

**REPORT ON THE INVESTIGATION OF SUSPECTED  
SUBSURFACE PETROLEUM CONTAMINATION**

**JANUARY 11, 1994**

**Site Location:**

**HART & MEAD, INC.  
ROUTE 116  
HINESBURG, VERMONT 05461  
(VT DEC Site #93-1486)**

**Prepared For:**

**HART & MEAD, INC.  
ROUTE 116  
HINESBURG, VERMONT 05461**

**Prepared By:**

***GRIFFIN INTERNATIONAL*  
2B Dorset Lane  
Williston, Vermont 05495  
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## I. INTRODUCTION

The following report details the investigation of suspected subsurface petroleum contamination at Hart & Mead, Inc. facility located off of Route 116 in Hinesburg, Vermont. This investigation has been conducted by Griffin International, Inc. (Griffin) for Hart & Mead, Inc. The State of Vermont Department of Environmental Conservation (DEC) requested that this investigation be conducted to determine the degree and extent of the contamination that was first detected during the replacement of underground piping for three gasoline underground storage tanks (UST) in September of 1993. The request was made in their letter to Hart & Mead, Inc. dated November 9, 1993. The work presented here has been conducted in accordance with the Griffin Work Plan dated October 29, 1993 and approved by the DEC on November 9, 1993.

## **II. SITE BACKGROUND**

### **A. Site History**

Approximately eight years ago (1985) gasoline fumes were detected in the Hart & Mead, Inc. building each morning for about one week. The vapors were traced to a leak in the gasoline suction line at the eastern most gasoline pump, which pumped air when left turned off for a while. This problem was repaired and no odors have been noticed in the building since. In September of 1993, Hart & Mead, Inc. began operations to upgrade the piping servicing the gasoline tanks. MacIntyre Fuels of Middlebury, Vermont conducted the installation. MacIntyre contacted Griffin on Hart & Mead's behalf when gasoline vapors were encountered in the shallow excavation after the pavement was removed and free product was observed in a nearby existing monitoring well. Marc Coleman of the Vermont DEC / UST Program visited the site on October 1, 1993 for an inspection and requested that a written work plan and cost estimate be submitted to the state for a subsurface investigation. Mr. John Mead of Hart & Mead, Inc. asked Griffin to perform this work.

Two monitoring wells already existed in the vicinity of the contamination. These wells were constructed improperly, specifically, they were screened to the ground surface with no caps. Griffin provided MacIntyre Fuels with the proper materials and supervised the reconstruction of the wells. In addition, a culvert well was installed in the general vicinity of the gasoline UST pit by MacIntyre while the excavation equipment was present. All soils which had been removed from the area of the old piping were screened by Griffin with an HNu PI-101 photoionization device (PID), and all the soils, approximately 50 cubic yards, were stockpiled on and covered with polyethylene liner on-site (the approximate location of these soils is indicated on the site map). No attempt was made to excavate all the contaminated soils present as the integrity of the three USTs would have been compromised.

### **B. Site Description**

Hart & Mead, Inc. is located on Route 116 at the south end of the Town of Hinesburg. The site is bordered to the south by Route 116, on the west by a residence located approximately 300 feet from the Hart & Mead, Inc. building, and to the north by a shallow drainage ditch, a church and a residential complex. The church and residential complex are located 300 to 400 feet away from the building at Hart & Mead. An elementary school is located directly across Route 116 from the gas station.

Most of the buildings in the vicinity are serviced by public community water supplies, including the school. The sources of the Hinesburg Water Department are two bedrock wells (WSID #5070) located approximately 1/2 mile to the northwest and 3/4 mile to the north northeast of the site. The residential complex, Lyman Meadows, located behind Hart & Mead is serviced by a bedrock well (WSID #20,000) which is located approximately 1000 feet to the northwest. According to the Vermont Water Supply Division records, Hart & Mead, Inc. is located on the southwest edge of the well head protection area (WHPA) designated for the Lyman Meadows

water supply. Two private wells are located within 1/2 mile of Hart & Mead. Well #263 is a 40 foot deep well located approximately 2000 feet to the northeast of the site. Well #342 is a 450 foot deep well located approximately 2000 feet due east of the site. The locations of all known public and private wells in the vicinity of the site and applicable WHPAs are displayed on the Hinesburg Environmental Assessment Map in Appendix A.

Hart & Mead, Inc. currently owns and operates five USTs which contain gasoline, fuel oil, and kerosene (see site map in Appendix B for configuration). A 9500 gallon capacity aboveground storage tank (AST) also exists on site which contains diesel fuel. A 1000 gallon capacity diesel UST was removed on December 29, 1993.

Soils encountered during the excavation of the underground piping in September of 1993 consisted primarily of dense gray clayey soils. This highly impermeable clay layer, which is typical for this region of Vermont, reaches to the ground surface in some areas. Therefore, the drainage ditches to the north of the site are to alleviate drainage problems that occur as a result of this type of soil. The soils surrounding the USTs on site consist of sand and other non-native fill material. It is also known that the depth to bedrock is very shallow directly east of the site as evidenced by exposed bedrock in the easterly neighbor's yard and well data from wells #263 and #342, which indicate three to four feet to bedrock.

In addition to the two monitoring wells that were reconstructed and the recovery well that was installed at the time of UST piping replacement, four monitoring wells currently exist approximately 100 feet to the north of the gasoline USTs. These wells are used as a leak detection method for the fuel oil and kerosene USTs. These wells are constructed of three inch perforated PVC piping with water tight well caps and extend to between 14 and 17 feet below the ground surface.

### **III. INVESTIGATIVE PROCEDURES**

#### **A. Determination of Groundwater Flow**

On November 24, 1993, data was collected from the six monitoring wells (MW1-MW6) and the recovery well (RW1) associated with the site. For each well, the depth to product, depth to water, and approximate total well depth were measured in feet with the use of a Keck interface probe. The water table elevations were determined relative to an arbitrary datum of 100.00 feet at the top of the casing for MW3. From this data, the groundwater contours were interpolated onto the site map and the groundwater direction and gradient determined. From the water level measurements summarized in Appendix D and the groundwater contour map displayed in Appendix B, the calculated groundwater flow for November 24, 1993 was generally to the west at a gradient of 3.3%. Based on surface water drainage patterns and gasoline contamination detected in a monitoring well to the north of the gasoline USTs, actual groundwater flow is likely to the north or northwest.

#### **B. Groundwater Sampling and Analysis**

On November 24, 1993, samples of the groundwater were collected from monitoring wells MW-2, MW-3, and recovery well RW1. Monitoring well MW1 was originally planned to be sampled according to the work plan and cost estimate dated October 29, 1993 for this investigation, but was not sampled due to the presence of approximately 0.1 inch of free product in the well. The locations of the wells are displayed on the site map in Appendix B. All samples were analyzed for benzene, toluene, ethylbenzene, and xylenes (BTEX), common constituents found in petroleum products, and MTBE, a common gasoline additive, per EPA Method 602. Results of the laboratory analysis for those wells sampled on this date are summarized in Appendix D.

According to the results of the laboratory analyses, all of the samples collected from the wells contain contaminants in concentrations that are above the Vermont Drinking Water Standards. The sample collected from monitoring well MW-3 revealed the presence of only MTBE, a gasoline additive.

All samples were collected according to Griffin's groundwater sampling protocol which complies with industry and state standards. Results from the analyses of the duplicate, trip blank and equipment blank samples indicate that adequate quality assurance and control (QA/QC) were maintained during sample collection and analyses.

#### **C. Stockpiled Soils Screening**

The approximately 50 cubic yards of petroleum contaminated soils currently stockpiled and encapsulated in a polyethylene liner were screened for volatile organic compounds (VOCs) with a properly calibrated HNu HW-101 PID on November 24, 1993. Five soil samples were collected randomly from the pile with the use of a hand auger at various depths and locations.

All samples were placed in plastic re-closeable bags and allowed to sit for 10 to 20 minutes before lightly agitating and then measuring the headspace in the bags with a PID. All samples screened were above freezing temperature. The results are displayed below:

<b>Results of the Screening of Stockpiled Soils with a PID at Hart &amp; Mead, Inc.</b>		
<b>Sample</b>	<b>Depth (ft)</b>	<b>PID response (ppm)</b>
1	2.0	152
2	3.0	260
3	2.5	210
4	2.0	210
5	2.5	74

Approximate sample locations are displayed on the soil sample location map included in Appendix B.

#### **D. Screening of Elementary School and Vicinity**

The Hinesburg Elementary School located on the south side of Route 116, across from Hart & Mead, Inc. was also screened for the presence of petroleum vapors. The school building foundation is constructed of concrete slab that extends to only a few feet below the ground elevation. There is no basement in the building. The entire north side of the building was screened with a PID, concentrating on lower elevations and possible routes of entry such as cracks in the wall and floor, electrical outlets, and air vents. The screening of all sample locations resulted in observed VOC concentrations of 0.0 ppm.

In addition to the elementary school, the outside background air in the vicinity of Hart & Mead, Inc. and the USTs were screened with a PID as well. This screening was conducted to determine the extent, if any, of petroleum vapors lingering at or around the Hart & Mead site. The area screened is indicated on the soil sample location map in Appendix B. The results of this screening were 0.0 ppm for all outside locations within the indicated boundaries.

#### **E. Sensitive Receptor Assessment**

The public supply well for the Lyman Meadows residential complex is located approximately 1000 feet to the north northeast of Hart & Mead, Inc. It is a bedrock well whose WHPA extends to include the Hart & Mead property. Based on data generated during this investigation, contaminants present in the groundwater could be migrating to the north or northwest. However, the dense soil conditions at the site will inhibit and retard the significant migration of contaminants in any direction. Topographically, the well is located approximately 30 to 40 feet higher in elevation than the site property. The most recent results from the routine monitoring for VOCs in the Lyman Meadows supply well, conducted in January of 1992, indicate that no VOCs were present at concentrations greater than the reporting limit. These results are displayed

in Appendix E in the form of a data base printout obtained from the Vermont DEC Water Supply Division records.

The closest Hinesburg Water Department supply well to Hart & Mead is 1/2 mile to the northwest. The closest edge of the WHPA for this well is at least 1000 feet to the northwest. The likelihood that this well is at risk of being impacted by petroleum contamination at the Hart & Mead property is low. Soil conditions will greatly inhibit the possibility of contaminant migration and the well is located a considerable distance from the site. Laboratory results from samples from these wells in August, 1990 also indicate no VOCs present in the groundwater.

The private water supply wells, #263 and #342, do not appear to be sensitive receptors. According to elevation contours on the USGS topographical survey of Hinesburg (Appendix A), the two wells are located at elevations 40 to 50 feet higher than the ground elevation at Hart & Mead. Given that the total depth of well #263 is 40 feet, it is highly unlikely that this well is at risk of impact from petroleum contamination from Hart & Mead.

The risk that the elementary school, located across the road from Hart & Mead, could be a receptor of petroleum vapors is low. The school has not been impacted by petroleum vapors as evidenced by the non-detect readings obtained from screening in and around the school and the lack of any reported vapor problems. It is protected by a concrete slab foundation which does not extend more than a few feet underground. It may also be in a location that is hydraulically up gradient of the contamination source.

The drainage ditch located to the north of the site may be a potential receptor. Two legs of the ditch collect storm water from the neighboring properties and direct it to a culvert which runs directly to the north. This culvert discharges into another ditch further to the north. The second ditch then runs north and west. It is not known where the eventual discharge of this second ditch is, but it is probably the La Platte River. The elevation of standing water in the ditches on November 24, 1993 was 1.65 feet lower in elevation than the measured groundwater at the nearest monitoring well location, MW6. Therefore, it may be possible for groundwater to seep into the ditches and collect in the culvert. The ditches were inspected and found to contain no evidence of petroleum contamination. The ditch running from the east had considerable amounts of bacterial sheening, but no odors were detected. No response was indicated on a PID and there did not appear to be any stress to the vegetation in the area.

#### IV. CONCLUSIONS

Based on the data collected from Hart & Mead, Inc. and surrounding areas from the period of October 1, 1993 to November 24, 1993, the following conclusions can be made.

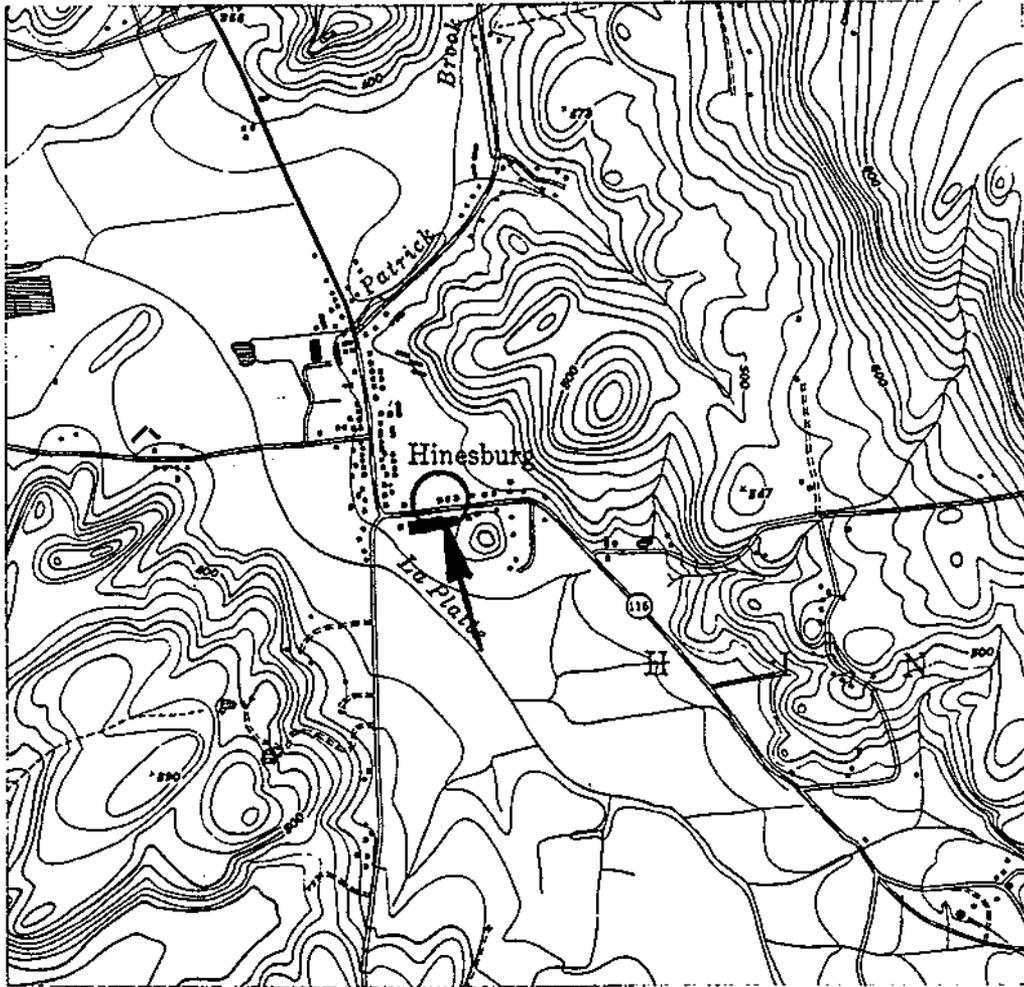
- 1) Petroleum contamination exists in the groundwater (dissolved) around the area of the gasoline USTs whose piping was replaced in September of 1993. A small amount of free product was also discovered in the southern most well on site (MW1). The contamination contains benzene, toluene, xylene, and MTBE, which are commonly found in gasoline.
- 2) The presence of MTBE in monitoring well MW3 indicates that this contaminant may be migrating to the north from the gasoline USTs.
- 3) It is not likely that the Lyman Meadows supply well (WSID #20,000) is at risk of being impacted from petroleum contamination detected at Hart & Mead, Inc. in Hinesburg, Vermont. The impervious soils typical of that region would cause maximum resistance to the transport of contaminants in any direction. The supply well was last analyzed in January of 1992 and was not found to be impacted with VOCs above reporting limits.
- 4) The Hinesburg Town Water Supply has not been impacted and is not likely to be impacted from the petroleum contamination at Hart & Mead based on the impervious soil conditions, and distance to the wells.
- 5) The low elevation of the drainage ditch behind the Hart & Mead main building allows for the possibility of groundwater seepage into the ditch.
- 6) The Hinesburg Elementary School located across the road from Hart & Mead does not appear to be impacted by petroleum vapors from Hart & Mead, Inc. It also is not likely that petroleum contamination would impact the school building due to the slab construction of the building.
- 7) At the time of site visit on November 24, 1993, no petroleum vapors were detected around the Hart & Mead property indicating that petroleum hydrocarbons are not migrating from the site via the air. The breathing zone around the stockpiled soils also did not reveal elevated levels of petroleum vapors.

## V. RECOMMENDATIONS

Based on the above conclusions, Griffin recommends the following action concerning petroleum contamination at Hart & Mead, Inc. in Hinesburg, Vermont.

- 1) In order to track the degree of petroleum contamination at the site in the future, the groundwater on site should be sampled for laboratory analysis on a quarterly basis for a period of one year. Monitoring wells MW1, MW2, MW3, and RW1 should be sampled as well as one of the other wells in the vicinity of the fuel oil tank, such as MW6, to further determine the extent of contamination at the site.
- 2) On a quarterly basis, the polyencapsulated soils on-site should be screened, in the field, for VOCs with a PID at times when the soils are not frozen. Soil sample locations should be collected from several random locations within the stockpile with the use of a hand auger. Once contamination concentrations have been reduced to below detectable concentrations, the soils can then be spread on-site. Hart & Mead, Inc. should routinely inspect the polyethylene liner and make necessary repairs to ensure total encapsulation of the soils during this period.
- 3) During each quarterly monitoring, the ditch located north of the Hart & Mead building should be inspected for evidence of petroleum contamination. Typical characteristics of petroleum impacts include petroleum odors, sheens on water surfaces, and stressed vegetation and should be noted in the quarterly reports.
- 4) Further recommendations relative to the continuation of regular monitoring or for the need of a more active remediation system should be made at the end of data collection for each quarter.

**APPENDIX A**  
**SITE LOCATION MAP**



JOB #: 9934441

SOURCE: USGS



HART & MEAD TEXACO

RT. 116 HINESBURG,

VERMONT

SITE LOCATION MAP

DATE: 12/2/93

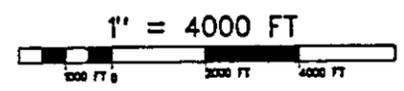
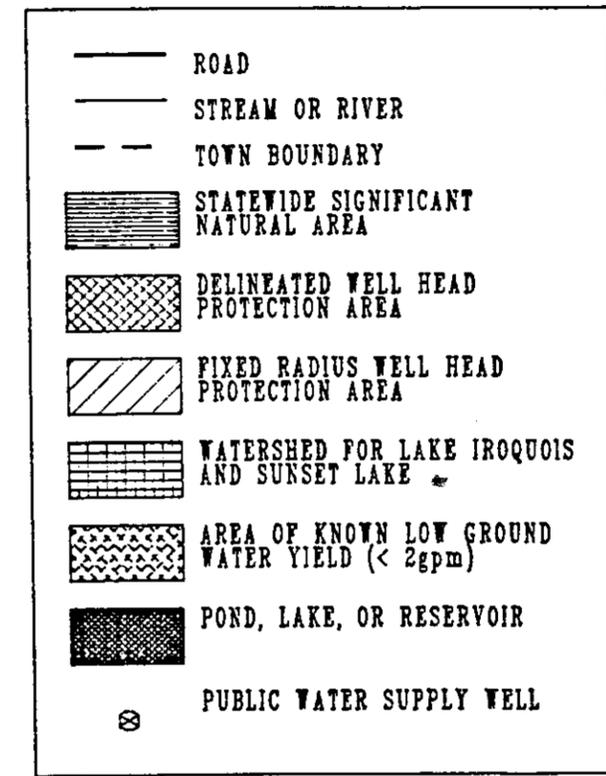
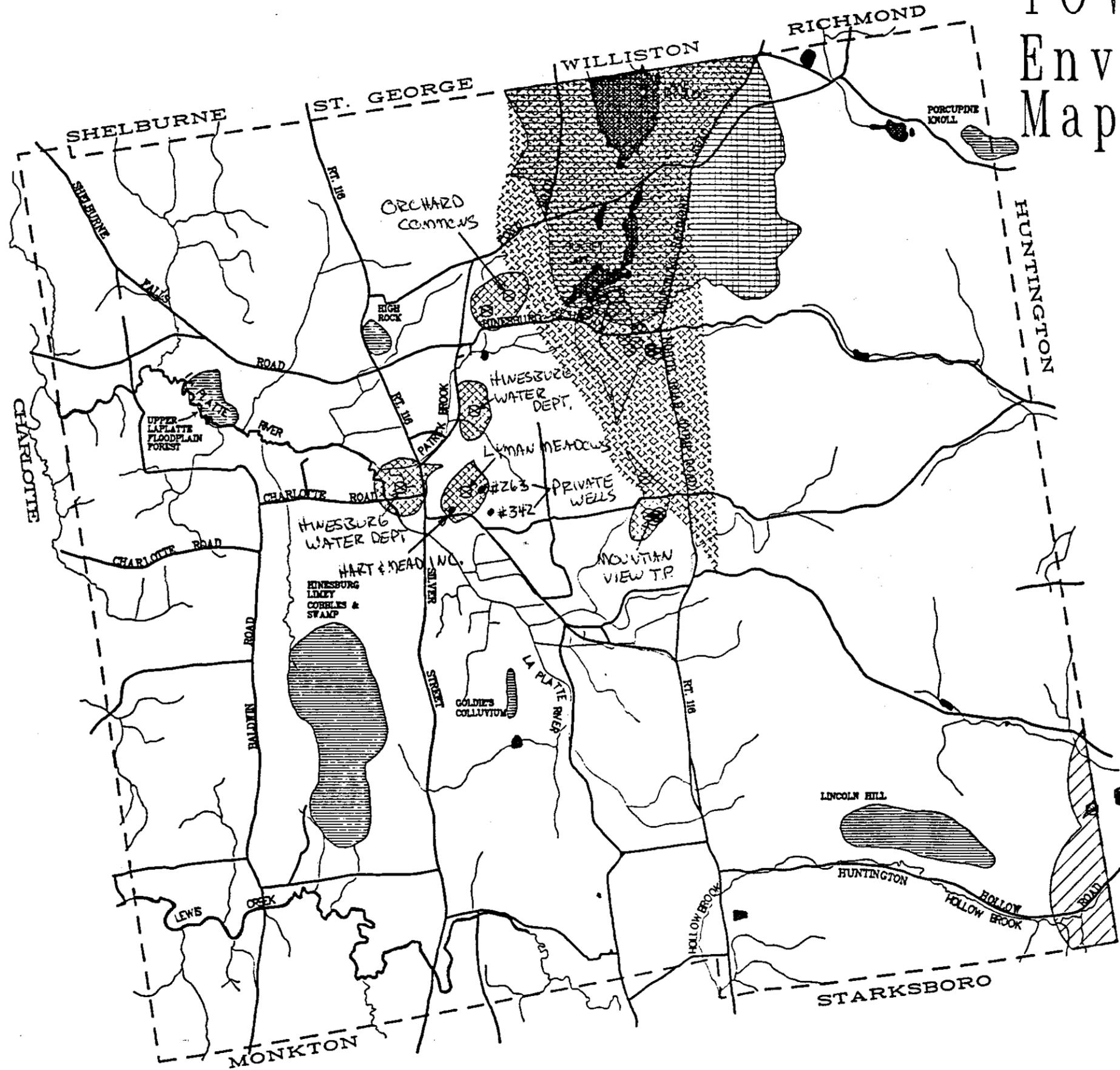
DWG.#:1

SCALE: 1:24000

DRN: SB

APP: ES

# TOWN OF HINESBURG Environmental Assessment Map

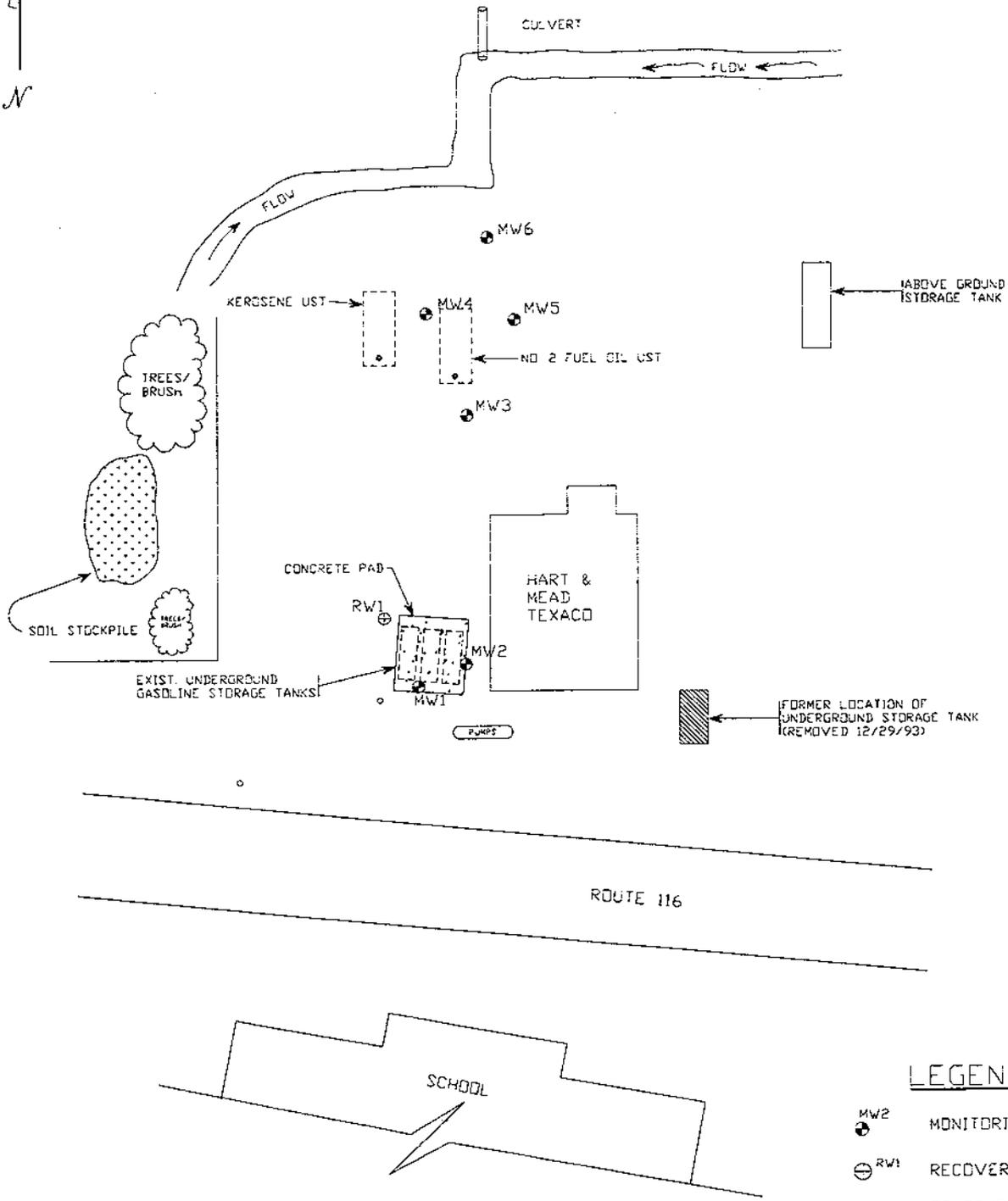


## SOURCE MAPS

TOWN BOUNDARIES - 1:5,000 scale Hinesburg taxmaps, digitized in 1991.  
 SURFACE WATER - VT OGIS digital data, 1978 1:20,000 scale Vermont orthophotos.  
 ROADS - VT OGIS digital data, 1978 1:20,000 scale Vermont orthophotos  
 NATURAL AREAS - Vermont Natural Heritage Program. Digitized from 1:24,000 scale USGS topographic maps  
 WELL HEAD PROTECTION AREAS - VT. OGIS digital data, 1:24,000 scale USGS topographic maps  
 LOW YIELD GROUNDWATER AREA - Delineated by the VT Dept. of Env. Conservation, Groundwater Management Section. Digitized from 1:24,000 scale USGS topographic

**APPENDIX B**

**SITE MAPS**



**LEGEND**

-  MW2 MONITORING WELL
-  RW1 RECOVERY WELL
-  TELEPHONE POLE

JEB # 9934441

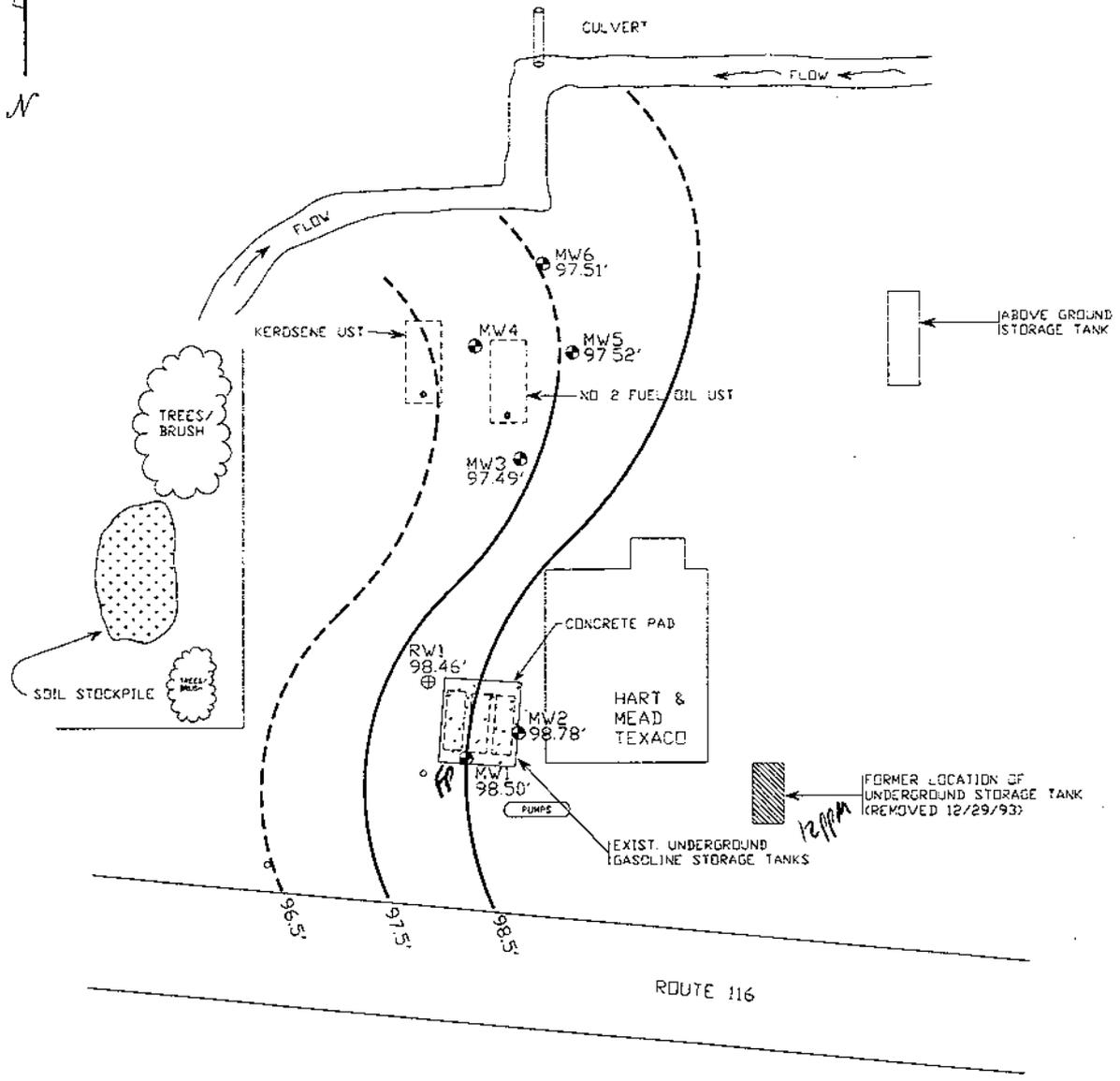


**HART & MEAD TEXACO**

RT. 116 HINESBURG, VERMONT

**SITE MAP**

DATE: 12/3/93	DWG #: 2	SCALE: 1"=60'	DRN: SB	APP: ES
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**LEGEND**

- MW2 MONITORING WELL
- RW1 RECOVERY WELL
- TELEPHONE POLE
- 97.5' GROUNDWATER CONTOUR

JOB #: 9934441

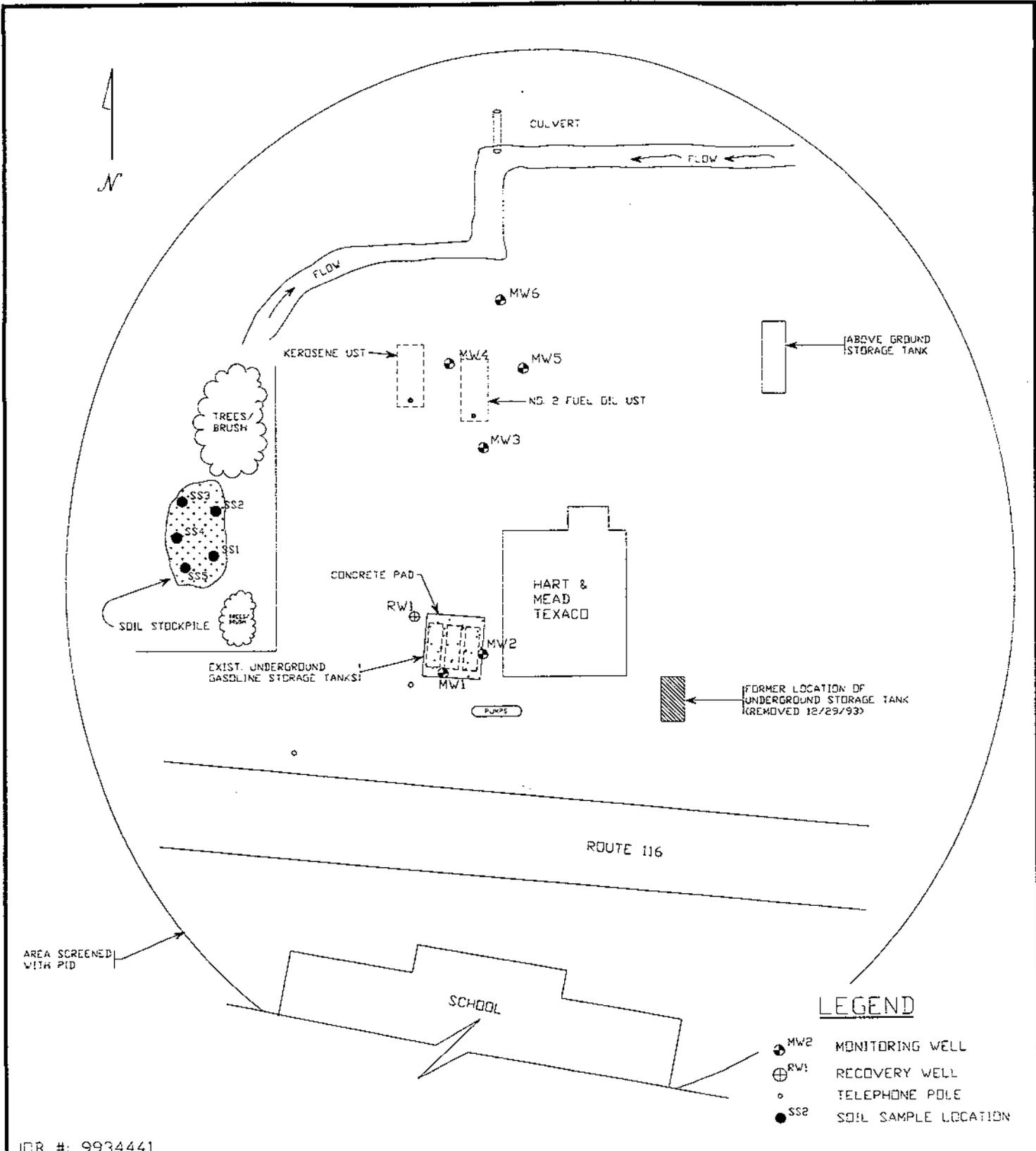


**HART & MEAD TEXACO**

RT. 116 HINESBURG, VERMONT

**GROUNDWATER CONTOUR MAP**

DATE: 12/3/93	DWG.#: 3	SCALE: 1"=60'	DRN: SB	APP: ES
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**LEGEND**

- MW2 MONITORING WELL
- ⊕ RW1 RECOVERY WELL
- TELEPHONE POLE
- SS2 SOIL SAMPLE LOCATION

JOB #: 9934441



**HART & MEAD TEXACO**

RT. 116 HINESBURG, VERMONT

**SOIL SAMPLE LOCATION MAP**

DATE: 12/3/93	DWG #: 4	SCALE: 1"=60'	DRN: SB	APP: ES
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**APPENDIX C**

**GROUNDWATER QUALITY SUMMARY DATA**

**Groundwater Quality Summary  
Hart & Mead Texaco  
Hinesburg, Vermont**

**Monitoring Well 1**

PARAMETER	Date of Sample Collection			Vermont Drinking Water Standards
	11/24/93			
Benzene	No			5.0*
Chlorobenzene	Sample			100*
1,2-DCB	Collected			600*
1,3-DCB				600**
1,4-DCB	Free			75*
Ethylbenzene	Product			700*
Toluene	in Well			1,000*
Xylenes				10,000*
Total BTEX				-
MTBE				40**
BTEX+MTBE				-

**Monitoring Well 2**

PARAMETER	Date of Sample Collection			Vermont Drinking Water Standards
	11/24/93			
Benzene	391.			5.0*
Chlorobenzene	ND			100*
1,2-DCB	ND			600*
1,3-DCB	ND			600**
1,4-DCB	ND			75*
Ethylbenzene	ND			700*
Toluene	271.			1,000*
Xylenes	1,440.			10,000*
Total BTEX	2,102.			-
MTBE	5,730.			40**
BTEX+MTBE	7,832.			-

**Monitoring Well 3**

PARAMETER	Date of Sample Collection			Vermont Drinking Water Standards
	11/24/93			
Benzene	ND			5.0*
Chlorobenzene	ND			100*
1,2-DCB	ND			600*
1,3-DCB	ND			600**
1,4-DCB	ND			75*
Ethylbenzene	ND			700*
Toluene	ND			1,000*
Xylenes	ND			10,000*
Total BTEX	ND			-
MTBE	4240.			40**
BTEX+MTBE	4240.			-

All values reported in ug/L (ppb)

ND - None Detected

TBQ - Trace below quantitation Limits

\* - EPA Established Maximum Contaminant Level

\*\* - Vermont Health Advisory Level

**Groundwater Quality Summary  
Hart & Mead Texaco  
Hinesburg, Vermont**

**Recovery Well 1**

PARAMETER	Date of Sample Collection			Vermont Drinking Water Standards
	11/24/93			
Benzene	1180.			5.0*
Chlorobenzene	ND			100*
1,2-DCB	ND			600*
1,3-DCB	ND			600**
1,4-DCB	ND			75*
Ethylbenzene	ND			700*
Toluene	4890.			1,000*
Xylenes	4600.			10,000*
Total BTEX	10670.			-
MTBE	7470.			40**
BTEX+MTBE	18140.			-

All values reported in ug/L (ppb)

ND - None Detected

TBQ - Trace below quantitation Limits

\* - EPA Established Maximum Contaminant Level

\*\* - Vermont Health Advisory Level

**Vermont Drinking Water Standards and  
Quality Assurance and Control Samples**

Sample Date: November 24, 1993

PARAMETER	Equipment Blank	Trip Blank	Duplicate (RW1)	Vermont Drinking Water Standards
Benzene	ND	ND	1,140.	5.0*
Chlorobenzene	ND	ND	ND	100*
1,2-DCB	ND	ND	ND	600*
1,3-DCB	ND	ND	ND	600**
1,4-DCB	ND	ND	ND	75*
Ethylbenzene	ND	ND	ND	700*
Toluene	ND	ND	4,800.	1,000*
Xylenes	ND	ND	4,740.	10,000*
Total BTEX	ND	ND	10,680.	-
MTBE	ND	ND	7,170.	40**
BTEX+MTBE	ND	ND	17,850.	-

ND - None Detected

TBQ - Trace Below Quantitation Limits

All Values Reported in ug/L (ppb)

**APPENDIX D**

**GROUNDWATER LEVEL DATA**

1/3/94

**Liquid Level Monitoring Data  
Hart & Mead Texaco  
Hinesburg, Vermont**

**Monitoring Date:  
November 24, 1993**

Well I.D.	Well Depth	Top of Casing Elevation	Depth to Product	Depth to Water	Product Thickness	Specific Gravity of Product	Hydro Equivalent	Corrected Depth to Water	Corrected Water Table Elevation
MW-1	10.5	100.22	1.72	1.73	0.0083	0.88	0.0073	1.72	98.50
MW-2	7.5	100.38	-	1.60				1.60	98.78
MW-3	14.0	100.00	-	2.51				2.51	97.49
MW-4	14.5	100.93	-	3.52				3.52	97.41
MW-5	14.0	100.66	-	3.14	-	-	-	3.14	97.52
MW-6	17.0	101.91	-	4.40				4.40	97.51
RW-1	10.0	100.32	-	1.86	-	-	-	1.86	98.46

Notes: All values reported in feet.  
Product thickness for MW-1 is approximately 0.1 inch

**APPENDIX E**

**LABORATORY ANALYSIS REPORTS**

RECEIVED JAN 16 1994

page 1



Date Of Sample	Location	Constituent	Result	Tolerance	Units	PQL	Date Of Analysis
20000	LYMAN MEADOWS						
11/02/89	SAMP.TAP AT RESERVOI	No VOCs present in concentrations greater than the reporting limit					11/08/89
01/15/92		No VOCs present in concentrations greater than the reporting limit					01/21/92

Date Of Sample	Location	Constituent	Result	Tolerance	Units	PQL	Date Of Analysis
5070 07/23/90	HINESBURG WATER DEPT TOWN HALL	No VOCs present in concentrations greater than the reporting limit					07/25/90
07/23/90	PUMPHOUSE	No VOCs present in concentrations greater than the reporting limit					07/25/90



**ENDYNE, INC.**

Laboratory Services

32 James Brown Drive  
Williston, Vermont 05495  
(802) 879-4333  
FAX 879-7103

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REPORT OF LABORATORY ANALYSIS

CLIENT: Griffin International  
PROJECT NAME: Hart & Mead  
REPORT DATE: December 8, 1993  
DATE SAMPLED: November 24, 1993

PROJECT CODE: GIHM1386  
REF.#: 54,511 - 54,516

Enclosed please find the results of the analyses performed for the samples referenced on the attached chain of custody. Chain of custody indicated samples were preserved with HCl.

All samples were prepared and analyzed by requirements outlined in the referenced method and within the specified holding times. All instrumentation was calibrated with the appropriate frequency and verified by the requirements outlined in the referenced method. Blank contamination was not observed at levels affecting the analytical results.

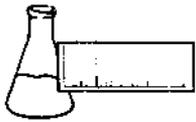
Analytical method precision and accuracy was monitored by laboratory control standards which included matrix spike, duplicate and quality control analyses. These standards were determined to be within established laboratory method acceptance limits.

Individual sample performance was monitored by the addition of surrogate analytes to each sample. All surrogate recovery data was determined to be within laboratory QA/QC guidelines unless otherwise noted.

Reviewed by,

Harry B. Locker, Ph.D.  
Laboratory Director

enclosures



**ENDYNE, INC.**

**Laboratory Services**

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FAX 879-7103

LABORATORY REPORT

EPA METHOD 8020--PURGEABLE AROMATICS

CLIENT: Griffin International  
PROJECT NAME: Hart & Mead  
REPORT DATE: December 8, 1993  
DATE SAMPLED: November 24, 1993  
DATE RECEIVED: November 29, 1993  
ANALYSIS DATE: December 8, 1993

PROJECT CODE: GIHM1386  
REF.#: 54,512  
STATION: MW 2  
TIME SAMPLED: 11:38  
SAMPLER: E. Sandblon

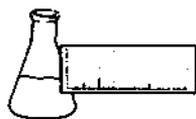
<u>Parameter</u>	<u>Detection Limit (ug/L)<sup>1</sup></u>	<u>Concentration (ug/L)</u>
Benzene	20	391.
Chlorobenzene	20	ND <sup>2</sup>
1,2-Dichlorobenzene	20	ND
1,3-Dichlorobenzene	20	ND
1,4-Dichlorobenzene	20	ND
Ethylbenzene	20	ND
Toluene	20	271.
Xylenes	20	1,440.
MTBE	200	5,730.

Bromobenzene Surrogate Recovery: 104%

NUMBER OF UNIDENTIFIED PEAKS FOUND: 10

NOTES:

- 1 Detection limit raised due to high levels of contaminants. Sample run at 5% dilution.
- 2 None detected



**ENDYNE, INC.**

**Laboratory Services**

32 James Brown Drive  
Williston, Vermont 05495  
(802) 879-4333  
FAX 879-7103

LABORATORY REPORT

EPA METHOD 8020--PURGEABLE AROMATICS

CLIENT: Griffin International  
PROJECT NAME: Hart & Mead  
REPORT DATE: December 8, 1993  
DATE SAMPLED: November 24, 1993  
DATE RECEIVED: November 29, 1993  
ANALYSIS DATE: December 8, 1993

PROJECT CODE: GIHM1386  
REF.#: 54,511  
STATION: MW 3  
TIME SAMPLED: 11:21  
SAMPLER: E. Sandblon

<u>Parameter</u>	<u>Detection Limit (ug/L)<sup>1</sup></u>	<u>Concentration (ug/L)</u>
Benzene	20	ND <sup>2</sup>
Chlorobenzene	20	ND
1,2-Dichlorobenzene	20	ND
1,3-Dichlorobenzene	20	ND
1,4-Dichlorobenzene	20	ND
Ethylbenzene	20	ND
Toluene	20	ND
Xylenes	20	ND
MTBE	200	4,240.

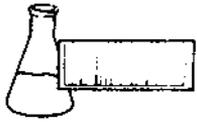
Bromobenzene Surrogate Recovery: 109%

NUMBER OF UNIDENTIFIED PEAKS FOUND: 1

NOTES:

1 Detection limit raised due to high levels of contaminants. Sample run at 5% dilution.

2 None detected



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LABORATORY REPORT

EPA METHOD 8020--PURGEABLE AROMATICS

CLIENT: Griffin International  
PROJECT NAME: Hart & Mead  
REPORT DATE: December 8, 1993  
DATE SAMPLED: November 24, 1993  
DATE RECEIVED: November 29, 1993  
ANALYSIS DATE: December 8, 1993

PROJECT CODE: GIHM1386  
REF.#: 54,513  
STATION: RW 1  
TIME SAMPLED: 12:03  
SAMPLER: E. Sandblon

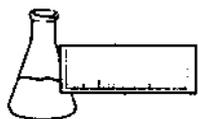
<u>Parameter</u>	<u>Detection Limit (ug/L)<sup>1</sup></u>	<u>Concentration (ug/L)</u>
Benzene	100	1,180.
Chlorobenzene	100	ND <sup>2</sup>
1,2-Dichlorobenzene	100	ND
1,3-Dichlorobenzene	100	ND
1,4-Dichlorobenzene	100	ND
Ethylbenzene	100	ND
Toluene	100	4,890.
Xylenes	100	4,600.
MTBE	1000	7,470.

Bromobenzene Surrogate Recovery: 105%

NUMBER OF UNIDENTIFIED PEAKS FOUND: 6

NOTES:

- 1 Detection limit raised due to high levels of contaminants. Sample run at 1% dilution.
- 2 None detected



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LABORATORY REPORT

EPA METHOD 8020--PURGEABLE AROMATICS

CLIENT: Griffin International  
PROJECT NAME: Hart & Mead  
REPORT DATE: December 8, 1993  
DATE SAMPLED: November 24, 1993  
DATE RECEIVED: November 29, 1993  
ANALYSIS DATE: December 8, 1993

PROJECT CODE: GIHM1386  
REF.#: 54,514  
STATION: Duplicate (RW 1)  
TIME SAMPLED: 12:03  
SAMPLER: E. Sandblon

<u>Parameter</u>	<u>Detection Limit (ug/L)<sup>1</sup></u>	<u>Concentration (ug/L)</u>
Benzene	100	1,140.
Chlorobenzene	100	ND <sup>2</sup>
1,2-Dichlorobenzene	100	ND
1,3-Dichlorobenzene	100	ND
1,4-Dichlorobenzene	100	ND
Ethylbenzene	100	ND
Toluene	100	4,800.
Xylenes	100	4,740.
MTBE	1000	7,170.

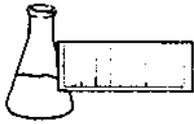
Bromobenzene Surrogate Recovery: 104%

NUMBER OF UNIDENTIFIED PEAKS FOUND: 6

NOTES:

1 Detection limit raised due to high levels of contaminants. Sample run at 1% dilution.

2 None detected



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LABORATORY REPORT

EPA METHOD 8020--PURGEABLE AROMATICS

CLIENT: Griffin International  
PROJECT NAME: Hart & Mead  
REPORT DATE: December 8, 1993  
DATE SAMPLED: November 24, 1993  
DATE RECEIVED: November 29, 1993  
ANALYSIS DATE: December 8, 1993

PROJECT CODE: GIHM1386  
REF.#: 54,515  
STATION: Trip Blank  
TIME SAMPLED: 10:00  
SAMPLER: E. Sandblon

<u>Parameter</u>	<u>Detection Limit (ug/L)</u>	<u>Concentration (ug/L)</u>
Benzene	1	ND <sup>1</sup>
Chlorobenzene	1	ND
1,2-Dichlorobenzene	1	ND
1,3-Dichlorobenzene	1	ND
1,4-Dichlorobenzene	1	ND
Ethylbenzene	1	ND
Toluene	1	ND
Xylenes	1	ND
MTBE	10	ND

Bromobenzene Surrogate Recovery: 108%

NUMBER OF UNIDENTIFIED PEAKS FOUND: 0

NOTES:

1 None detected



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LABORATORY REPORT

EPA METHOD 8020--PURGEABLE AROMATICS

CLIENT: Griffin International  
PROJECT NAME: Hart & Mead  
REPORT DATE: December 8, 1993  
DATE SAMPLED: November 24, 1993  
DATE RECEIVED: November 29, 1993  
ANALYSIS DATE: December 8, 1993

PROJECT CODE: GIHM1386  
REF.#: 54,516  
STATION: Equipment Blank  
TIME SAMPLED: 12:28  
SAMPLER: E. Sandblon

<u>Parameter</u>	<u>Detection Limit (ug/L)</u>	<u>Concentration (ug/L)</u>
Benzene	1	ND <sup>1</sup>
Chlorobenzene	1	ND
1,2-Dichlorobenzene	1	ND
1,3-Dichlorobenzene	1	ND
1,4-Dichlorobenzene	1	ND
Ethylbenzene	1	ND
Toluene	1	ND
Xylenes	1	ND
MTBE	10	ND

Bromobenzene Surrogate Recovery: 105%

NUMBER OF UNIDENTIFIED PEAKS FOUND: 0

NOTES:

1 None detected



32 James Brown Drive  
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(802) 879-6383

CHAIN-OF-CUSTODY RECORD

008444

993444

Project Name: **HART & MEAD** Billing Address: **ZPS PORTSET LN**  
 Site Location: **Windsor, VT** Reporting Address: **GRIF-FW INT**  
 Endyne Project Number: **879-7788** Company Contact Name/Phone #: **E. SANDBLON / 879-7788** Sampler Name: **E. Sandblon**  
 Phone #: **879-7788**

Lab #	Sample Location	Matrix	G R A B	C O M P	Date/Time	Sample Containers		Field Results/Remarks	Analysis Required	Sample Preservation	Rush
						No.	Type/Size				
	<del>MW3</del> MW3	H <sub>2</sub> O			11/24/95 11:21	Z	40 ml		8020	HCl	
	<del>MW2</del> MW2	H <sub>2</sub> C			11:38						
	<del>RW1</del> RW1	H <sub>2</sub> C			12:03						
	Duplicate (RW1)	H <sub>2</sub> C			12:03						
	Trip Blank	H <sub>2</sub> C			10:00						
	Equip Blank	H <sub>2</sub> O			12:06						

Relinquished by: Signature *[Signature]* Date/Time *11/24/95 1:00 AM*  
 Received by: Signature *[Signature]* Date/Time  
 Relinquished by: Signature \_\_\_\_\_ Date/Time  
 Received by: Signature \_\_\_\_\_ Date/Time

Requested Analyses

Lab #	Analysis	Lab #	Analysis
1	pH	16	Metals (Specify)
2	Chloride	17	Coliform (Specify)
3	Ammonia N	18	COD
4	Nitrite N	19	BTEX
5	Nitrate N	20	EPA 601/602
29	TCLP (Specify: volatiles, semi-volatiles, metals, pesticides, herbicides)	21	EPA 624
30	Other (Specify):	22	EPA 625 B/N or A
		23	EPA 418.1
		24	EPA 608 Pest/PCB
		25	EPA 8240
		26	EPA 8270 B/N or Acid
		27	EPA 8060/8020
		28	EPA 8080 Pest/PCB