two million dollars and a maximum duration of 12 months, except as provided for under two types of

exemptions available (emergency and consistency). The 12 month time limit and two million dollar statutory limit are governed by applicable portions of CERCLA Section 104 (b) (1). As described in this report, the proposed removal action is to incur costs of less than two million dollars and occur within a time period much shorter than 12 months.

3.2 Determination of Removal Scope

The scope of work for the Site 26 will include the excavation and off-site disposal of piping, concrete, and sludge associate with the leaching line, grease trap and leach tank, and backfilling the excavated area with clean fill. This removal action is considered an interim action to remove the source area and any below grade obstructions which may impede the final remedial solution (air sparging and soil vapor extraction).

3.3 Determination of Removal Schedule

The planned removal action will occur from December 15, 1997 through December 23, 1997.

4.0 IDENTIFICATION OF REMOVAL ACTION ALTERNATIVES

4.1 No Action

No action is not a technology but is an option. This option entails taking no remedial measures. No action does not include future monitoring or future migration assessment. This option is generally considered as a baseline for comparison to other remedial actions.

INITIAL SCREENING

Although analytical results do not indicate that Site 26 presents any immediate threat, the lack of action to remove the leach line and tanks now would mitigate a potential for TCE and 1,2-DCE to continue leaching into the groundwater.

4.2 Institutional Controls

Institutional controls and containment is a grouping of options that would slow or stop the contaminant exposure to receptors, and in some cases, the environment. These options include land use restrictions, capping with various materials, and containment via stabilization and solidification.

4.2.1 Land Use Restrictions

Land use restriction is the official limiting of access to the sites, either by Naval instruction or local code. Site 26 is within a Naval Installation that presently has limited

public access. Additionally, this site is within a secure area which has additional personnel restrictions.

INITIAL SCREENING

Land use restriction would provide limited protection and assessment of future land use and property ownership and control cannot be firmly established. Even under limited access, TCE and 1,2-DCE can continue to leach into the soils and groundwater.

4.2.3 In Situ Containment, Stabilization/Solidification

The solidification process involves the addition of a reagent to transform the contaminated soil into a solid-like material. The stabilization process involves the addition of a reagent to transform the material so that the hazardous constituents are in their least mobile or toxic form. When both solidification and stabilization are performed, the handling and physical characteristics of the waste are improved. The surface area of the waste mass across which the transfer or loss of contaminant can occur is decreased, and the solubility of the hazardous constituent is limited.

INITIAL SCREENING

Although this option is technically feasible and may be effective in holding the contaminants in place, leachability prevention is not guaranteed. The piping and in-ground tanks may also interfere with piping networks associated with the final remedial alternative. Therefore, this option has been eliminated from further consideration.

4.3 Excavation and Off-Site Removal of Source Material

Implementation of this alternative assures the removal of the potential contaminant source and is a common cost-effective remedial alternative. The affected source is excavated and disposed off-site at a permitted disposal facility. The piping shall be removed. Sludge shall be removed from the concrete tanks and placed in drums for off-site disposal and the concrete shall be broken up and removed for off-site disposal. The excavated areas are backfilled with clean fill material and topsoil, regraded and reseeded.

INITIAL SCREENING

This option will provide for an effective remedy to remove the source of contamination.

5.0 COMPARATIVE ANALYSIS OF REMOVAL ACTION ALTERNATIVES

Based on the initial screening of alternatives, the most effective alternative is described in paragraph 4.3. Exhibit 2 is the cost estimate for the total effort. The estimate incorporates the assumptions that all site work shall be conducted in Level B respiratory protection, the sludge will be considered hazardous waste, and the concrete can be

disposed as debris. This alternative effectively removes the source of the groundwater contamination.

Contractor personnel will excavate the piping and concrete tanks, place sludge inside the tanks into drums, break apart the concrete tanks and load the piping and concrete into lined roll-off containers for off-site disposal. The excavated area shall be restored by contractor personnel.

EXHIBIT 1

**REMEDIAL ACTION
COST ESTIMATE**

**SOURCE AREA REMOVAL AT SITE 26
INSTALLATION RESTORATION PROGRAM
NAVAL WEAPONS STATION EARLE**

November 1997

Remediation Labor

Preparation, Planning, Procurement, Documentation	\$16,700
Site Labor	\$17,900
Subtotal Remediation Labor	\$34,600
Equipment/Supplies and Materials/Laboratory Costs	\$14,000
Transportation/Disposal	\$16,000
Total Remedial Action	\$64,600