Mabbett & Associates Inc.
Environmental Consultants & Engineers

5 Alfred Circle
Bedford, Massachusetts
01730-2346
Tel: (781) 275-6050
Fax: (781) 275-5651
info@mabbett.com
www.mabbett.com

November16, 2005

Mr. David M. Webster
Chief, Industrial Permits Branch
United States Environmental Protection Agency, Region 1
One Congress Street, Suite 1100
Boston, MA 02114-2023

Re: NPDES Remediation General Permit Application
Krueger Residence
243 Chapman Road
Tewksbury, MA
Project No. 2005022.007

Dear Mr. Webster:

On behalf of our client, Michael Krueger of Tewksbury, MA, Mabbett & Associates, Inc. (M&A) is submitting the enclosed NPDES Remediation General Permit (RGP) MAG910000 application for the operation of a groundwater remediation system at the Krueger's Residence. The groundwater system is to treat No. 2 fuel oil impacted groundwater that recharges into the sumps in the basement of the residence to prevent basement flooding.

Enclosed is the NOI application as well as supporting documentation. If you have any questions or require any additional information, please contact us. We appreciate the USEPA's assistance on this project.

Very truly yours,

MABBETT & ASSOCIATES, INC.

BY:

William F. Simons, P.G., LSP
Project Manager & Senior Hydrogeologist

PDS/tw

Enclosures:
1. Notice of Intent
2. Supporting Documentation

cc: Mr. Michael Krueger (Property Owner)
Mr. Tom Wigglesworth (Ambrose Environmental Management, Inc.)
(MF/RF)

df: CLM

REMEDIATION GENERAL PERMIT APPLICATION

B. Suggested Form for Notice of Intent (NOI) for the Remediation General Permit

1. General site information. Please provide the following information about the site:

<table>
<tr><td colspan="2">a) Name of facility/site:
Krueger Residence</td><td colspan="4">Facility/site address:
243 Chapman Road
Tewksbury, MA 01876</td></tr>
<tr><td>Location of facility/site:
longitude:-71° 15' 38" latitude:42° 35' 53"</td><td>Facility SIC code(s):
N/A</td><td colspan="4">Street:
243 Chapman Road</td></tr>
<tr><td colspan="2">b) Name of facility/site owner: Michael Krueger</td><td colspan="4">Town: Tewksbury</td></tr>
<tr><td colspan="2" rowspan="2">Email address of owner:
Michael_Krueger@harte-hanks.com

Telephone no.of facility/site owner: (978) 851-9924</td><td rowspan="2">State:
MA</td><td rowspan="2">Zip:
01876</td><td rowspan="2">County:
Middlesex</td><td></td></tr>
<tr><td colspan="2">Fax no. of facility/site owner:

Address of owner (if different from site):</td><td colspan="2">Owner is (check one): 1. Federal____ 2. State/Tribal_____
3. Private_✔___ 4. other, if so, describe:</td></tr>
<tr><td colspan="6">Street:</td></tr>
<tr><td colspan="2">Town:</td><td>State:</td><td>Zip:</td><td colspan="2">County:</td></tr>
<tr><td colspan="2" rowspan="2">c) Legal name of operator:
Mabbett & Associates, Inc.</td><td colspan="4">Operator telephone no: (781) 275-6050</td></tr>
<tr><td colspan="2">Operator fax no.: (781) 275-5651</td><td colspan="2">Operator email:
simons@mabbett.com</td></tr>
<tr><td colspan="6">Operator contact name and title: William F. Simons, P.G., LSP, Project Manager & Senior Hydrogeologist</td></tr>
</table>

Address of **operator** (if different from owner):	Street: 5 Alfred Circle		
Town: Bedford	State: MA	Zip: 01730	County: Middlesex

d) Check "yes" or "no" for the following:
1. Has a prior NPDES permit exclusion been granted for the discharge? Yes___ No ✔, if "yes," number:
2. Has a prior NPDES application (Form 1 & 2C) ever been filed for the discharge? Yes___ No ✔, if "yes," date and tracking #:
3. Is the discharge a "new discharge"as defined by 40 CFR 122.2? Yes ✔ No___
4. For sites in Massachusetts, is the discharge covered under the MA Contingency Plan (MCP) and exempt from state permitting? Yes ✔ No___

e) Is site/facility subject to any State permitting or other action which is causing the generation of discharge? Yes ✔ No___ If "yes," please list: 1. site identification # assigned by the state of NH or MA: 3-25008 2. permit or license # assigned: 3. state agency contact information: name, location, and telephone number: Gary Bogue, MA DEP, (978) 682-5237	f) Is the site/facility covered by any other EPA permit, including: 1. multi-sector storm water general permit? Y___ N ✔, if Y, number: 2. phase I or II construction storm water general permit? Y___ N ✔, if Y, number: 3. individual NPDES permit? Y___ N ✔, if Y, number: 4. any other water quality related permit? Y___ N ✔, if Y, number:

2. Discharge information. Please provide information about the discharge, (attaching additional sheets as needed) including:

a) Describe the discharge activities for which the owner/applicant is seeking coverage:

Groundwater treatment system for the treatment of water infiltrating into basement sumps in order to prevent flooding of the basement. The sump pump discharge system was installed by prior owners of the residence.

b) Provide the following information about each discharge:	1) Number of discharge points: 1	2) What is the **maximum** and **average flow rate** of discharge (in cubic feet per second, ft^3/s)? Max. flow .03 Average flow .015 Is maximum flow a **design value**? Y ✔ N___ For average flow, include the units and appropriate notation if this value is a design value or estimate if not available.

3) Latitude and longitude of each discharge within 100 feet: pt.1:long. -72° 15' 38" lat.42° 35' 53"; pt.2: long._____ lat._____; pt.3: long._____ lat._____; pt.4:long._____ lat._____; pt.5: long._____ lat._____; pt.6:long._____ lat._____; pt.7: long._____ lat._____; pt.8:long._____ lat._____; etc.

4) If hydrostatic testing, total volume of the discharge (gals):	5) Is the discharge intermittent_____or seasonal ✔ ? Is discharge ongoing Yes ✔ No_____?
c) Expected dates of discharge (mm/dd/yy): start 11/30/05 end Pending MCP Closure	
d) Please attach a line drawing or flow schematic showing water flow through the facility including: 1. sources of intake water, 2. contributing flow from the operation, 3. treatment units, and 4. discharge points and receiving waters(s).	

3. Contaminant information. In order to complete this section, the applicant will need to take a minimum of one sample of the untreated water and have it analyzed for **all** of the parameters listed in Appendix III. Historical data, (i.e., data taken no more than 2 years prior to the effective date of the permit) may be used if obtained pursuant to: i. Massachusetts' regulations 310 CMR 40.0000, the Massachusetts Contingency Plan ("Chapter 21E"); ii. New Hampshire's Title 50 RSA 485-A: Water Pollution and Waste Disposal or Title 50 RSA 485-C: Groundwater Protection Act; or iii. an EPA permit exclusion letter issued pursuant to 40 CFR 122.3, provided the data was analyzed with test methods that meet the requirements of this permit. Otherwise, a new sample shall be taken and analyzed.

a) Based on the analysis of the sample(s) of the untreated influent, the applicant must check the box of the sub-categories that the potential discharge falls within.

Gasoline Only	VOC Only	Primarily Metals	Urban Fill Sites	Contaminated Sumps	Mixed Contaminants	Aquifer Testing
Fuel Oils (and Other Oils) only	VOC with Other Contaminants	Petroleum with Other Contaminants	Listed Contaminated Sites	Contaminated Dredge Condensates	Hydrostatic Testing of Pipelines/Tanks	Well Development or Rehabilitation

b) Based on the analysis of the untreated influent, the applicant must indicate whether each listed chemical is **believed present** or **believed absent** in the potential discharge. Attach additional sheets as needed.

PARAMETER	Believe Absent	Believe Present	# of Samples (1 min-imum)	Type of Sample (e.g., grab)	Analytical Method Used (method #)	Minimum Level (ML) of Test Method	Maximum daily value		Avg. daily value	
							concentration (ug/l)	mass (kg)	concentration (ug/l)	mass (kg)
1. Total Suspended Solids	✔		1	grab	160.2	5 mg/L	ND	0	ND	0
2. Total Residual Chlorine	✔		1	grab	330.1	0.05 mg/L	ND	0	ND	0
3. Total Petroleum Hydrocarbons		✔	1	grab	1664	4 mg/L	ND	0	ND	0
4. Cyanide	✔		1	grab	335.2	0.005 mg/L	ND	0	ND	0
5. Benzene		✔	1	grab	624	2.5 ug/L	ND	0	ND	0
6. Toluene		✔	1	grab	624	2.5 ug/L	7.5	5.5 E-04	7.5	2.75 E-04
7. Ethylbenzene		✔	1	grab	624	2.5 ug/L	4.8	3.52 E-04	4.8	1.76 E-04
8. (m,p,o) Xylenes		✔	1	grab	624	2.5 ug/L	180	1.32 E-02	180	6.61 E-03
9. Total BTEX[4]		✔	1	grab	624	2.5 ug/L	192.2	1.41 E-02	192.2	7.05 E-03

[4]BTEX = Sum of Benzene, Toluene, Ethylbenzene, total Xylenes.

PARAMETER	Believe Absent	Believe Present	# of Samples (1 min-imum)	Type of Sample (e.g., grab)	Analytical Method Used (method #)	Minimum Level (ML) of Test Method	Maximum daily value		Avg. daily value	
							concentration (ug/l)	mass (kg)	concentration (ug/l)	mass (kg)
10. Ethylene Dibromide (1,2- Dibromo-methane)	✔		1	grab	504.1	0.02 ug/L	ND	0	ND	0
11. Methyl-tert-Butyl Ether (MtBE)	✔		1	grab	624	50 ug/L	ND	0	ND	0
12. tert-Butyl Alcohol (TBA)	✔		1	grab	624	250 ug/L	ND	0	ND	0
13. tert-Amyl Methyl Ether (TAME)	✔		1	grab	624	50 ug/L	ND	0	ND	0
14. Naphthalene	✔		1	grab	8270	4.8 ug/L	ND	0	ND	0
15. Carbon Tetra-chloride	✔		1	grab	624	2.5 ug/L	ND	0	ND	0
16. 1,4 Dichlorobenzene	✔		1	grab	8270	4.8 ug/L	ND	0	ND	0
17. 1,2 Dichlorobenzene	✔		1	grab	8270	4.8 ug/L	ND	0	ND	0
18. 1,3 Dichlorobenzene	✔		1	grab	8270	4.8 ug/L	ND	0	ND	0
19. 1,1 Dichloroethane	✔		1	grab	624	3.8 ug/L	ND	0	ND	0
20. 1,2 Dichloroethane	✔		1	grab	624	3.8 ug/L	ND	0	ND	0
21. 1,1 Dichloroethylene	✔		1	grab	624	2.5 ug/L	ND	0	ND	0
22. cis-1,2 Dichloro-ethylene	✔		1	grab	624	2.5 ug/L	ND	0	ND	0
23. Dichloromethane (Methylene Chloride)	✔		1	grab	624	2.5 ug/L	ND	0	ND	0
24. Tetrachloroethylene	✔		1	grab	624	2.5 ug/L	ND	0	ND	0

PARAMETER	Believe Absent	Believe Present	# of Samples (1 min-imum)	Type of Sample (e.g., grab)	Analytical Method Used (method #)	Minimum Level (ML) of Test Method	Maximum daily value		Avg. daily Value	
							concentration (ug/l)	mass (kg)	concentration (ug/l)	mass (kg)
25. 1,1,1 Trichloroethane	✔		1	grab	624	5.0 ug/L	ND	0	ND	0
26. 1,1,2 Trichloroethane	✔		1	grab	624	3.8 ug/L	ND	0	ND	0
27. Trichloroethylene	✔		1	grab	624	2.5 ug/L	ND	0	ND	0
28. Vinyl Chloride	✔		1	grab	624	5.0 ug/L	ND	0	ND	0
29. Acetone	✔		1	grab	624	25 ug/L	ND	0	ND	0
30. 1,4 Dioxane	✔		1	grab	624	5000 ug/L	ND	0	ND	0
31. Total Phenols	✔		1	grab	8270	6.8 ug/L	ND	0	ND	0
32. Pentachlorophenol	✔		1	grab	8270	19 ug/L	ND	0	ND	0
33. Total Phthalates [5] (Phthalate esthers)	✔		1	grab	8270	4.8 ug/L	ND	0	ND	0
34. Bis (2-Ethylhexyl) Phthalate [Di-(ethylhexyl) Phthalate]	✔		1	grab	8270	9.7 ug/L	ND	0	ND	0
35. Total Group I Polycyclic Aromatic Hydrocarbons (PAH)	✔		1	grab	8270	0.8 ug/L	ND	0	ND	0
a. Benzo(a) Anthracene	✔		1	grab	8270	0.19 ug/L	ND	0	ND	0
b. Benzo(a) Pyrene	✔		1	grab	8270	0.19 ug/L	ND	0	ND	0
c. Benzo(b)Fluoranthene	✔		1	grab	8270	0.19 ug/L	ND	0	ND	0
d. Benzo(k) Fluoranthene	✔		1	grab	8270	0.19 ug/L	ND	0	ND	0
e. Chrysene	✔		1	grab	8270	0.19 ug/L	ND	0	ND	0

[5] The sum of individual phthalate compounds.

PARAMETER	Believe Absent	Believe Present	# of Samples (1 min-imum)	Type of Sample (e.g., grab)	Analytical Method Used (method #)	Minimum Level (ML) of Test Method	Maximum daily value		Average daily value	
							concentration (ug/l)	mass (kg)	concentration (ug/l)	mass (kg)
f. Dibenzo(a,h) anthracene	✔		1	grab	8270	0.19 ug/L	ND	0	ND	ND
g. Indeno(1,2,3-cd) Pyrene	✔		1	grab	8270	0.19 ug/L	ND	0	ND	ND
36. Total Group II Polycyclic Aromatic Hydrocarbons (PAH)		✔	1	grab	8270	0.19 ug/L	10.14 ug/L	7.44 E-04	10.14 ug/L	3.72 E-04
h. Acenaphthene		✔	1	grab	8270	0.19 ug/L	1.2 ug/L	8.81 E-05	1.2 ug/L	4.40 E-04
i. Acenaphthylene		✔	1	grab	8270	0.19 ug/L	ND	0	ND	ND
j. Anthracene		✔	1	grab	8270	0.19 ug/L	0.3 ug/L	2.20 E-05	0.3 ug/L	1.10 E-05
k. Benzo(ghi) Perylene		✔	1	grab	8270	0.19 ug/L	ND	0	ND	ND
l. Fluoranthene		✔	1	grab	8270	0.19 ug/L	ND	0	ND	ND
m. Fluorene		✔	1	grab	8270	0.19 ug/L	2.1 ug/L	1.54 E-04	2.1 ug/L	7.71 E-05
n. Naphthalene-		✔	1	grab	8270	0.19 ug/L	4.5 ug/L	3.30 E-04	4.5 ug/L	1.65 E-04
o. Phenanthrene		✔	1	grab	8270	0.19 ug/L	1.3 ug/L	9.54 E-05	1.3 ug/L	4.77 E-05
p. Pyrene		✔	1	grab	8270	0.19 ug/L	0.74 ug/L	5.43 E-05	0.74 ug/L	2.72 E-05
37. Total Polychlorinated Biphenyls (PCBs)	✔		1	grab	608	0.266 ug/L	ND	0	ND	ND
38. Antimony	✔		1	grab	200.9	0.002 mg/L	ND	0	ND	ND
39. Arsenic	✔		1	grab	200.7	0.005 mg/L	ND	0	ND	ND
40. Cadmium	✔		1	grab	213.2	0.0002 mg/L	0.3 ug/L	2.20 E-04	0.3 ug/L	1.10 E-04
41. Chromium III	✔		1	grab	200.7	0.01 mg/L	ND	0	ND	ND
42. Chromium VI	✔		1	grab	200.7	0.01 mg/L	ND	0	ND	ND

PARAMETER	Believe Absent	Believe Present	# of Samples (1 min-imum)	Type of Sample (e.g., grab)	Analytical Method Used (method #)	Minimum Level (ML) of Test Method	Maximum daily value		Avg. daily value	
							concentration (ug/l)	mass (kg)	concentration (ug/l)	mass (kg)
43. Copper	✔		1	grab	200.7	0.01 mg/L	ND	0	ND	0
44. Lead		✔	1	grab	200.9	0.001 mg/L	2 ug/L	1.47 E-04	2 ug/L	7.34 E-05
45. Mercury	✔		1	grab	245.2	0.0002 mg/L	ND	0	ND	0
46. Nickel	✔		1	grab	200.7	0.025 mg/L	ND	0	ND	0
47. Selenium	✔		1	grab	200.7	0.005 mg/L	ND	0	ND	0
48. Silver	✔		1	grab	272.2	0.0004 mg/L	ND	0	ND	0
49. Zinc		✔	1	grab	200.7	0.05 mg/L	60 ug/L	4.40 E-03	60 ug/L	2.20 E-03
50. Iron		✔	1	grab	200.7	0.05 mg/L	200 ug/L	1.47 E-02	200 ug/L	7.34 E-03
Other (describe):										

c) For discharges where **metals** are believed present, please fill out the following:

Step 1: Do any of the metals in the influent have a **reasonable potential** to exceed the effluent limits in Appendix III (i.e., the limits set at zero to five dilutions)? Y____ N ✔	If yes, which metals?
Step 2: For any metals which have **reasonable potential** to exceed the **Appendix III** limits, calculate the **dilution factor (DF)** using the formula in Part I.A.3.c) (step 2) of the NOI instructions or as determined by the State prior to the submission of this NOI. What is the dilution factor for applicable metals? Metals:_____ DF: _____	Look up the limit calculated at the corresponding dilution factor in **Appendix IV.** Do any of the metals in the **influent** have the potential to exceed the corresponding **effluent** limits in Appendix IV (i.e., is the influent concentration above the limit set at the calculated dilution factor)? Y ✔ N____ If "Yes," list which metals: Cadmium and lead at the 0-5 dilution range

4. Treatment system information. Please describe the treatment system using separate sheets as necessary, including:

a) A description of the treatment system, including a schematic of the proposed or existing treatment system:
2-hp centrifugal pump leading to a oil/water seperator then to another 2-hp centrifugal pump leading to a silt filter that then leads to the primary and secondary granular activated carbon units which then discharge directly to the un-named wetland.

b) Identify each applicable treatment unit (check all that apply):	Frac. tank	Air stripper	Oil/water separator	Equalization tanks ✔	Bag filter ✔	GAC filter ✔
	Chlorination	Dechlorination	Other (please describe): silt filter			

c) Proposed **average** and **maximum flow rates** (gallons per minute) for the discharge and the **design flow rate**(s) (gallons per minute) of the treatment system:
Average flow rate of discharge 7 Maximum flow rate of treatment system 15 Design flow rate of treatment system _____

d) A description of chemical additives being used or planned to be used (attach MSDS sheets):
N/A

5. Receiving surface water(s). Please provide information about the receiving water(s), using separate sheets as necessary:

a) Identify the discharge pathway:	Direct_____	Within facility__	Storm drain____	River/brook____	Wetlands ✔	Other (describe):

b) Provide a narrative description of the discharge pathway, including the name(s) of the receiving waters:
Discharge directly to un-named wetland adjacent to Site.

c) Attach a detailed map(s) indicating the site location and location of the outfall to the receiving water:
1. For multiple discharges, number the discharges sequentially.
2. For indirect dischargers, indicate the location of the discharge to the indirect conveyance and the discharge to surface water
The map should also include the location and distance to the nearest sanitary sewer as well as the locus of nearby sensitive receptors (based on USGS topographical mapping), such as surface waters, drinking water supplies, and wetland areas.

d) Provide the state water quality classification of the receiving water N/A ,

e) Provide the reported or calculated seven day-ten year low flow (7Q10) of the receiving water N/A cfs
Please attach any calculation sheets used to support stream flow and dilution calculations.

f) Is the receiving water a listed 303(d) water quality impaired or limited water? Yes___ No ✔ If yes, for which pollutant(s)?

Is there a TMDL? Yes___ No ✔ If yes, for which pollutant(s)?

6. Results of Consultation with Federal Services: Please provide the following information according to requirements of Part I.B.4 and Appendices II and VII.

a) Are any listed threatened or endangered species, or designated critical habitat, in proximity to the discharge? Yes___ No ✔
Has any consultation with the federal services been completed ? No___ or is consultation underway? Yes ✔ No___
What were the results of the consultation with the U.S. Fish and Wildlife Service and/or National Marine Fisheries Service (~~check~~ one):
a "no jeopardy" opinion? ✔ or written concurrence___ on a finding that the discharges are not likely to adversely affect any endangered species or critical habitat?

b) Are any historic properties listed or eligible for listing on the National Register of Historic Places located on the facility or site or in proximity to the discharge?
Yes___ No ✔ Have any state or tribal historic preservation officer been consulted in this determination (Massachusetts only)? Yes ✔ No___

7. Supplemental information. :

Please provide any supplemental information. Attach any analytical data used to support the application. Attach any certification(s) required by the general permit.

Michael Krueger (Homeowner) retained Mabbett and Associates, Inc. (M&A) to prepare an Immediate Response Action (IRA) Plan as required by the Massachusetts Contingency Plan (MCP) regulations for a release of fuel oil which occurred inside his residence in Tewksbury, Massachusetts (the Site). The release condition related to the No. 2 fuel oil leak occurred from the fuel oil line connecting the AST to an oil burner pump located in the basement of the residence. A release of fuel oil was reported to the Massachusetts Department of Environmental Protection (MADEP) at the Site on July 5, 2005 at 12:00 pm. The MADEP responded by dispatching Gary Bogue (Environmental Analyst) to the Site. Gary Bogue issued a field Notice of Responsibility (NOR) to Michael Krueger (Homeowner) who verbally agreed to take response actions deemed necessary by the MADEP. The Site has been assigned a Release Tracking Number (RTN) 3-25008 by the MADEP. M&A personnel coordinated the delivery and setup of a 4,000 gallon AST to store groundwater and ancillary fuel oil pumped from the sump pump nearest to the furnace fuel oil line. A secondary containment unit was constructed around the AST to prevent further contamination if a spill occurred. The property is located on relatively flat land that has a slight slope from the northwest to the southeast. The abutting parcel located to the east of the Site is an apparent wetland and serves as a discharge point for runoff from the surrounding area. The parcel has historically received sump pump discharge from the residence prior to the fuel oil release. During significant precipitation events, a runoff stream forms just to the north of the property and flows from northwest to southeast into the apparent wetland. The RGP permit will serve to treat impacted groundwater in the basement of the residence during heavy rain periods. The groundwater treatment system will operate on an as needed basis until the groundwater concentrations reach the RGP discharge limits.

8. Signature Requirements: The Notice of Intent must be signed by the operator in accordance with the signatory requirements of 40 CFR Section 122.22, including the following certification:

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, I certify that the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I certify that I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

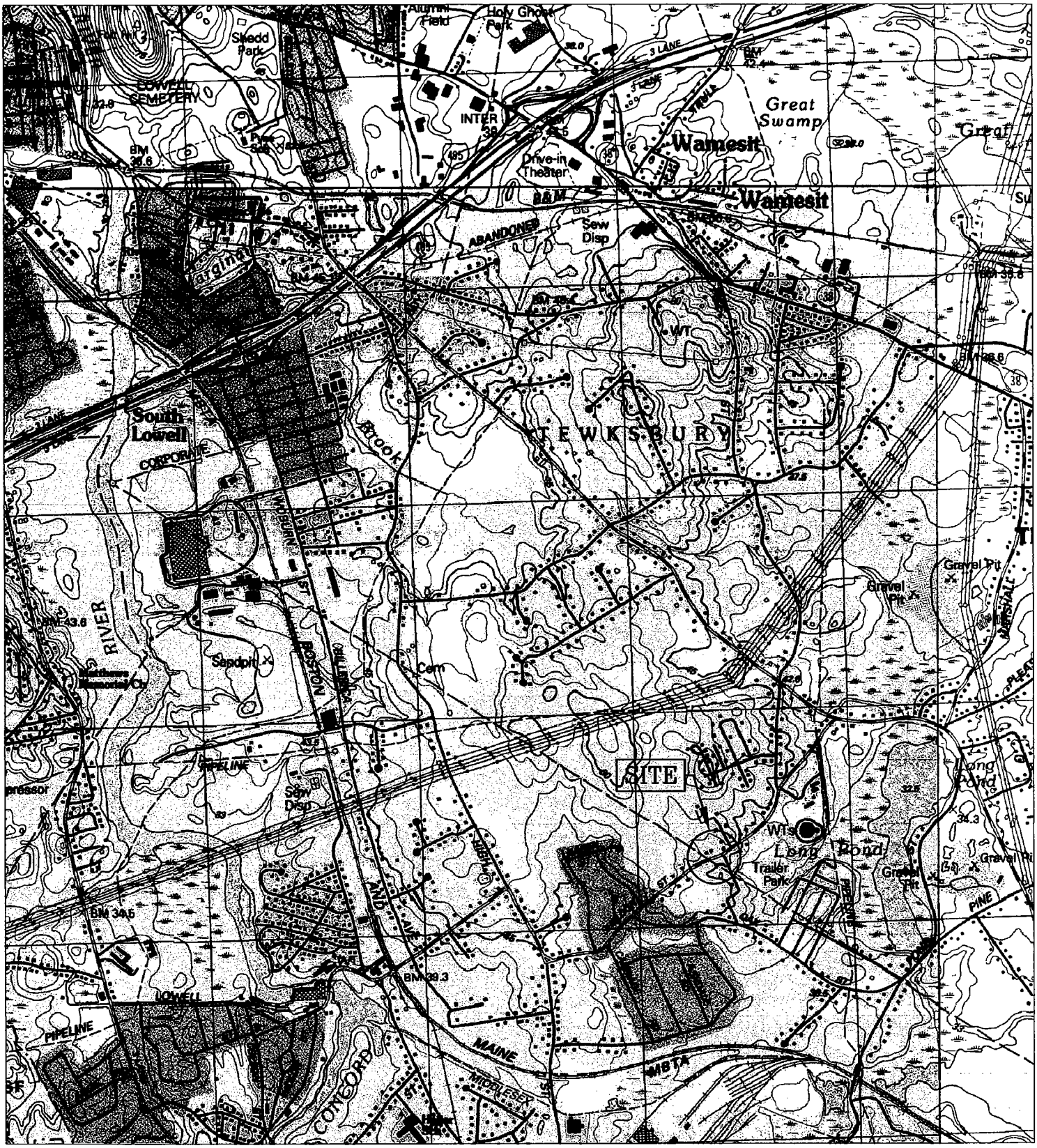
Facility/Site Name: Krueger Residence

Operator signature: William D. Ahrens

Title: Project Manager and Senior Hydrogeologist

Date: 11/16/2005

SITE LOCATION



KRUEGER RESIDENCE

243 CHAPMAN ROAD, TEWKSBURY, MA

SITE LOCATION MAP

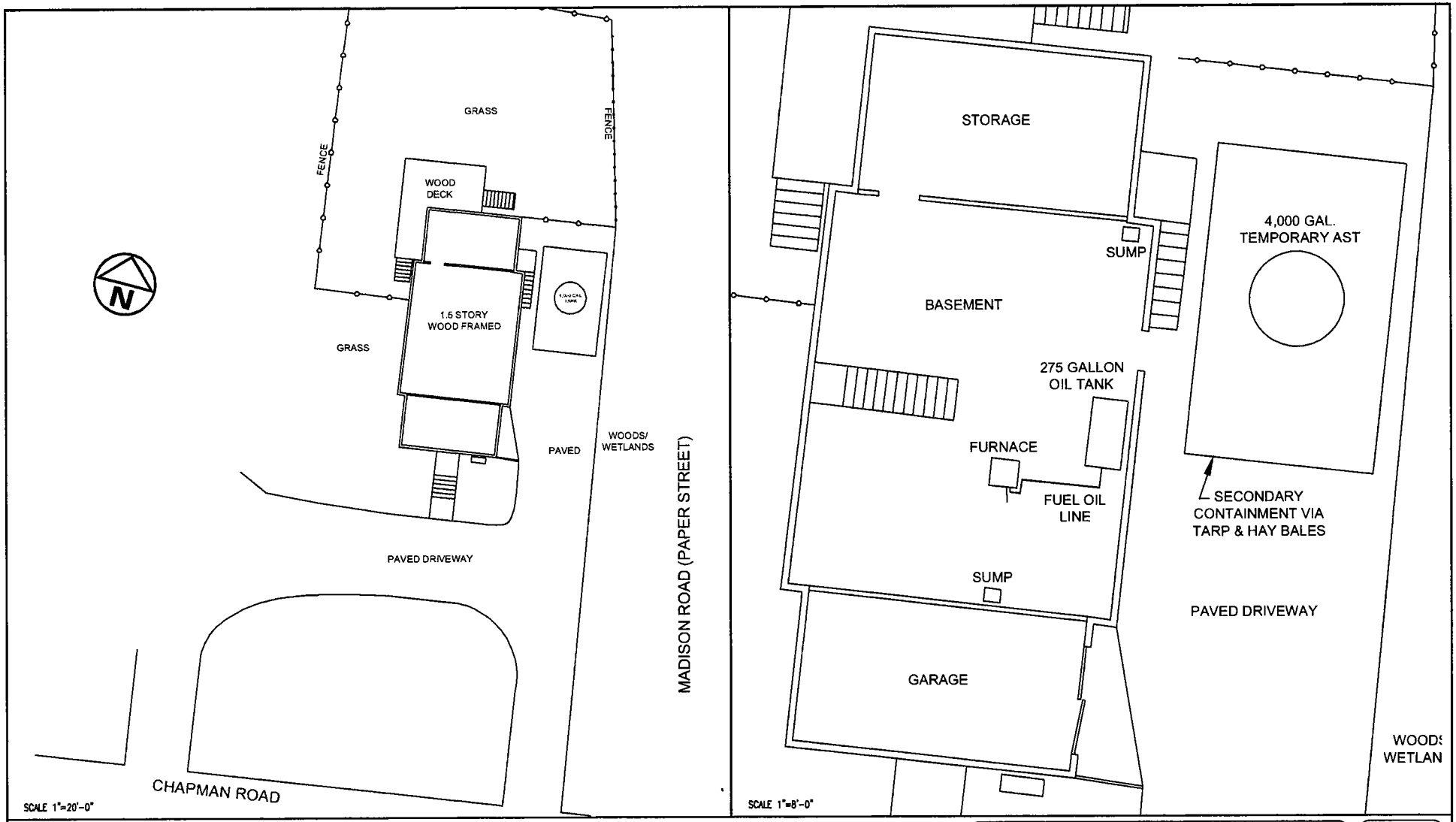
Mabbett & Associates
Environmental Consultants & Engineers

SCALE: 1"=2000'	DR BY: DJA
DATE: 11-16-05	AP BY: CLM

DWG NO. L-1

PROJ NO. 2005022.001

SITE PLAN



LEGEND:

- BUILDING
- PROPERTY LINES
- FENCE

NOTES

1. SITE PLAN BASED ON A MORTGAGE PLOT PLAN, DATED MARCH 21, 2001, AND OBSERVATIONS BY MABBETT & ASSOCIATES, INC. PERSONNEL.

KRUEGER RESIDENCE
243 CHAPMAN ROAD, TEWKSBURY, MA

Mabbett & Associates
Environmental Consultants & Engineers

SITE PLAN

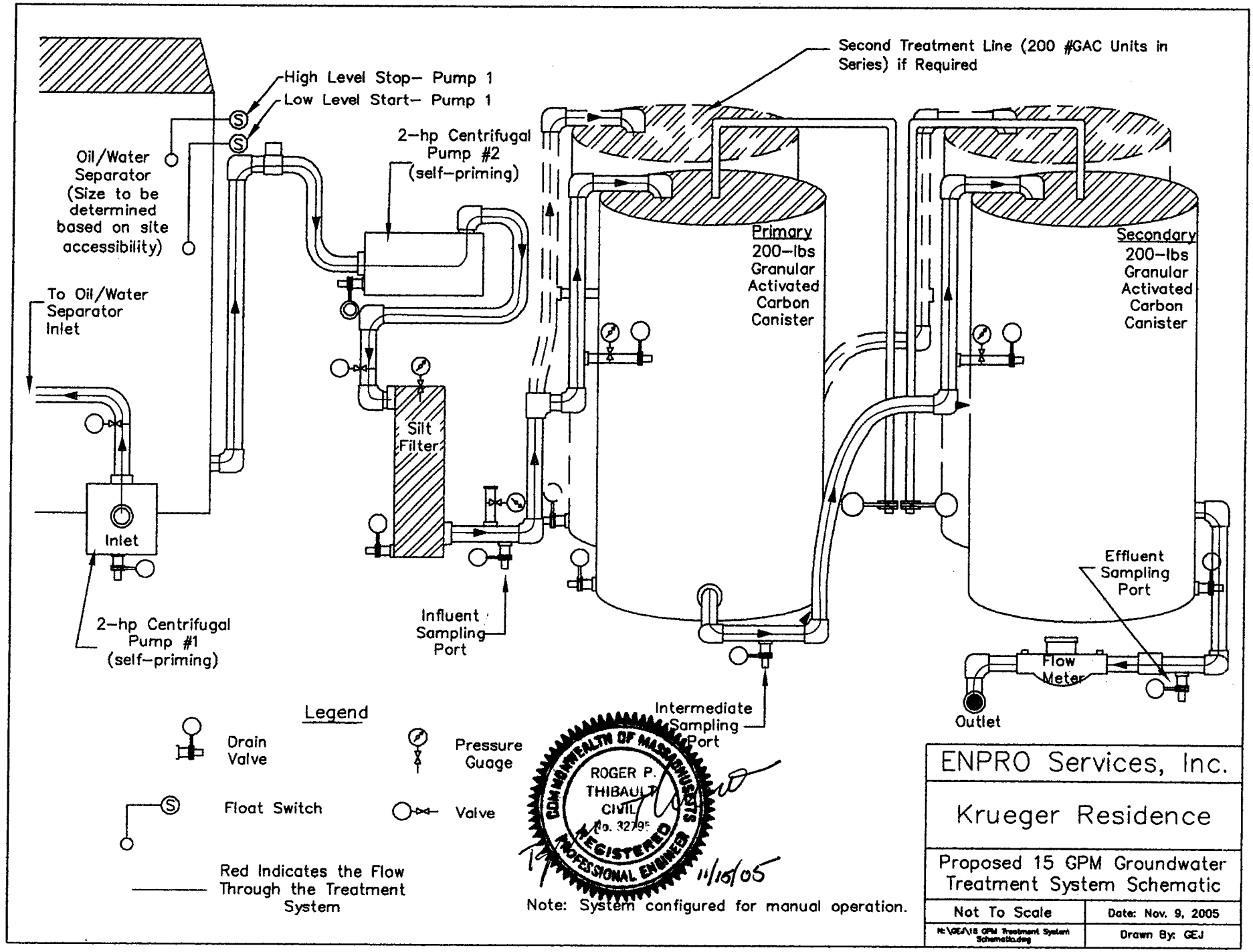
SCALE: 1"=60' | DR BY: DJA

DATE: 11-16-05 | AP BY: CLM

DRAWING NO. L-2

PROJECT NO. 2005022.001

FLOW SCHEMATIC OF SYSTEM
PROVIDED BY ENPRO SERVICES, INC.


High Level Stop– Pump 1
Low Level Start– Pump 1
Second Treatment Line (200 #GAC Units in Series) if Required
Oil/Water Separator (Size to be determined based on site accessibility)
2–hp Centrifugal Pump #2 (self–priming)
To Oil/Water Separator Inlet
Primary 200–lbs Granular Activated Carbon Canister
Secondary 200–lbs Granular Activated Carbon Canister
Silt Filter
Inlet
2–hp Centrifugal Pump #1 (self–priming)
Influent Sampling Port
Intermediate Sampling Port
Effluent Sampling Port
Flow Meter
Outlet
Legend
Drain Valve
Pressure Guage
Float Switch
Valve
Red Indicates the Flow Through the Treatment System
Note: System configured for manual operation.
COMMONWEALTH OF MASSACHUSETTS
ROGER P. THIBAULT
CIVIL
No. 32795
REGISTERED PROFESSIONAL ENGINEER
11/15/05
ENPRO Services, Inc.
Krueger Residence
Proposed 15 GPM Groundwater Treatment System Schematic
Not To Scale
Date: Nov. 9, 2005
N:\GEJ\15 GPM Treatment System Schematic.dwg
Drawn By: GEJ

LAB DATA

ALPHA ANALYTICAL LABORATORIES

Eight Walkup Drive
Westborough, Massachusetts 01581-1019
(508) 898-9220 www.alphalab.com

MA:M-MA086 NH:200301-A CT:PH-0574 ME:MA086 RI:65 NY:11148 NJ:MA935 Army:USACE

CERTIFICATE OF ANALYSIS

Client: Mabbett & Associates

Address: 5 Alfred Circle

Bedford, MA 01730

Attn: Mr. William Simons

Project Number: 2005022

Site: KRUEGER

Laboratory Job Number: L0513040

Date Received: 28-OCT-2005

Date Reported: 07-NOV-2005

Delivery Method: Alpha

ALPHA SAMPLE NUMBER	CLIENT IDENTIFICATION	SAMPLE LOCATION
L0513040-01	MW-13	TEWKSBURY, MA

I, the undersigned, attest under the pains and penalties of perjury that, based upon my personal inquiry of those responsible for obtaining the information, the material contained in this report is, to the best of my knowledge and belief, accurate and complete. This certificate of analysis is not complete unless this page accompanies any and all pages of this report.

Authorized by: _____
Technical Director

ALPHA ANALYTICAL LABORATORIES
CERTIFICATE OF ANALYSIS

MA:M-MA086 NH:200301-A CT:PH-0574 ME:MA086 RI:65 NY:11148 NJ:MA935 Army:USACE

Laboratory Sample Number: L0513040-01
MW-13
Sample Matrix: WATER

Date Collected: 28-OCT-2005 11:45
Date Received : 28-OCT-2005
Date Reported : 07-NOV-2005

Condition of Sample: Satisfactory

Field Prep: None

Number & Type of Containers: 10-Amber,4-Plastic,4-Vial

PARAMETER	RESULT	UNITS	RDL	REF	METHOD	DATE PREP	DATE ANAL	ID
Solids, Total Suspended	ND	mg/l	5.0	4	160.2		1102 15:10	DT
Cyanide, Total	ND	mg/l	0.005	4	335.2	1101 10:45	1102 17:46	AT
Chlorine, Total Residual	ND	mg/l	0.05	4	330.1		1028 20:45	DP
TPH	ND	mg/l	4.00	74	1664A		1102 15:20	AT
Phenolics, Total	0.15	mg/l	0.03	4	420.1		1103 12:30	AT
Chromium, Hexavalent	ND	mg/l	0.01	30	3500CR-D	1028 19:00	1028 19:00	HS
Total Metals				19	200.7			
Antimony, Total	ND	mg/l	0.002	3	200.9	1031 14:45	1101 18:57	PY
Arsenic, Total	ND	mg/l	0.005	19	200.7	1031 14:45	1102 11:43	RW
Cadmium, Total	0.0003	mg/l	0.0002	4	213.2	1031 14:45	1102 16:43	PY
Chromium, Total	ND	mg/l	0.01	19	200.7	1031 14:45	1102 11:43	RW
Copper, Total	ND	mg/l	0.01	19	200.7	1031 14:45	1102 11:43	RW
Iron, Total	0.20	mg/l	0.05	19	200.7	1031 14:45	1102 11:43	RW
Lead, Total	0.002	mg/l	0.001	3	200.9	1031 14:45	1102 13:41	PY
Mercury, Total	ND	mg/l	0.0002	4	245.2	1102 14:30	1103 09:31	DM
Nickel, Total	ND	mg/l	0.025	19	200.7	1031 14:45	1102 11:43	RW
Selenium, Total	ND	mg/l	0.005	19	200.7	1031 14:45	1102 11:43	RW
Silver, Total	ND	mg/l	0.0004	4	272.2	1031 14:45	1103 17:43	PY
Zinc, Total	0.06	mg/l	0.05	19	200.7	1031 14:45	1102 11:43	RW
Pesticides by GC 504				14	504.1	1101 17:47	1102 01:00	JB
1,2-Dibromoethane	ND	ug/l	0.019					
Volatile Organics by GC/MS 624				5	624		1103 13:58	MM
Methylene chloride	ND	ug/l	12.					
1,1-Dichloroethane	ND	ug/l	3.8					
Chloroform	ND	ug/l	3.8					
Carbon tetrachloride	ND	ug/l	2.5					
1,2-Dichloropropane	ND	ug/l	8.8					
Dibromochloromethane	ND	ug/l	2.5					
1,1,2-Trichloroethane	ND	ug/l	3.8					
2-Chloroethylvinyl ether	ND	ug/l	25.					

Comments: Complete list of References and Glossary of Terms found in Addendum I

ALPHA ANALYTICAL LABORATORIES
CERTIFICATE OF ANALYSIS

Laboratory Sample Number: L0513040-01
MW-13

PARAMETER	RESULT	UNITS	RDL	REF METHOD	DATE PREP	DATE ANAL	ID
SVOC's by GC/MS 8270 cont'd				1 8270C	1101 15:45	1104 05:43	RL
1,2,4-Trichlorobenzene	ND	ug/l	4.8				
Hexachlorobenzene	ND	ug/l	4.8				
Bis(2-chloroethyl)ether	ND	ug/l	4.8				
1-Chloronaphthalene	ND	ug/l	4.8				
2-Chloronaphthalene	ND	ug/l	5.8				
1,2-Dichlorobenzene	ND	ug/l	4.8				
1,3-Dichlorobenzene	ND	ug/l	4.8				
1,4-Dichlorobenzene	ND	ug/l	4.8				
3,3'-Dichlorobenzidine	ND	ug/l	48.				
2,4-Dinitrotoluene	ND	ug/l	5.8				
2,6-Dinitrotoluene	ND	ug/l	4.8				
Azobenzene	ND	ug/l	4.8				
Fluoranthene	ND	ug/l	4.8				
4-Chlorophenyl phenyl ether	ND	ug/l	4.8				
4-Bromophenyl phenyl ether	ND	ug/l	4.8				
Bis(2-chloroisopropyl)ether	ND	ug/l	4.8				
Bis(2-chloroethoxy)methane	ND	ug/l	4.8				
Hexachlorobutadiene	ND	ug/l	9.7				
Hexachlorocyclopentadiene	ND	ug/l	9.7				
Hexachloroethane	ND	ug/l	4.8				
Isophorone	ND	ug/l	4.8				
Naphthalene	ND	ug/l	4.8				
Nitrobenzene	ND	ug/l	4.8				
NDPA/DPA	ND	ug/l	14.				
n-Nitrosodi-n-propylamine	ND	ug/l	4.8				
Bis(2-ethylhexyl)phthalate	ND	ug/l	9.7				
Butyl benzyl phthalate	ND	ug/l	4.8				
Di-n-butylphthalate	ND	ug/l	4.8				
Di-n-octylphthalate	ND	ug/l	4.8				
Diethyl phthalate	ND	ug/l	4.8				
Dimethyl phthalate	ND	ug/l	4.8				
Benzo(a)anthracene	ND	ug/l	4.8				
Benzo(a)pyrene	ND	ug/l	4.8				
Benzo(b)fluoranthene	ND	ug/l	4.8				
Benzo(k)fluoranthene	ND	ug/l	4.8				
Chrysene	ND	ug/l	4.8				
Acenaphthylene	ND	ug/l	4.8				
Anthracene	ND	ug/l	4.8				
Benzo(ghi)perylene	ND	ug/l	4.8				
Fluorene	ND	ug/l	4.8				
Phenanthrene	ND	ug/l	4.8				
Dibenzo(a,h)anthracene	ND	ug/l	4.8				
Indeno(1,2,3-cd)pyrene	ND	ug/l	6.8				
Pyrene	ND	ug/l	4.8				
Benzo(e)pyrene	ND	ug/l	4.8				
Biphenyl	ND	ug/l	4.8				
Perylene	ND	ug/l	4.8				
Aniline	ND	ug/l	9.7				
4-Chloroaniline	ND	ug/l	4.8				

Comments: Complete list of References and Glossary of Terms found in Addendum I

ALPHA ANALYTICAL LABORATORIES
CERTIFICATE OF ANALYSIS

Laboratory Sample Number: L0513040-01
MW-13

PARAMETER	RESULT	UNITS	RDL	REF METHOD	DATE PREP	DATE ANAL	ID
SVOC's by GC/MS 8270 cont'd				1 8270C	1101 15:45	1104 05:43	RL
Surrogate(s)	Recovery		QC Criteria				
2-Fluorophenol	33.0	%	21-120				
Phenol-d6	29.0	%	10-120				
Nitrobenzene-d5	65.0	%	23-120				
2-Fluorobiphenyl	64.0	%	43-120				
2,4,6-Tribromophenol	74.0	%	10-120				
4-Terphenyl-d14	83.0	%	33-120				
PAH by GC/MS SIM 8270M				1 8270C-M	1101 15:45	1103 23:20	RL
Acenaphthene	1.2	ug/l	0.19				
2-Chloronaphthalene	ND	ug/l	0.19				
Fluoranthene	ND	ug/l	0.19				
Hexachlorobutadiene	ND	ug/l	0.48				
Naphthalene	4.5	ug/l	0.19				
Benzo(a)anthracene	ND	ug/l	0.19				
Benzo(a)pyrene	ND	ug/l	0.19				
Benzo(b)fluoranthene	ND	ug/l	0.19				
Benzo(k)fluoranthene	ND	ug/l	0.19				
Chrysene	ND	ug/l	0.19				
Acenaphthylene	ND	ug/l	0.19				
Anthracene	0.30	ug/l	0.19				
Benzo(ghi)perylene	ND	ug/l	0.19				
Fluorene	2.1	ug/l	0.19				
Phenanthrene	1.3	ug/l	0.19				
Dibenzo(a,h)anthracene	ND	ug/l	0.19				
Indeno(1,2,3-cd)Pyrene	ND	ug/l	0.19				
Pyrene	0.74	ug/l	0.19				
1-Methylnaphthalene	6.2	ug/l	0.19				
2-Methylnaphthalene	2.5	ug/l	0.19				
Pentachlorophenol	ND	ug/l	0.78				
Hexachlorobenzene	ND	ug/l	0.78				
Perylene	ND	ug/l	0.19				
Biphenyl	ND	ug/l	0.19				
2,6-Dimethylnaphthalene	7.1	ug/l	0.19				
1-Methylphenanthrene	1.8	ug/l	0.19				
Benzo(e)Pyrene	ND	ug/l	0.19				
Hexachloroethane	ND	ug/l	0.78				
Surrogate(s)	Recovery		QC Criteria				
2-Fluorophenol	36.0	%	21-120				
Phenol-d6	32.0	%	10-120				
Nitrobenzene-d5	59.0	%	23-120				
2-Fluorobiphenyl	59.0	%	43-120				
2,4,6-Tribromophenol	73.0	%	10-120				
4-Terphenyl-d14	65.0	%	33-120				
Polychlorinated Biphenyls				5 608	1031 17:45	1105 01:54	JB
Aroclor 1221	ND	ug/l	0.266				
Aroclor 1232	ND	ug/l	0.266				

Comments: Complete list of References and Glossary of Terms found in Addendum I

ALPHA ANALYTICAL LABORATORIES
QUALITY ASSURANCE BATCH DUPLICATE ANALYSIS

Laboratory Job Number: L0513040

Parameter	Value 1	Value 2	Units	RPD	RPD Limits
Solids, Total Suspended for sample(s) 01 (L0513003-02, WG219404-2)					
Solids, Total Suspended	2500	2500	mg/l	0	20
Cyanide, Total for sample(s) 01 (L0513040-01, WG219225-4)					
Cyanide, Total	ND	ND	mg/l	NC	30
Chlorine, Total Residual for sample(s) 01 (L0513040-01, WG219019-3)					
Chlorine, Total Residual	ND	ND	mg/l	NC	
TPH for sample(s) 01 (L0513153-01, WG219444-4)					
TPH	ND	ND	mg/l	NC	34
Phenolics, Total for sample(s) 01 (L0513040-01, WG219566-4)					
Phenolics, Total	0.15	0.15	mg/l	0	
Chromium, Hexavalent for sample(s) 01 (L0513040-01, WG219036-3)					
Chromium, Hexavalent	ND	ND	mg/l	NC	
Total Metals for sample(s) 01 (L0513040-01, WG219168-1)					
Antimony, Total	ND	ND	mg/l	NC	
Arsenic, Total	ND	ND	mg/l	NC	
Cadmium, Total	0.0003	0.0003	mg/l	0	
Chromium, Total	ND	ND	mg/l	NC	
Copper, Total	ND	ND	mg/l	NC	
Iron, Total	0.20	0.22	mg/l	10	
Lead, Total	0.002	0.001	mg/l	3	
Nickel, Total	ND	ND	mg/l	NC	
Selenium, Total	ND	ND	mg/l	NC	
Silver, Total	ND	ND	mg/l	NC	
Zinc, Total	0.06	0.05	mg/l	2	
Total Metals for sample(s) 01 (L0513155-01, WG219415-3)					
Mercury, Total	ND	ND	mg/l	NC	
Volatile Organics by GC/MS 624 for sample(s) 01 (L0513045-20, WG219667-2)					
Methylene chloride	ND	ND	ug/l	NC	30
1,1-Dichloroethane	ND	ND	ug/l	NC	30
Chloroform	ND	ND	ug/l	NC	30
Carbon tetrachloride	ND	ND	ug/l	NC	30
1,2-Dichloropropane	ND	ND	ug/l	NC	30
Dibromochloromethane	ND	ND	ug/l	NC	30
1,1,2-Trichloroethane	ND	ND	ug/l	NC	30
2-Chloroethylvinyl ether	ND	ND	ug/l	NC	30
Tetrachloroethene	ND	ND	ug/l	NC	30
Chlorobenzene	ND	ND	ug/l	NC	30
Trichlorofluoromethane	ND	ND	ug/l	NC	30
1,2-Dichloroethane	ND	ND	ug/l	NC	30
1,1,1-Trichloroethane	ND	ND	ug/l	NC	30
Bromodichloromethane	ND	ND	ug/l	NC	30

ALPHA ANALYTICAL LABORATORIES
QUALITY ASSURANCE BATCH SPIKE ANALYSES

Laboratory Job Number: L0513040

Parameter	% Recovery	QC Criteria
Cyanide, Total LCS for sample(s) 01 (WG219225-2)		
Cyanide, Total	102	90-110
Chlorine, Total Residual LCS for sample(s) 01 (WG219019-2)		
Chlorine, Total Residual	100	
TPH LCS for sample(s) 01 (WG219444-2)		
TPH	84	64-132
Phenolics, Total LCS for sample(s) 01 (WG219566-2)		
Phenolics, Total	94	
Chromium, Hexavalent LCS for sample(s) 01 (WG219036-2)		
Chromium, Hexavalent	100	
Total Metals LCS for sample(s) 01 (WG219168-4)		
Antimony, Total	89	
Arsenic, Total	104	
Cadmium, Total	111	
Chromium, Total	95	
Copper, Total	96	
Iron, Total	91	
Lead, Total	107	
Nickel, Total	99	
Selenium, Total	112	
Silver, Total	114	
Zinc, Total	102	
Total Metals LCS for sample(s) 01 (WG219415-1)		
Mercury, Total	103	
Pesticides by GC 504 LCS for sample(s) 01 (WG219380-2)		
1,2-Dibromoethane	99	
Volatile Organics by GC/MS 624 LCS for sample(s) 01 (WG219667-5)		
Methylene chloride	99	10-221
1,1-Dichloroethane	103	59-155
Chloroform	100	51-138
Carbon tetrachloride	122	70-140
1,2-Dichloropropane	97	10-210
Dibromochloromethane	106	53-149
1,1,2-Trichloroethane	103	52-150
2-Chloroethylvinyl ether	120	10-305
Tetrachloroethene	109	64-148
Chlorobenzene	117	37-160
Trichlorofluoromethane	105	17-181
1,2-Dichloroethane	103	49-155
1,1,1-Trichloroethane	108	52-162
Bromodichloromethane	107	35-155

ALPHA ANALYTICAL LABORATORIES
QUALITY ASSURANCE BATCH SPIKE ANALYSES

Laboratory Job Number: L0513040

Continued

Parameter	% Recovery	QC Criteria
SVOC's by GC/MS 8270 LCS for sample(s) 01 (WG219315-2)		
Anthracene	50	40-140
Pyrene	93	26-127
Hexachloropropene	53	40-140
P-Chloro-M-Cresol	79	23-97
2-Chlorophenol	64	27-123
2-Nitrophenol	74	30-130
4-Nitrophenol	44	10-80
2,4-Dinitrophenol	91	30-130
Pentachlorophenol	98	9-103
Phenol	29	12-110
Surrogate(s)		
2-Fluorophenol	44	21-120
Phenol-d6	39	10-120
Nitrobenzene-d5	74	23-120
2-Fluorobiphenyl	75	43-120
2,4,6-Tribromophenol	93	10-120
4-Terphenyl-d14	103	33-120
PAH by GC/MS SIM 8270M LCS for sample(s) 01 (WG219322-2)		
Acenaphthene	57	46-118
2-Chloronaphthalene	67	
Fluoranthene	85	
Anthracene	62	
Pyrene	79	26-127
Pentachlorophenol	67	9-103
Surrogate(s)		
2-Fluorophenol	46	21-120
Phenol-d6	38	10-120
Nitrobenzene-d5	66	23-120
2-Fluorobiphenyl	57	43-120
2,4,6-Tribromophenol	61	10-120
4-Terphenyl-d14	72	33-120
Polychlorinated Biphenyls LCS for sample(s) 01 (WG219180-2)		
Aroclor 1242/1016	77	30-150
Aroclor 1260	81	30-150
Surrogate(s)		
2,4,5,6-Tetrachloro-m-xylene	67	30-150
Decachlorobiphenyl	55	30-150
Cyanide, Total SPIKE for sample(s) 01 (L0512834-02, WG219225-3)		
Cyanide, Total	94	80-120

ALPHA ANALYTICAL LABORATORIES
QUALITY ASSURANCE BATCH SPIKE ANALYSES

Laboratory Job Number: L0513040

Continued

Parameter	% Recovery	QC Criteria
Volatile Organics by GC/MS 624 SPIKE for sample(s) 01 (L0513045-20, WG219667-1)		
Ethylbenzene	107	37-162
Chloromethane	73	10-273
Bromomethane	58	10-242
Vinyl chloride	84	10-251
Chloroethane	89	14-230
1,1-Dichloroethene	93	10-234
trans-1,2-Dichloroethene	97	54-156
cis-1,2-Dichloroethene	102	60-140
Trichloroethene	99	71-157
1,2-Dichlorobenzene	105	18-190
1,3-Dichlorobenzene	103	59-156
1,4-Dichlorobenzene	103	18-190
p/m-Xylene	107	40-160
o-Xylene	106	40-160
XYLENE (TOTAL)	107	40-160
Styrene	100	40-160
Acetone	87	40-160
Carbon disulfide	82	40-160
2-Butanone	87	40-160
Vinyl acetate	82	40-160
4-Methyl-2-pentanone	95	40-160
2-Hexanone	93	40-160
Acrolein	22	40-160
Acrylonitrile	100	40-160
Surrogate(s)		
Pentafluorobenzene	104	80-120
Fluorobenzene	104	80-120
4-Bromofluorobenzene	107	80-120
Polychlorinated Biphenyls SPIKE for sample(s) 01 (L0513040-01, WG219180-3)		
Aroclor 1242/1016	77	30-150
Aroclor 1260	84	30-150
Surrogate(s)		
2,4,5,6-Tetrachloro-m-xylene	66	30-150
Decachlorobiphenyl	76	30-150

ALPHA ANALYTICAL LABORATORIES
QUALITY ASSURANCE BATCH BLANK ANALYSIS

Laboratory Job Number: L0513040

PARAMETER	RESULT	UNITS	RDL	REF	METHOD	DATE PREP	DATE ANAL	ID
Blank Analysis for sample(s) 01 (WG219404-1)								
Solids, Total Suspended	ND	mg/l	5.0	4	160.2		1102 15:10	DT
Blank Analysis for sample(s) 01 (WG219225-1)								
Cyanide, Total	ND	mg/l	0.005	4	335.2	1101 10:45	1102 17:51	AT
Blank Analysis for sample(s) 01 (WG219019-1)								
Chlorine, Total Residual	ND	mg/l	0.05	4	330.1		1028 20:45	DP
Blank Analysis for sample(s) 01 (WG219444-1)								
TPH	ND	mg/l	4.00	74	1664A		1102 15:20	AT
Blank Analysis for sample(s) 01 (WG219566-1)								
Phenolics, Total	ND	mg/l	0.03	4	420.1		1103 12:30	AT
Blank Analysis for sample(s) 01 (WG219036-1)								
Chromium, Hexavalent	ND	mg/l	0.01	30	3500CR-D	1028 19:00	1028 19:00	HS
Blank Analysis for sample(s) 01 (WG219168-3)								
Total Metals				19	200.7			
Antimony, Total	ND	mg/l	0.002	3	200.9	1031 14:45	1101 18:30	PY
Arsenic, Total	ND	mg/l	0.005	19	200.7	1031 14:45	1102 11:33	RW
Cadmium, Total	ND	mg/l	0.0002	4	213.2	1031 14:45	1102 16:33	PY
Chromium, Total	ND	mg/l	0.01	19	200.7	1031 14:45	1102 11:33	RW
Copper, Total	ND	mg/l	0.01	19	200.7	1031 14:45	1102 11:33	RW
Iron, Total	ND	mg/l	0.05	19	200.7	1031 14:45	1102 11:33	RW
Lead, Total	ND	mg/l	0.001	3	200.9	1031 14:45	1102 13:27	PY
Nickel, Total	ND	mg/l	0.025	19	200.7	1031 14:45	1102 11:33	RW
Selenium, Total	ND	mg/l	0.005	19	200.7	1031 14:45	1102 11:33	RW
Silver, Total	ND	mg/l	0.0004	4	272.2	1031 14:45	1103 17:30	PY
Zinc, Total	ND	mg/l	0.05	19	200.7	1031 14:45	1102 11:33	RW
Blank Analysis for sample(s) 01 (WG219415-4)								
Total Metals								
Mercury, Total	ND	mg/l	0.0002	4	245.2	1102 14:30	1103 09:27	DM
Blank Analysis for sample(s) 01 (WG219380-1)								
Pesticides by GC 504				14	504.1	1101 17:47	1101 23:09	JB
1,2-Dibromoethane	ND	ug/l	0.020					

ALPHA ANALYTICAL LABORATORIES
QUALITY ASSURANCE BATCH BLANK ANALYSIS

Laboratory Job Number: L0513040

Continued

PARAMETER	RESULT	UNITS	RDL	REF METHOD	DATE PREP	DATE ANAL	ID
Blank Analysis for sample(s) 01 (WG219667-6)							
Volatile Organics by GC/MS 624 cont'd				5 624		1103 08:44	MM
Surrogate(s)	Recovery		QC Criteria				
Pentafluorobenzene	98.0	%	80-120				
Fluorobenzene	98.0	%	80-120				
4-Bromofluorobenzene	114.	%	80-120				
Blank Analysis for sample(s) 01 (WG219315-1)							
SVOC's by GC/MS 8270				1 8270C	1101 15:45	1103 14:59	RL
Acenaphthene	ND	ug/l	5.0				
Benzidine	ND	ug/l	50.				
1,2,4-Trichlorobenzene	ND	ug/l	5.0				
Hexachlorobenzene	ND	ug/l	5.0				
Bis(2-chloroethyl)ether	ND	ug/l	5.0				
1-Chloronaphthalene	ND	ug/l	5.0				
2-Chloronaphthalene	ND	ug/l	6.0				
1,2-Dichlorobenzene	ND	ug/l	5.0				
1,3-Dichlorobenzene	ND	ug/l	5.0				
1,4-Dichlorobenzene	ND	ug/l	5.0				
3,3'-Dichlorobenzidine	ND	ug/l	50.				
2,4-Dinitrotoluene	ND	ug/l	6.0				
2,6-Dinitrotoluene	ND	ug/l	5.0				
Azobenzene	ND	ug/l	5.0				
Fluoranthene	ND	ug/l	5.0				
4-Chlorophenyl phenyl ether	ND	ug/l	5.0				
4-Bromophenyl phenyl ether	ND	ug/l	5.0				
Bis(2-chloroisopropyl)ether	ND	ug/l	5.0				
Bis(2-chloroethoxy)methane	ND	ug/l	5.0				
Hexachlorobutadiene	ND	ug/l	10.				
Hexachlorocyclopentadiene	ND	ug/l	10.				
Hexachloroethane	ND	ug/l	5.0				
Isophorone	ND	ug/l	5.0				
Naphthalene	ND	ug/l	5.0				
Nitrobenzene	ND	ug/l	5.0				
NDPA/DPA	ND	ug/l	15.				
n-Nitrosodi-n-propylamine	ND	ug/l	5.0				
Bis(2-ethylhexyl)phthalate	ND	ug/l	10.				
Butyl benzyl phthalate	ND	ug/l	5.0				
Di-n-butylphthalate	ND	ug/l	5.0				
Di-n-octylphthalate	ND	ug/l	5.0				
Diethyl phthalate	ND	ug/l	5.0				
Dimethyl phthalate	ND	ug/l	5.0				
Benzo(a)anthracene	ND	ug/l	5.0				
Benzo(a)pyrene	ND	ug/l	5.0				
Benzo(b)fluoranthene	ND	ug/l	5.0				
Benzo(k)fluoranthene	ND	ug/l	5.0				
Chrysene	ND	ug/l	5.0				
Acenaphthylene	ND	ug/l	5.0				

ALPHA ANALYTICAL LABORATORIES
QUALITY ASSURANCE BATCH BLANK ANALYSIS

Laboratory Job Number: L0513040

Continued

PARAMETER	RESULT	UNITS	RDL	REF METHOD	DATE PREP	DATE ANAL	ID
Blank Analysis for sample(s) 01 (WG219315-1)							
SVOC's by GC/MS 8270 cont'd				1 8270C	1101 15:45	1103 14:59	RL
4,6-Dinitro-o-cresol	ND	ug/l	20.				
Pentachlorophenol	ND	ug/l	20.				
Phenol	ND	ug/l	7.0				
2-Methylphenol	ND	ug/l	6.0				
3-Methylphenol/4-Methylphenol	ND	ug/l	6.0				
2,4,5-Trichlorophenol	ND	ug/l	5.0				
2,6-Dichlorophenol	ND	ug/l	10.				
Benzoic Acid	ND	ug/l	50.				
Benzyl Alcohol	ND	ug/l	10.				
Carbazole	ND	ug/l	5.0				
Pyridine	ND	ug/l	50.				
2-Picoline	ND	ug/l	20.				
Pronamide	ND	ug/l	20.				
Methyl methanesulfonate	ND	ug/l	20.				
Surrogate(s)	Recovery		QC Criteria				
2-Fluorophenol	29.0	%	21-120				
Phenol-d6	25.0	%	10-120				
Nitrobenzene-d5	49.0	%	23-120				
2-Fluorobiphenyl	47.0	%	43-120				
2,4,6-Tribromophenol	49.0	%	10-120				
4-Terphenyl-d14	81.0	%	33-120				
Blank Analysis for sample(s) 01 (WG219322-1)							
PAH by GC/MS SIM 8270M				1 8270C-M	1101 15:45	1103 20:33	RL
Acenaphthene	ND	ug/l	0.20				
2-Chloronaphthalene	ND	ug/l	0.20				
Fluoranthene	ND	ug/l	0.20				
Hexachlorobutadiene	ND	ug/l	0.50				
Naphthalene	ND	ug/l	0.20				
Benzo(a)anthracene	ND	ug/l	0.20				
Benzo(a)pyrene	ND	ug/l	0.20				
Benzo(b)fluoranthene	ND	ug/l	0.20				
Benzo(k)fluoranthene	ND	ug/l	0.20				
Chrysene	ND	ug/l	0.20				
Acenaphthylene	ND	ug/l	0.20				
Anthracene	ND	ug/l	0.20				
Benzo(ghi)perylene	ND	ug/l	0.20				
Fluorene	ND	ug/l	0.20				
Phenanthrene	ND	ug/l	0.20				
Dibenzo(a,h)anthracene	ND	ug/l	0.20				
Indeno(1,2,3-cd)Pyrene	ND	ug/l	0.20				
Pyrene	ND	ug/l	0.20				
1-Methylnaphthalene	ND	ug/l	0.20				
2-Methylnaphthalene	ND	ug/l	0.20				
Pentachlorophenol	ND	ug/l	0.80				

REFERENCES

1. Test Methods for Evaluating Solid Waste: Physical/Chemical Methods. EPA SW-846. Third Edition. Updates I - IIIA, 1997.

3. Methods for the Determination of Metals in Environmental Samples, Supplement I. EPA/600/R-94/111. May 1994.

4. Methods for Chemical Analysis of Water and Wastes. EPA 600/4-79-020. Revised March 1983.

5. Methods for the Organic Chemical Analysis of Municipal and Industrial Wastewater. Appendix A, Part 136, 40 CFR (Code of Federal Regulations).

14. Methods for the Determination of Organic Compounds in Finished Drinking Water and Raw Source Water. EPA/600/4-88/039, Revised July 1991.

19. Inductively Coupled Plasma Atomic Emission Spectrometric Method for Trace Element Analysis of Water and Wastes. Appendix C, Part 136, 40 CFR (Code of Federal Regulations). July 1, 1999 edition.

30. Standard Methods for the Examination of Water and Wastewater. APHA-AWWA-WPCF. 18th Edition. 1992.

74. Method 1664,Revision A: N-Hexane Extractable Material (HEM; Oil & Grease) and Silica Gel Treated N-Hexane Extractable Material (SGT-HEM; Non-polar Material) by Extraction and Gravimetry, EPA-821-R-98-002, February 1999.

GLOSSARY OF TERMS AND SYMBOLS

REF	Reference number in which test method may be found.
METHOD	Method number by which analysis was performed.
ID	Initials of the analyst.
ND	Not detected in comparison to the reported detection limit.
NI	Not Ignitable.
ug/cart	Micrograms per Cartridge.

LIMITATION OF LIABILITIES

Alpha Analytical, Inc. performs services with reasonable care and diligence normal to the analytical testing laboratory industry. In the event of an error, the sole and exclusive responsibility of Alpha Analytical, Inc., shall be to re-perform the work at it's own expense. In no event shall Alpha Analytical, Inc. be held liable for any incidental consequential or special damages, including but not limited to, damages in any way connected with the use of, interpretation of, information or analysis provided by Alpha Analytical, Inc.

We strongly urge our clients to comply with EPA protocol regarding sample volume, preservation, cooling, containers, sampling procedures, holding times and splitting of samples in the field.

CHAIN OF CUSTODY

PAGE 1 OF 1

Eight Walkup Drive Westborough, MA 01581
TEL: 508-898-9220 FAX: 508-898-9193

Date Rec'd in Lab: 10-28-05

ALPHA Job #: L05 13040

Client Information

Client: Mabbett & Assoc Inc
Address: 5 Alfred Circle
Bedford MA 01730
Phone: 781 275 6050
Fax: 781 275 5651
Email: Simons@mabbett.com

☐ These samples have been previously analyzed by Alpha

Project Information

Project Name: Krueger
Project Location: Tewksbury MA
Project #: 2005023
Project Manager: William Simons
ALPHA Quote #:

Turn-Around Time

☐ Standard ☐ RUSH (only confirmed if pre-approved!)
Date Due: 5 DAYS Time: 11.4.05

Report Information - Data Deliverables

☐ FAX ☐ EMAIL
☒ ADEx ☐ Add'l Deliverables

Billing Information

☒ Same as Client info PO #: 4023

Regulatory Requirements/Report Limits

State /Fed Program	Criteria

MCP PRESUMPTIVE CERTAINTY - THESE QUESTIONS MUST BE ANSWERED

☐ Yes ☐ No Are MCP Analytical Methods Required?
☐ Yes ☐ No Are Drinking Water Samples Submitted?
☐ Yes ☐ No Have you met minimum field QC requirements?

Other Project Specific Requirements/Comments/Detection Limits:

SAMPLE HANDLING
Filtration
☐ Done
☐ Not needed
☐ Lab to do
Preservation
☐ Lab to do
(Please specify below)

ALPHA Lab ID (Lab Use Only)	Sample ID	Collection Date	Collection Time	Sample Matrix	Sampler's Initials	TCN	Total Metals	TRC, Hex Cr	TSS	TPH-1664	PCB	PAH-Low	8270	T Phenol	Soil	624	Sample Specific Comments	TOTAL # BOTTLES
L05 13046-01	MW-13	10/26/05	1145	GW	CLM	X	X	X	X	X	X	X	X	X	X	X		18

Container Type
Preservative

QUESTIONS ABOVE MUST BE ANSWERED FOR PRESUMPTIVE CERTAINTY

IS YOUR PROJECT MCP ?

Relinquished By:	Date/Time	Received By:	Date/Time
[signature]	10/28/05 14:30	[signature]	10/28/05 1430
[signature]	10/28/05 17:00	[signature]	10/28/05 17:00

Please print clearly, legibly and completely. Samples can not be logged in and turnaround time clock will not start until any ambiguities are resolved. All samples submitted are subject to Alpha's Payment Terms. See reverse side.

FORM NO: 01-01(rev. 14-May-04)

HISTORICAL COMMISSION

950 CMR: OFFICE OF THE SECRETARY OF THE COMMONWEALTH

APPENDIX A

MASSACHUSETTS HISTORICAL COMMISSION
220 MORRISSEY BOULEVARD
BOSTON, MASS. 02125
617-727-8470, FAX: 617-727-5128

PROJECT NOTIFICATION FORM

Project Name: Krueger Residence

Location / Address: 243 Chapman Road

City / Town: Tewksbury, Massachusetts

Project Proponent

Name: Mabbett & Associates, Inc.

Address: 5 Alfred Circle

City/Town/Zip/Telephone: Bedford, MA 01730 781-275-6050

Agency license or funding for the project (list all licenses, permits, approvals, grants or other entitlements being sought from state and federal agencies).

Agency Name	Type of License or funding (specify)
U.S. Environmental Protection Agency	Remediation General Permit

Project Description (narrative):
Mabbett & Associates is coordinating the installation of and will be operating a groundwater treatment system to enable the discharge of treated groundwater to a wetland to prevent basement flooding in the residence. M&A is seeking coverage under the EPA's new Remediation General Permit.

Does the project include demolition? If so, specify nature of demolition and describe the building(s) which are proposed for demolition.

No

Does the project include rehabilitation of any existing buildings? If so, specify nature of rehabilitation and describe the building(s) which are proposed for rehabilitation.

No

Does the project include new construction? If so, describe (attach plans and elevations if necessary).

No

After review of MHC files and the materials you submitted, it has been determined that this project is unlikely to affect significant historic or archaeological resources. 950 CMR 71.05

MHC Req. 38255

Edward L. Bell
Senior Archaeologist
Massachusetts Historical Commission

15 November 2005
Date

5/31/96 (Effective 7/1/93) - corrected

APPENDIX A (continued)

To the best of your knowledge, are any historic or archaeological properties known to exist within the project's area of potential impact? If so, specify.

No

What is the total acreage of the project area?

Woodland	0 acres	Productive Resources:	
Wetland	0 acres	Agriculture	0 acres
Floodplain	0 acres	Forestry	0 acres
Open space	0.21 acres	Mining/Extraction	0 acres
Developed	0.04 acres	Total Project Acreage	0.25 acres

What is the acreage of the proposed new construction? N/A acres

What is the present land use of the project area?

Residential

Please attach a copy of the section of the USGS quadrangle map which clearly marks the project location.

This Project Notification Form has been submitted to the MHC in compliance with 950 CMR 71.00.

Signature of Person submitting this form: _____ Date: November 9, 2005

Name: William Simons - Mabbett & Associates, Inc.

Address: 5 Alfred Circle

City/Town/Zip: Bedford, MA 01730

Telephone: 781 - 275 - 6050 (x322)

REGULATORY AUTHORITY

950 CMR 71.00: M.G.L. c. 9, §§ 26-27C as amended by St. 1988, c. 254.

7/1/93

PRIORITY HABITAT OF RARE SPECIES

ESTIMATE HABITAT OF RARE WILDLIFE

KRUEGER RESIDENCE
TEWKSBURY, MASSACHUSETTS

ENDANGERED SPECIES HABITAT MAP

SCALE: 1'=300'

DR BY: WFS

DATE: 11/16/05

AP BY:

DWG NO. L-5

PROJ NO. 2005022.007