THE COMMONWEALTH OF MASSACHUSETTS
GOVERNMENT LAND BANK
Devens Commerce Center
Devens, Massachusetts

UNDERGROUND STORAGE TANK CLOSURE REPORT

UST NO. 1676

SEPTEMBER 1996

Prepared by:
S E A CONSULTANTS INC.
Science/Engineering/Architecture
Cambridge, Massachusetts
Rocky Hill, Connecticut
Londonderry, New Hampshire
Rochester, New York

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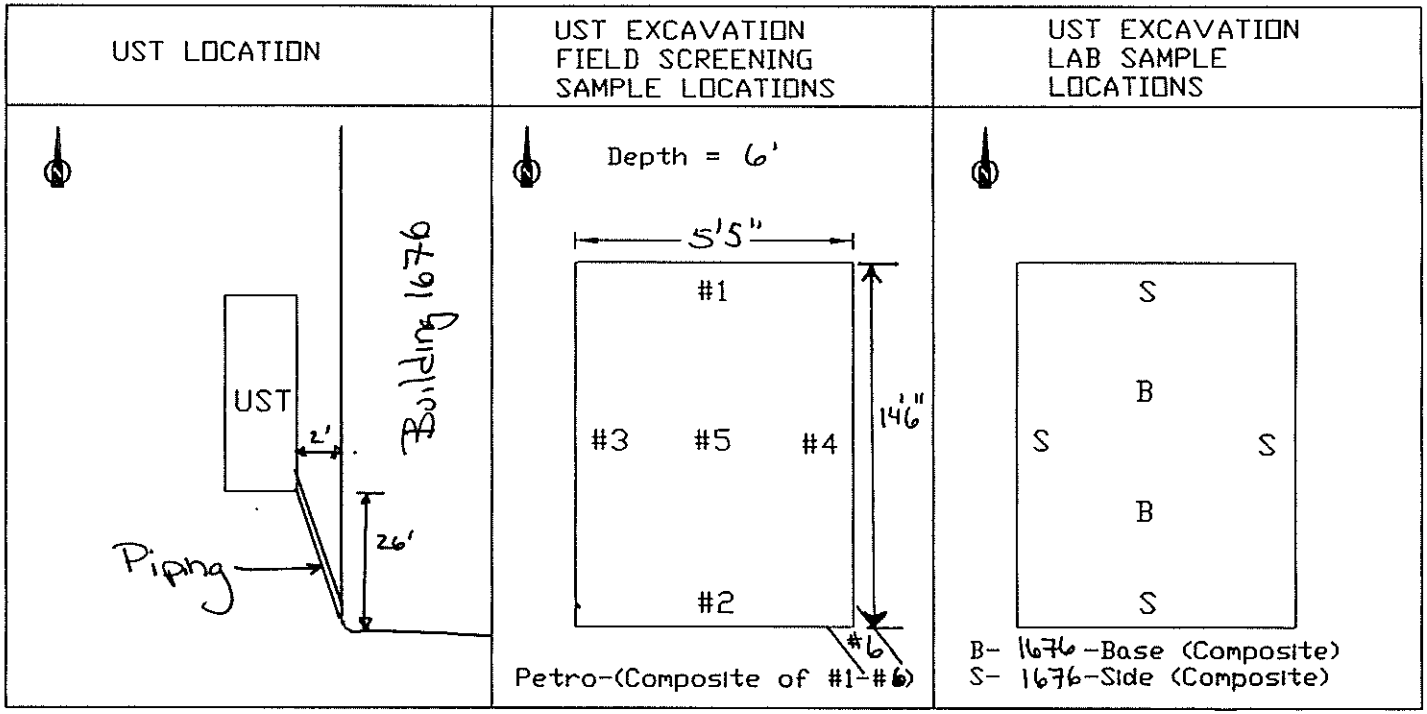
1.0 INTRODUCTION

This Underground Storage Tank (UST) Closure Report has been completed in accordance with the Commonwealth of Massachusetts Underground Storage Tank Closure Assessment Manual, dated April 9, 1996, and the Devens Commerce Center's (DCC) ***"Underground Storage Tank Closure Protocol"*** (Addendum to a DEP-approved Tier 1A permit), dated June 14, 1996. The 1,000-gallon UST was located at Building 1676, Carey Street, Devens, Massachusetts (north/east [North American Datum, 1983] coordinates 3024362/630058). The former location of this UST is shown on Figure 1.

The 1,000-gallon steel UST, storing No. 2 heating oil, was removed on May 24, 1996. Headspace and Petroflag field screening on soil adjacent to the UST and associated piping indicated minimal impact to the soils from the UST/piping. Laboratory tests within the UST excavation confirmed contaminant levels below applicable regulatory levels outlined in the Massachusetts Contingency Plan (MCP) [310 CMR 40.0000]. Following review of the laboratory data, the excavated hole was backfilled.

2.0 BACKGROUND

The UST at Building 1676 was originally installed in 1962 by the U.S. Army to store No. 2 heating oil for Building 1676. Upon the closure of Fort Devens, the UST's ownership was transferred from the U.S. Army to the DCC. As part of the DCC's goal to develop Fort Devens, a number of USTs, including this UST at Building 1676, were removed. This steel UST had a diameter of four (4) feet and a length of eleven (11) feet. The associated piping was copper tubing.



FIELD SCREENING				
SAMPLE #	DEPTH	TPH SCREEN	HEAD SPACE	LAB ANAL METHOD
#1	2-5'		0.0	
#2	↓		0.0	
#3			0.0	
#4			0.1	
#5	6'		1.8	
PETRO		55		
#6	1'		0.5	
1676 -BASE				144
1676-SIDE				101

Figure 1
UST and Sample Locations

Massachusetts Land Bank
Devens, Massachusetts

SEA Consultants, Inc.
Scientists/Engineers/Architects

\W\FTDEVENS\DEMO\USTCLEAN.DWG

3.0 UST REMOVAL

During the weeks of May 13 and 20, 1996, D&C Construction Co., Inc. of Rockland, Massachusetts, as part of its UST removal contract with the DCC, removed product from the UST with a vacuum truck. Later, soil above the UST and its associated piping were removed with an excavator and hand shovel. The UST was then tilted by the excavator to allow the remaining product to pool at the UST's bottom corner. A two-foot by two-foot access hole was then cut in the UST after it had been tested for combustible gases and oxygen. A laborer then made entry into the tank, and, using squeegee wipers, rags and a vacuum hose, cleaned out the remaining product from the tank. All product was transported off-site as hazardous waste. The manifests are in Appendix A. On May 24, 1996, the UST was removed and transported off-site. Transfer documentation (Forms FP290R and 291) is in Appendix B. A total of eleven (11) cubic yards of soil were excavated as part of the UST removal. Contaminant levels within the stockpile were later found to be below applicable regulatory thresholds.

4.0 FIELD OBSERVATIONS AND ASSESSMENT

Upon removal of the UST, it was observed to be intact with very little rust. There was no visual or olfactory evidence of impacted soil within the excavation and groundwater was not observed.

Soil was then collected for Jar Headspace measurements using a Photoionization Detector (PID), and Total Petroleum Hydrocarbons (TPH) readings were measured using a Petroflag Hydrocarbon Analyzer. PID readings ranged from 0.0 to 1.8 ppmv. A composite sample collected from the sidewalls and base of the excavation measured 55 ppm of TPH using the Petroflag Hydrocarbon Analyzer. Results and sampling locations are shown in Figure 1. Due to the low levels of these field readings, no further excavation was conducted and

samples were collected from the excavation and associated soil stockpile for laboratory analysis. The sidewalls and base of the excavation were analyzed for TPH [Method 418.1], and the associated stockpile was analyzed for TPH [Method 418.1], Polynuclear Aromatic Hydrocarbons (PAHs) [Method 8270], and Volatile Organic Compounds (VOCs) [Method 8260]. All samples were below the applicable MCP "RCS-1 Reportable Concentrations". Results and sampling locations are shown in Table 1 and Figure 1, respectively. The laboratory analytical data package is contained in Appendix C.

After receipt of the laboratory data, the stockpiled soil was backfilled into the excavation. Off-site fill was then added and compacted to bring the excavation back to grade. Compaction documentation is contained in Appendix D.

TABLE 1
SUMMARY OF LABORATORY ANALYTICAL RESULTS

SAMPLE I.D. NUMBER	ANALYTE	LABORATORY RESULT (PPM)	RCS-1* (PPM)
1676-Base	TPH	144	500
1676-Side	TPH	101	500
1676-Stock	TPH	164	500
1676-Stock	Fluorene	ND	400
1676-Stock	Phenanthrene	0.405	100
1676-Stock	Anthracene	ND	1,000
1676-Stock	Fluoranthene	0.792	600
1676-Stock	Pyrene	1.08	500
1676-Stock	Benzo(a)anthracene	0.640	0.7
1676-Stock	Chrysene	0.558	7
1676-Stock	Benzo(b)fluoranthene	0.415	0.7
1676-Stock	Benzo(k)fluoranthene	1.26	7
1676-Stock	Benzo(a)pyrene	0.487	0.7
1676-Stock	Indeno(1,2,3-cd)pyrene	ND	0.7
1676-Stock	Toluene	ND	90
1676-Stock	Ethyl Benzene	ND	80
1676-Stock	Xylenes	ND	500

*Applicable Reportable Concentration (310 CMR 40.1600).
ND = Not Detected above laboratory detection limits.

APPENDIX A

UNIFORM HAZARDOUS WASTE MANIFESTS

DEPARTMENT OF ENVIRONMENTAL PROTECTION
DIVISION OF HAZARDOUS MATERIALS
One Winter Street
Boston, Massachusetts 02108

→ Carter Fahy

se print or type. (Form designed for use on elite (12-pitch) typewriter.)

UNIFORM HAZARDOUS WASTE MANIFEST	1. Generator US EPA ID No. / Manifest Document No.	2. Page 1 of 1	Information in the shaded areas is not required by Federal law.
	NOT APPLICAB 148176		

3. Generator's Name and Mailing Address: DEVENS COMMERCE CENTER
43 BUENA VISTA ST. P-12
FORT DEVENS, MA 01433

4. Generator's Phone (508 772-6340)

A. State Manifest Document Number: MA 148176
B. State Gen. ID: 43 BUENA VISTA ST. P-12 FORT DEVENS, MA
C. State Trans. ID: 25684 MA
D. Transporter's Phone (315 471-0503)
E. State Trans. ID:
F. Transporter's Phone ( )
G. State Facility's ID: Not Required
H. Facility's Phone (508 880-6002)

5. Transporter 1 Company Name	6. US EPA ID Number
ENVIRONMENTAL PRODUCTS&SERVICES, INC	NYD980761191
7. Transporter 2 Company Name	8. US EPA ID Number

9. Designated Facility Name and Site Address	10. US EPA ID Number
OLSON'S GREENHOUSES 590 SOUTH ST. E. RAYNHAM, MA 02767	MAD059733778

11. US DOT Description (Including Proper Shipping Name, Hazard Class, and ID Number)	12. Containers No.	Type	13. Total Quantity	14. Unit Wt/Vol	Waste No.
a. FUEL OIL MIXTURE, COMBUSTIBLE LIQUID, NA1993, PGIII	001	TT	2700	G	MA98
b.					
c.					
d.					

J. Additional Descriptions for Materials Listed Above (include physical state and hazard code.)
a. #2 FUEL OIL, WATER
b.
c.
d.

K. Handling Codes for Wastes Listed Above
a. D80
b.
c.
d.

15. Special Handling Instructions and Additional Information
Job #: E0641 PO #:
Emergency #: (315)471-0503 ERG A. 27

16. GENERATOR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national government regulations.

If I am a large quantity generator, I certify that I have a program in place to reduce the volume and toxicity of waste generated to the degree I have determined to be economically practicable and that I have selected the practicable method of treatment, storage, or disposal currently available to me which minimizes the present and future threat to human health and the environment; OR, if I am a small quantity generator, I have made a good faith effort to minimize my waste generation and select the best waste management method that is available to me and that I can afford.

Printed/Typed Name	Signature	Date (Month Day Year)
RONALD J OSTROWSKI	RJOstrowski	04 16 96

17. Transporter 1 Acknowledgement of Receipt of Materials

Printed/Typed Name	Signature	Date (Month Day Year)
Philip Pilcher Jr		04 16 96

18. Transporter 2 Acknowledgement of Receipt of Materials

Printed/Typed Name	Signature	Date (Month Day Year)

19. Discrepancy Indication Space

20. Facility Owner or Operator: Certification of receipt of hazardous materials covered by this manifest except as noted in Item 19.

Printed/Typed Name	Signature	Date (Month Day Year)
Arthur S. Carvalho		04 16 96

Approved OMB No. 2050-0039, Expires 9-30-96
EPA Form 8700-22 (Rev. 9-94) Previous editions are obsolete.

COPY>3: FACILITY MAILS TO GENERATOR

MA 148176 COPY>3: FACILITY MAILS TO GENERATOR

DEPARTMENT OF ENVIRONMENTAL PROTECTION
DIVISION OF HAZARDOUS MATERIALS
One Winter Street
Boston, Massachusetts 02108

se print or type. (Form designed for use on elite (12-pitch) typewriter.)

UNIFORM HAZARDOUS WASTE MANIFEST

RC/11

1. Generator's US EPA ID No. MAD985772634 NOT APPLICABLE
Manifest Document No. 4817 8

2. Page 1 of 1 | Information in the shaded areas is not required by Federal law.

3. Generator's Name and Mailing Address
DEVENS COMMERCE CENTER
43 BUENA VISTA ST. P-12
FORT DEVENS, MA 01433

4. Generator's Phone (508) 772-6340

5. Transporter 1 Company Name: ENVIRONMENTAL PRODUCTS&SERVICES, INC
6. US EPA ID Number: NYD980761191

7. Transporter 2 Company Name:
8. US EPA ID Number:

9. Designated Facility Name and Site Address
OLSON'S GREENHOUSES
590 SOUTH ST. E.
RAYNHAM, MA 02767
10. US EPA ID Number: MAD059733278

A. State Manifest Document Number: MA J148178
B. State Gen. ID: 43 BUENA VISTA ST. P- FORT DEVENS, MA
C. State Trans. ID: 25684 MA
D. Transporter's Phone (315) 471-0503
E. State Trans. ID:
F. Transporter's Phone ( )
G. State Facility's ID: Not Required
H. Facility's Phone (508 880-6002

11. US DOT Description (Including Proper Shipping Name, Hazard Class, and ID Number)	12. Containers No.	Type	13. Total Quantity	14. Unit Wt/Vol	Waste No.
a. FUEL OIL MIXTURE, COMBUSTIBLE LIQUID, NA1993, PGIII	001	TM	2900	G	#A98
b.					
c.					
d.					

J. Additional Descriptions for Materials Listed Above (include physical state and hazard code.)
a. #2 FUEL, WATER
b.
c.
d.

K. Handling Codes for Wastes Listed Above
a. D83
b.
c.
d.

15. Special Handling Instructions and Additional Information
Job #: E0641 PO #:
Emergency #:(315)471-0503 ERG A. 27

16. GENERATOR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national government regulations.

If I am a large quantity generator, I certify that I have a program in place to reduce the volume and toxicity of waste generated to the degree I have determined to be economically practicable and that I have selected the practicable method of treatment, storage, or disposal currently available to me which minimizes the present and future threat to human health and the environment; OR, if I am a small quantity generator, I have made a good faith effort to minimize my waste generation and select the best waste management method that is available to me and that I can afford.

Printed/Typed Name: RONALD J OSTROWSKI
Signature: RJO
Date: Month 01 Day 17 Year 91

17. Transporter 1 Acknowledgement of Receipt of Materials
Printed/Typed Name: Philip Pike Jr
Signature:
Date: Month 01 Day 17 Year 91

18. Transporter 2 Acknowledgement of Receipt of Materials
Printed/Typed Name:
Signature:
Date: Month Day Year

19. Discrepancy Indication Space

20. Facility Owner or Operator: Certification of receipt of hazardous materials covered by this manifest except as noted in Item 19.
Printed/Typed Name: RONALD J. OSTROWSKI
Signature:
Date: Month 01 Day 14 Year 91

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PA Form 8700-22 (Rev. 9-94) Previous editions are obsolete.

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MA J148178 COPY>3: FACILITY MAILS TO GENERATOR

COMMONWEALTH OF MASSACHUSETTS
DEPARTMENT OF ENVIRONMENTAL PROTECTION
DIVISION OF HAZARDOUS MATERIALS
One Winter Street
Boston, Massachusetts 02108

ase print or type. (Form designed for use on elite (12-pitch) typewriter.)

UNIFORM HAZARDOUS WASTE MANIFEST

1. Generator US EPA ID No. M A D 9 8 0 7 6 1 3 4 0 Manifest Document No. 0 0 1 4 8 1 7 9 5

2. Page 1 of 1 — Information in the shaded areas is not required by Federal law.

3. Generator's Name and Mailing Address
DEVENS COMMERCE CENTER
43 BUENA VISTA ST. P-12
FORT DEVENS, MA 01433

4. Generator's Phone (508 772-6340

5. Transporter 1 Company Name: ENVIRONMENTAL PRODUCTS&SERVICES, INC
6. US EPA ID Number: N Y D 9 8 0 7 6 1 1 9

7. Transporter 2 Company Name
8. US EPA ID Number

9. Designated Facility Name and Site Address
OLSON'S GREENHOUSES
590 SOUTH ST. E.
RAYNHAM, MA 02767
10. US EPA ID Number: M A D 0 5 9 7 3 3 3 7 8

A. State Manifest Document Number: MA J148179
B. State Gen. ID: 43 BUENA VISTA ST P-12 FORT DEVENS, MA
C. State Trans. ID: 26133 MA
D. Transporter's Phone (315 471-0503
E. State Trans. ID
F. Transporter's Phone
G. State Facility's ID: Not Required
H. Facility's Phone (508 880-6002

11. US DOT Description (Including Proper Shipping Name, Hazard Class, and ID Number)	12. Containers No.	Type	13. Total Quantity	14. Unit Wt/Vol	Waste No.
a. FUEL OIL MIXTURE, COMBUSTIBLE LIQUID, NA1993, PGIII	0 0 1	T	1600 ~~800~~	G	MA98
b.					
c.					
d.					

J. Additional Descriptions for Materials Listed Above (include physical state and hazard code.)
a. #2 FUEL OIL, WATER
b.
c.
d.

K. Handling Codes for Wastes Listed Above
a.
b.

15. Special Handling Instructions and Additional Information
E0649
Job #: ~~E0641~~ PO #:
Emergency #: (315)471-0503 ERG A. 27

16. GENERATOR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national government regulations.

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Printed/Typed Name	Signature	Date (Month Day Year)
James E Armstrong		05 22 96

17. Transporter 1 Acknowledgement of Receipt of Materials

Printed/Typed Name	Signature	Date (Month Day Year)
Philip Pike Jr		05 23 96

18. Transporter 2 Acknowledgement of Receipt of Materials

Printed/Typed Name	Signature	Date (Month Day Year)

19. Discrepancy Indication Space

20. Facility Owner or Operator: Certification of receipt of hazardous materials covered by this manifest except as noted in Item 19.

Printed/Typed Name	Signature	Date (Month Day Year)
JEFFREY E RICHARDY		05 23 96

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DEPARTMENT OF ENVIRONMENTAL PROTECTION
DIVISION OF HAZARDOUS MATERIALS
One Winter Street
Boston, Massachusetts 02108

ase print or type. (Form designed for use on elite (12-pitch) typewriter.)

MA 98 772 6340

UNIFORM HAZARDOUS WASTE MANIFEST	1. Generator US EPA ID No. NOT APPLICABLE	Manifest Document No. 08180	2. Page 1 of 1	Information in the shaded areas is not required by Federal law.

3. Generator's Name and Mailing Address
DEVENS COMMERCE CENTER
43 BUENA VISTA ST. P-12
FORT DEVENS, MA 01433

4. Generator's Phone (508) 772-6340

A. State Manifest Document Number: MA JL48180
B. State Gen. ID: SAME
C. State Trans. ID: MA 25684
D. Transporter's Phone (315) 471-0503
E. State Trans. ID:
F. Transporter's Phone ( )
G. State Facility's ID: Not Required
H. Facility's Phone (508) 880-6002

5. Transporter 1 Company Name: ENVIRONMENTAL PRODUCTS&SERVICES, INC
6. US EPA ID Number: NYD980761191

7. Transporter 2 Company Name:
8. US EPA ID Number:

9. Designated Facility Name and Site Address
OLSON'S GREENHOUSES
590 SOUTH ST. E.
RAYNHAM, MA 02767
10. US EPA ID Number: MAD059733378

11. US DOT Description (including Proper Shipping Name, Hazard Class, and ID Number)	12. Containers No.	Type	13. Total Quantity	14. Unit Wt/Vol	Waste No.
a. FUEL OIL MIXTURE, COMBUSTIBLE LIQUID, NA1993, PGIII	001	TT	X11300	G	NA98
b.					
c.					
d.					

J. Additional Descriptions for Materials Listed Above (include physical state and hazard code.)
a. #2 OIL-WATER
b.
c.
d.

K. Handling Codes for Wastes Listed Above
a. D99
b.
c.
d.

15. Special Handling Instructions and Additional Information
Job #: E0649 PO #:
Emergency #: (315)471-0503 ERG A. 27

DUPLICATE COPY

16. GENERATOR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national government regulations.

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Printed/Typed Name	Signature	Date (Month Day Year)
RONALD J OSTROWSKI	RJ Ostrowski	05 24 96

TRANSPORTER

17. Transporter 1 Acknowledgement of Receipt of Materials

Printed/Typed Name	Signature	Date (Month Day Year)
MICHAEL HUMES	Michael Humes	05 24 96

18. Transporter 2 Acknowledgement of Receipt of Materials

Printed/Typed Name	Signature	Date (Month Day Year)

FACILITY

19. Discrepancy Indication Space

20. Facility Owner or Operator: Certification of receipt of hazardous materials covered by this manifest except as noted in Item 19.

Printed/Typed Name	Signature	Date (Month Day Year)

Form Approved OMB No. 2050-0039 Expires 9-30-96
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APPENDIX B

TANK MANIFESTS AND RECEIPTS

1676

The Commonwealth of Massachusetts

Department of Public Safety—Division of Fire Prevention

APPLICATION FOR PERMIT FOR REMOVAL AND TRANSPORTATION TO APPROVED TANK YARD

(Date) 19

C.82 S.40 M.G.L.

DIG SAFE NUMBER
961907225
Start Date MAY 10, 96

019596 To 54596

To: HEAD OF FIRE DEPARTMENT
Chief PAXTON TEAM
City or Town

In accordance with the provisions of Chapter 148, G.L. as provided in Section 38A Application is hereby made by Jim Morris
(Name of Person, Firm or Corporation)

248 River St Dowell MA. 02061
Address

35 total

For permission to remove and transport underground steel storage tank(s) from Area of Removal 1600 AREA
33 tanks plus 208, 209
DEVENS Commerce Center Ph Devens MA. 01433
Street address (city or town)

FDID# 17919 to approved Tank Yard# 008

State clearly type of inert gas used in steel storage tank: Co2
Type of inert gas used

Name of Person, Firm, Corporation disposing tank J.G. Grant, Pendulle MA.

Date issued - rejected _____ 19
Date of expiration _____ 19 paid/due
Fee 25.00 per (MGL C-148, S-10A)

By: James G. Morris
Signature of Applicant

Total 1875.00

The Commonwealth of Massachusetts

DEPARTMENT OF PUBLIC SAFETY—DIVISION OF FIRE PREVENTION

PERMIT

FOR REMOVAL AND TRANSPORTATION TO APPROVED TANK YARD

(Date) 19

C.82 S.40 M.G.L.

DIG SAFE NUMBER
Start Date

In accordance with the provisions of Chapter 148, G.L. as provided in Section 38A this permit is granted to

Name: _____
Full name of person, firm or Corporation

To transport underground steel storage tank(s) to Approved tank yard# _____

State clearly type of inert gas used in steel storage tank

steel tank: _____
method

FDID# 17919

Name and address of contractor disposing tank _____

Fee paid $ _____

Location to which tank will be transported

Approved tank yard# _____

This permit will expire _____ 19

Signature of official granting permit (TITLE)
(Head of Fire Dept.)

1601
1602
1603
1604
1606
1607
1608
1609
1610
1611
1652
1653
1654
1655
1656
1657
1658
1659

1660
1661
1662
1663
1665
1667
1668
1669
1670
1671
1672
1673
1674
1675
1676

208
209

RECEIPT OF DISPOSAL OF UNDERGROUND STEEL STORAGE TANK

NAME AND ADDRESS OF APPROVED TANK YARD: ~~JAMES G. GRANT CO., INC.~~ R. 28 WOLCOTT ST. READVILLE, MA 02137 #1618

APPROVED TANK YARD NO. _____

Tank Yard Ledger 502 CMR 3.03(4) Number: 96223352

I certify under penalty of law I have personally examined the underground steel storage tank delivered to this "approved tank yard" by firm, corporation or partnership Jim Morris DTC and accepted same in conformance with Massachusetts Fire Prevention Regulation 502 CMR 3.00 Provisions for Approving Underground Steel Storage Tank dismantling yards. A valid permit was issued by LOCAL Head of Fire Department FDID# 12212 to transport this tank to this yard.

Name and official title of approved tank yard owner or owners authorized representative:

Edward V. G. (SIGNATURE) Mgr. (TITLE) 5-24-96 (DATE SIGNED)

This signed receipt of disposal must be returned to the local head of the fire department FDID# 12212 pursuant to 502 CMR 3:00. (EACH TANK MUST HAVE A RECEIPT OF DISPOSAL)

FORM F.P. 291 (rev. 11/95) (OVER) MASSACHUSETTS STATE FIRE MARSHAL'S OFFICE

Tank Data

Gallons 1000

Previous Contents #2

Diameter_____Length_____

Date Received 5-24-96

Serial # (if available)_____

Tank I.D. # (Form FP-290)___

Tank Removed From:

Devens Commerce Ctr.
(No. and Street)

Ft. Devens
(City or Town)

Fire Dept. Permit #_____

Owner/Operator to mail revised copy of Notification Form(FP-290, or Fp-290R) to: UST Compliance, Office of the State Fire Marshal, 1010 Commonwealth Avenue, Boston, Ma. 02215.

APPENDIX C

LABORATORY ANALYTICAL RESULTS

Received: 05/30/96 06/10/96 12:39:20

	SAMPLE IDENTIFICATION
27	1676-STOCK
28	1676-BASE
29	1676-SIDE
30	3596-STOCK
31	3596-BASE
32	3596-SIDE
33	1468-BASE
34	1468-SIDE
35	2729-BASE

SAMPLE ID 1653-BASE SAMPLE # 25 FRACTIONS: A
Date & Time Collected 05/29/96 14:55:00 Category SOIL

TPH_IR 102
mg/kg DL=40.0

SAMPLE ID 1653-SIDE SAMPLE # 26 FRACTIONS: A
Date & Time Collected 05/29/96 14:55:00 Category SOIL

TPH_IR 51.4
mg/kg DL=40.0

SAMPLE ID 1676-STOCK SAMPLE # 27 FRACTIONS: A
Date & Time Collected 05/29/96 15:30:00 Category SOIL

TPH_IR 164
mg/kg DL=40.0

SAMPLE ID 1676-STOCK FRACTION 27A TEST CODE 8260 NAME PURGEABLE ORGANICS VOA
Date & Time Collected 05/29/96 15:30:00 Category SOIL

EPA 8260 PURGEABLE ORGANICS

	RESULT	LIMIT		RESULT	LIMIT
Chloromethane	ND	10	o-Xylene	ND	5.0
Bromomethane	ND	10	m-Xylene	ND	5.0
Vinyl Chloride	ND	2.0	p-Xylene	ND	5.0
Chloroethane	ND	10	1,2-Dichlorobenzene	ND	5.0
Methylene Chloride	ND	10	1,3-Dichlorobenzene	ND	5.0
1,1-Dichloroethene	ND	5.0	1,4-Dichlorobenzene	ND	5.0
Trichlorofluoromethane	ND	10	Naphthalene	ND	10
1,1-Dichloroethane	ND	5.0	n-Propylbenzene	ND	10
Trans-1,2-Dichloroethene	ND	5.0	Bromobenzene	ND	5.0
Chloroform	ND	5.0	Bromchloromethane	ND	5.0
1,2-Dichloroethane	ND	5.0	n-Butylbenzene	ND	10
1,1,1-Trichloroethane	ND	5.0	sec-Butylbenzene	ND	10
Carbon Tetrachloride	ND	5.0	tert-Butylbenzene	ND	10
Bromodichloromethane	ND	5.0	2-Chlorotoluene	ND	5.0
1,2-Dichloropropane	ND	5.0	4-Chlorotoluene	ND	5.0
Trichloroethene	ND	5.0	1,2-Dibromo-3-chloropropane	ND	5.0
Dibromochloromethane	ND	5.0	1,2-Dibromomethane	ND	5.0
1,1,2-Trichloroethane	ND	5.0	Dibromomethane	ND	5.0
Benzene	ND	5.0	Dichlorodifluoromethane	ND	10
1,1-Dichloropropene	ND	5.0	cis-1,2-Dichloroethene	ND	5.0
2-2-Dichlorpropane	ND	5.0	1,3-Dichloropropane	ND	5.0
Bromoform	ND	5.0	1,1,1,2-Tetrachloroethane	ND	5.0
Hexachlorobutadiene	ND	10	1,2,3-Trichlorobenzene	ND	5.0
Isopropylbenzene	ND	10	1,1,2,2-Tetrachloroethane	ND	5.0
Tetrachloroethene	ND	5.0	1,2,4-Trichlorobenzene	ND	5.0
Methyl tertiary butyl ether	ND	5.0	1,2,3-Trichloropropane	ND	5.0
Toluene	ND	5.0	1,2,4-Trimethylbenzene	ND	10
Chlorobenzene	ND	5.0	1,3,5-Trimethylbenzene	ND	10
Ethyl Benzene	ND	5.0			
p-Isopropyltoluene	ND	10			

Notes and definitions for this report:

DATE RUN 06/07/96
ANALYST CM
INSTRUMENT B
DIL. FACTOR 1
UNITS ug/Kg
COMMENTS

ND = Not detected at detection limit

SAMPLE ID 1676-STOCK FRACTION Z7A TEST CODE 827PAH NAME 8270 PAH ONLY
Date & Time Collected 05/29/96 15:30:00 Category SOIL

BASE NEUTRAL EXTRACTABLES

	RESULT	LIMIT
Naphthalene	ND	360
Acenaphthylene	ND	360
Acenaphthene	ND	360
Fluorene	ND	360
Phenanthrene	405	360
Anthracene	ND	360
Fluoranthene	792	360
Pyrene	1080	360
Benzo (a) anthracene	640	360
Chrysene	558	360
Benzo(b)fluoranthene	415	360
Benzo(k)fluoranthene	1260	360
Benzo(a)pyrene	487	360
Indeno(1,2,3-cd)pyrene	ND	360
Dibenz(a,h)anthracene	ND	360
Benzo(g,h,i)perylene	ND	360
2-Methylnaphthalene	ND	360

Notes and Definitions for this Report:

UNITS: ug/Kg
EXTRACTED: 06/06/96
DATE RUN: 06/06/96
ANALYST: PAC
INSTRUMENT: F
DIL. FACTOR: 1
ND = not detected at detection limit

SAMPLE ID 1676-BASE SAMPLE # 28 FRACTIONS: A
Date & Time Collected 05/29/96 15:30:00 Category SOIL

TPH_IR 144
mg/kg DL=40.0

SAMPLE ID 1676-SIDE SAMPLE # 29 FRACTIONS: A
Date & Time Collected 05/29/96 15:30:00 Category SOIL

TPH_IR 101
mg/kg DL=40.0

SAMPLE ID 3596-STOCK SAMPLE # 30 FRACTIONS: A
Date & Time Collected 05/30/96 13:17:00 Category SOIL

TPH_IR 163
mg/kg DL=40.0

TEST CODE 8260 NAME PURGEABLE ORGANICS VOA

EPA METHOD: 8260: Gas Chromatography/Mass Spectrometry for Volatile Organics.

Reference: Test Methods for Evaluating Solid Wastes: Physical/Chemical Methods.
EPA SW-846 (Third Edition) 1986. Office of Solid Waste, USEPA.

RESULTS ARE REPORTED ON A DRY WEIGHT BASIS.

TEST CODE 827PAH NAME 8270 PAH ONLY

EPA METHOD: 8270 GAS CHROMATOGRAPHY / MASS SPECTROMETRY FOR SEMIVOLATILE ORGAINCS; CAPILLARY COLUM TECHNIQUE. BASE NEUTRAL ONLY.

REFERENCE: TEST METHODS FOR EVALUATING SOLID WASTES: PHYSICAL/CHEMICAL METHODS. EPA SW-846 (THIRD EDITION) 1986. OFFICE OF SOLID WASTE, USEPA.

RESULTS ARE REPORTED ON A DRY WEIGHT BASIS.

TEST CODE TPH IR NAME TPH BY IR

EPA METHOD: 418.1 for water sample.

Reference: Methods for Chemical Analysis of Water and Wastes.
EPA 600/4-79-020 (Revised, March 1983). EPA/EMSL, Cincinnati, OH.

EPA METHOD: 9071/9073

Reference: Test Methods for Evaluating Solid Waste: Physical/Chemical Methods.
EPA SW-846 (Third Edition) 1986. Office of Solid Waste, USEPA.

; Wiggins Ave., Bedford, MA 01730
Telephone: (617) 275-3330
Fax: (617) 271-1136

CHAIN OF CUS.ODY RECORD

WORK ORDER #: [illegible]

DUE DATE : 6-6-96

OMPANY: D+C

)DRESS: 415 VFW DR
Rockland MA 02370

)NE #: (617) 871-0232 FAX #: (617) 871-1029

). #:

ROJECT MANAGER: Walter

ROJECT ID/LOCATION: DEVENS

SAMPLE TYPE	CONTAINER TYPE
1. WASTEWATER	P - PLASTIC
2. SOIL	G - GLASS
3. SLUDGE	V - VOA
4. OIL	
5. DRINKING WATER	
6. WATER (GW/MW/SW)	
7. OTHER (SPECIFY	

KON	SAMPLE IDENTIFICATION	SAMPLE TYPE	CONTAINER SIZE	CONTAINER TYPE	CONTAINER #	SAMPLING DATE	SAMPLING TIME	PRESERVATIVE	ANALYSES: TPH (418.1)	VOCs (8260)	SVOCs (8270)	SPECIAL INSTRUCTIONS/ COMMENTS
7	1676-stock	Soil	250 ml	Glass	1	5/29/96	1535	—	X	X	X	
8	1676-base	↓	↓	↓	↓	↓	↓					
9	1676-side	↓	↓	↓	↓	↓	↓					
D	3596-stock	soil	250/2oz	↓	2	5/30/96	1317					
1	3596-base						↓					
2	3596-side						↓					
3	1468x base						1325					
4	1468-side						↓					
—	~~1468-stock~~						↓					
—	~~2688-base~~						1045					
—	~~2688-side~~						↓					
—	~~2688-stock~~						↓					
5	2729-base						1300					

PLED BY: CCF

QUISHED BY:

NQUISHED BY:

HOD OF SHIPMENT

	DATE	TIME
	5-29-96	-
	5-30-96	17-10
	-	-
	-	-

QUOTATION #:

RECEIVED BY:

RECEIVED FOR LAB BY:

COOLER TEMPERATURE

DATE	TIME
5-30-96	17-10
-	-
-	-

☑ RUSH 5 BUSINESS DAY TURN AROUND
☐ ROUTINE

Sample disposal information

Are there any other known or suspected contaminants in these samples other than those listed above?

Yes ____ No ____ If Yes, 1st Known ____

APPENDIX D

COMPACTION TESTS

Briggs Associates
400 Hingham Street
Rockland, MA 02370
A Tundra Corporation Company

SOILS COMPACTION REPORT

PROJECT: Fort Devens, Ayer
PROJECT #: 60409
DATE: June 19, 1986
INSPECTOR: John Vogel

EMP.#: 236	REPORT #:	CODE:	LAB #:
ARR. TIME: 800	JOB HOURS:	T.T.:	MILEAGE:
TEMP.: H L	WIND: H L	HUMID.: H/ L	SUNNY/ CLOUDY

MAXIMUN DRY DENSITY: 130.8 // 115.3
OPTIMUM MOISTURE CONTENT: 8.3 // 9.5
METHOD OF TESTING (CHECK ONE): SAND CONE: ☐ NUCLEAR DENSOMETER: ☒

Test No:	Location	Estimated Area Tested	~~Elevation~~ Depth	Test Results % compaction	Min.% Comp. Req.	Moist. Content %	Optimum Moisture %
1	Building 3541	11ft	2ft	95.2% 124.5pcf	95%	4.1	8.3
2	"	"	grade	95.7 125.2pcf		4.3	8.3
3	"	"	grade	96.5 114.1		6.6	9.5
4	3548	"	3ft	95.4 124.8		5.5	8.3
5	"	"	1ft	96.3 125.9		6.1	8.3
6	"	"	grade	96.8 114.5		4.6	9.5
7	3546	"	3ft	95.9 113.4		5.9	9.5
8	"	"	1ft	96.8 114.5		6.2	9.5
9	"	"	grade	97.9 115.8		4.8	9.5
10	1031	"	1ft	96.3 113.9		6.5	9.5
11	"	"	2ft	96.7 114.4		7.1	9.5
12	"	"	grade	95.8 113.3		6.3	9.5
13	1671	"	2ft	97.1 114.8		6.0	9.5
14	"	"	grade	96.0 113.5		5.6	9.5
15	1661	"	2ft	95.4 112.8		5.3	9.5
16	"	"	grade	96.6 114.3		5.8	9.5
17	202	"	2ft	96.4 114.0		6.4	9.5
18	"	"	grade	95.9 113.4		5.9	9.5
19	1676	"	2ft	95.8 113.3		5.8	8.3
20	"	"	grade	96.2 113.8		6.1	9.5

Tests not meeting requirements: none | Who notified: Bob (Dir Const.)
Recommendations: none at this time
REMARKS: Done at this time

TECHNICIAN:
APPROVED:

Tundra Corporation

D & C Construction / Ft. Devens
Briggs # 60904
Tested: 6-5-96

1. Sample No. M-956 (Keating Sand + Gravel Fitchburg.) | Description: Gravelly Sand with silt | Source: Site

2. Sieve Analysis (ASTM C 136, and ASTM C 117)

Sieve Size	Results (% Passing by Wt.)	Specs.
4"	100	
3"	100	
2-1/2"	100	
2"	100	
1-1/2"	86	
1"	86	
3/4"	75	
1/2"	71	
3/8"	67	
#4	55	
#10	45	
#20	36	
#40	30	
#80	23	
#100	20	
#200	17.8	

3. No specifications provided.

4. Proctor Density (four point procedure - ASTM D 1557 Method C, and ASTM D 4718).

	Results
Maximum Dry Unit Weight (pcf)	130.8
Optimum Moisture Content (%)	8.3

400 Hingham Street, Rockland, Massachusetts 02370
Tel (617) 871-6040 • Fax (617) 871-7982
Offices located throughout the United States and Canada

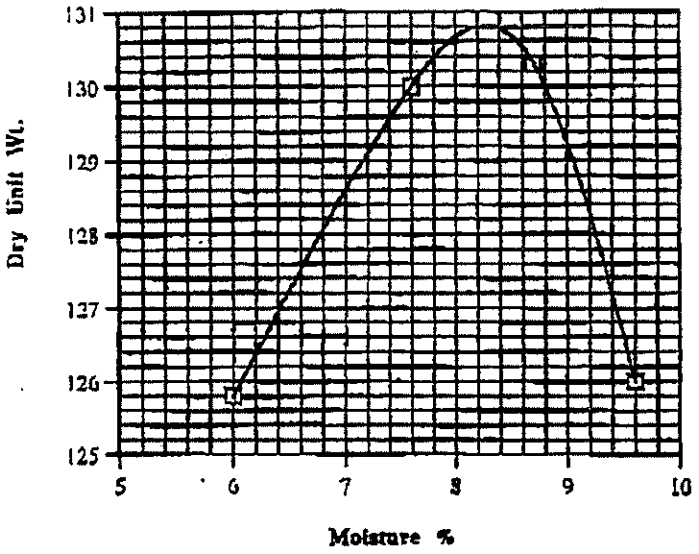
Briggs Associates

A Tundra Corporation Company

Project: D & C Construction / Ft. Devens

Sample no. M-956 **Date:** 6/5/96

Proctor



Max. Dry Density
130.8 pcf

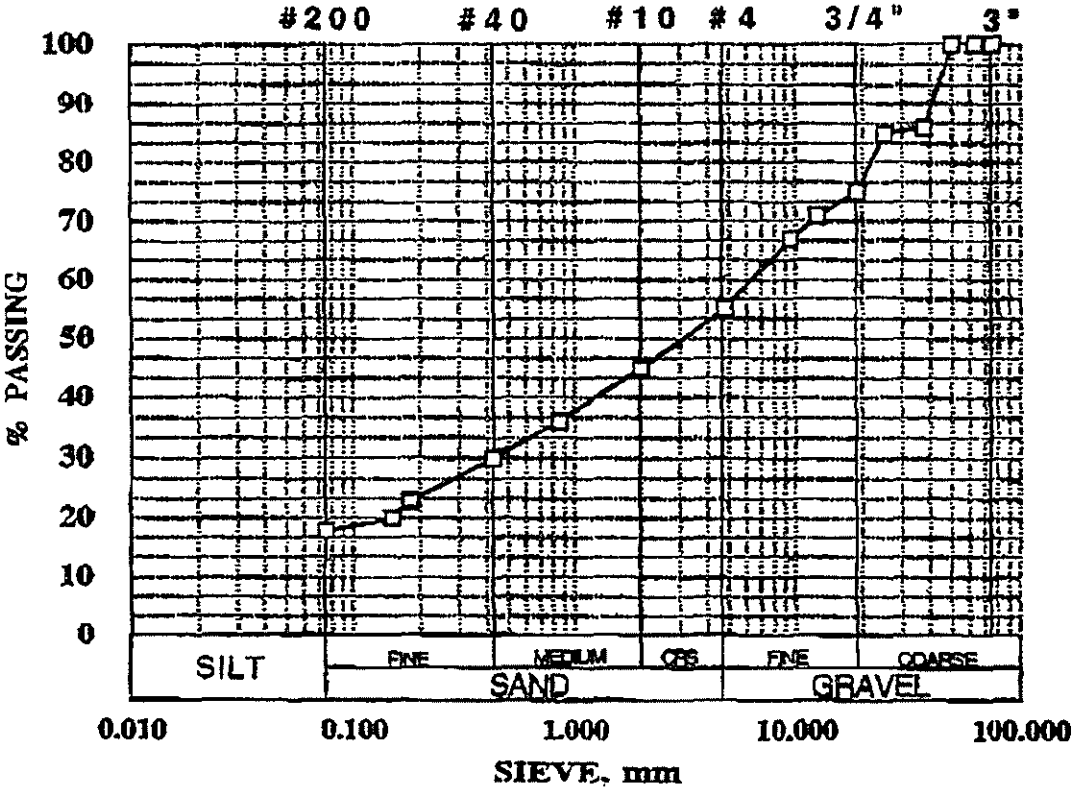
Optimum Moisture
8.3 %

Briggs Associates

A Tundra Corporation Company

Project:	D & C Construction / Ft. Devens	
Sample No.	M-956	**Date:** 6/3/96

SIEVE



Tundra Corporation

D & C Construction / Ft. Devens
Briggs # 60904
Tested: 6-5-96

1.

Sample No.	Description	Source
M-957	Gravelly Sand	Site

2. Sieve Analysis (ASTM C 136, and ASTM C 117)

Sieve Size	Results (% Passing by Wt.)	Specs.
4"	100	
3"	100	
2-1/2"	100	
2"	100	
1-1/2"	100	
1"	100	
3/4"	98	
1/2"	96	
3/8"	95	
#4	90	
#10	85	
#20	70	
#40	38	
#80	11	
#100	9	
#200	5.4	

3. No specifications provided.

4. Proctor Density (four point procedure - ASTM D 1557 Method C, and ASTM D 4718).

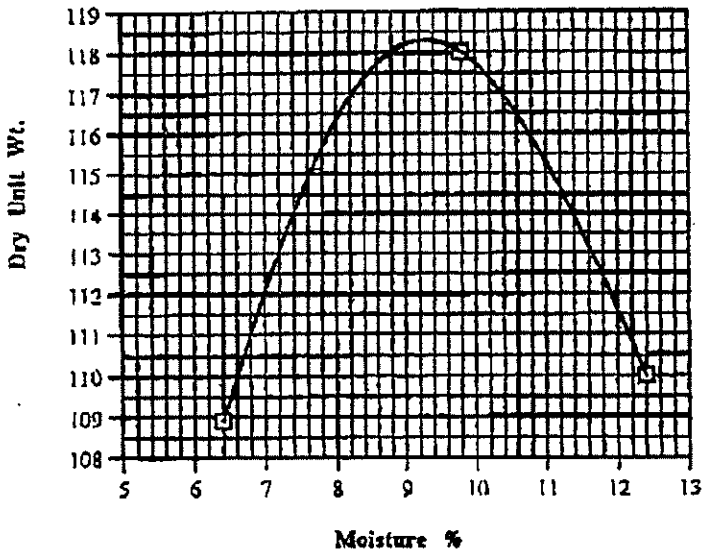
	Results
Maximum Dry Unit Weight (pcf)	118.3
Optimum Moisture Content (%)	9.5

400 Hingham Street, Rockland, Massachusetts 02370
Tel (617) 871-6010 • Fax (617) 871-7982
Offices located throughout the United States and Canada

Briggs Associates
A Tundra Corporation Company

Project:	D & C Construction / Ft. Devens		
Sample no.	M-957	**Date:**	6/5/96

Proctor



Max. Dry Density
118.3 pcf

Optimum
Moisture
9.5 %

Briggs Associates
A Tundra Corporation Company

Project:	D & C Construction / Ft. Devens	
Sample No.	M-957	**Date:** 6/3/96

SIEVE