RAVENNA ARMY AMMUNITION PLANT

8451 STATE ROUTE 5 • RAVENNA, OHIO 44266-9297

28 December 1993

THRU: Contracting Officer's Representative
Ravenna Army Ammunition Plant
8451 State Route 5
Ravenna, Ohio 44266-9297

TO: State of Ohio
Environmental Protection Agency
Northeast District Office
2110 E. Aurora Road
Twinsburg, Ohio 44087-1969
ATTN: Mr. Reggie Brown

Subject: Formal Closure of Ravenna Army Ammunition Plant's #2 Fuel Oil Recovery Well Located at Waterworks #3

Dear Mr. Brown:

Attached are analytical results taken from soil samples following excavation of a 500 gallon underground fuel oil storage tank. This storage tank was adjacent to the subject extraction/removal well.

The attached submission of analysis is the result of your 16 July and 28 July 1993 Site visits. The formal closure of the subject well was contingent upon the soil cleanliness of the excavation site following tank removal. Tank #51 and associated sample numbers ATS-842, ATS-843, and ATS-857 reference the subject underground storage tank adjacent to the removal well. As identified in the analytical report the chemical constituents within the tank pit soils were below action levels.

Following your review of the attached tank/soil data, Ravenna requests a formal notice from your office regarding approval to perform closure action on the well site.

This installation's point of contact is the Government's Mr. Robert J. Kasper, Commander's Representative, at telephone (216) 358-7311/7312.

Sincerely,
Mason & Hanger-Silas Mason Co. Inc.

W.B. Talmon, Jr.
Site Manager

cf: AMSMC-EQ
cc: J.M. Higgins J. Adams Environmental File

CLOSURE REPORT

FOR

RAVENNA ARMY AMMUNITION PLANT
8451 State Route 5
Ravenna, Ohio 44266
Portage County
(216) 297-3124

Submitted To:

Ms. Susan McCauslin
RAVENNA ARSENAL INC.
(216) 297-3220

Prepared By:

AUTUMN TECHNICAL SERVICES, INC.
518 Perkins-Jones Road
Warren, Ohio 44483
(216) 372-5002

September 28, 1993

TABLE OF CONTENTS

DESCRIPTION OF FACILITY

The two (2) tanks permanently removed were from the following location:

RAVENNA ARMY AMMUNITION PLANT
8451 St. Rte. 5
Ravenna, Ohio 44266
Portage County
(216) 297-3124

The U.S. Army is the underground storage tanks (UST's) Owner and Operator. The facility is an inactive army facility. The one thousand (1,000) gallon tank (Tank #12) was removed from near Powerhouse #6 and the five hundred fifty (550) gallon tank (Tank #51) was removed from near the Water Works 4 Generator.

NOTICE TO REMOVE

On March 3, 1993, notification to remove the Ravenna Army Ammunition Plants two (2) tanks was directed to:

Ms. Beverly Spears
State Fire Marshal's Office
Bureau of Underground Storage Tank Regulations
7510 E. Main Street
P.O. Box 687
Reynoldsburg, Ohio 43068-0687
(614) 752-7938

Notification was directed to the local fire department:

Ravenna Arsenal, Inc.
8451 St. Rte. 5
Ravenna, Ohio 44266

On March 30, 1993, Permit No. 8476 was issued by the Bureau of Underground Storage Tank Regulations for the removal and permanent closure of two (2) underground storage tanks at the Ravenna Army Ammunition Plant.

TANK DATA

The two (2) tanks permanently removed consisted of a one thousand (1,000) gallon #2 fuel oil tank and a five hundred fifty (550) gallon #2 fuel oil tank. The one thousand (1,000) gallon tank was installed in June of 1974. The five hundred fifty (550) gallon tank was installed in August of 1976.

Tank Registration	Removal Date	Capacity	Construction	Product	Location
12	7/28/93	1,000 gallon	Steel	#2 fuel oil	Powerhouse
51	7/28/93	550 gallon	Steel	#2 fuel oil	Water Works 4 Generator

Both the one thousand (1,000) gallon tank was last used in July 1993 the five hundred fifty (550) gallon tank were last used in July 1993. The tanks contained #2 fuel oil only. The tanks were used by the Owner only.

TANK REMOVAL

On July 28, 1993 Autumn Technical Services, Inc. began preparation to remove the two tanks.

Tank #12, the one thousand (1,000) gallon #2 fuel oil tank located at Powerhouse #6 was to be removed first.

The top of the tank was uncovered to determine its exact location and orientation.

Next, the tank was checked for the potential for explosion through the use of an Industrial Scientific CMX 271 Multimeter calibrated with a .35% (25% Lower Explosive Limit [LEL]) pentane standard. The percent LEL in the tank was determined to be < 5%.

At this point, some excavation around the tank was performed and the tank was prepared for removal.

Mr. David Capara of the Bureau of Underground Storage Tank Regulations (B.U.S.T.R.) North East Field Office (N.E.F.O.) was on site to view the removal. The LEL was retested and found to still be < 5%.

The tank was then removed and placed on a piece of polyethylene sheeting. Finally, all backfill was removed and a one foot (1') additional overexcavation around the tank was completed. All soil/backfill removed during the excavation was placed on a separate piece of polyethylene sheeting.

Upon completion of all excavation activities, samples were ready to be collected. Split samples were to be collected in the following manner:

A) Samples would be collected from each end of the tank excavation. If the tank is longer than 35 feet, an additional sample shall be collected from under the middle of the tank.

B) Samples would be collected from every 20' of the tank's associated piping. If the piping run is less than 20' in length, no sample is required.

C) A sample would be collected from underneath each dispensing unit. If the dispensing unit is located directly above the tank, no sample is required.

D) A sample would be collected from below any remote fill pipe area located more than ten feet from the tank cavity excavation.

E) A sample would be collected from any area that was visibly stained or contained a high PID reading.

An MSA Photon Gas Detector calibrated with a 98 ppm isobutylene standard was used to check the excavation to determine if any area contained a high PID (Photoionization Detector) reading, measured in ppm (parts per million) within the excavation limits.

Upon removal of the tank and completion of the one foot (1') overexcavation, visibly contaminated soil was still present in the excavation. One samples was collected to gain disposal facility acceptance and steps were taken to gain permission from the State Fire Marshal's office to perform more excavation at this location.

After removing the one thousand (1,000) gallon tank, preparations were made to remove the five hundred fifty (550) gallon tank (Tank #51).

The top of the tank was uncovered to determine its exact location and orientation.

Next, the tank was checked for the potential for explosion through the use of an Industrial Scientific CMX 271 Multimeter calibrated with a .35% (25% Lower Explosive Limit [Limit]) pentane standard. The percent LEL in the tank was determined to be < 5%.

At this point, more excavation around the tank was performed and the tank was prepared for removal.

Mr. David Capara of the B.U.S.T.R.-N.E.F.O. was on site to view the removal. The LEL was retested and found to still be < 5%.

The tank was then removed and placed on the piece of polyethylene sheeting. Finally, all backfill was removed and placed on a separate piece of polyethylene sheeting.

Upon completion of all excavation activities, samples were ready to be collected. Split samples were to be collected in the following manner.

A) Samples would be collected from each end of the tank excavation. If the tank is longer than 35 feet, an additional sample shall be collected from under the middle of the tank.

B) Samples would be collected from every 20' of the tank's associated piping. If the piping run is less than 20' in length, no sample is required.

C) A sample would be collected from underneath each dispensing unit. If the dispensing unit is located directly above the tank, no sample is required.

D) A sample would be collected from below any remote fill pipe area located more than ten feet from the tank cavity excavation.

E) A sample would be collected from any area that was visibly stained or contained a high PID reading.

An MSA Photon Gas Detector calibrated with a 98 ppm isobutylene standard was used to check the excavation to determine if any area contained a high PID (Photoionization Detector) reading, measured in ppm (parts per million) within the excavation limits.

A total of two (2) samples were collected from the five hundred fifty (550) gallon tank for closure reporting.

One sample was collected from under each end of the tank. PID readings and sample locations can be seen later in this report. Analytical results can be seen in the section titled Sample Results.

VISUAL SITE EVALUATION

During excavation activities, the predominant soil substratum evident for both tank excavations was a silt/clayey sand mix.

Upon removal, of the one thousand (1,000) gallon tank, (Tank #12) there was still visibly contaminated soil remaining confirmed by a distinct petroleum odor within the excavation.

Upon removal of the five hundred fifty (550) gallon tank (Tank #51) and completion of the one foot (1') additional overexcavation, there was no visible signs of contamination remaining in the excavation.

SAMPLE COLLECTION PROCEDURES

All soil samples were collected with a stainless steel core sampler, with a hammer type drive. The core sampler was decontaminated prior to and between each use in the following manner:

A. The core sampler was rinsed with distilled water.

B. The core sampler was then scrubbed with a soft bristled brush and non-phosphate detergent (i.e., Alconox).

C. The core sampler was again rinsed with distilled water.

D. The core sampler was dried with a lint-free cloth rag to remove excess moisture.

Once the samples were collected, they were placed in 16 oz. wide mouth glass jars. The samples were placed in the jar in a manner to obtain zero headspace upon sealing. Screw on teflon lids were then placed on the jars. They were then placed on ice and preserved at 4° C prior to delivery to the lab.

Sample labels and a chains of custody were filled out for the samples. Information on each included project name and number, collector's name and signature, time and date of sampling, sample I.D. #, sample matrix, analyses to be performed, names and dates to whom and when samples were relinquished and preservation techniques. Sample Nos. ATS-842 through ATS-844 were collected by Barney Brown. Sample Nos. ATS-850, ATS-857 and ATS-858 were collected by Mike Maraczi. All persons collecting samples are employees of Autumn Technical Services, Inc.

SAMPLE RESULTS

Analysis	ATS-842	ATS-843	ATS-857	ATS-858*	ATS-844
TPH (Method 418.1) Detection Limit 10 ppm	16,343	70	74	16	46
BTEX (Method 8020) Detection Limit .20 ppm					
Benzene	ND	ND	—	ND	ND
Toluene	ND	ND	—	ND	ND
Ethyl Benzene	ND	ND	—	ND	ND
Xylene	ND	ND	—	ND	ND
PNAH's (Method 8100) Detection Limit - 2.0 ppm					
Acenapthene	6.1	ND	ND	ND	ND
Acenapthylene	ND	ND	ND	ND	ND
Anthracene	7.6	ND	ND	ND	ND
Benzo (A) Anthracene	9.3	ND	ND	ND	—
Benzo (A) Pyrene	5.8	ND	ND	ND	—
Benzo (B) Fluoranthene	9.9	ND	ND	ND	—
Benzo (GHI) Perylene	3.4	ND	ND	ND	—
Benzo (K) Fluoranthene	ND	ND	ND	ND	—
Chrysene	6.1	ND	ND	ND	—
Fluoranthene	23.0	ND	ND	ND	—
Flourene	6.7	ND	ND	ND	—
Napthalene	ND	ND	ND	ND	—
Phenanthrene	28.0	ND	ND	ND	—
Pyrene	ND	ND	ND	ND	—
Indeno (1,2,3-CD) Pyrene	3.8	ND	ND	ND	—
Dibenzo(A,H)Anthracene	3.3	ND	ND	ND	—

ND = Non-Detect
*Detection Limit .002 ppm for BTEX Method 8020
.33 ppm for PNAH's Method 8100

Sample ATS-844 was analyzed for the parameters required by BFI for the disposal of contaminated soil resulting from an underground storage tank leakage.

Samples ATS-850 was a sample collected from a roll-off box containing sludges collected and solidified from all tanks on site (AST's and/or UST's).

INITIAL SAMPLE LOCATIONS, DEPTHS AND PID READINGS

Sample# ATS-	Location	Collection Date	Sample Depth	PID (ppm)
842	550 Gallon-East End	07/28/93	7.5'	588
843	550 Gallon-East End	07/28/93	7.5'	73
844	1,000 Gallon-West End	07/28/93	7.5'	1,217
850	Roll-Off Box	08/30/93	---	9,999 +
857	550 Gallon-East End	08/27/93	9.5'	81
858	1,000 Gallon-East End	08/27/93	9.5'	22

Closure analyses required for the two (2) #2 fuel oil tanks

(ATS

PNAH's (Polynuclear Aromatic Hydrocarbons)	Method 8100
TPH (Total Petroleum Hydrocarbons)	Method 418.1
BTEX (Benzene, Toluene, Ethyl Benzene, Xylene)	Method 8020

Laboratory used on this project was:

DeYor Laboratories, Inc.
7655 Market Street
Youngstown, Ohio 44512
(216) 758-5788
Albert F. Vicinie, Supervisor - Industrial Lab

REMEDIAL EFFORT

There was approximately 50 cubic yards total of material that was excavated and stockpiled during the removal of both of the #2 fuel oil tanks.

Based upon the visible contamination and the petroleum odor emanating from the east end of the one thousand (1,000) gallon (Tank #12) tank excavation, a sample of the material was collected on July 28, 1993 and analyzed for the following parameters required by BFI:

TCLP Metals (plus Cu and Ni), TPH, BTEX, RCI.
RCI (Reactivity, Corrosivity and Ignitability)

On September 2, 1993, approval at BFI Carbon Limestone Landfill in Poland, Ohio was granted.

On September 9, 1993, a letter from Mr. Andrew E. Lyles, Bureau Chief of the Division of the State Fire Marshal's Office, Bureau of Underground Storage Tank Regulations in Reynoldsburg granted permission to overexcavate the contaminated material remaining in the excavation for Tank #12.

After the over excavation was completed, one sample (ATS-858) was collected from the excavation. The result can be seen in the section entitled Sample Results.

DISPOSAL OF CONTAMINATED SOIL

On September 17, 1993, 107.72 tons of #2 fuel oil contaminated soil was disposed of at BFI's Carbon Limestone Landfill in Poland, Ohio, and on September 18, 1993, 37.60 tons of #2 fuel oil contaminated soil was disposed of at BFI's Carbon Limestone Landfill in Poland, Ohio for a total 145.32 tons generated and disposed of from this site.

DISPOSAL OF CONTAMINATED LIQUID

Any liquid and/or sludge generated from the cleaning of these two (2) tanks along with other tanks (UST and AST) associated with the property was bulked into a roll-off box and solidified with kiln dust. A sample (ATS-850) was collected and analyzed for the following parameters:

RCI (Reactivity, Corrosivity, Ignitability)
TCLP Metals (Plus Cu and Ni), TPH, RCI, BTEX
TCLP Volatiles, TCLP Semi-Volatiles

Approval for this material was granted September 27, 1993 and the material is scheduled to be disposed of on September 30, 1993.

DISPOSAL OF TANKS

After cleaning and removal of the tanks, the ends were cut out rendering the tanks out of service. The tanks were then taken to Warren Scrap for recycling.

REVIEW AND CONCLUSIONS

Based on a Site Feature Scoring System (SFSS), score of 65, the site falls into Category 3 for SFSS Action Levels.

Both tanks were #2 fuel oil and therefore fall into Analytical Group 2. Action levels for the group are TPH of 904, Benzene .335 ppm, Toluene 9 ppm, Ethyl Benzene 14 ppm, and Total Xylenes 67 ppm. The above action levels are for contaminated soils.

Upon completion of excavation activities of the 1,000 gallon tank (Tank #12) there was still visibly contaminated soil remaining in the excavation. A PID reading of 1217 ppm indicated that hydrocarbons were still present in the excavation. A sample was collected from the west end and analyzed for disposal parameters. The parameters included TPH, BTEX which are required for closure reporting. These results showed hydrocarbons to be present but not at the level expected based on initial indications. After overexcavation, a sample was collected and analyzed for TPH (418.1), BTEX (8020) and PNAH's (8100). The results were below the action levels for a Category 3 Analytical Group 2 soil. The results can be seen in Exhibit A, Sample Results. No further action is required for the tank location.

Upon completion of the removal of the five hundred fifty (550) gallon tank, the one foot (1') overexcavation around the tank cavity was not completed due to the fact that visible contamination was not present. After the return of the analyses for the excavation (ATS-842 and ATS-843), it was determined the sample from the east end (ATS-842) was above the action levels for a Category 3 Analytical Group 2 soil. The explanation for the high results for TPH, PNAH's was that the backfill material contained broken chunks of asphalt. The one foot (1') overexcavation was then completed and a new sample (ATS-857) was collected. The results for ATS-843 and ATS-857 were below the action levels for this tank cavity. Therefore, no further action should be required at this location.

Therefore, no further action should be required at this site.

EXHIBIT A

SAMPLE RESULTS
AND
CHAINS-OF-CUSTODY

NAME		ACCESSION NO.
ATS-842 EAST END [illegible]		93-608222
	COLLECTION DATE: 07/28/93	COLLECTION TIME: 13:45
		RECEIVED: 07/29/93
	CLIENT ID NUMBER: 8222	REPORTED: 08/11/93
RAVENNA ARSENAL		

TEST	RESULT NORMAL	RESULT ABNORMAL	REFERENCE OR THERAPEUTIC RANGE	UNITS
POLYAROMATIC HYDROCA[illegible]				
METHOD NUMBER	8100			
QUANTITATION LIMIT	2.0			PPM
ACENAPTHENE	6.1			PPM
ACENAPTHYLENE	ND			
ANTHRACENE	7.6			PPM
BENZO(A)ANTHRACENE	9.3			PPM
BENZO(A)PYRENE	5.8			PPM
BENZO(B)FLUORANTHENE	9.9			PPM
BENZO(GHI)PERYLENE	3.4			PPM
BENZO(K)FLUORANTHENE	ND			
CHRYSENE	6.1			PPM
FLUORANTHENE	23.0			PPM
FLUORENE	6.7			PPM
NAPTHALENE	ND			
PHENANTHRENE	28.0			PPM
PYRENE	17.0			PPM
INDENO(1,2,3-CD)PYR	3.8			PPM
DIBENZ(A,H)ANTHRACEN	3.3			PPM
TOT.PETRO.HYDROCARB.	16343			PPM
	ANALYSIS	PERFORMED	USING USEPA METHODS 9071/418.1	
B-E-T-X				
METHOD NUMBER	8020			
QUANTITATION LIMIT	0.20			PPM
BENZENE	ND			
TOLUENE	ND			
ETHYLBENZENE	ND			
XYLENE	ND			
LABORATORY ANALYST	BHM LABORATORY			
	A.I.H.A.	ACCREDITED	LABORATORY (# 365).	

--- DIRECTORS ---
Patrick K. Jaynes Ph.D.
Anthony Nasrallah Ph.D.

DEYOR Laboratories
[illegible]

AUTUMN INDUSTRIES
518 PERKINS-JONES ROAD
WARREN OH 44483

NAME	SPECIMEN ID NUMBER	ACCESSION NO.
ATS-843 WEST END TANK [redacted]	93608223	93-608223
	COLLECTION DATE / CLIENT ID NUMBER/LOCATION	COLLECTION TIME / RECEIVED
AVENNA ARSENAL [redacted]	7/28/93 [redacted] 822F [redacted] 00000	13:50 07/29/93
		REPORTED
		08/11/93

TEST	RESULT NORMAL	RESULT ABNORMAL	REFERENCE OR THERAPEUTIC RANGE	UNITS
POLYAROMATIC HYDROCA				
METHOD NUMBER	8100			
QUANTITATION LIMIT	2.0			PPM
ACENAPTHENE	ND			
ACENAPTHYLENE	ND			
ANTHRACENE	ND			
BENZO(A)ANTHRACENE	ND			
BENZO(A)PYRENE	ND			
BENZO(B)FLUORANTHENE	ND			
BENZO(GHI)PERYLENE	ND			
BENZO(K)FLUORANTHENE	ND			
CHRYSENE	ND			
FLUORANTHENE	ND			
FLUORENE	ND			
NAPTHALENE	ND			
PHENANTHRENE	ND			
PYRENE	ND			
INDENO(1,2,3-CD)PYR	ND			
DIBENZ(A,H)ANTHRACEN	ND			
OT.PETRO.HYDROCARB.	70			PPM
	ANALYSIS PERFORMED USING USEPA METHODS 9071/418.1			
-E-T-X				
METHOD NUMBER	8020			
QUANTITATION LIMIT	0.20			PPM
BENZENE	ND			
TOLUENE	ND			
ETHYLBENZENE	ND			
XYLENE	ND			
LABORATORY ANALYST	BHM LABORATORY			
	A.I.H.A. ACCREDITED LABORATORY (# 365).			

AUTUMN INDUSTRIES
518 PERKINS-JONES ROAD
WARREN OH 44483

DEYOR Laboratories
[redacted] Street, Suite 250
[redacted]

NAME	SPECIMEN ID NUMBER	ACCESSION NO.
ATS 844 WEST END BOTTOM LANE	9608224	9608224
[redacted]	COLLECTION DATE / IDENTIFICATION NUMBER/LOCATION	COLLECTION TIME
RAVENNA ARSENAL	0424 00000	RECEIVED

TEST	RESULT NORMAL	RESULT ABNORMAL	REFERENCE OR THERAPEUTIC RANGE		UNITS
TCLP EXTRACTION PROC	FINAL PH=5.29				
TCLP METALS & BIAS %					
ARSENIC	<0.2		0.0	5.0	MG/L
Spike recovery	104				%
BARIUM	<0.5		0.0	100.0	MG/L
Spike recovery	96				%
CADMIUM	<0.03		0.0	1.0	MG/L
Spike recovery	100				%
CHROMIUM	<0.3		0.0	5.0	MG/L
Spike recovery	114				%
SELENIUM	<0.02		0.0	1.0	MG/L
Spike recovery	91				%
MERCURY	<0.0002		0.0	0.2	MG/L
Spike recovery	94				%
LEAD	<0.2		0.0	5.0	MG/L
Spike recovery	88				%
SILVER	<0.05		0.0	5.0	MG/L
Spike recovery	101				%
TCLP SUPPL.METALS					
NICKEL	<0.2				MG/L
Spike recovery	100				%
COPPER	<0.08				MG/L
Spike recovery	102				%
B-E-T-X					
METHOD NUMBER	8020				
QUANTITATION LIMIT	0.005				PPM
BENZENE	ND				
TOLUENE	ND				
ETHYLBENZENE	ND				
XYLENE	ND				
LABORATORY ANALYST	BHM LABORATORY				
	A.I.H.A.	ACCREDITED LABORATORY (# 365).			
TOT.PETRO.HYDROCARB.	46				PPM
	ANALYSIS	PERFORMED USING USEPA METHODS 9071/418.1			
REACTIVITY SCREEN	REACTIVE	CYANIDE <2.0 PPM			
	REACTIVE	SULFIDE <2.0 PPM			

NAME

ATS-844 WEST END [illegible]

RAVENNA ARSENAL

ACCESSION NO.
93 608224

COLLECTION DATE
07/28/93

COLLECTION TIME
00

RECEIVED
07/29/93

REPORTED
08/11/93

TEST	RESULT NORMAL	RESULT ABNORMAL	REFERENCE OR THERAPEUTIC RANGE	UNITS
	ASTM D5049 METHOD D/D4978 METHOD B			
CORROSIVITY SCREEN	SAMPLE IS NONCORROSIVE. PH = 8.07			
	ASTM D4980 METHOD B/USEPA 9040			
IGNITABILITY TEST	SAMPLE HEATED TO 160F WITHOUT FLASH OR IGNITION.			
	ASTM D4982 METHOD B/ASTM D93			
PCB'S (SOIL)				
METHOD NUMBER	8080			
QUANTITATION LIMIT	0.5			PPM
PCB 1221	ND=NONE DETECTED			
PCB 1232	ND			
PCB 1242	ND			
PCB 1248	ND			
PCB 1254	ND			
PCB 1260	ND			
PCB 1262	ND			
PCB 1016	ND			
TCLP REVIEW	.			
	.			
	.			
	TCLP PREPARATION FOLLOWS METHOD 1311 SW-846			
	AS REVISED NOVEMBER 24,1992 (57FR55114)			
	REVIEWED BY ALBERT F. VICINIE III,LAB SUPERVISOR			

DEYOR Laboratories
AUTUMN INDUSTRIES
512 PERKINS-JONES ROAD
WARREN OH 44483
7654 Center Street, Suite 2501
Mentor, Ohio 44512
440/255-8196

Chain of Custody Record

REFERRING CLIENT
AUTUMN INDUSTRIES
518 PERKINS-JONES ROAD
WARREN OH 44483

1416 216 372 5002

DeYOR Laboratories

DeYor Laboratories, Inc. (216) 758-5788
7655 Market Street, Suite 2500
Youngstown, Ohio 44512

BILLING CONTROL NUMBER (FOR LAB USE ONLY)

PROJECT # 30604

P.O.# 2778

SAMPLERS (Signature) Barney Brown

PROJECT NAME Ravenna Arsenal

FOR LAB USE ONLY ACC #	SAMPLE DESCRIPTION	DATE	TIME	COMP	GRAB	# OF CONT.	ANALYSES REQUESTED
	ATS-842 So.1 East End Tank #51	7/28/93	13:45		X	1	PNAH (8100) BTEX (8020) TPH (418.1)
	ATS-843 So.1 West End Tank #51	7/28/93	13:50		X	1	PNAH (8100) BTEX (8020) TPH (418.1)
	ATS-844 So.1 West End Bottom Tank #12	7/28/93	15:00		X	1	~~PNAH (8100) BTEX (8020) TPH (418.1)~~ BTEX, TPH, pH Flashpoint, Reactivity TCLP Metals (Cu, Ni) PCB's

Relinquished by: (Signature)	Date/Time	Received by: (Signature)	Received for Laboratory by: (Signature)	Date/Time
Barney Brown (by fax)	7/29/93 16:00			
Relinquished by: (Signature)	Date/Time	Received by: (Signature)	Remarks	
	7/29/93 14:50			
Relinquished by: (Signature)	Date/Time	Received by: (Signature)		
Relinquished by: (Signature)	Date/Time	Received by: (Signature)		

NAME

ATS-850

AVENNA ARSENAL

COLLECTION DATE
08/23/93

COLLECTION TIME
00:00

CLIENT I.D. NUMBER (LOCATION)
1819

ACCESSION NO.
93-621819

RECEIVED
08/23/93

REPORTED
09/13/93

TEST	RESULT NORMAL	RESULT ABNORMAL	REFERENCE OR THERAPEUTIC RANGE		UNITS
TCLP EXTRACTION PROC	FINAL PH=12.04				
ERO HEADSPACE EXTRT					
CLP METALS & BIAS %					
ARSENIC	<0.2		0.0	5.0	MG/L
Spike recovery	110				%
BARIUM	0.7		0.0	100.0	MG/L
Spike recovery	94				%
CADMIUM	<0.03		0.0	1.0	MG/L
Spike recovery	105				%
CHROMIUM	<0.3		0.0	5.0	MG/L
Spike recovery	126				%
SELENIUM	<0.02		0.0	1.0	MG/L
Spike recovery	89				%
MERCURY	<0.0002		0.0	0.2	MG/L
Spike recovery	94				%
LEAD	<0.2		0.0	5.0	MG/L
Spike recovery	105				%
SILVER	<0.05		0.0	5.0	MG/L
Spike recovery	98				%
CLP SUPPL.METALS					
NICKEL	0.25				MG/L
Spike recovery	105				%
COPPER	<0.08				MG/L
Spike recovery	111				%
CLP VOA'S & BIAS %					
METHOD NUMBER	8240				
VINYL CHLORIDE	<0.10		0.0	0.2	MG/L
Spike recovery	64				%
1,1-DICHLOROETHYLENE	<0.10		0.0	0.7	MG/L
Spike recovery	82				%
METHYL ETHYL KETONE	<1.0		0.0	200	MG/L
Spike recovery	108				%
CHLOROFORM	<0.10		0.0	6.0	MG/L
Spike recovery	74				%
CARBON TETRACHLORIDE	<0.10		0.0	0.5	MG/L
Spike recovery	76				%
BENZENE	<0.10		0.0	0.5	MG/L
Spike recovery	76				%

DEYOR Laboratories
AUTUMN INDUSTRIES
518 PERKINS-JONES ROAD
WARREN OH 44483

NAME

ATS-850

RAVENNA ARSENAL

SPECIMEN ID NUMBER: 93621819

COLLECTION DATE: 08/23/93

COLLECTION TIME: 00:00

CLIENT ID NUMBER LOCATION: 1819 00000

ACCESSION NO: 93621819

RECEIVED: 08/28/93

REPORTED: 09/13/93

TEST	RESULT NORMAL	RESULT ABNORMAL	REFERENCE OR THERAPEUTIC RANGE		UNITS
1,2-DICHLOROETHANE	<0.10		0.0	0.5	MG/L
Spike recovery	78				%
TRICHLOROETHYLENE	<0.10		0.0	0.5	MG/L
Spike recovery	100				%
TETRACHLOROETHYLENE	<0.10		0.0	0.7	MG/L
Spike recovery	73				%
CHLOROBENZENE	<0.10		0.0	100.0	MG/L
Spike recovery	74				%
1,4-DICHLOROBENZENE	<0.10		0.0	7.5	MG/L
Spike recovery	61				%
TCLP BNA'S & BIAS %					
METHOD NUMBER	8270				
PYRIDINE	<0.10		0.0	5.0	MG/L
Spike recovery	66				%
o-CRESOL	<0.10		0.0	200	MG/L
Spike recovery	71				%
m-CRESOL	<0.10		0	200	MG/L
Spike recovery	62				%
p-CRESOL	<0.10		0.0	200	MG/L
Spike recovery	62				%
2,4-DINITROTOLUENE	<0.10		0.0	0.13	MG/L
Spike recovery	67				%
HEXACHLOROBUTADIENE	<0.10		0.0	0.50	MG/L
Spike recovery	67				%
HEXACHLOROETHANE	<0.10		0.0	3.0	MG/L
Spike recovery	65				%
NITROBENZENE	<0.10		0.0	2.0	MG/L
Spike recovery	79				%
PENTACHLOROPHENOL	<0.10		0.0	100.	MG/L
Spike recovery	50				%
2,4,5-TRICHLOROPHEN	<0.10		0.0	400.	MG/L
Spike recovery	74				%
2,4,6-TRICHLOROPHEN	<0.10		0.0	2.0	MG/L
Spike recovery	74				%
HEXACHLOROBENZENE	<0.10		0.0	0.13	MG/L
Spike recovery	118				%
REACTIVITY SCREEN		REACTIVE CYANIDE	<2.0 PPM		
		REACTIVE SULFIDE	<2.0 PPM		

DEYOR Laboratories

AUTUMN INDUSTRIES
518 PERKINS-JONES ROAD
WARREN OH 4448

NAME

ATS-850

SPECIMEN ID NUMBER

93621819

ACCESSION NO.

93 621819

COLLECTION DATE

08/23/93

COLLECTION TIME

00:00

RECEIVED

08/23/93

CLIENT ID NUMBER (LOCATION)

7317 (OSIDE)

REPORTED

09/13/93

RAVENNA ARSENAL

TEST	RESULT NORMAL	RESULT ABNORMAL	REFERENCE OR THERAPEUTIC RANGE	UNITS
	ASTM D5049 METHOD D7D4978 METHOD B			
CORROSIVITY SCREEN	SAMPLE IS NONCORROSIVE; PH = 10.91			
	ASTM D4980 METHOD B/USEPA 9040			
IGNITABILITY TEST	SAMPLE HEATED TO 160F WITHOUT FLASH OR IGNITION.			
	ASTM D4982 METHOD B/ASTM D93			
TOT.PETRO.HYDROCARB.	269500			PPM
	ANALYSIS PERFORMED USING USEPA METHODS 9071/418.1			
B-E-T-X				
METHOD NUMBER	8240			
QUANTITATION LIMIT	0.28			PPM
BENZENE	0.70			PPM
TOLUENE	4.06			PPM
ETHYLBENZENE	2.38			PPM
XYLENE	16.5			PPM
LABORATORY ANALYST	LORI VERBKA B.S.			
	A.I.H.A. ACCREDITED LABORATORY (# 365).			
TCLP REVIEW	.			
	.			
	.			
	TCLP PREPARATION FOLLOWS METHOD 1311 SW-846			
	AS REVISED NOVEMBER 24,1992 (57FR55114)			
	REVIEWED BY ALBERT F. VICINIE III,LAB SUPERVISOR			

DEYOR Laboratories
AUTUMN INDUSTRIES
518 PERKINS-JONES ROAD
WARREN OH 4448

Chain of Custody Record

DEYOR Laboratories

REFERRING CLIENT
UTUMN INDUSTRIES
518 PERKINS-JONES ROAD
ARREN OH 44483
1416 (216) 372-5002

DeYor Laboratories, Inc. (216) 758-5788
855 Market Street, Suite 2500
Youngstown, Ohio 44512

ILLING CONTROL NUMBER (FOR LAB USE ONLY)

PROJECT # 30604

P.O.# 2842

SAMPLERS (Signature) (for Mike Maraczi)

PROJECT NAME Ravenna Arsenal Inc

FOR LAB USE ONLY ACC #	SAMPLE DESCRIPTION	DATE	TIME	COMP	GRAB	# OF CONT	ANALYSES REQUESTED
	ATS-850 Sludge Material	8/30/93	15:00		X	1	Additional Material for sample # 621819
							TCLP Volatiles, TCLP Semi-Vol. RCI

Relinquished by: (Signature) (for Mike Maraczi)	Date/Time 8/30/93 15:00	Received by: (Signature)	Received for Laboratory by: (Signature) / Date/Time
Relinquished by: (Signature)	Date/Time 8/31/93 10:15	Received by: (Signature)	Remarks
Relinquished by: (Signature)	Date/Time	Received by: (Signature)	
Relinquished by: (Signature)	Date/Time	Received by: (Signature)	

Chain of Custody Record

REFERRING CLIENT

AUTUMN INDUSTRIES
518 PERKINS-JONES ROAD
WARREN OH 44483

1416 216 372 5002

DeYor Laboratories
DeYor Laboratories, Inc. (216) 758-5788
7655 Market Street, Suite 2500
Youngstown, Ohio 44512

BILLING CONTROL NUMBER (FOR LAB USE ONLY)

PROJECT # 30604

P.O.# 2842

SAMPLERS (Signature) Mike Maraj

PROJECT NAME Ravenna Arsenal

FOR LAB USE ONLY ACC #	SAMPLE DESCRIPTION	DATE	TIME	COMP	GRAB	# OF CONT.	ANALYSES REQUESTED
	ATS-850	8/23/93	3:00p		X	1	TCLP Metals + Cu + Ni (TAL) TPH, BTEX

Relinquished by: (Signature)	Date/Time	Received by: (Signature)	Received for Laboratory by: (Signature)	Date/Time
Mike Maraj	8/23/93 5:00p	Angela Longhini		
Angela Longhini	8/23 4:40p	Bob Mutt		
			Remarks	

NAME

[redacted]

RAVENNA ARSENAL

TEST	RESULT NORMAL	RESULT ABNORMAL	REFERENCE OR THERAPEUTIC RANGE	UNITS
TOT.PETRO.HYDROCARB.	74			PPM
	ANALYSIS PERFORMED USING USEPA METHODS 9071/418.1			
POLYAROMATIC HYDROCA				
METHOD NUMBER	8100			
QUANTITATION LIMIT	0.33			PPM
ACENAPTHENE	ND			
ACENAPTHYLENE	ND			
ANTHRACENE	ND			
BENZO(A)ANTHRACENE	ND			
BENZO(A)PYRENE	ND			
BENZO(B)FLUORANTHENE	ND			
BENZO(GHI)PERYLENE	ND			
BENZO(K)FLUORANTHENE	ND			
CHRYSENE	ND			
FLUORANTHENE	ND			
FLUORENE	ND			
NAPTHALENE	ND			
PHENANTHRENE	ND			
PYRENE	ND			
INDENO(1,2,3-CD)PYR	ND			
DIBENZ(A,H)ANTHRACEN	ND			

Tank #51
East End
Bottom
ATS-857

AUTUMN INDUSTRIES
518 PERKINS-JONES ROAD

DEYOR Laboratories
2656 Market Street, Suite 253
[redacted]

NAME

RAVENNA ARSENAL

RECEIVED
09/30/93
REPORTED
09/15/93

TEST	RESULT NORMAL	RESULT ABNORMAL	REFERENCE OR THERAPEUTIC RANGE	UNITS
TOT.PETRO.HYDROCARB.	16			PPM
	ANALYSIS		PERFORMED USING USEPA METHODS 9071/418.1	
B-E-T-X				
METHOD NUMBER	8020			
QUANTITATION LIMIT	0.002			PPM
BENZENE	ND			
TOLUENE	ND			
ETHYLBENZENE	ND			
XYLENE	ND			
LABORATORY ANALYST	ELECTRO-ANALYTICAL			
	A.I.H.A.		ACCREDITED LABORATORY (# 365).	
POLYAROMATIC HYDROCA				
METHOD NUMBER	8100			
QUANTITATION LIMIT	0.33			PPM
ACENAPTHENE	ND			
ACENAPTHYLENE	ND			
ANTHRACENE	ND			
BENZO(A)ANTHRACENE	ND			
BENZO(A)PYRENE	ND			
BENZO(B)FLUORANTHENE	ND			
BENZO(GHI)PERYLENE	ND			
BENZO(K)FLUORANTHENE	ND			
CHRYSENE	ND			
FLUORANTHENE	ND			
FLUORENE	ND			
NAPTHALENE	ND			
PHENANTHRENE	ND			
PYRENE	ND			
INDENO(1,2,3-CD)PYR	ND			
DIBENZ(A,H)ANTHRACEN	ND			

DEYOR Laboratories

AUTUMN INDUSTRIES
[illegible] PERKINS-JONES ROAD
WARREN, OH [illegible]

Chain of Custody Record

REFERRING CLIENT
AUTUMN INDUSTRIES
518 PERKINS-JONES ROAD
WARREN OH 44483

1416 216 372 5002

DeYor Laboratories
DeYor Laboratories, Inc. (216) 758-5788
7655 Market Street, Suite 2500
Youngstown, Ohio 44512

BILLING CONTROL NUMBER (FOR LAB USE ONLY)

PROJECT # 30604

P.O.# 2858

SAMPLERS (Signature)

PROJECT NAME Routine Ajsonal

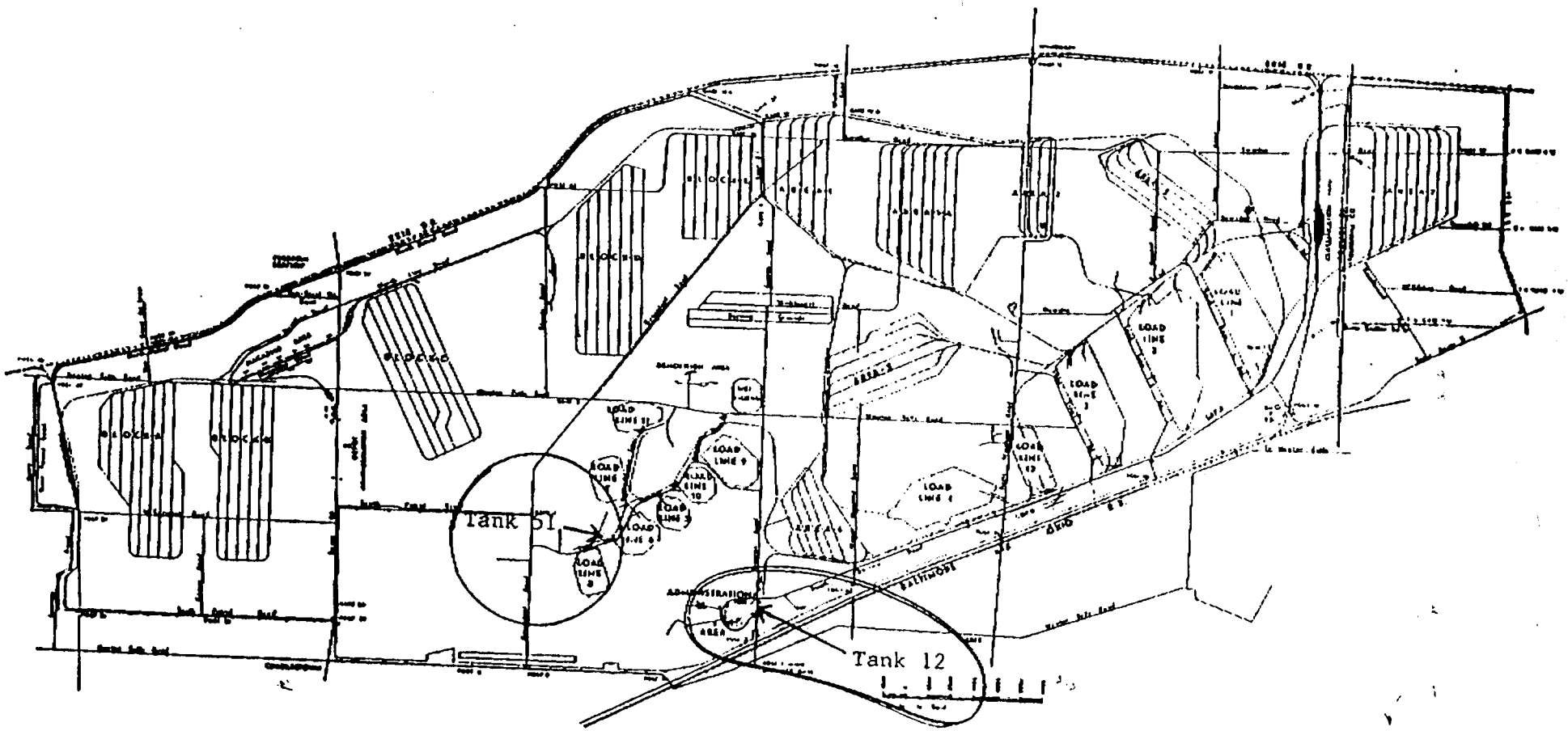
FOR LAB USE ONLY ACC #	SAMPLE DESCRIPTION	DATE	TIME	COMP	GRAB	# OF CONT.	ANALYSES REQUESTED
	ATS-856 So.1 Tank #66 N.E. Corner	8/27/93	9:45		X	1	TPH (418.1)
	ATS-857 So.1 Tank #51 N.E. Bottom Well	8/27/93	14:06		X	1	TPH (418.1) PNAH'S (8100)
	ATS-858 So.1 Tank #12 East End Bottom	8/27/93	12:30		X	1	TPH (418.1) BTEX (8020) PNAH (8100)

Relinquished by: (Signature)	Date/Time	Received by: (Signature)	Received for Laboratory by: (Signature)	Date/Time
	8/3/93 800			
Relinquished by: (Signature)	Date/Time	Received by: (Signature)	Remarks	
	8/3/93 1625			
Relinquished by: (Signature)	Date/Time	Received by: (Signature)		
Relinquished by: (Signature)	Date/Time	Received by: (Signature)		

EXHIBIT B

SAMPLE LOCATION DIAGRAM

RVAAP REGISTERED UST LOCATIONS



RAVENNA ARMY AMMUNITION PLANT
GENERAL AREA MAP

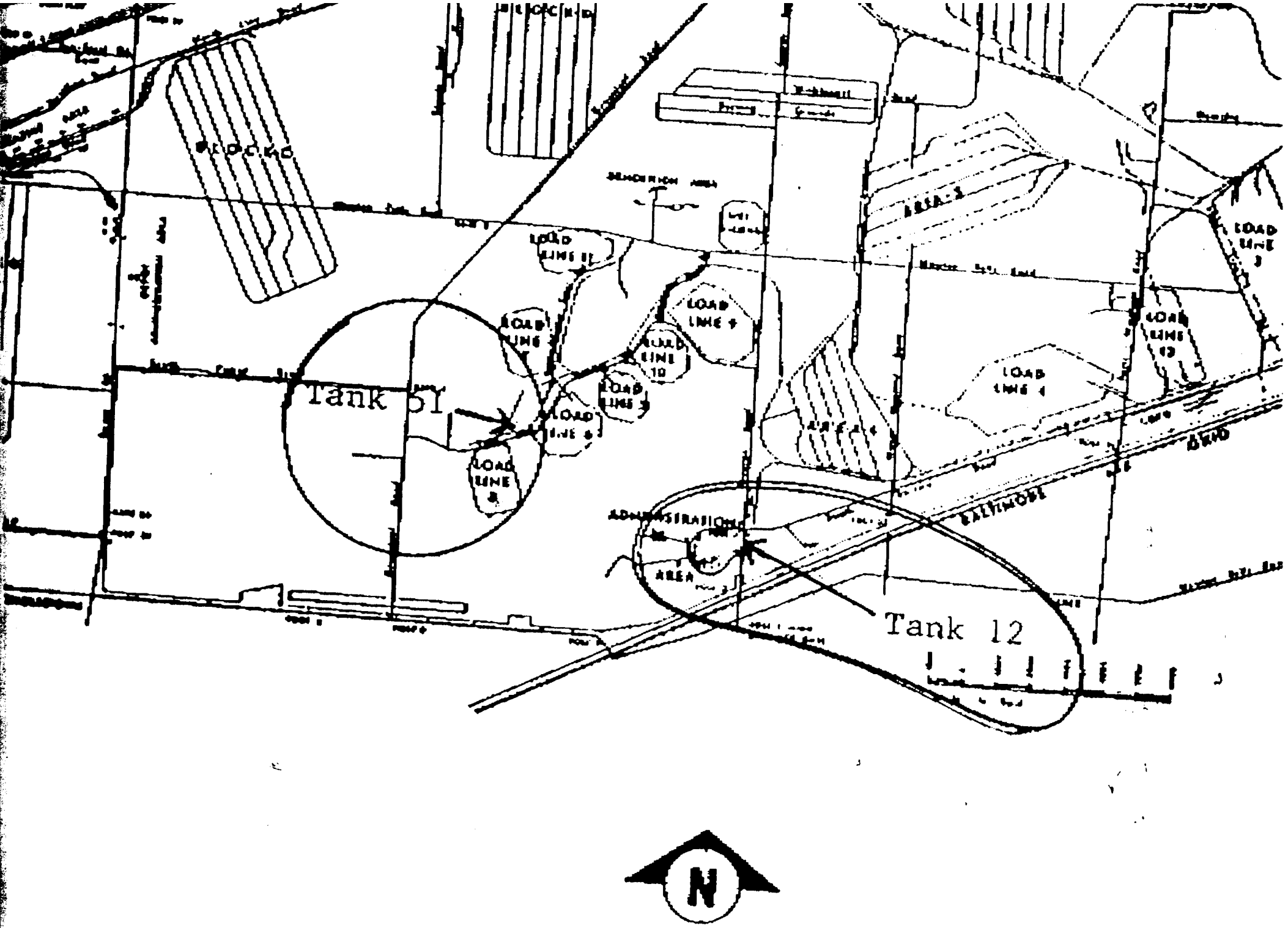

Tank 51
Tank 12
N

EXHIBIT C

30-DAY NOTIFICATION

TANK REMOVAL PERMIT

Olin ORDNANCE

RAVENNA ARSENAL, INC.
8451 STATE ROUTE 5, RAVENNA, OHIO 44266-9297
TELEPHONE: (216) 358-7111 • FAX: (216) 297-3216

March 3, 1993

THRU: Contracting Officer's Representative
Ravenna Army Ammunition Plant
8451 State Route 5
Ravenna, Ohio 44266-9297

TO: State Fire Marshall - BUSTR
Permit Application Section
ATTN: Bev Spears
Post Office Box 687
Reynoldsburg, Ohio 43068-0687

Subject: Permit Application to Remove Two Underground Storage Tanks

Dear Ms. Spears:

Attached is a permit application and fee for the removal of two registered underground storage tanks at Ravenna Army Ammunition Plant. The tanks to be removed are as follows:

One 4' x 10'8" 1,000 gallon steel tank used for storing #2 Fuel Oil (PH#6 Generator)

One 4' x 6' 550 gallon steel tank used for storing #2 Fuel Oil (WW#4 Generator)

Once removed, the tanks will be rendered unreusable, cleaned, marked as scrap and sold as scrap by the tank removal contractor.

Please contact Susan McCauslin, Ravenna Arsenal, Inc., Environmental Engineer, at (216) 297-3220 if you have any questions or need further information. The Government point of contact is Robert J. Kasper, Commander's Representative, (216) 297-3124.

Sincerely,

H.R. Cooper
Plant Engineer

:bp/UST.SM

c: N. Wulff T. Chanda File

9

STATE OF OHIO
DEPARTMENT OF COMMERCE - DIVISION OF STATE FIRE MARSHAL
BUREAU OF UNDERGROUND STORAGE TANK REGULATIONS
8895 EAST MAIN STREET, P.O. BOX 687
REYNOLDSBURG, OHIO 43068-0687
APPLICATION FOR UNDERGROUND STORAGE TANK PERMIT

I. OWNERSHIP OF TANKS — OWNER NO:	II. LOCATION OF TANKS — FACILITY NO.
OWNER/OPERATOR NAME: U. S. Army	FACILITY NAME: Ravenna Army Ammunition Plant
ADDRESS: 8451 State Route 5	ADDRESS: 8451 State Route 5
CITY: Ravenna — STATE: OH — ZIP CODE: 44266	CITY: Ravenna — STATE: OH — ZIP CODE: 44266
ATTN: (CONTACT PERSON): Robert J. Kasper — AREA CODE-PHONE: (216) 297-3124	AREA CODE-PHONE: (216) 297-3124 — COUNTY: Portage
III. CONTRACTOR	IV. LOCAL FIRE DEPARTMENT
CONTRACTOR'S NAME: Ravenna Arsenal, Inc.	FIRE DEPARTMENT NAME: Ravenna Arsenal, Inc.
CONTACT PERSON: Susan McCauslin — AREA CODE-PHONE: (216) 297-3220	ADDRESS: 8451 State Route 5
ADDRESS: 8451 State Route 5	CITY: Ravenna — STATE: OH — ZIP CODE: 44266
CITY: Ravenna — STATE: OH — ZIP CODE: 44266	30-DAY NOTIFICATION LETTER SENT FOR REMOVAL OF TANK TO BUSTR DATE: March 3, 1993

V. FEE CALCULATION (NOTE: PERMIT EXPIRES SIX (6) MONTHS FROM DATE OF ISSUE. FEE IS NON-REFUNDABLE)

TANK INSTALLATION (INCLUDES PIPING)	NO. OF TANKS	X $75.00 PER TANK	=	
TANK (REMOVAL) OR ABANDONMENT (CIRCLE ONE) (THESE INCLUDE PIPING)	2 NO. OF TANKS	X $100.00 PER TANK	=	$200.00
TANK UPGRADE	NO. OF TANKS	X $75.00 PER TANK	=	
TANK REPLACEMENT	NO. OF TANKS	X $175.00 PER TANK	=	
TANK REPAIR	NO. OF TANKS	X $50.00 PER TANK	=	
PIPING INSTALLATION ONLY		X $25.00 PER FACILITY	=	
PIPING REMOVAL ONLY OR ABANDONMENT ONLY (CIRCLE ONE)		X $100.00 PER FACILITY	=	
PIPING UPGRADE OR REPAIR (CIRCLE ONE)		X $25.00 PER FACILITY	=	
PIPING REPLACEMENT		X $100.00 PER FACILITY	=	
LEAK DETECTION UPGRADE		X $25.00 PER FACILITY	=	
CHANGE IN SERVICE OR TEMPORARY CLOSURE (CIRCLE ONE)		X $100.00 PER SYSTEM	=	

TOTAL FEE: $200.00

SIGNATURE OF APPLICANT: [signature] DATE: 8 Mar 93

BUREAU USE ONLY

AMOUNT PAID: _____ CHECK NO: _____ FEE NO: _____

SUPERVISOR/INSPECTOR: _____ PERMIT NO: _____ DATE ISSUED: _____

COM 5209 (10/92)

INCIDENT NUMBER: _____ (BUREAU USE ONLY)

STATE OF OHIO
DEPARTMENT OF COMMERCE – DIVISION OF STATE FIRE MARSHAL
BUREAU OF UNDERGROUND STORAGE TANK REGULATIONS
8895 EAST MAIN STREET, P.O. BOX 687
REYNOLDSBURG, OH 43068-0687

PERMIT FOR UNDERGROUND STORAGE TANKS

PERMIT NO.: 8476
ISSUE DATE: 3/30/93

I. OWNERSHIP OF TANKS	II. LOCATION OF TANKS
OWNER NO. 11595 U.S. ARMY 8451 STRT 5 RAVENNA, OH 44266 ROBERT J. KASPER 216-297-3124	INCIDENT NO. 679298-01 FACILITY NO. 670501 RAVENNA ARMY AMMUNITION PLANT 8451 ST RT 5 PORTAGE COUNTY RAVENNA, OH 44266
III. CONTRACTOR	**IV. LOCAL FIRE DEPARTMENT**
RAVENNA ARSENAL, INC. SUSAN McCAUSLIN 216-297-3220 8451 ST RT 5 RAVENNA, OH 44266	RAVENNA ARSENAL, INC. 8451 ST RT 5 RAVENNA, OH 44266

V. PERMIT ISSUED FOR:
REMOVAL OF (2) UST(S)

VI. CONDITIONS (NOTE: PERMIT EXPIRES SIX (6) MONTHS FROM DATE OF ISSUE. FEE IS NON-REFUNDABLE)

1. Inspector will ask to see UST installer's proof of certification. Inspector must be present for the following:
   A. Immediately before purging operations begin, immediately before the tank is cut open for any purpose and the actual removal of the UST system from the ground.

2. Certified installer must be on-site for the following:
   A. The cleaning and purging of the UST system;
   B. The actual excavation and removal of the UST system or any of its components;
   C. All testing associated with the cleaning and purging processes;
   D. Any time during the removal in which components of the UST system are disconnected or capped.

DEPARTMENT OF COMMERCE
DIVISION OF STATE FIRE MARSHAL

BUREAU USE ONLY

CERTIFIED INSTALLER: Mike Gmarocy ID No: 10-90-1300

INSPECTOR'S SIGNATURE: William A Hamm DATE: 7-28-93

EXHIBIT D

LETTER -
GRANTING PERMISSION TO OVEREXCAVATE

Ohio Department of Commerce

George V. Voinovich, Governor

Nancy Chiles Dix, Director

Division of State Fire Marshal • Bureau of Underground Storage Tank Regulations
8895 E. Main St., P.O. Box 687 • Reynoldsburg, OH 43068-0687
(614) 752-7938 • FAX (614) 752-7942

SEP 09 1993

H.R. Cooper
Engineering Manager
Ravenna Arsenal, Inc.
8451 State Route 5
Ravenna, Ohio 44266-9297

RE: Ravenna Army Ammunition Plant
1,000 gallon diesel UST;
Eastside of power plant #6
8451 State Route 5
Ravenna, Ohio 44266-9297
Portage County
Incident #679298-14

Dear Mr. Cooper:

The State Fire Marshal, Bureau of Underground Storage Tank Regulations (SFM, BUSTR) has received your letter dated July 30, 1993 requesting approval to over excavate your underground storage tank (UST) cavity to no more than five (5) feet beyond the tank cavity sidewalls and to no more than two (2) feet below the tank cavity bottom. Your justification for this request was based on test pits that were dug around the UST cavity. You stated that soils in the test pits were visually examined and were field screened with a PID field screening instrument in which both methods showed no evidence of fuel contamination.

Based on this information, SFM, BUSTR grants approval of overexcavation of the UST cavity.

If you have any questions regarding this matter, please contact Kelly Gill at (614) 752-7095.

Sincerely,

Andrew E. Lyles

Andrew E. Lyles
Bureau Chief

AEL:KG:kkm

cc: File #679298-14
Susan McCauslin, Ravenna Arsenal, Inc.

EXHIBIT E

SITE FEATURE SCORING SYSTEM

SITE FEATURE SCORING SYSTEM

Both Tank #12 and Tank #51 are over 1,000' away from the nearest potable water supply.

The depth of groundwater is assumed to be between fifteen and thirty feet.

The predominant soil type evident in both tank cavities was a natural silt and/or clayey sand substratum.

The following distinctives are associated with Tank #12:

1) There is a basement or a subsurface foundation with 100' of the underground storage tank system.

2) There is a storm sewer with 50' of the underground storage system.

3) There is a buried electrical cable main within 50' of the underground storage tank system.

The following distinctions are associated with Tank #51:

1) There is a storm sewer within 50' of the underground storage tank system.

2) There is a sanitary sewer within 50' of the underground storage tank system.

3) There is a water line main within 50' of the underground storage tank system.

SFM SITE FEATURE SCORING SYSTEM (SFSS) CHART

(USE "SFSS GUIDELINES" TO COMPLETE THIS CHART)

I. OWNERSHIP OF TANKS	II. LOCATION OF TANKS
OWNER NO. 11595 U.S. ARMY 8451 STRT 5 RAVENNA, OH 44266 ROBERT J. KASPER 216-297-3124	INCIDENT NO. 679298-01 FACILITY NO. 670501 RAVENNA ARMY AMMUNITION PLANT 8451 ST RT 5 PORTAGE COUNTY RAVENNA, OH 44266 TANK NO. 12

Site Features	COLUMN A		COLUMN B		COLUMN C		COLUMN D	
	Score 20	Enter Score	Score 15	Enter Score	Score 10	Enter Score	Score 5	Enter Score
1. Distance of UST system from closest potable-water supply source currently in use is:	> 1000 ft.	20	300-1000 ft		< 300 ft.		Inside of designated sensitive area	
2. Depth to groundwater is:	> 50 ft.		31-50 ft.		15-30 ft. or unknown	10	< 15 ft.	
3. Predominant soil type of substratum is:	Clay or shale		Silt or clayey sands or fine sandstone	15	Silty sand or fine sand, unknown, or sandstone		Clean sand, gravel, or conglomerate	
4. Natural and/or man-made conduits or receptors - See Worksheet Below	< 8		8-10	15	11-13		> 13	
Subtotals:								
							TOTAL SCORE (SUBTOTALS)	60

SITE FEATURE 4 WORKSHEET:

Basements or subsurface foundations within 100 feet of UST system	4 points	4
Storm sewer within 50 feet of UST system	4 points	4
Sanitary sewer within 50 feet of UST system	4 points	0
Septic system leach field within 50 feet of UST system	2 points	0
Water line main within 50 feet of UST system	1 point	0
Natural Gas line main within 50 feet of UST system	1 point	0
Bedrock area prone to dissolution along joints of fractures within 100 feet of UST system	1 point	0
Faults or known fractures within 100 feet of UST system	1 point	0
Buried telephone/television cable main within 50 feet of UST system	1 point	0
Buried electrical cable main within 50 feet of UST system	1 point	1
	TOTAL POINTS	9

SSFS ACTION LEVELS (PPM)

CONSTITUENT	CATEGORY 1	CATEGORY 2	CATEGORY 3	CATEGORY 4
TOTAL SCORE	< 31	31-50	51-70	> 71
Soil BTEX	.006/4/6/28	.170/7/10/47	.335/9/14/67	.500/12/18/85
Groundwater BTEX	.005/1/.700/10	.005/1/.700/10	.005/1/700/10	.005/1/.700/10
Soil TPH (Gasoline)	105	300	450	600
Soil TPH (Others)	380	642	904	1156

SFM SITE FEATURE SCORING SYSTEM (SFSS) CHART

(USE "SFSS GUIDELINES" TO COMPLETE THIS CHART)

I. OWNERSHIP OF TANKS	II. LOCATION OF TANKS
OWNER NO. 11595 U. S. ARMY 8451 STRT 5 RAVENNA, OH 44266 ROBERT J. KASPER 216-297-3124	INCIDENT NO. 679298-01 FACILITY NO. 670501 RAVENNA ARMY AMMUNITION PLANT 8451 ST RT 5 PORTAGE COUNTY RAVENNA, OH 44266 TANK NO. 51

Site Features	COLUMN A		COLUMN B		COLUMN C		COLUMN D	
	Score 20	Enter Score	Score 15	Enter Score	Score 10	Enter Score	Score 5	Enter Score
1. Distance of UST system from closest potable-water supply source currently in use is:	> 1000 ft.	20	300-1000 ft		< 300 ft.		Inside of designated sensitive area	
2. Depth to groundwater is:	> 50 ft.		31-50 ft.		15-30 ft. or unknown	10	< 15 ft.	
3. Predominant soil type of substratum is:	Clay or shale		Silt or clayey sands or fine sandstone	15	Silty sand or fine sand, unknown, or sandstone		Clean sand, gravel, or conglomerate	
4. Natural and/or man-made conduits or receptors - See Worksheet Below	< 8		8-10	15	11-13		> 13	
Subtotals:								
						TOTAL SCORE (SUBTOTALS)		60

SITE FEATURE 4 WORKSHEET:

Basements or subsurface foundations within 100 feet of UST system	4 points	0
Storm sewer within 50 feet of UST system	4 points	4
Sanitary sewer within 50 feet of UST system	4 points	4
Septic system leach field within 50 feet of UST system	2 points	0
Water line main within 50 feet of UST system	1 point	1
Natural Gas line main within 50 feet of UST system	1 point	0
Bedrock area prone to dissolution along joints of fractures within 100 feet of UST system	1 point	0
Faults or known fractures within 100 feet of UST system	1 point	0
Buried telephone/television cable main within 50 feet of UST system	1 point	0
Buried electrical cable main within 50 feet of UST system	1 point	0
	TOTAL POINTS	9

SSFS ACTION LEVELS (PPM)

CONSTITUENT	CATEGORY 1	CATEGORY 2	CATEGORY 3	CATEGORY 4
TOTAL SCORE	< 31	31-50	51-70	> 71
Soil BTEX	.006/4/6/28	.170/7/10/47	.335/9/14/67	.500/12/18/85
Groundwater BTEX	.005/1/.700/10	.005/1/.700/10	.005/1/700/10	.005/1/.700/10
Soil TPH (Gasoline)	105	300	450	600
Soil TPH (Others)	380	642	904	1156

SFM SITE FEATURE SCORING SYSTEM (SFSS) CHECKLIST

(SUBMIT TO SFM AS APPENDIX OR ADDENDUM TO CLOSURE REPORT)

I. OWNERSHIP OF TANKS	II. LOCATION OF TANKS
Owner No. 11595 U.S. Army 8451 State Route 5 Ravenna, OH 44266 Robert J. Kasper (216) 297-3124	Incident No. 679298-01 Facilit No. 670501 Ravenna Army Ammunition Plant 8451 State Route 5 Portage County Ravenna, OH 44266 Tank Nos. 12 and 51

SFSS WRITTEN REPORT MUST INCLUDE THE FOLLOWING:

SFM USE	PAGE NO.	
_____	Ex E	A. The completed "SFSS Chart".
_____	Ex E	B. Written report which must include justification for site features 1 through 4 which include th e following:
		1. Distance of UST system from closest potable-water supply source currently in use within 1/4 mile.
		2. Average depth to groundwater.
		3. Predominant soil type of substratum in UST excavation.
		4. Natural and/or man-made conduits/receptors near closed UST system.
_____	6	C. Soil and/or groundwater analytical sample results in table format from closure report.

NOTE: DEFICIENT "SFSS REPORTS AND CHARTS" SUBMITTED TO OUR OFFICE WILL BE RETURNED TO THE OWNER FOR COMPLETION. SEND THE "SFSS REPORT AND CHART" TO THE ADDRESS AS INDICATED ON THE ENCLOSED COVER LETTER.

Preparer Name: Joe Stock Signature: _____ Date: 9/29/93

Owner/Operator: _____ Signature: _____ Date: _____

BUREAU USE ONLY

Reviewed By: _____ **Signature:** _____ **Date:** _____

EXHIBIT F

CLOSURE REPORT CHECKLIST FORM

DIVISION OF STATE FIRE MARSHAL-BUREAU OF UNDERGROUND STORAGE TANK REGULATIONS

CLOSURE REPORT CHECKLIST FORM

OWNERSHIP OF TANKS	LOCATION OF TANKS
Owner No. 11595 U.S. Army 8451 State Route 5 Ravenna, OH 44266 Robert J. Kasper (216) 297-3124	Incident No. 679298-01 Facility No. 670501 Ravenna Army Ammunition Plant 8451 State Route 5 Portage County Ravenna, OH 44266 Tank Nos. 12 and 51

I. FILING INSTRUCTIONS

A. In the column on the left side of the form, place either the page number or appendix designation where each item on the checklist can be found in the closure report or "N/A" (Not Applicable) for items that do not apply to your closure report. If "N/A" is indicated, you must also indicate the the page number accordingly.

B. UST owner must sign where indicated on page 2 of this form and attach it to the Closure Report. Deficient closure reports submitted to our office will be returned to the UST owner for completion. Send the closure report checklist form and the closure report to the address as indicated on the enclosed cover letter.

NOTE: UST OWNER/OPERATORS SHALL SUBMIT ONE COPY OF THE WRITTEN CLOSURE REPORT WHICH SHALL BE RECEIVED BY THE STATE FIRE MARSHAL WITHIN 45 DAYS OF RECEIPT BY THE UST OWNER/OPERATOR OF SOIL AND/OR GROUNDWATER LABORATORY ANALYSIS BUT NOT LATER THAN 90 DAYS FROM THE DATE OF COLLECTING SOIL AND/OR GROUNDWATER SAMPLES.

II. UST SYSTEM OWNER, OPERATOR, AND FACILITY DATA

1 UST Owner (name; address; zip code; county; phone no.)
1 UST Operator (name; address; zip code; county; phone no.)
1 UST Facility Location (name; address; zip code; county; phone no.)
1 UST Facility Owner (name; address; zip code; county; phone no.)

III. UST SYSTEM DATA

2 UST System(s) Age (years)
2 UST(s) Capacity (gallons)
2 UST System(s) Construction (i.e., steel, fiberglass, etc.)
2 Date UST System(s) Last Used
2 Person(s) Who Last Used UST System
2 Substance(s) Stored in UST(s) both past and present (i.e. gasoline, diesel fuel, used oil, etc.)
1 UST System Use (i.e., retail sales, residential, farm, business, etc.)
2 UST(s) System Status (Permanently Removed or Abandoned-In-Place)
8 Disposal of UST(s) System

IV. WASTE DISPOSAL DATA

8 Method of Disposal and Final Location of Excavated Soil(s) and Backfill Materials
7 Amount of Soils and Backfill Excavated (cubic yards)
8 Disposal and final Location of any liquids from UST System or UST System Excavation
7 Locations of Soil Samples taken from Excavated Soil Waste Pile(s)
Ex A Copies of Laboratory Data Sheets of Soil Samples taken from Excavated Soil(s) and Backfill Materials

V. SAMPLING DATA

(Groundwater sampling data only required if groundwater encountered during closure activities)

5 Soil and/or Groundwater Sample Collection Procedures
5 Type of Sample Containers and Sample Preservation Techniques Used for Soil and/or Groundwater Samples
5 Labeling Number or Designation of Soil and/or Groundwater Sample(s) Used
5 Type of Sampling Equipment Used (i.e., split spoon, shelby tube, etc.)
5 Decontamination Procedures of Sampling Equipment Used
4 Field Screening Methodology Used for each Soil and/or Groundwater Samples Obtained
4 Type of Field Screening Instrument Used
7 Listing of Field Screening Readings for each Soil and/or Groundwater Sample Obtained
4 Calibration Methodology Used for Field Screening Instrument
7 Locations and Depths of all Soil and/or Groundwater Samples Obtained
Ex A Copy of Chain of Custody Documentation for Soil and/or Groundwater Samples submitted to Laboratory
5 Sample Collector(s) Name and Company Affiliation

VI. LABORATORY DATA

(Groundwater laboratory data only required if groundwater encountered during closure activities)

Ex A Copies of Laboratory Sample Analysis Data Sheets for Soil and/or Groundwater Samples
7/Ex A Date Soil and/or Groundwater Samples Collected
Ex A Date Soil and/or Groundwater Samples Received by Laboratory
Ex A Date Soil and/or Groundwater Samples Analyzed by Laboratory and type of Matrix Analyzed (soil or water)
7/Ex A Name, Address, and Phone No. of Laboratory and name of Sample Analyst
7/Ex A Analytical Test Methods Used for Soil and/or Groundwater Samples
6/Ex A Detection/Quantitation Limits Used for Laboratory Test Methods
N/A Laboratory Instrument Calibration used

VII. MISCELLANEOUS DATA

Ex B Site Map Accurately Depicting Dimensions of Facility Property Boundaries, Above Ground Structures, adjacent street locations, and UST Systems (no. of tanks and product lines)
Ex B Mapped Locations of Known Private Wells, Public Water Wells, or Monitoring Wells on Facility
Ex B Mapped Locations of Any Utilities Exposed During UST System Excavation
5 Description of Native Soils Encountered During UST System Excavation (i.e., sands, gravels, clays, etc.)
7/Ex B Mapped Depths and Locations of all Soil and/or groundwater Samples taken from Excavation
5 Visual Site Evaluation
Ex B Mapped Locations of UST(s) Recently or Historically Removed, Abandoned-In-Place, or have undergone a Change in Service
Ex B Mapped Locations of Other UST Still in Service
Ex B Mapped Length of UST(s) and Product Line(s)
Ex B Mapped Excavation Limits
2 Certified Fire Safety Inspector Name and Certificate Number
1 Local Fire Department (name; address; zip code; county; phone) with jurisdiction over UST site
Ex C Copy of 30 Day Closure Notification and Closure Permit

UST(s) Owner Signature:_____ Date:_____

DIVISION USE ONLY

Reviewed By:_____ Date:_____

closure2

NEW DOC

CLOSURE REPORT

FOR

RAVENNA ARMY AMMUNITION PLANT
8451 State Route 5
Ravenna, Ohio 44266
Portage County
(216) 297-3124

Submitted To:

Ms. Susan McCauslin
RAVENNA ARSENAL INC.
(216) 297-3220

Prepared By:

AUTUMN TECHNICAL SERVICES, INC.
518 Perkins-Jones Road
Warren, Ohio 44483
(216) 372-5002

September 28, 1993

TABLE OF CONTENTS

DESCRIPTION OF FACILITY

The two (2) tanks permanently removed were from the following location:

RAVENNA ARMY AMMUNITION PLANT
8451 St. Rte. 5
Ravenna, Ohio 44266
Portage County
(216) 297-3124

The U.S. Army is the underground storage tanks (UST's) Owner and Operator. The facility is an inactive army facility. The one thousand (1,000) gallon tank (Tank #12) was removed from near Powerhouse #6 and the five hundred fifty (550) gallon tank (Tank #51) was removed from near the Water Works 4 Generator.

NOTICE TO REMOVE

On March 3, 1993, notification to remove the Ravenna Army Ammunition Plants two (2) tanks was directed to:

Ms. Beverly Spears
State Fire Marshal's Office
Bureau of Underground Storage Tank Regulations
7510 E. Main Street
P.O. Box 687
Reynoldsburg, Ohio 43068-0687
(614) 752-7938

Notification was directed to the local fire department:

Ravenna Arsenal, Inc.
8451 St. Rte. 5
Ravenna, Ohio 44266

On March 30, 1993, Permit No. 8476 was issued by the Bureau of Underground Storage Tank Regulations for the removal and permanent closure of two (2) underground storage tanks at the Ravenna Army Ammunition Plant.

TANK DATA

The two (2) tanks permanently removed consisted of a one thousand (1,000) gallon #2 fuel oil tank and a five hundred fifty (550) gallon #2 fuel oil tank. The one thousand (1,000) gallon tank was installed in June of 1974. The five hundred fifty (550) gallon tank was installed in August of 1976.

Tank Registration	Removal Date	Capacity	Construction	Product	Location
12	7/28/93	1,000 gallon	Steel	#2 fuel oil	Powerhouse
51	7/28/93	550 gallon	Steel	#2 fuel oil	Water Works 4 Generator

Both the one thousand (1,000) gallon tank was last used in July 1993 the five hundred fifty (550) gallon tank were last used in July 1993. The tanks contained #2 fuel oil only. The tanks were used by the Owner only.

TANK REMOVAL

On July 28, 1993 Autumn Technical Services, Inc. began preparation to remove the two tanks.

Tank #12, the one thousand (1,000) gallon #2 fuel oil tank located at Powerhouse #6 was to be removed first.

The top of the tank was uncovered to determine its exact location and orientation.

Next, the tank was checked for the potential for explosion through the use of an Industrial Scientific CMX 271 Multimeter calibrated with a .35% (25% Lower Explosive Limit [LEL]) pentane standard. The percent LEL in the tank was determined to be < 5%.

At this point, some excavation around the tank was performed and the tank was prepared for removal.

Mr. David Capara of the Bureau of Underground Storage Tank Regulations (B.U.S.T.R.) North East Field Office (N.E.F.O.) was on site to view the removal. The LEL was retested and found to still be < 5%.

The tank was then removed and placed on a piece of polyethylene sheeting. Finally, all backfill was removed and a one foot (1') additional overexcavation around the tank was completed. All soil/backfill removed during the excavation was placed on a separate piece of polyethylene sheeting.

Upon completion of all excavation activities, samples were ready to be collected. Split samples were to be collected in the following manner:

A) Samples would be collected from each end of the tank excavation. If the tank is longer than 35 feet, an additional sample shall be collected from under the middle of the tank.

B) Samples would be collected from every 20' of the tank's associated piping. If the piping run is less than 20' in length, no sample is required.

C) A sample would be collected from underneath each dispensing unit. If the dispensing unit is located directly above the tank, no sample is required.

D) A sample would be collected from below any remote fill pipe area located more than ten feet from the tank cavity excavation.

E) A sample would be collected from any area that was visibly stained or contained a high PID reading.

An MSA Photon Gas Detector calibrated with a 98 ppm isobutylene standard was used to check the excavation to determine if any area contained a high PID (Photoionization Detector) reading, measured in ppm (parts per million) within the excavation limits.

Upon removal of the tank and completion of the one foot (1') overexcavation, visibly contaminated soil was still present in the excavation. One samples was collected to gain disposal facility acceptance and steps were taken to gain permission from the State Fire Marshal's office to perform more excavation at this location.

After removing the one thousand (1,000) gallon tank, preparations were made to remove the five hundred fifty (550) gallon tank (Tank #51).

The top of the tank was uncovered to determine its exact location and orientation.

Next, the tank was checked for the potential for explosion through the use of an Industrial Scientific CMX 271 Multimeter calibrated with a .35% (25% Lower Explosive Limit [Limit]) pentane standard. The percent LEL in the tank was determined to be < 5%.

At this point, more excavation around the tank was performed and the tank was prepared for removal.

Mr. David Capara of the B.U.S.T.R.-N.E.F.O. was on site to view the removal. The LEL was retested and found to still be < 5%.

The tank was then removed and placed on the piece of polyethylene sheeting. Finally, all backfill was removed and placed on a separate piece of polyethylene sheeting.

Upon completion of all excavation activities, samples were ready to be collected. Split samples were to be collected in the following manner.

A) Samples would be collected from each end of the tank excavation. If the tank is longer than 35 feet, an additional sample shall be collected from under the middle of the tank.

B) Samples would be collected from every 20' of the tank's associated piping. If the piping run is less than 20' in length, no sample is required.

C) A sample would be collected from underneath each dispensing unit. If the dispensing unit is located directly above the tank, no sample is required.

D) A sample would be collected from below any remote fill pipe area located more than ten feet from the tank cavity excavation.

E) A sample would be collected from any area that was visibly stained or contained a high PID reading.

An MSA Photon Gas Detector calibrated with a 98 ppm isobutylene standard was used to check the excavation to determine if any area contained a high PID (Photoionization Detector) reading, measured in ppm (parts per million) within the excavation limits.

A total of two (2) samples were collected from the five hundred fifty (550) gallon tank for closure reporting.

One sample was collected from under each end of the tank. PID readings and sample locations can be seen later in this report. Analytical results can be seen in the section titled Sample Results.

VISUAL SITE EVALUATION

During excavation activities, the predominant soil substratum evident for both tank excavations was a silt/clayey sand mix.

Upon removal, of the one thousand (1,000) gallon tank, (Tank #12) there was still visibly contaminated soil remaining confirmed by a distinct petroleum odor within the excavation.

Upon removal of the five hundred fifty (550) gallon tank (Tank #51) and completion of the one foot (1') additional overexcavation, there was no visible signs of contamination remaining in the excavation.

SAMPLE COLLECTION PROCEDURES

All soil samples were collected with a stainless steel core sampler, with a hammer type drive. The core sampler was decontaminated prior to and between each use in the following manner:

A. The core sampler was rinsed with distilled water.

B. The core sampler was then scrubbed with a soft bristled brush and non-phosphate detergent (i.e., Alconox).

C. The core sampler was again rinsed with distilled water.

D. The core sampler was dried with a lint-free cloth rag to remove excess moisture.

Once the samples were collected, they were placed in 16 oz. wide mouth glass jars. The samples were placed in the jar in a manner to obtain zero headspace upon sealing. Screw on teflon lids were then placed on the jars. They were then placed on ice and preserved at 4° C prior to delivery to the lab.

Sample labels and a chains of custody were filled out for the samples. Information on each included project name and number, collector's name and signature, time and date of sampling, sample I.D. #, sample matrix, analyses to be performed, names and dates to whom and when samples were relinquished and preservation techniques. Sample Nos. ATS-842 through ATS-844 were collected by Barney Brown. Sample Nos. ATS-850, ATS-857 and ATS-858 were collected by Mike Maraczi. All persons collecting samples are employees of Autumn Technical Services, Inc.

SAMPLE RESULTS

Analysis	ATS-842	ATS-843	ATS-857	ATS-858*	ATS-844
TPH (Method 418.1) Detection Limit 10 ppm	16,343	70	74	16	46
BTEX (Method 8020) Detection Limit .20 ppm					
Benzene	ND	ND	—	ND	ND
Toluene	ND	ND	—	ND	ND
Ethyl Benzene	ND	ND	—	ND	ND
Xylene	ND	ND	—	ND	ND
PNAH's (Method 8100) Detection Limit - 2.0 ppm					
Acenapthene	6.1	ND	ND	ND	ND
Acenapthylene	ND	ND	ND	ND	ND
Anthracene	7.6	ND	ND	ND	ND
Benzo (A) Anthracene	9.3	ND	ND	ND	—
Benzo (A) Pyrene	5.8	ND	ND	ND	—
Benzo (B) Fluoranthene	9.9	ND	ND	ND	—
Benzo (GHI) Perylene	3.4	ND	ND	ND	—
Benzo (K) Fluoranthene	ND	ND	ND	ND	—
Chrysene	6.1	ND	ND	ND	—
Fluoranthene	23.0	ND	ND	ND	—
Flourene	6.7	ND	ND	ND	—
Napthalene	ND	ND	ND	ND	—
Phenanthrene	28.0	ND	ND	ND	—
Pyrene	ND	ND	ND	ND	—
Indeno (1,2,3-CD) Pyrene	3.8	ND	ND	ND	—
Dibenzo(A,H)Anthracene	3.3	ND	ND	ND	—

ND = Non-Detect
*Detection Limit .002 ppm for BTEX Method 8020
.33 ppm for PNAH's Method 8100

Sample ATS-844 was analyzed for the parameters required by BFI for the disposal of contaminated soil resulting from an underground storage tank leakage.

Samples ATS-850 was a sample collected from a roll-off box containing sludges collected and solidified from all tanks on site (AST's and/or UST's).

INITIAL SAMPLE LOCATIONS, DEPTHS AND PID READINGS

Sample# ATS-	Location	Collection Date	Sample Depth	PID (ppm)
842	550 Gallon-East End	07/28/93	7.5'	588
843	550 Gallon-East End	07/28/93	7.5'	73
844	1,000 Gallon-West End	07/28/93	7.5'	1,217
850	Roll-Off Box	08/30/93	---	9,999 +
857	550 Gallon-East End	08/27/93	9.5'	81
858	1,000 Gallon-East End	08/27/93	9.5'	22

Closure analyses required for the two (2) #2 fuel oil tanks

(ATS

PNAH's (Polynuclear Aromatic Hydrocarbons)	Method 8100
TPH (Total Petroleum Hydrocarbons)	Method 418.1
BTEX (Benzene, Toluene, Ethyl Benzene, Xylene)	Method 8020

Laboratory used on this project was:

DeYor Laboratories, Inc.
7655 Market Street
Youngstown, Ohio 44512
(216) 758-5788
Albert F. Vicinie, Supervisor - Industrial Lab

REMEDIAL EFFORT

There was approximately 50 cubic yards total of material that was excavated and stockpiled during the removal of both of the #2 fuel oil tanks.

Based upon the visible contamination and the petroleum odor emanating from the east end of the one thousand (1,000) gallon (Tank #12) tank excavation, a sample of the material was collected on July 28, 1993 and analyzed for the following parameters required by BFI:

TCLP Metals (plus Cu and Ni), TPH, BTEX, RCI.
RCI (Reactivity, Corrosivity and Ignitability)

On September 2, 1993, approval at BFI Carbon Limestone Landfill in Poland, Ohio was granted.

On September 9, 1993, a letter from Mr. Andrew E. Lyles, Bureau Chief of the Division of the State Fire Marshal's Office, Bureau of Underground Storage Tank Regulations in Reynoldsburg granted permission to overexcavate the contaminated material remaining in the excavation for Tank #12.

After the over excavation was completed, one sample (ATS-858) was collected from the excavation. The result can be seen in the section entitled Sample Results.

DISPOSAL OF CONTAMINATED SOIL

On September 17, 1993, 107.72 tons of #2 fuel oil contaminated soil was disposed of at BFI's Carbon Limestone Landfill in Poland, Ohio, and on September 18, 1993, 37.60 tons of #2 fuel oil contaminated soil was disposed of at BFI's Carbon Limestone Landfill in Poland, Ohio for a total 145.32 tons generated and disposed of from this site.

DISPOSAL OF CONTAMINATED LIQUID

Any liquid and/or sludge generated from the cleaning of these two (2) tanks along with other tanks (UST and AST) associated with the property was bulked into a roll-off box and solidified with kiln dust. A sample (ATS-850) was collected and analyzed for the following parameters:

RCI (Reactivity, Corrosivity, Ignitability)
TCLP Metals (Plus Cu and Ni), TPH, RCI, BTEX
TCLP Volatiles, TCLP Semi-Volatiles

Approval for this material was granted September 27, 1993 and the material is scheduled to be disposed of on September 30, 1993.

DISPOSAL OF TANKS

After cleaning and removal of the tanks, the ends were cut out rendering the tanks out of service. The tanks were then taken to Warren Scrap for recycling.

REVIEW AND CONCLUSIONS

Based on a Site Feature Scoring System (SFSS), score of 65, the site falls into Category 3 for SFSS Action Levels.

Both tanks were #2 fuel oil and therefore fall into Analytical Group 2. Action levels for the group are TPH of 904, Benzene .335 ppm, Toluene 9 ppm, Ethyl Benzene 14 ppm, and Total Xylenes 67 ppm. The above action levels are for contaminated soils.

Upon completion of excavation activities of the 1,000 gallon tank (Tank #12) there was still visibly contaminated soil remaining in the excavation. A PID reading of 1217 ppm indicated that hydrocarbons were still present in the excavation. A sample was collected from the west end and analyzed for disposal parameters. The parameters included TPH, BTEX which are required for closure reporting. These results showed hydrocarbons to be present but not at the level expected based on initial indications. After overexcavation, a sample was collected and analyzed for TPH (418.1), BTEX (8020) and PNAH's (8100). The results were below the action levels for a Category 3 Analytical Group 2 soil. The results can be seen in Exhibit A, Sample Results. No further action is required for the tank location.

Upon completion of the removal of the five hundred fifty (550) gallon tank, the one foot (1') overexcavation around the tank cavity was not completed due to the fact that visible contamination was not present. After the return of the analyses for the excavation (ATS-842 and ATS-843), it was determined the sample from the east end (ATS-842) was above the action levels for a Category 3 Analytical Group 2 soil. The explanation for the high results for TPH, PNAH's was that the backfill material contained broken chunks of asphalt. The one foot (1') overexcavation was then completed and a new sample (ATS-857) was collected. The results for ATS-843 and ATS-857 were below the action levels for this tank cavity. Therefore, no further action should be required at this location.

Therefore, no further action should be required at this site.

EXHIBIT A

SAMPLE RESULTS
AND
CHAINS-OF-CUSTODY

NAME		ACCESSION NO.
ATS-842 EAST END [illegible]	[illegible]	93-608222
	COLLECTION DATE: 07/28/93 — COLLECTION TIME: 13:45	RECEIVED: 07/29/93
RAVENNA ARSENAL	CLIENT ID NUMBER: 8222 [illegible]	REPORTED: 08/11/93

TEST	RESULT NORMAL	RESULT ABNORMAL	REFERENCE OR THERAPEUTIC RANGE	UNITS
POLYAROMATIC HYDROCA[illegible]				
METHOD NUMBER	8100			
QUANTITATION LIMIT	2.0			PPM
ACENAPTHENE	6.1			PPM
ACENAPTHYLENE	ND			
ANTHRACENE	7.6			PPM
BENZO(A)ANTHRACENE	9.3			PPM
BENZO(A)PYRENE	5.8			PPM
BENZO(B)FLUORANTHENE	9.9			PPM
BENZO(GHI)PERYLENE	3.4			PPM
BENZO(K)FLUORANTHENE	ND			
CHRYSENE	6.1			PPM
FLUORANTHENE	23.0			PPM
FLUORENE	6.7			PPM
NAPTHALENE	ND			
PHENANTHRENE	28.0			PPM
PYRENE	17.0			PPM
INDENO(1,2,3-CD)PYR	3.8			PPM
DIBENZ(A,H)ANTHRACEN	3.3			PPM
TOT.PETRO.HYDROCARB.	16343			PPM
	ANALYSIS	PERFORMED USING USEPA METHODS 9071/418.1		
B-E-T-X				
METHOD NUMBER	8020			
QUANTITATION LIMIT	0.20			PPM
BENZENE	ND			
TOLUENE	ND			
ETHYLBENZENE	ND			
XYLENE	ND			
LABORATORY ANALYST	BHM LABORATORY			

A.I.H.A. ACCREDITED LABORATORY (# 365).

--- DIRECTORS ---
Patrick K. Jaynes Ph.D.
Anthony Nasrallah Ph.D.

DEYOR Laboratories

[illegible]

AUTUMN INDUSTRIES
318 PERKINS-JONES ROAD
WARREN OH 44483

NAME	SPECIMEN NUMBER	ACCESSION NO.
ATS-843 WEST END TANK EST	93608223	93608223
	COLLECTION TIME 13:50	RECEIVED 07/29/93
AVEMA ARSENAL		REPORTED 08/11/93

TEST	RESULT NORMAL	RESULT ABNORMAL	REFERENCE OR THERAPEUTIC RANGE	UNITS
POLYAROMATIC HYDROCA				
METHOD NUMBER	8100			
QUANTITATION LIMIT	2.0			PPM
ACENAPTHENE	ND			
ACENAPTHYLENE	ND			
ANTHRACENE	ND			
BENZO(A)ANTHRACENE	ND			
BENZO(A)PYRENE	ND			
BENZO(B)FLUORANTHENE	ND			
BENZO(GHI)PERYLENE	ND			
BENZO(K)FLUORANTHENE	ND			
CHRYSENE	ND			
FLUORANTHENE	ND			
FLUORENE	ND			
NAPTHALENE	ND			
PHENANTHRENE	ND			
PYRENE	ND			
INDENO(1,2,3-CD)PYR	ND			
DIBENZ(A,H)ANTHRACEN	ND			
OT.PETRO.HYDROCARB.	70			PPM
	ANALYSIS PERFORMED USING USEPA METHODS 9071/418.1			
-E-T-X				
METHOD NUMBER	8020			
QUANTITATION LIMIT	0.20			PPM
BENZENE	ND			
TOLUENE	ND			
ETHYLBENZENE	ND			
XYLENE	ND			
LABORATORY ANALYST	BHM LABORATORY			
	A.I.H.A. ACCREDITED LABORATORY (# 365).			

DEYOR laboratories
AUTUMN INDUSTRIES
318 PERKINS-JONES ROAD
WARREN OH 44483

NAME	SPECIMEN ID NUMBER	SESSION NO.
ATS-844, WEST END BOTTOM TANK	3608224	608224
	COLLECTION DATE	COLLECTION TIME
	[illegible]	[illegible]
RAVENNA ARSENAL	[illegible]	00000

RECEIVED
[illegible] /29/93
[illegible] /1/93

TEST	RESULT NORMAL	RESULT ABNORMAL	REFERENCE OR THERAPEUTIC RANGE		UNITS
TCLP EXTRACTION PROC	FINAL PH=5.29				
TCLP METALS & BIAS %					
ARSENIC	<0.2		0.0	5.0	MG/L
Spike recovery	104				%
BARIUM	<0.5		0.0	100.0	MG/L
Spike recovery	96				%
CADMIUM	<0.03		0.0	1.0	MG/L
Spike recovery	100				%
CHROMIUM	<0.3		0.0	5.0	MG/L
Spike recovery	114				%
SELENIUM	<0.02		0.0	1.0	MG/L
Spike recovery	91				%
MERCURY	<0.0002		0.0	0.2	MG/L
Spike recovery	94				%
LEAD	<0.2		0.0	5.0	MG/L
Spike recovery	88				%
SILVER	<0.05		0.0	5.0	MG/L
Spike recovery	101				%
TCLP SUPPL.METALS					
NICKEL	<0.2				MG/L
Spike recovery	100				%
COPPER	<0.08				MG/L
Spike recovery	102				%
B-E-T-X					
METHOD NUMBER	8020				
QUANTITATION LIMIT	0.005				PPM
BENZENE	ND				
TOLUENE	ND				
ETHYLBENZENE	ND				
XYLENE	ND				
LABORATORY ANALYST	BHM LABORATORY				
	A.I.H.A.	ACCREDITED LABORATORY (# 365).			
TOT.PETRO.HYDROCARB.	46				PPM
	ANALYSIS	PERFORMED USING USEPA METHODS 9071/418.1			
REACTIVITY SCREEN	REACTIVE	CYANIDE <2.0 PPM			
	REACTIVE	SULFIDE <2.0 PPM			

NAME	ACCESSION NO.
ATS-844 WEST END BOUNDARY [illegible]	93 608224
[illegible]	
COLLECTION DATE: 07/28/93	COLLECTION TIME: 00
RAVENNA ARSENAL	RECEIVED: 07/29/93
[illegible]	REPORTED: 08/11/93

TEST	RESULT NORMAL	RESULT ABNORMAL	REFERENCE OR THERAPEUTIC RANGE	UNITS
	ASTM D5049 METHOD D/D4978 METHOD B			
CORROSIVITY SCREEN	SAMPLE IS NONCORROSIVE. PH = 8.07			
	ASTM D4980 METHOD B/USEPA 9040			
IGNITABILITY TEST	SAMPLE HEATED TO 160F WITHOUT FLASH OR IGNITION.			
	ASTM D4982 METHOD B/ASTM D93			
PCB'S (SOIL)				
METHOD NUMBER	8080			
QUANTITATION LIMIT	0.5			PPM
PCB 1221	ND=NONE DETECTED			
PCB 1232	ND			
PCB 1242	ND			
PCB 1248	ND			
PCB 1254	ND			
PCB 1260	ND			
PCB 1262	ND			
PCB 1016	ND			
TCLP REVIEW	TCLP PREPARATION FOLLOWS METHOD 1311 SW-846 AS REVISED NOVEMBER 24,1992 (57FR55114) REVIEWED BY ALBERT F. VICINIE III,LAB SUPERVISOR			

--- DIRECTORS ---
Patrick K. Jaynes Ph.D. John C. York II, M.D.
Anthony Nasrallah Ph.D. Arlington G. Kuklinca M.D.

--- PATHOLOGISTS ---
AUTUMN INDUSTRIES
518 PERKINS JONES ROAD

DEYOR Laboratories
WARREN OH 44483
7656 Market Street, Suite 250
Youngstown, Ohio 44512

Chain of Custody Record

DeYor Laboratories

DeYor Laboratories, Inc. (216) 758-5788
7655 Market Street, Suite 2500
Youngstown, Ohio 44512

REFERRING CLIENT
AUTUMN INDUSTRIES
518 PERKINS-JONES ROAD
WARREN OH 44483

1416 216 372 5002

BILLING CONTROL NUMBER (FOR LAB USE ONLY)

PROJECT # 30604

P.O.# 2778

SAMPLERS (Signature) Barney Brown

PROJECT NAME Ravenna Arsenal

FOR LAB USE ONLY ACC #	SAMPLE DESCRIPTION	DATE	TIME	COMP	GRAB	# OF CONT	ANALYSES REQUESTED
	ATS-842 So.1 East End Tank #51	7/28/93	13:45		X	1	PNAH (8100) BTEX (8020) TPH (418.1)
	ATS-843 So.1 West End Tank #51	7/28/93	13:50		X	1	PNAH (8100) BTEX (8020) TPH (418.1)
	ATS-844 So.1 West End Bottom Tank #12	7/28/93	15:00		X	1	~~PNAH (8100) BTEX (8020) TPH (418.1)~~ BTEX, TPH, PH Flashpoint, Reactivity TCLP Metals (Cu, Ni) PCB's

Relinquished by: (Signature)	Date/Time	Received by: (Signature)	Received for Laboratory by: (Signature)	Date/Time
Barney Brown	7/29/93 16:00			
Relinquished by: (Signature)	Date/Time	Received by: (Signature)	Remarks	
	7/29/93 14:50			
Relinquished by: (Signature)	Date/Time	Received by: (Signature)		
Relinquished by: (Signature)	Date/Time	Received by: (Signature)		

NAME

ATS-850

RAVENNA ARSENAL

COLLECTION DATE: 08/23/93

COLLECTION TIME: 00:00

ACCESSION NO. 93-621819

RECEIVED: 08/23/93

REPORTED: 09/13/93

TEST	RESULT NORMAL	RESULT ABNORMAL	REFERENCE OR THERAPEUTIC RANGE		UNITS
TCLP EXTRACTION PROC	FINAL PH=12.04				
ZERO HEADSPACE EXTRT					
TCLP METALS & BIAS %					
ARSENIC	<0.2		0.0	5.0	MG/L
Spike recovery	110				%
BARIUM	0.7		0.0	100.0	MG/L
Spike recovery	94				%
CADMIUM	<0.03		0.0	1.0	MG/L
Spike recovery	105				%
CHROMIUM	<0.3		0.0	5.0	MG/L
Spike recovery	126				%
SELENIUM	<0.02		0.0	1.0	MG/L
Spike recovery	89				%
MERCURY	<0.0002		0.0	0.2	MG/L
Spike recovery	94				%
LEAD	<0.2		0.0	5.0	MG/L
Spike recovery	105				%
SILVER	<0.05		0.0	5.0	MG/L
Spike recovery	98				%
TCLP SUPPL.METALS					
NICKEL	0.25				MG/L
Spike recovery	105				%
COPPER	<0.08				MG/L
Spike recovery	111				%
TCLP VOA'S & BIAS %					
METHOD NUMBER	8240				
VINYL CHLORIDE	<0.10		0.0	0.2	MG/L
Spike recovery	64				%
1,1-DICHLOROETHYLENE	<0.10		0.0	0.7	MG/L
Spike recovery	82				%
METHYL ETHYL KETONE	<1.0		0.0	200	MG/L
Spike recovery	108				%
CHLOROFORM	<0.10		0.0	6.0	MG/L
Spike recovery	74				%
CARBON TETRACHLORIDE	<0.10		0.0	0.5	MG/L
Spike recovery	76				%
BENZENE	<0.10		0.0	0.5	MG/L
Spike recovery	76				%

DEYOR Laboratories
AUTUMN INDUSTRIES
518 PERKINS-JONES ROAD
WARREN OH 44483

NAME: ATS-850 [redacted]

SPECIMEN I.D. NUMBER: 93621819

ACCESSION NO.: 93621819

COLLECTION DATE: 08/23/93

COLLECTION TIME: 00:00

RECEIVED: 08/23/93

CLIENT ID NUMBER / LOCATION: 1819 00000

REPORTED: 09/13/93

RAVENNA ARSENAL

TEST	RESULT NORMAL	RESULT ABNORMAL	REFERENCE OR THERAPEUTIC RANGE		UNITS
1,2-DICHLOROETHANE	<0.10		0.0	0.5	MG/L
Spike recovery	78				%
TRICHLOROETHYLENE	<0.10		0.0	0.5	MG/L
Spike recovery	100				%
TETRACHLOROETHYLENE	<0.10		0.0	0.7	MG/L
Spike recovery	73				%
CHLOROBENZENE	<0.10		0.0	100.0	MG/L
Spike recovery	74				%
1,4-DICHLOROBENZENE	<0.10		0.0	7.5	MG/L
Spike recovery	61				%
TCLP BNA'S & BIAS %					
METHOD NUMBER	8270				
PYRIDINE	<0.10		0.0	5.0	MG/L
Spike recovery	66				%
o-CRESOL	<0.10		0.0	200	MG/L
Spike recovery	71				%
m-CRESOL	<0.10		0	200	MG/L
Spike recovery	62				%
p-CRESOL	<0.10		0.0	200	MG/L
Spike recovery	62				%
2,4-DINITROTOLUENE	<0.10		0.0	0.13	MG/L
Spike recovery	67				%
HEXACHLOROBUTADIENE	<0.10		0.0	0.50	MG/L
Spike recovery	67				%
HEXACHLOROETHANE	<0.10		0.0	3.0	MG/L
Spike recovery	65				%
NITROBENZENE	<0.10		0.0	2.0	MG/L
Spike recovery	79				%
PENTACHLOROPHENOL	<0.10		0.0	100.	MG/L
Spike recovery	50				%
2,4,5-TRICHLOROPHEN	<0.10		0.0	400.	MG/L
Spike recovery	74				%
2,4,6-TRICHLOROPHEN	<0.10		0.0	2.0	MG/L
Spike recovery	74				%
HEXACHLOROBENZENE	<0.10		0.0	0.13	MG/L
Spike recovery	118				%
REACTIVITY SCREEN	REACTIVE	CYANIDE	<2.0 PPM		
	REACTIVE	SULFIDE	<2.0 PPM		

DEYOR Laboratories
AUTUMN INDUSTRIES
518 PERKINS-JONES ROAD
WARREN OH 44483

NAME

ATS-850

[redacted]

RAVENNA ARSENAL

SPECIMEN ID NUMBER
93621819

ACCESSION NO.
93 621819

COLLECTION DATE
08/23/93

COLLECTION TIME
00100

CLIENT ID NUMBER LOCATION
[redacted]

RECEIVED
08/23/93

REPORTED
09/13/93

TEST	RESULT NORMAL	RESULT ABNORMAL	REFERENCE OR THERAPEUTIC RANGE	UNITS
	ASTM D5049 METHOD D7D4978 METHOD B			
CORROSIVITY SCREEN	SAMPLE IS NONCORROSIVE; PH = 10.91			
	ASTM D4980 METHOD B/USEPA 9040			
IGNITABILITY TEST	SAMPLE HEATED TO 160F WITHOUT FLASH OR IGNITION.			
	ASTM D4982 METHOD B/ASTM D93			
TOT.PETRO.HYDROCARB.	269500			PPM
	ANALYSIS PERFORMED USING USEPA METHODS 9071/418.1			
B-E-T-X				
METHOD NUMBER	8240			
QUANTITATION LIMIT	0.28			PPM
BENZENE	0.70			PPM
TOLUENE	4.06			PPM
ETHYLBENZENE	2.38			PPM
XYLENE	16.5			PPM
LABORATORY ANALYST	LORI VERBKA B.S.			
	A.I.H.A. ACCREDITED LABORATORY (# 365).			
TCLP REVIEW	.			
	.			
	.			
	TCLP PREPARATION FOLLOWS METHOD 1311 SW-846			
	AS REVISED NOVEMBER 24,1992 (57FR55114)			
	REVIEWED BY ALBERT F. VICINIE III,LAB SUPERVISOR			

DEYOR Laboratories
AUTUMN INDUSTRIES
518 PERKINS-JONES ROAD
WARREN OH 4448

Chain of Custody Record

DEYOR Laboratories

DeYor Laboratories, Inc. (216) 758-5788
7855 Market Street, Suite 2500
Youngstown, Ohio 44512

REFERRING CLIENT
UTUMN INDUSTRIES
518 PERKINS-JONES ROAD
ARREN OH 44483
1416 216 372-5002

ILLING CONTROL NUMBER (FOR LAB USE ONLY)

PROJECT # 30604

P.O.# 2842

SAMPLERS (Signature) (for Mike Maraczi)

PROJECT NAME Ravenna Arsenal Inc

FOR LAB USE ONLY ACC #	SAMPLE DESCRIPTION	DATE	TIME	COMP	GRAB	# OF CONT.	ANALYSES REQUESTED
	ATS-850 Sludge Material	8/30/93	15:00		X	1	Additional Material for sample # 621819 TCLP Volatiles, TCLP Semi-Vol. RCI

Relinquished by: (Signature)	Date/Time	Received by: (Signature)	Received for Laboratory by: (Signature) / Date/Time
Relinquished by: (Signature)	Date/Time	Received by: (Signature)	Remarks
Relinquished by: (Signature)	Date/Time	Received by: (Signature)	
Relinquished by: (Signature)	Date/Time	Received by: (Signature)	

Chain of Custod Record

REFERRING CLIENT
AUTUMN INDUSTRIES
518 PERKINS-JONES ROAD
ARREN OH 44483

1416 216 372 5002

ILLING CONTROL NUMBER (FOR LAB USE ONLY)

DeYOR Laboratories

DeYor Laboratories, Inc. (216) 758-5788
7655 Market Street, Suite 2500
Youngstown, Ohio 44512

PROJECT # 30604

P.O.# 2842

SAMPLERS (Signature) Mike Maraq;

PROJECT NAME Ravenna Arsenal

FOR LAB USE ONLY ACC #	SAMPLE DESCRIPTION	DATE	TIME	COMP	GRAB	# OF CONT.	ANALYSES REQUESTED
	ATS-850	8/23/93	3:00p		X	1	TCLP Metals + (Cu + Ni ...) TPH, BTEX

Relinquished by: (Signature)	Date/Time		Received by: (Signature)
Mike Maraq;	8/23/93	5:00	Marie Longhi
Marie Longhi	8/23	4:40 pm	Bob Mat...

Received for Laboratory by: (Signature)

Date/Time

Remarks

[redacted]

TEST	RESULT NORMAL	RESULT ABNORMAL	REFERENCE OR THERAPEUTIC RANGE	UNITS
TOT.PETRO.HYDROCARB	74			PPM
	ANALYSIS PERFORMED USING USEPA METHODS 9071/418.1			
POLYAROMATIC HYDROCA				
METHOD NUMBER	8100			
QUANTITATION LIMIT	0.33			PPM
ACENAPTHENE	ND			
ACENAPTHYLENE	ND			
ANTHRACENE	ND			
BENZO(A)ANTHRACENE	ND			
BENZO(A)PYRENE	ND			
BENZO(B)FLUORANTHENE	ND			
BENZO(GHI)PERYLENE	ND			
BENZO(K)FLUORANTHENE	ND			
CHRYSENE	ND			
FLUORANTHENE	ND			
FLUORENE	ND			
NAPTHALENE	ND			
PHENANTHRENE	ND			
PYRENE	ND			
INDENO(1,2,3-CD)PYR	ND			
DIBENZ(A,H)ANTHRACEN	ND			

Tank #51
AT5-857
East End Bottom

AUTUMN INDUSTRIES
518 PERKINS-JONES ROAD

NAME

RAVENNA ARSENAL

RECEIVED 8/30/93

REPORTED 09/15/93

TEST	RESULT NORMAL	RESULT ABNORMAL	REFERENCE OR THERAPEUTIC RANGE	UNITS
TOT.PETRO.HYDROCARB.	16			PPM
	ANALYSIS		PERFORMED USING USEPA METHODS 9071/418.1	
B-E-T-X				
METHOD NUMBER	8020			
QUANTITATION LIMIT	0.002			PPM
BENZENE	ND			
TOLUENE	ND			
ETHYLBENZENE	ND			
XYLENE	ND			
LABORATORY ANALYST	ELECTRO-ANALYTICAL			
	A.I.H.A.		ACCREDITED LABORATORY (# 365).	
POLYAROMATIC HYDROCA				
METHOD NUMBER	8100			
QUANTITATION LIMIT	0.33			PPM
ACENAPTHENE	ND			
ACENAPTHYLENE	ND			
ANTHRACENE	ND			
BENZO(A)ANTHRACENE	ND			
BENZO(A)PYRENE	ND			
BENZO(B)FLUORANTHENE	ND			
BENZO(GHI)PERYLENE	ND			
BENZO(K)FLUORANTHENE	ND			
CHRYSENE	ND			
FLUORANTHENE	ND			
FLUORENE	ND			
NAPTHALENE	ND			
PHENANTHRENE	ND			
PYRENE	ND			
INDENO(1,2,3-CD)PYR	ND			
DIBENZ(A,H)ANTHRACEN	ND			

DEYOR Laboratories

AUTUMN INDUSTRIES
518 PERKINS-JONES ROAD
WARREN OH 44483

Chain of Custody Record

REFERRING CLIENT
AUTUMN INDUSTRIES
518 PERKINS-JONES ROAD
WARREN OH 44483

1416 216 372 5002

DeYor Laboratories
DeYor Laboratories, Inc. (216) 755-3788
7655 Market Street, Suite 2500
Youngstown, Ohio 44512

BILLING CONTROL NUMBER (FOR LAB USE ONLY)

PROJECT # 30604

P.O.# 2858

SAMPLERS (Signature)

PROJECT NAME Revenue Arsenal

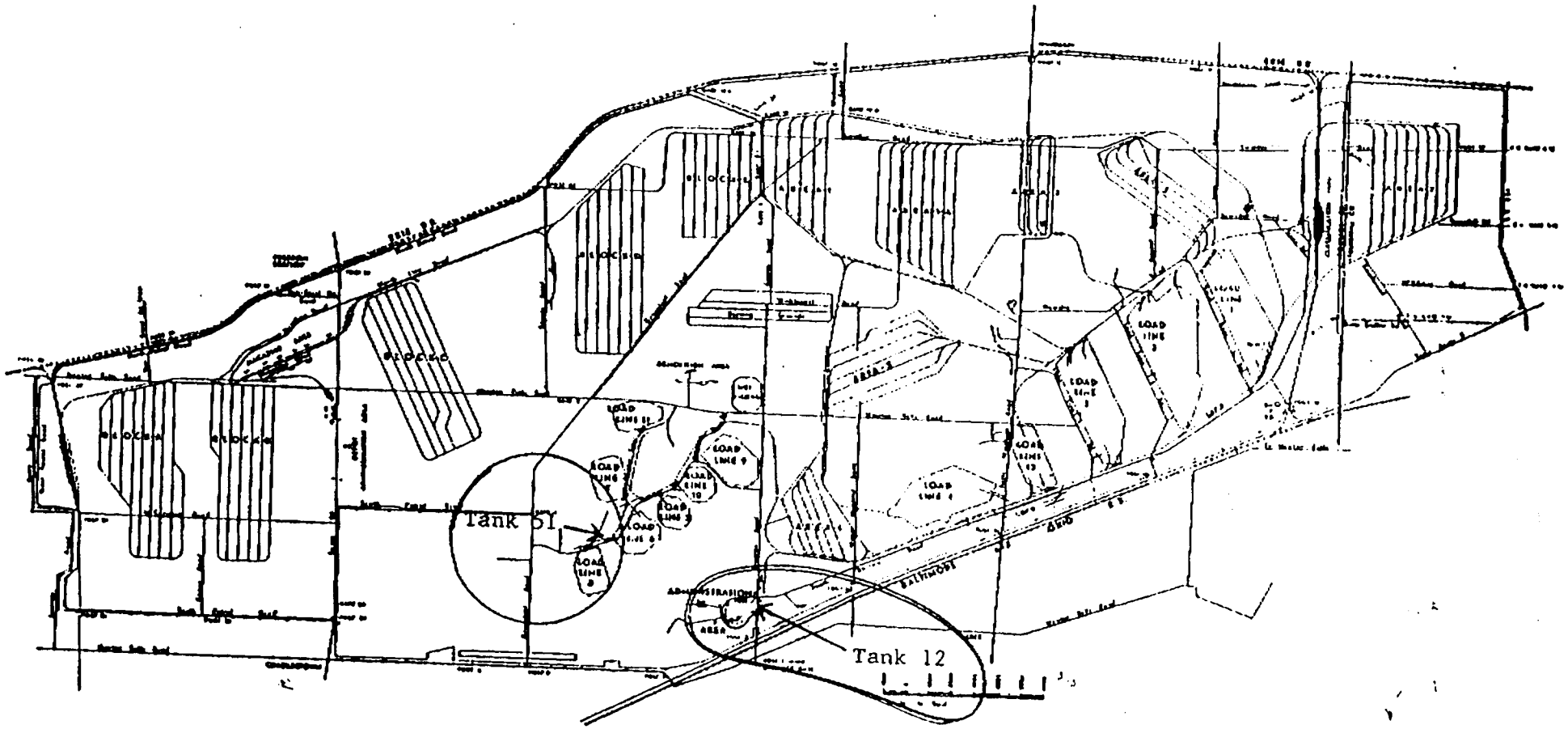
FOR LAB USE ONLY ACC #	SAMPLE DESCRIPTION	DATE	TIME	COMP	GRAB	# OF CONT.	ANALYSES REQUESTED
	ATS-856 So.1 Tank #66 N.E. Corner	8/27/93	9:45		X	1	TPH (418.1)
	ATS-857 So.1 Tank #51 N End Bottom Valve	8/27/93	14:06		X	1	TPH (418.1) PNAH'S (8100)
	ATS-858 So.1 Tank #12 East End Bottom	8/27/93	12:30		X	1	TPH (418.1) BTEX (8020) PNAH (8100)

Relinquished by: (Signature)	Date/Time	Received by: (Signature)	Received for Laboratory by: (Signature)	Date/Time
	8/28/93 800			
Relinquished by: (Signature)	Date/Time	Received by: (Signature)	Remarks	
	8/30/93 1625			
Relinquished by: (Signature)	Date/Time	Received by: (Signature)		
Relinquished by: (Signature)	Date/Time	Received by: (Signature)		

EXHIBIT B

SAMPLE LOCATION DIAGRAM

RVAAP REGISTERED UST LOCATIONS



RAVENNA ARMY AMMUNITION PLANT

GENERAL AREA MAP

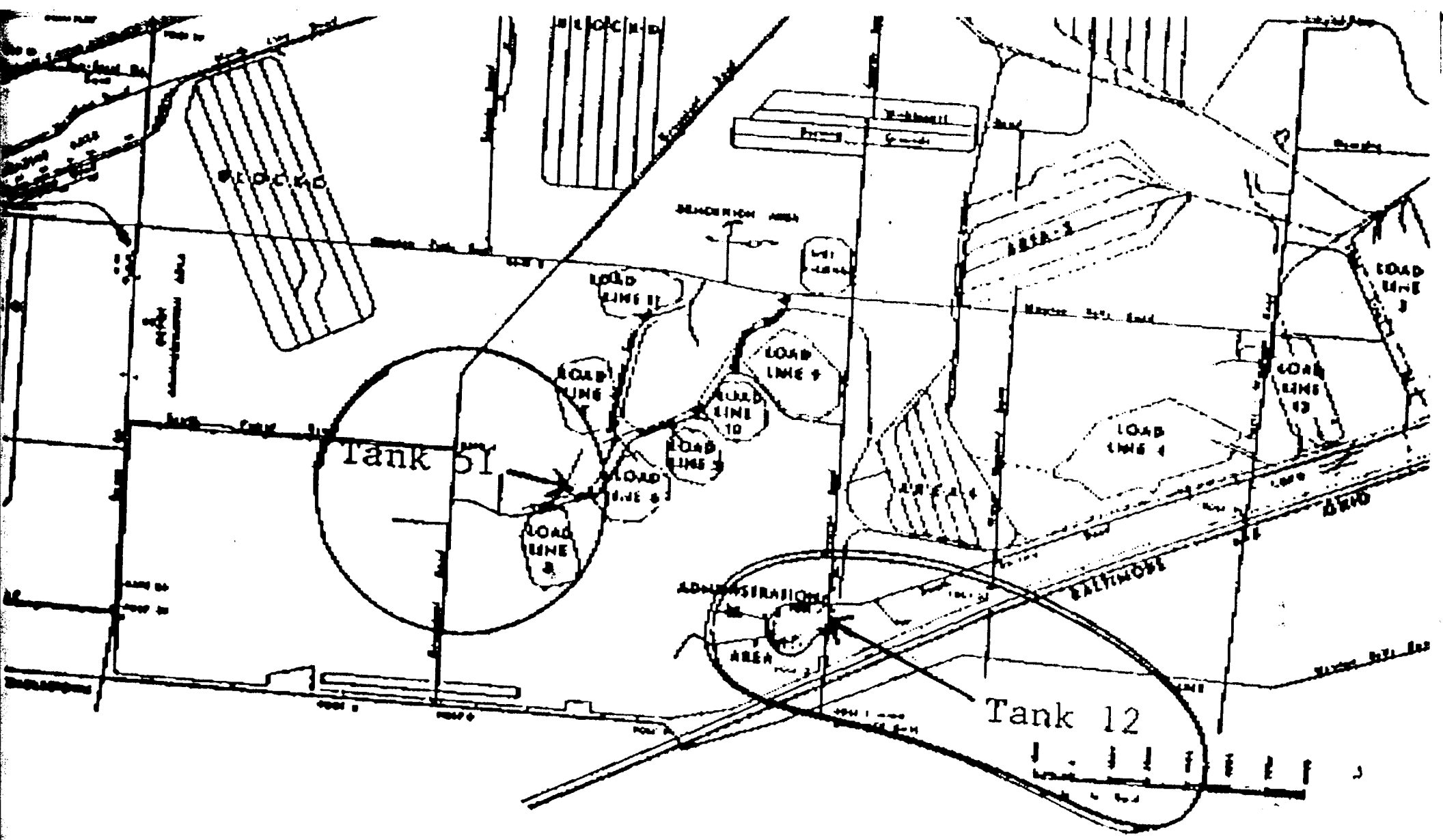

Tank 51
Tank 12
LOAD LINE 1
LOAD LINE 2
LOAD LINE 3
LOAD LINE 4
LOAD LINE 5
LOAD LINE 6
LOAD LINE 7
LOAD LINE 8
LOAD LINE 9
LOAD LINE 10
LOAD LINE 11
LOAD LINE 12
LOAD LINE 13
AREA 1
AREA 2
AREA 3
AREA 4
ADMINISTRATION
BALTIMORE
N

EXHIBIT C

30-DAY NOTIFICATION

TANK REMOVAL PERMIT

Olin ORDNANCE

RAVENNA ARSENAL, INC.
8451 STATE ROUTE 5, RAVENNA, OHIO 44266-9297
TELEPHONE: (216) 358-7111 • FAX: (216) 297-3216

March 3, 1993

THRU: Contracting Officer's Representative
Ravenna Army Ammunition Plant
8451 State Route 5
Ravenna, Ohio 44266-9297

TO: State Fire Marshall - BUSTR
Permit Application Section
ATTN: Bev Spears
Post Office Box 687
Reynoldsburg, Ohio 43068-0687

Subject: Permit Application to Remove Two Underground Storage Tanks

Dear Ms. Spears:

Attached is a permit application and fee for the removal of two registered underground storage tanks at Ravenna Army Ammunition Plant. The tanks to be removed are as follows:

One 4' x 10'8" 1,000 gallon steel tank used for storing #2 Fuel Oil (PH#6 Generator)

One 4' x 6' 550 gallon steel tank used for storing #2 Fuel Oil (WW#4 Generator)

Once removed, the tanks will be rendered unreusable, cleaned, marked as scrap and sold as scrap by the tank removal contractor.

Please contact Susan McCauslin, Ravenna Arsenal, Inc., Environmental Engineer, at (216) 297-3220 if you have any questions or need further information. The Government point of contact is Robert J. Kasper, Commander's Representative, (216) 297-3124.

Sincerely,

H.R. Cooper
Plant Engineer

:bp/UST.SM

c: N. Wulff T. Chanda File

9

STATE OF OHIO
DEPARTMENT OF COMMERCE – DIVISION OF STATE FIRE MARSHAL
BUREAU OF UNDERGROUND STORAGE TANK REGULATIONS
8895 EAST MAIN STREET, P.O. BOX 687
REYNOLDSBURG, OHIO 43068-0687
APPLICATION FOR UNDERGROUND STORAGE TANK PERMIT

I. OWNERSHIP OF TANKS	OWNER NO:	II. LOCATION OF TANKS	FACILITY NO.
OWNER/OPERATOR NAME: U. S. Army		FACILITY NAME: Ravenna Army Ammunition Plant	
ADDRESS: 8451 State Route 5		ADDRESS: 8451 State Route 5	
CITY: Ravenna	STATE: OH ZIP CODE: 44266	CITY: Ravenna	STATE: OH ZIP CODE: 44266
ATTN: (CONTACT PERSON): Robert J. Kasper	AREA CODE-PHONE: (216) 297-3124	AREA CODE-PHONE: (216) 297-3124	COUNTY: Portage
III. CONTRACTOR		IV. LOCAL FIRE DEPARTMENT	
CONTRACTOR'S NAME: Ravenna Arsenal, Inc.		FIRE DEPARTMENT NAME: Ravenna Arsenal, Inc.	
CONTACT PERSON: Susan McCauslin	AREA CODE-PHONE: (216) 297-3220	ADDRESS: 8451 State Route 5	
ADDRESS: 8451 State Route 5		CITY: Ravenna	STATE: OH ZIP CODE: 44266
CITY: Ravenna	STATE: OH ZIP CODE: 44266	30-DAY NOTIFICATION LETTER SENT FOR REMOVAL OF TANK TO BUSTR DATE: March 3, 1993	

V. FEE CALCULATION (NOTE: PERMIT EXPIRES SIX (6) MONTHS FROM DATE OF ISSUE. FEE IS NON-REFUNDABLE)

TANK INSTALLATION (INCLUDES PIPING)	NO. OF TANKS	X $75.00 PER TANK	=	
TANK (REMOVAL) OR ABANDONMENT (CIRCLE ONE) (THESE INCLUDE PIPING)	2 NO. OF TANKS	X $100.00 PER TANK	=	$200.00
TANK UPGRADE	NO. OF TANKS	X $75.00 PER TANK	=	
TANK REPLACEMENT	NO. OF TANKS	X $175.00 PER TANK	=	
TANK REPAIR	NO. OF TANKS	X $50.00 PER TANK	=	
PIPING INSTALLATION ONLY		X $25.00 PER FACILITY	=	
PIPING REMOVAL ONLY OR ABANDONMENT ONLY (CIRCLE ONE)		X $100.00 PER FACILITY	=	
PIPING UPGRADE OR REPAIR (CIRCLE ONE)		X $25.00 PER FACILITY	=	
PIPING REPLACEMENT		X $100.00 PER FACILITY	=	
LEAK DETECTION UPGRADE		X $25.00 PER FACILITY	=	
CHANGE IN SERVICE OR TEMPORARY CLOSURE (CIRCLE ONE)		X $100.00 PER SYSTEM	=	
			TOTAL FEE:	$200.00

SIGNATURE OF APPLICANT: [signature] DATE: 9 May 93

BUREAU USE ONLY

AMOUNT PAID: _____ CHECK NO: _____ FEE NO: _____

SUPERVISOR/INSPECTOR: _____ PERMIT NO: _____ DATE ISSUED: _____

COM 5209 (10/92)

INCIDENT NUMBER: _____ (BUREAU USE ONLY)

STATE OF OHIO
DEPARTMENT OF COMMERCE – DIVISION OF STATE FIRE MARSHAL
BUREAU OF UNDERGROUND STORAGE TANK REGULATIONS
8895 EAST MAIN STREET, P.O. BOX 687
REYNOLDSBURG, OH 43068-0687

PERMIT FOR UNDERGROUND STORAGE TANKS

PERMIT NO.: 8476
ISSUE DATE: 3/30/93

I. OWNERSHIP OF TANKS	II. LOCATION OF TANKS
OWNER NO. 11595 U.S. ARMY 8451 STRT 5 RAVENNA, OH 44266 ROBERT J. KASPER 216-297-3124	INCIDENT NO. 679298-01 FACILITY NO. 670501 RAVENNA ARMY AMMUNITION PLANT 8451 ST RT 5 PORTAGE COUNTY RAVENNA, OH 44266
III. CONTRACTOR	**IV. LOCAL FIRE DEPARTMENT**
RAVENNA ARSENAL, INC. SUSAN McCAUSLIN 216-297-3220 8451 ST RT 5 RAVENNA, OH 44266	RAVENNA ARSENAL, INC. 8451 ST RT 5 RAVENNA, OH 44266

V. PERMIT ISSUED FOR:
REMOVAL OF (2) UST(S)

VI. CONDITIONS (NOTE: PERMIT EXPIRES SIX (6) MONTHS FROM DATE OF ISSUE. FEE IS NON-REFUNDABLE)

1. Inspector will ask to see UST installer's proof of certification. Inspector must be present for the following:
   A. Immediately before purging operations begin, immediately before the tank is cut open for any purpose and the actual removal of the UST system from the ground.

2. Certified installer must be on-site for the following:
   A. The cleaning and purging of the UST system;
   B. The actual excavation and removal of the UST system or any of its components;
   C. All testing associated with the cleaning and purging processes;
   D. Any time during the removal in which components of the UST system are disconnected or capped.

DEPARTMENT OF COMMERCE
DIVISION OF STATE FIRE MARSHAL

BUREAU USE ONLY

CERTIFIED INSTALLER: Mike Maraczy — ID NO.: 10-90-1300
INSPECTOR'S SIGNATURE: William A Hamm — DATE: 7-28-93

EXHIBIT D

LETTER -
GRANTING PERMISSION TO OVEREXCAVATE

Ohio Department of Commerce George V. Voinovich, Governor

Division of State Fire Marshal • Bureau of Underground Storage Tank Regulations Nancy Chiles Dix, Director
8895 E. Main St., P.O. Box 687 • Reynoldsburg, OH 43068-0687
(614) 752-7938 • FAX (614) 752-7942

SEP 0 9 1993

H.R. Cooper
Engineering Manager
Ravenna Arsenal, Inc.
8451 State Route 5
Ravenna, Ohio 44266-9297

RE: Ravenna Army Ammunition Plant
1,000 gallon diesel UST;
Eastside of power plant #6
8451 State Route 5
Ravenna, Ohio 44266-9297
Portage County
Incident #679298-14

Dear Mr. Cooper:

The State Fire Marshal, Bureau of Underground Storage Tank Regulations (SFM, BUSTR) has received your letter dated July 30, 1993 requesting approval to over excavate your underground storage tank (UST) cavity to no more than five (5) feet beyond the tank cavity sidewalls and to no more than two (2) feet below the tank cavity bottom. Your justification for this request was based on test pits that were dug around the UST cavity. You stated that soils in the test pits were visually examined and were field screened with a PID field screening instrument in which both methods showed no evidence of fuel contamination.

Based on this information, SFM, BUSTR grants approval of overexcavation of the UST cavity.

If you have any questions regarding this matter, please contact Kelly Gill at (614) 752-7095.

Sincerely,

Andrew E. Lyles

Andrew E. Lyles
Bureau Chief

AEL:KG:kkm

cc: File #679298-14
Susan McCauslin, Ravenna Arsenal, Inc.

EXHIBIT E

SITE FEATURE SCORING SYSTEM

SITE FEATURE SCORING SYSTEM

Both Tank #12 and Tank #51 are over 1,000' away from the nearest potable water supply.

The depth of groundwater is assumed to be between fifteen and thirty feet.

The predominant soil type evident in both tank cavities was a natural silt and/or clayey sand substratum.

The following distinctives are associated with Tank #12:

1) There is a basement or a subsurface foundation with 100' of the underground storage tank system.

2) There is a storm sewer with 50' of the underground storage system.

3) There is a buried electrical cable main within 50' of the underground storage tank system.

The following distinctions are associated with Tank #51:

1) There is a storm sewer within 50' of the underground storage tank system.

2) There is a sanitary sewer within 50' of the underground storage tank system.

3) There is a water line main within 50' of the underground storage tank system.

SFM SITE FEATURE SCORING SYSTEM (SFSS) CHART

(USE "SFSS GUIDELINES" TO COMPLETE THIS CHART)

I. OWNERSHIP OF TANKS	II. LOCATION OF TANKS
OWNER NO. 11595 U.S. ARMY 8451 STRT 5 RAVENNA, OH 44266 ROBERT J. KASPER 216-297-3124	INCIDENT NO. 679298-01 FACILITY NO. 670501 RAVENNA ARMY AMMUNITION PLANT 8451 ST RT 5 PORTAGE COUNTY RAVENNA, OH 44266 TANK NO. 12

Site Features	COLUMN A		COLUMN B		COLUMN C		COLUMN D	
	Score 20	Enter Score	Score 15	Enter Score	Score 10	Enter Score	Score 5	Enter Score
1. Distance of UST system from closest potable-water supply source currently in use is:	> 1000 ft.	20	300-1000 ft		< 300 ft.		Inside of designated sensitive area	
2. Depth to groundwater is:	> 50 ft.		31-50 ft.		15-30 ft. or unknown	10	< 15 ft.	
3. Predominant soil type of substratum is:	Clay or shale		Silt or clayey sands or fine sandstone	15	Silty sand or fine sand, unknown, or sandstone		Clean sand, gravel, or conglomerate	
4. Natural and/or man-made conduits or receptors - See Worksheet Below	< 8		8-10	15	11-13		> 13	
Subtotals:								
							TOTAL SCORE (SUBTOTALS)	60

SITE FEATURE 4 WORKSHEET:

Basements or subsurface foundations within 100 feet of UST system	4 points	4
Storm sewer within 50 feet of UST system	4 points	4
Sanitary sewer within 50 feet of UST system	4 points	0
Septic system leach field within 50 feet of UST system	2 points	0
Water line main within 50 feet of UST system	1 point	0
Natural Gas line main within 50 feet of UST system	1 point	0
Bedrock area prone to dissolution along joints of fractures within 100 feet of UST system	1 point	0
Faults or known fractures within 100 feet of UST system	1 point	0
Buried telephone/television cable main within 50 feet of UST system	1 point	0
Buried electrical cable main within 50 feet of UST system	1 point	1
	TOTAL POINTS	9

SSFS ACTION LEVELS (PPM)

CONSTITUENT	CATEGORY 1	CATEGORY 2	CATEGORY 3	CATEGORY 4
TOTAL SCORE	< 31	31-50	51-70	> 71
Soil BTEX	.006/4/6/28	.170/7/10/47	.335/9/14/67	.500/12/18/85
Groundwater BTEX	.005/1/.700/10	.005/1/.700/10	.005/1/700/10	.005/1/.700/10
Soil TPH (Gasoline)	105	300	450	600
Soil TPH (Others)	380	642	904	1156

SFM SITE FEATURE SCORING SYSTEM (SFSS) CHART

(USE "SFSS GUIDELINES" TO COMPLETE THIS CHART)

I. OWNERSHIP OF TANKS	II. LOCATION OF TANKS
OWNER NO. 11595 U. S. ARMY 8451 STRT 5 RAVENNA, OH 44266 ROBERT J. KASPER 216-297-3124	INCIDENT NO. 679298-01 FACILITY NO. 670501 RAVENNA ARMY AMMUNITION PLANT 8451 ST RT 5 PORTAGE COUNTY RAVENNA, OH 44266 TANK NO. 51

Site Features	COLUMN A		COLUMN B		COLUMN C		COLUMN D	
	Score 20	Enter Score	Score 15	Enter Score	Score 10	Enter Score	Score 5	Enter Score
1. Distance of UST system from closest potable-water supply source currently in use is:	> 1000 ft.	20	300-1000 ft		< 300 ft.		Inside of designated sensitive area	
2. Depth to groundwater is:	> 50 ft.		31-50 ft.		15-30 ft. or unknown	10	< 15 ft.	
3. Predominant soil type of substratum is:	Clay or shale		Silt or clayey sands or fine sandstone	15	Silty sand or fine sand, unknown, or sandstone		Clean sand, gravel, or conglomerate	
4. Natural and/or man-made conduits or receptors - See Worksheet Below	< 8		8-10	15	11-13		> 13	
Subtotals:								
							TOTAL SCORE (SUBTOTALS)	60

SITE FEATURE 4 WORKSHEET:

Basements or subsurface foundations within 100 feet of UST system	4 points	0
Storm sewer within 50 feet of UST system	4 points	4
Sanitary sewer within 50 feet of UST system	4 points	4
Septic system leach field within 50 feet of UST system	2 points	0
Water line main within 50 feet of UST system	1 point	1
Natural Gas line main within 50 feet of UST system	1 point	0
Bedrock area prone to dissolution along joints of fractures within 100 feet of UST system	1 point	0
Faults or known fractures within 100 feet of UST system	1 point	0
Buried telephone/television cable main within 50 feet of UST system	1 point	0
Buried electrical cable main within 50 feet of UST system	1 point	0
	TOTAL POINTS	9

SSFS ACTION LEVELS (PPM)

CONSTITUENT	CATEGORY 1	CATEGORY 2	CATEGORY 3	CATEGORY 4
TOTAL SCORE	< 31	31-50	51-70	> 71
Soil BTEX	.006/4/6/28	.170/7/10/47	.335/9/14/67	.500/12/18/85
Groundwater BTEX	.005/1/.700/10	.005/1/.700/10	.005/1/700/10	.005/1/.700/10
Soil TPH (Gasoline)	105	300	450	600
Soil TPH (Others)	380	642	904	1156

SFM SITE FEATURE SCORING SYSTEM (SFSS) CHECKLIST

(SUBMIT TO SFM AS APPENDIX OR ADDENDUM TO CLOSURE REPORT)

I. OWNERSHIP OF TANKS	II. LOCATION OF TANKS
Owner No. 11595 U.S. Army 8451 State Route 5 Ravenna, OH 44266 Robert J. Kasper (216) 297-3124	Incident No. 679298-01 Facilit No. 670501 Ravenna Army Ammunition Plant 8451 State Route 5 Portage County Ravenna, OH 44266 Tank Nos. 12 and 51

SFSS WRITTEN REPORT MUST INCLUDE THE FOLLOWING:

SFM USE	PAGE NO.	
_____	Ex E	A. The completed "SFSS Chart".
_____	Ex E	B. Written report which must include justification for site features 1 through 4 which include th e following:
		1. Distance of UST system from closest potable-water supply source currently in use within 1/4 mile.
		2. Average depth to groundwater.
		3. Predominant soil type of substratum in UST excavation.
		4. Natural and/or man-made conduits/receptors near closed UST system.
_____	6	C. Soil and/or groundwater analytical sample results in table format from closure report.

NOTE: DEFICIENT "SFSS REPORTS AND CHARTS" SUBMITTED TO OUR OFFICE WILL BE RETURNED TO THE OWNER FOR COMPLETION. SEND THE "SFSS REPORT AND CHART" TO THE ADDRESS AS INDICATED ON THE ENCLOSED COVER LETTER.

Preparer Name: Joe Stock Signature: _____ Date: 9/29/93

Owner/Operator: _____ Signature: _____ Date: _____

BUREAU USE ONLY

Reviewed By: _____ **Signature:** _____ **Date:** _____

EXHIBIT F

CLOSURE REPORT CHECKLIST FORM

DIVISION OF STATE FIRE MARSHAL–BUREAU OF UNDERGROUND STORAGE TANK REGULATIONS

CLOSURE REPORT CHECKLIST FORM

OWNERSHIP OF TANKS	LOCATION OF TANKS
Owner No. 11595 U.S. Army 8451 State Route 5 Ravenna, OH 44266 Robert J. Kasper (216) 297-3124	Incident No. 679298-01 Facility No. 670501 Ravenna Army Ammunition Plant 8451 State Route 5 Portage County Ravenna, OH 44266 Tank Nos. 12 and 51

I. FILING INSTRUCTIONS

A. In the column on the left side of the form, place either the page number or appendix designation where each item on the checklist can be found in the closure report or "N/A" (Not Applicable) for items that do not apply to your closure report. If "N/A" is indicated, you must also indicate the the page number accordingly.

B. UST owner must sign where indicated on page 2 of this form and attach it to the Closure Report. Deficient closure reports submitted to our office will be returned to the UST owner for completion. Send the closure report checklist form and the closure report to the address as indicated on the enclosed cover letter.

NOTE: UST OWNER/OPERATORS SHALL SUBMIT ONE COPY OF THE WRITTEN CLOSURE REPORT WHICH SHALL BE RECEIVED BY THE STATE FIRE MARSHAL WITHIN 45 DAYS OF RECEIPT BY THE UST OWNER/OPERATOR OF SOIL AND/OR GROUNDWATER LABORATORY ANALYSIS BUT NOT LATER THAN 90 DAYS FROM THE DATE OF COLLECTING SOIL AND/OR GROUNDWATER SAMPLES.

II. UST SYSTEM OWNER, OPERATOR, AND FACILITY DATA

1 UST Owner (name; address; zip code; county; phone no.)
1 UST Operator (name; address; zip code; county; phone no.)
1 UST Facility Location (name; address; zip code; county; phone no.)
1 UST Facility Owner (name; address; zip code; county; phone no.)

III. UST SYSTEM DATA

2 UST System(s) Age (years)
2 UST(s) Capacity (gallons)
2 UST System(s) Construction (i.e., steel, fiberglass, etc.)
2 Date UST System(s) Last Used
2 Person(s) Who Last Used UST System
2 Substance(s) Stored in UST(s) both past and present (i.e. gasoline, diesel fuel, used oil, etc.)
1 UST System Use (i.e., retail sales, residential, farm, business, etc.)
2 UST(s) System Status (Permanently Removed or Abandoned-In-Place)
8 Disposal of UST(s) System

IV. WASTE DISPOSAL DATA

8 Method of Disposal and Final Location of Excavated Soil(s) and Backfill Materials
7 Amount of Soils and Backfill Excavated (cubic yards)
8 Disposal and final Location of any liquids from UST System or UST System Excavation
7 Locations of Soil Samples taken from Excavated Soil Waste Pile(s)
Ex A Copies of Laboratory Data Sheets of Soil Samples taken from Excavated Soil(s) and Backfill Materials

V. **SAMPLING DATA**

(Groundwater sampling data only required if groundwater encountered during closure activities)

5 Soil and/or Groundwater Sample Collection Procedures
5 Type of Sample Containers and Sample Preservation Techniques Used for Soil and/or Groundwater Samples
5 Labeling Number or Designation of Soil and/or Groundwater Sample(s) Used
5 Type of Sampling Equipment Used (i.e., split spoon, shelby tube, etc.)
5 Decontamination Procedures of Sampling Equipment Used
4 Field Screening Methodology Used for each Soil and/or Groundwater Samples Obtained
4 Type of Field Screening Instrument Used
7 Listing of Field Screening Readings for each Soil and/or Groundwater Sample Obtained
4 Calibration Methodology Used for Field Screening Instrument
7 Locations and Depths of all Soil and/or Groundwater Samples Obtained
Ex A Copy of Chain of Custody Documentation for Soil and/or Groundwater Samples submitted to Laboratory
5 Sample Collector(s) Name and Company Affiliation

VI. **LABORATORY DATA**

(Groundwater laboratory data only required if groundwater encountered during closure activities)

Ex A Copies of Laboratory Sample Analysis Data Sheets for Soil and/or Groundwater Samples
7/Ex A Date Soil and/or Groundwater Samples Collected
Ex A Date Soil and/or Groundwater Samples Received by Laboratory
Ex A Date Soil and/or Groundwater Samples Analyzed by Laboratory and type of Matrix Analyzed (soil or water)
7/Ex A Name, Address, and Phone No. of Laboratory and name of Sample Analyst
7/Ex A Analytical Test Methods Used for Soil and/or Groundwater Samples
6/Ex A Detection/Quantitation Limits Used for Laboratory Test Methods
N/A Laboratory Instrument Calibration used

VII. **MISCELLANEOUS DATA**

Ex B Site Map Accurately Depicting Dimensions of Facility Property Boundaries, Above Ground Structures, adjacent street locations, and UST Systems (no. of tanks and product lines)
Ex B Mapped Locations of Known Private Wells, Public Water Wells, or Monitoring Wells on Facility
Ex B Mapped Locations of Any Utilities Exposed During UST System Excavation
5 Description of Native Soils Encountered During UST System Excavation (i.e., sands, gravels, clays, etc.)
7/Ex B Mapped Depths and Locations of all Soil and/or groundwater Samples taken from Excavation
5 Visual Site Evaluation
Ex B Mapped Locations of UST(s) Recently or Historically Removed, Abandoned-In-Place, or have undergone a Change in Service
Ex B Mapped Locations of Other UST Still in Service
Ex B Mapped Length of UST(s) and Product Line(s)
Ex B Mapped Excavation Limits
2 Certified Fire Safety Inspector Name and Certificate Number
1 Local Fire Department (name; address; zip code; county; phone) with jurisdiction over UST site
Ex C Copy of 30 Day Closure Notification and Closure Permit

UST(s) Owner Signature:_____ Date:_____

DIVISION USE ONLY

Reviewed By:_____ Date:_____

closure2

RAVENNA ARMY AMMUNITION PLANT
RAVENNA ARSENAL, INC.

INTEROFFICE MEMORANDUM

16 July 1993

TO: See Distribution

FROM: T. M. Chanda, Environmental Eng.

SUBJECT: #2 F.O. Extraction/Recovery Well at Waterworks #3; Ohio EPA Closure Approval.

This office had made arrangements for Mr. Reggie Brown, Inspector/Field Response Coordinator for Ohio EPA's Emergency Response Commission to visit the subject site on 16 July 1993. The purpose of the visit was to get OEPA's approval to abandon/fill-in the well in conjunction with the shutdown of WW#3. Mr. Brown visited the site and extracted a water sample from the well. The sample showed oily residues still present in the well. Mr. Brown indicated that this residue may be the remaining portion of oil that's unable to be picked up by the in-line sump pump; his statement was with reservation.

Mr. Brown recommends that RVAAP do the following before he gives final consideration for closure of the well:

1. Pump the well down to dryness several times. Send all collected water to the on-site oil/water separator. In this drawn down cycle make some effort to remove the oily residues adhering to the interior well casing wall to avoid any further intrusion of captive residuals.

2. To avoid any inference of oil leaking from the near-by #2 F.O. tank supplying the WW#3 emergency generator, Brown wants to be present for the unearthing of the tank to inspect the excavated pit to assure no fuel migration has occurred.

3. Following the excavation and no apparent signs of oil leak/migration, Ravenna will send to Brown's office a copy of the closure notice, applicable soil analyses, along with a request to close the well. At this point, if closure indicates clean, he'll then respond from his office with an approval to close the well.

In the event, there's evidence that the underground fuel tank has a leak and in turn contributing to the oily residue in the removal well, then the well will remain open. Efforts would also require removal of all contaminated soil. The well would continue its function until such time visible proof can demonstrate no further oil migration is apparent. The proposed plan for the well's continued operation following WW#3 shutdown would be maintained via a portable generator providing the electrical service to the well pump. Frequency of well draw down would be dictated by seasonal effect.

As of now, it's been determined that the WW#3 underground fuel tank will be removed in the afternoon on 28 July 1993. This date is when the State Fire Marshal's Office will be on site to view the tank's excavation since it's a regulated tank.

Mr. Brown's office will be formally notified of the tank's expected excavation date.

T.M. Chanda

Distribution: RVAAP COR Office
N. Wulff
H. Cooper
S. McCauslin
D. Jendrisak
J. McGee
J. Mound
File