Ground Water
of Vermont
A Division of Marin Environmental, Inc.

14 January, 1997

Mr. John Schmeltzer
Department of Environmental Conservation
Waste Management Division
103 South Main Street, West Building
Waterbury, Vermont 05671-0404

RE: Expressway Investigation Report
Chernesky Garage, Grand Isle, Vermont (Site # 96-2054)

Dear Schmeltzer,

Enclosed is one bound copy of the Initial Site Investigation Report for Chernesky Garage located in Grand Isle, Vermont.

Please call me if you have any questions or comments regarding this report.

Sincerely,

Robert J. Ross, CGWP
Hydrogeologist

cc. Michael Chernesky
Aleta Schuppin and Mitch McGrath

enclosure

Ref: 96077C01.DOC

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INITIAL SITE INVESTIGATION REPORT

CHERNESKY GARAGE
U.S. Route 2
Grand Isle, Vermont

(VT DEC SITE #96-2054)

14 January, 1997

Prepared for:

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EXECUTIVE SUMMARY

Ground Water of Vermont (GWV) has conducted an initial site investigation at the Chernesky Garage located on U.S. Route 2 in Grand Isle, Vermont and has concluded the following:

- Two abandoned gasoline underground storage tanks (USTs) removed from the site on 9 October 1996 are the likely principal source of gasoline contamination identified at the site — two holes were discovered in one tank and six holes were discovered in the other tank. The gasoline USTs were reportedly abandoned prior to 1979, when Mr. Chernesky purchased the property.
- Analytical results of ground water samples collected from on-site monitoring wells detected low concentrations of gasoline compounds and indicate that residual subsurface contamination is limited primarily to the immediate vicinity of the former location of the USTs.
- Observations made during the UST closure, which included excavation of approximately 180 cubic yards of gasoline contaminated soils, and recent ground-water sample results from monitoring wells completed in and downgradient of the former UST locations suggest that a majority of the contaminated soil was removed during the UST closure.
- Benzene was detected above the Vermont Groundwater Enforcement Standard (VGES) of 5 parts per billion in samples collected from MW-1 and MW-2, both of which were installed in the area excavated to remove petroleum contaminated soil from the site.
- The source of methyl-tertiary butyl ether (MTBE) detected at low concentrations (less than 6.5 parts per billion - ppb) in three on-site monitoring wells may be the nearby Grand Isle Store which is located approximately 300 feet south of the site and appears to be obliquely upgradient. MTBE was detected in an on-site well located upgradient of the former USTs and the USTs were reportedly abandoned prior to 1979 when MTBE began to be used as an octane-busting gasoline additive.
- Toluene and xylenes were detected at low concentrations, less than 1.3 ppb on a volume/volume (v/v) basis, in ambient air samples collected in the kitchen and upstairs area of the adjacent Schuppin/McGrath home. Trace concentrations of benzene and ethylbenzene, less than 0.35 ppb v/v, were also detected in these samples. None of the BTEX compounds or MTBE were detected in the samples collected from the crawl space of the Schuppin/McGrath home.
- Subsurface contamination at the site does not appear to have migrated to a sump located in the crawlspace in the Schuppin/McGrath home — analysis of two ground-water samples from separate sampling events did not detect the presence of BTEX compounds or MTBE.
- The water line serving the Schuppin/McGrath home passes through an area of residual soil contamination.
- No drinking-water supplies appear to be at risk from the residual soil contamination at the site— the site and all buildings within a half-mile radius of the garage are served by

a community drinking-water supply system which receives drinking-water from Lake Champlain.

- Ground water in the unconfined surficial aquifer directly beneath the site appears to be flowing in a northeasterly direction. The average gradient of the local ground-water table on 12 November 1996 was about 2 percent. Average flow velocities in the ground water moving through the moderately-dense glacial till deposits are estimated to be in the range of 0.006 to 0.03 feet per day (ft/day).

On the basis of the results of this investigation, GWV makes the following recommendations:

1. The on-site monitoring wells should be resampled to confirm the November 1996 analytical results. The samples should be analyzed for BTEX compounds and MTBE by EPA Method 8020. At that time, ground-water level measurements should be obtained from the monitoring wells located at the Grand Isle Store property, which have been tied into the site survey for the Chernesky site, to assist with determining the source of MTBE contamination identified on the Chernesky property.
2. Indoor air in the Schuppin/McGrath home should be resampled in January/February 1997 to confirm the October 1996 analytical results. The samples should be analyzed for BTEX compounds and MTBE by EPA Method TO2.
3. The tap-water of the Schuppin/McGrath home should be sampled to evaluate possible contaminant entry into the water line that passes through residual soil contamination at the site. The sample should be analyzed for BTEX compounds and MTBE by EPA Method 8020.
4. The soil stockpile, located on Lovers Lane in Grand Isle, should be monitored semi-annually with a photoionization detector (PID), and the integrity of the stockpile cover maintained. When PID readings have decreased to below one part per million (ppm), permission should be sought from the VT DEC to return the soils to the site for thin-spreading. If thin spreading on-site is not feasible, soil samples should be collected from the piles and analyzed for petroleum compounds, in accordance with VT DEC guidelines.
5. The area of the Schuppin/McGrath front lawn damaged during test pit installation and monitoring well installation should be landscaped, and the area of the drive-way that was excavated during removal of contaminated soil checked for settling and repaired as necessary in the Spring of 1997.

1.0 INTRODUCTION

This report details the results of an initial site investigation conducted at the Chernesky Garage, located on U.S. Route 2 in the village of Grand Isle, Vermont (Figure 1). This report has been prepared by Ground Water of Vermont (GWV) for Mr. Michael Chernesky. The site investigation was initiated with Vermont Department of Environmental Conservation (VT DEC) approval following the discovery of two abandoned underground storage tanks (USTs) on the property. Mr. Chernesky, the site owner, was directed by the Secretary of the Vermont Agency of Natural Resources (ANR) to remove the abandoned USTs in a letter dated 10 September 1996.

1.1 Site Location and Physical Setting

The property is occupied by one two-story building — a one-bay automotive-service garage with an automotive-supply storage area and office on the second floor. The building is situated on the southern portion of the property; the former gasoline USTs and pump island were located approximately three feet from the northeast corner of the garage along U.S. Route 2 (Figure 2).

The ground surface around the Chernesky Garage has an average elevation of about 170 feet above mean sea level and slopes toward the north-northeast. Surface drainage appears to be controlled by the slope of the ground surface and parking lots. The presumed direction of ground-water flow in the area is toward the northeast. Pearl Bay on Lake Champlain is located approximately 2,500 feet east of the garage (USGS, 1984).

The site and all buildings within a 0.5 mile radius of the garage are served by a community drinking-water supply system. The nearest building in the presumed downgradient direction, owned by Aleta Schuppin and Mitch McGrath, also receives drinking water from the community system. The town of Grand Isle is in the process of upgrading the municipal water service and is planning to install a new water line along U.S. Route 2 with connections to Mr. Chernesky's garage and Schuppin/McGrath home. The site and adjacent properties have individual on-site waste-water disposal systems.

The Grand Isle Store, located south of Mr. Chernesky's property, is included on the VT DECs active hazardous waste sites list (Site # 93-1525). A petroleum release was detected at the Grand Isle Store in 1992 during a Phase II environmental site assessment. In October 1993 one diesel UST was closed in place and in November 1994 three gasoline USTs were removed from the site. During removal of the gasoline USTs, photoionization detector (PID) readings ranged from 2.5 to 1,030 parts per million (ppm). At the time of the removal, the tanks appeared to be in fair to good condition with no visible holes. Ground-water flow direction and contaminant distribution based on available data from on-site monitoring wells indicate a northeasterly trend, which is generally toward Mr. Chernesky's property. Ground-Water of Vermont has been retained by the owners of the former gasoline USTs (S.B. Collins, Inc.) and the former diesel UST (Vermont Federal Bank) to monitor ground-water quality at the Grand Isle Store on an annual basis.

Native surficial materials in the area are mapped as glacial till (Stewart and MacClintock, 1970). Bedrock in the area is mapped as the Stoney Point Formation, which is composed predominantly of black shale of middle Ordovician age (Doll, 1961).

1.2 Site History

Michael Chernesky has owned the property since 1979. At that time, Mr. Chernesky reports that he had no knowledge of the presence of the USTs on the property. Property deeds provided by the Town of Grand Isle dating back to 1928, do not mention the presence of the USTs; however, town employees indicated that the property was once used as an automotive service station and gasoline retail outlet. Mr. Chernesky currently operates an automotive restoration business on the property. A summary of the ownership history is as follows:

- S.W Tobias to Walton Hazen (8/2/28, Vol. 11, p.188),
- Walton Hazen to Richard and Anita Hazen (9/15/47, Vol. 12, p. 166),
- Richard and Anita Hazen to Wilfred and Elaine Delisle (7/6/72, Vol. 26, p.163),
- Wilfred and Elaine Delisle to Randolph and Joanne Merin (6/7/76, Vol. 26, p.126),
- Randolph and Joanne Merin to Michael Chernesky (12/8/79, Vol. 31, p. 51).

Two USTs were removed from the property on 9 October 1996: a 1,000-gallon abandoned, single-walled-steel gasoline UST (UST #1), of unknown age, located six feet from the northeast corner of the garage and a 1,000-gallon abandoned, single-walled-steel gasoline UST (UST #2), of unknown age, located three feet from the northeast corner of the garage and parallel to UST # 1. According to Michael Chernesky, the site owner, no other USTs are known to exist on the site.

The USTs were oriented side-by-side and perpendicular to U.S. Route 2. The former pump island appears to have been located over the east end of both tanks and parallel to U.S. Route 2. No vent lines, fuel dispensers or associated piping were encountered or observed during the UST closure.

Prior to excavation, approximately 1,700 gallons of water/gasoline were removed from the tanks. Also, approximately 30 gallons of residual fuel/sludge were pumped from each tank and excess product/water bailed from each fill-pipe containment reservoir. The UST excavation, which encompassed both tanks, was approximately 12 feet wide, 20 feet long, and 6 feet deep.

The northern-most UST (UST #1) was found to be in poor condition upon removal, with two visible holes, approximately 1/8 to 1/4 inch in diameter. The southern tank (UST #2) was also found to be in poor condition upon removal, with six visible holes ranging in size from 1/8 to 1/2 inch in diameter.

Three test pits were excavated in the area north of the USTs to within three feet of the Schuppin/McGrath home. The test pits were completed to evaluate the extent of contamination on the Schuppin/McGrath property. PID readings on soils from three test

were between 1.0 and 1,884 ppm, with the highest concentrations at about 4.5 feet bgs. PID readings in the excavation averaged approximately 500 ppm.

At the direction of Mr. Marc Coleman of the VT DEC, GWV supervised the removal of approximately 180 cubic yards of petroleum-contaminated soils. Excavation activities were conducted on 9 and 10 October 1996 following the removal of both tanks. Not all of the contaminated soils were removed due to the presence of buildings, an on-site water line, overhead power lines, and U.S. Route 2. The excavated area, which encompassed both tanks and the test pits, was approximately 30 feet wide, 40 feet long, and 6 feet deep. The average PID readings in the stockpiled soil was about 1,330 ppm.

The soils excavated from the former UST locations were transported from the site by T.L. Boise Excavating, Inc. and polyencapsulated on property owned by Mr. Brian McNeil, located at 25 Lovers' Lane approximately one mile east of the garage. Clean fill material, obtained from the water line installation being conducted along U.S. Route 2 south of the site, was used to backfill the excavation.

During the placement of backfill material in the excavation, T.L. Boise Excavating, Inc., assisted GWV by installing two monitoring wells — one near the former location of UST # 2 (MW-1) and one at the northern extent of the excavation, approximately three feet south of the Schuppin/McGrath home (MW-2).

GWV initiated an initial site investigation after receiving approval on 9 October 1996 from Mr. Marc Coleman of the VT DEC.

1.3 Objectives and Scope of Work

The objectives of this initial site investigation were to:

- Evaluate the degree and extent of petroleum contamination in soil and ground water;
- Qualitatively assess the risks to environmental and public health via relevant sensitive receptors and potential contaminant migration pathways; and
- Identify potentially appropriate monitoring and/or remedial actions based on the site conditions.

To accomplish these purposes, GWV has:

- Reviewed existing historical site data.
- Collected and submitted indoor-air samples from the Schuppin/McGrath home for laboratory analysis of volatile petroleum compounds
- Supervised the installation of four additional soil borings/monitoring wells, and determined the extent of gasoline contamination, and the local ground-water flow direction, gradient and approximate velocity.
- Screened subsurface soils from the soil borings for the possible presence of volatile organic compounds (VOCs) using a photoionization detector (PID).
- Collected and submitted ground-water samples from the on-site monitoring wells for laboratory analysis of volatile petroleum compounds.

- Identified sensitive receptors in the area, and assessed the risk posed by the contamination to these potential receptors.
- Evaluated the need for treatment and/or a long-term monitoring plan for the site.
- Prepared this summary report, which details the work performed, qualitatively assesses risks, provides conclusions and offers recommendations for further action.

2.0 INVESTIGATIVE PROCEDURES AND RESULTS

2.1 Soil Boring / Monitoring Well Installation

Prior to backfilling the UST excavation on 10 October 1996, two monitoring wells (MW-1 and MW-2) were placed within the UST excavation. The monitoring wells consisted of 5-foot sections of two-inch-diameter machine-slotted PVC screen with solid riser extending to ground surface. The bottoms of both wells were set at approximately 6 feet below ground surface (bgs). The wells were backfilled with fill material obtained from the water line installation being conducted along U.S. Route 2 south of the site. The completed monitoring wells were protected by a flush-mounted steel roadbox cemented into place at ground surface. A water-tight compression cap was placed on top of the PVC riser.

On 5 November 1996, GWV supervised the completion of four soil borings/monitoring wells (MW-3, MW-4, MW-5, and MW-6). Approximate monitoring well locations are shown on Figure 2. The soil borings and monitoring wells were installed using vibratory drilling technique by Adams Engineering of Underhill, Vermont.

The soils encountered in each boring generally consisted of gray poorly sorted glacial till. The borings for MW-3 and MW-4 were completed to a depth 10 feet bgs and monitoring wells MW-5 and MW-6 were completed to depths of 6.5 and 9 feet bgs, respectively. Ground water was encountered in the till deposits between 2 and 5 feet bgs at the time of drilling. Soil samples were collected from each boring using a five-foot long core tube lined with polyethylene. Soil recovery was generally very good, ranging between 60 and 100 percent. The core-tube samples were screened for the possible presence of VOCs with a photo-ionization detector (PID) and logged for lithology by a GWV field geologist. All downhole drilling and sampling equipment was decontaminated during use as appropriate.

Two-inch-diameter PVC monitoring wells with 5 feet of 0.010-inch slots were installed to 10 feet bgs at MW-2 and MW-3, and to 6.5 and 9 feet bgs at MW-5 and MW-6, respectively. The tops of the screen sections were set about one to four feet below the ground surface. Sections of solid PVC were added to bring the tops of the well casings to approximately 0.5 feet bgs. Clean silica #1 filter sand was placed in the borehole annulus around each well to nominally one foot above the slotted interval. A bentonite pellet seal, approximately 1 foot thick, was set above the sand pack and the remainder of the annular space was backfilled with native material. Each completed monitoring well was protected by a flush-mounted steel roadbox cemented into place. Each well casing was topped with a water-tight compression cap. All of the monitoring wells were developed after installation using a peristaltic pump. Monitoring-well construction details are included on the soil-boring and well-construction logs in Appendix A.

2.2 Soil-Screening Results

During the completion of soil borings on 5 November 1996, no PID field-screening response was detected on soil samples collected from any of the soil borings. PID readings at monitoring wells MW-1 and MW-2, installed on 10 October in the UST excavation, ranged

from 85 to 1,500 ppm, with the highest readings obtained at about 4 feet bgs. PID screening results are included on the boring logs in Appendix A.

The GWV field geologist screened soil samples from each soil boring for the possible presence of volatile organic compounds (VOCs) using a Photovac Tip II portable photoionization detector (PID). The PID was calibrated with an isobutylene standard gas to a benzene reference.

2.3 Determination of Ground-Water Flow Direction and Gradient

Ground water in the unconfined surficial aquifer directly beneath the site appears to be flowing in a northeasterly direction. The average gradient of the local ground-water table on 12 November 1996 was about 2 percent. Average flow velocities in the ground water moving through the moderately-dense glacial till deposits are estimated to be in the range of 0.006 to 0.03 feet per day (ft/day). Water-level measurements and elevation calculations for 12 November 1996 are presented in Table 1. The ground-water contour map in Figure 3 was prepared using this data.

TABLE 1. Ground-Water Elevations Calculations

Well I. D.	Top of Casing Elevation *	Depth to Water (feet, TOC)	Ground Water Elevation
MW-1	99.27	1.29	97.98
MW-2	99.19	1.67	97.52
MW-3	98.04	0.75	97.29
MW-4	98.85	1.84	97.01
MW-5	99.27	0.92	98.35
MW-6	100.00	1.65	98.35

*Top of casing (TOC) and ground water elevations are relative to an arbitrary site datum of 100.00 feet

Fluid levels were measured in the six monitoring wells on 12 November 1996. The depth to water varied from 0.75 feet (MW-3) to 1.84 feet (MW-4) below top-of-casing. No free-phase gasoline was observed in any of the on-site monitoring wells. Static water-table elevations were computed for each monitoring well by subtracting the measured depth-to-water readings from the surveyed top-of-casing elevations, which are relative to an arbitrary site datum of 100.00 feet.

The shallow aquifer at the site consists predominately of moderately-dense glacial till, which typically exhibits effective porosities of about 0.1 to 0.2 and hydraulic conductivities of about 0.03 to 0.3 ft/day (Fetter, 1994). Assuming Darcian flow, these estimated ranges of porosity and conductivity combine with the calculated ground-water gradient of 2 percent to yield an estimated range of ground-water flow velocities in the surficial aquifer of between 0.006 and 0.03 ft/day.

2.4 Ground-Water Sampling and Analysis

The ground-water analytical results indicate that residual gasoline contamination was detected at the site in the vicinity of the former gasoline USTs. Benzene was detected above the Vermont Ground Water Enforcement Standard (VGES) in the samples collected from MW-1 and MW-2. Low levels of toluene (less than 3 parts per billion - ppb) were detected in MW-3 and MW-4. Methyl-tertiary butyl ether (MTBE) was detected in the samples collected from MW-1, MW-2, and MW-6. No benzene, toluene, ethylbenzene, or xylenes (BTEX) were detected in samples collected from MW-5 and MW-6. Ground-water analytical results are summarized in Table 2. Laboratory report forms are included in Appendix B.

The presence of MTBE, which was introduced as a gasoline additive in about 1980 (after the tanks were reportedly abandoned), in three monitoring wells (MW-1, MW-2, and MW-6), one of which is upgradient of the former USTs, suggests that contamination has migrated from the petroleum release discovered in 1992 at the Grand Isle Store, located approximately 300 feet south (upgradient) of Mr. Chernesky's property. MTBE has been detected in monitoring wells on the Grand Isle Store property at concentrations ranging from 1.1 to 149 ppb. Ground-water flow direction and contaminant distribution based on available data from monitoring wells located on the Grand Isle Store property indicate a northeasterly trend, which is generally toward Mr. Chernesky's property.

TABLE 2. Ground Water Analytical Results
12 November 1996

Well I.D.	Benzene	Ethyl benzene	Toluene	Xylenes	Total BTEX	MTBE
MW-1	**19.2**	**14.0**	**30.6**	**97.6**	**161.5**	**6.3**
MW-2	**8.4**	**5.4**	**19.7**	**46.1**	**79.6**	**2.2**
MW-3	ND <1	ND <1	**2.5**	ND <1	ND <1	ND <1
MW-4	ND <1	ND <1	**2.9**	**TBQ <1**	2.9	ND <1
MW-5	ND <1	ND <1	ND <1	ND <1	ND <1	ND <1
MW-6	ND <1	ND <1	ND <1	ND <1	ND <1	**3.2**
duplicate	**20.3**	**14.7**	**31.9**	**103**	**169.9**	**5.3**
trip blank	ND <1	ND <1	ND <1	ND <1	ND <1	ND <1
VGES*	**5**	**680**	**2,420**	**400**	**---**	**40**

Results reported as parts per billion (ppb), unless noted otherwise.
ND = Not detected above indicated detection limit.
VGES = Vermont Groundwater Enforcement Standard. * Vermont Health Advisory for MTBE.
Duplicate collected from MW-1.
Shaded areas denote exceedance of the corresponding VGES or VHA.

Ground-water samples were collected from the six monitoring wells on 12 November 1996. Each monitoring well was purged and then sampled using a dedicated bailer and dropline. Purge water was discharged directly to the ground in the vicinity of each well. Trip blank and

duplicate samples were collected during the sampling event for quality assurance/quality control (QA/QC) purposes. All field procedures were conducted in accordance with GWV standard protocols.

Each water sample was collected in two 40-milliliter (mL) glass vials with Teflon-lined-septa lids and the sample preserved with hydrochloric acid. All samples were transported in an ice-filled cooler under chain-of-custody to Endyne, Inc. of Williston, Vermont for laboratory analysis, where they were analyzed for the possible presence of BTEX and MTBE by EPA Method 8020. Analytical results from the QA/QC samples indicate that adequate QA/QC was maintained during sample collection and analysis. None of the BTEX compounds or MTBE were detected in the trip-blank sample and the analytical results for the blind field-duplicate sample were within ten percent of the original sample results.

3.0 SENSITIVE RECEPTOR SURVEY AND RISK ASSESSMENT

3.1 Sensitive Receptor Survey

GWV conducted a survey to identify sensitive receptors in the vicinity of the site that could potentially be impacted by residual soil contamination and migration of contaminated ground water. The following sensitive receptors were identified in the vicinity of the site:

- Indoor air of the Schuppin/McGrath home.
- The crawlspace of the Schuppin/McGrath home including ambient air and water that collects in the crawlspace sump.
- The water line passing through the residual soil contamination between the Schuppin/McGrath home and Mr. Chernesky's garage.
- Direct contact with contaminated soils during excavation of the proposed water line along U.S. Route 2 to the east of the Chernesky Garage and Schuppin/McGrath home.

The site and all buildings within a half-mile radius of the garage are served by a community drinking-water supply system, which receives drinking-water from Lake Champlain.

3.2 Risk Assessment

GWV assessed the risks that the residual subsurface contamination poses to the receptors identified above. In general, human exposure to petroleum related contamination is possible through inhalation, ingestion, or direct contact while impacts to environmental receptors are due either to a direct release or contaminant migration through one receptor to another or along a preferential pathway.

The findings of our risk assessment indicate that the residual subsurface gasoline contamination at the site may pose a threat to indoor air of the Schuppin/McGrath home and to construction workers via direct contact during installation of the proposed water line along U.S. Route 2. Contaminant entry into the water line serving the Schuppin/McGrath home, which passes through an area of residual soil contamination, is also be a potential concern at the site. Analytical results of samples collected from the sump located in the crawlspace of the Schuppin/McGrath home did not detect the presence of any BTEX compounds or MTBE. It should be noted that the potential long-term threat to the receptors identified above appears to have been significantly reduced due to the fact that approximately 180 cubic yards of grossly contaminated soils were removed from the site during the UST closure.

3.2.1 Indoor Air

Ambient air samples were collected from three locations in the Schuppin/McGrath home— kitchen, upstairs, and crawlspace areas— on 16 October 1996 to evaluate possible impacts from the gasoline release discovered during the removal of two abandoned UST from Mr. Chernesky's property on 9 October 1996.

Low concentrations of toluene and xylenes, less than 1.3 parts per billion on a volume/volume basis (ppb v/v), were detected in the samples collected from the kitchen and upstairs areas. Trace levels of benzene and ethylbenzene, less than 0.35 ppb v/v, were

also detected in these samples. Benzene, toluene, ethylbenzene, xylenes, and methyl-tertiary butyl ether (MTBE) were not detected in either of the crawlspace duplicate air samples. Summaries of the indoor air sample results and sample volume calculations are included on Tables 3 and 4, respectively. Copies of the laboratory analytical reports are included in Appendix B.

TABLE 3. Indoor-Air Analytical Results

Location	Benzene	Ethylbenzene	Toluene	Xylenes	MTBE
Kitchen Area	TBQ <0.35	TBQ <0.35	**1.23**	**1.06**	ND <0.35
Upstairs Area	TBQ <0.31	TBQ <0.31	**1.09**	**0.969**	ND <0.31
Crawlspace Sump Area	ND <1.50	ND <1.50	ND <1.50	ND <1.50	ND <1.50
Duplicate	ND <1.55	ND <1.55	ND <1.55	ND <1.55	ND <1.55
Trip Blank	ND <0.50	ND <0.50	ND <0.50	ND <0.50	ND <0.50

Reported values are volume based concentrations at normal temperature and pressure.
parts per billion volume/volume (ppb v/v at 25 C; 760 mm Hg).
ND = compound not detected at indicated detection limit.
TBQ = compound detected at trace concentrations below indicated quantitation limit.
Duplicate collected from crawlspace sump area.

TABLE 4. Indoor-Air Sample Volume Calculations

Location	Pump No.	Start Time	Stop Time	Flow Rate (mL/min)	Sample Volume (liters)
Kitchen Area	No. 3	9:08	13:00	97	22.5
Upstairs Area	No. 4	9:12	13:02	109	25.07
Crawlspace Sump Area	No. 1	8:54	12:54	22	5.28
Duplicate	No. 2	8:56	12:56	21	5.04
Trip Blank	---	---	---	---	14.47

Sampling pumps calibrated prior to sample collection to determine flow rate.
Trip blank sample volume based on mean project sample volume.
Duplicated collected from crawlspace sump area.

Based on these analytical results, there does not appear to be an immediate health risk related to indoor air at this time. According to Dr. William Bress of the Vermont Department of Health (VT DOH), the concentrations of toluene and xylenes identified in the Schuppin/McGrath home are consistent with background concentrations determined during an indoor ambient air survey conducted in 60 rural homes during 1991/1992. The

average concentrations for benzene, toluene, ethylbenzene, and xylenes determined during the VT DOH study were 0.46, 4.75, 0.72, and 0.83 ppb v/v, respectively. The VT DOH does not currently have health-based action levels or risk-based standards for indoor ambient air. U.S. Environmental Protection Agency (EPA) Region III has established risk-based concentrations for indoor ambient air of 0.07 ppb v/v for benzene, 109 ppb v/v for toluene, 226 ppb v/v for ethylbenzene, and 70 ppb v/v for xylenes. Comparison of the sample results from the Schuppin/McGrath home to the U.S. EPA Region III risk-based concentrations indicates that levels of toluene, ethylbenzene, and xylenes do not exceed the Region III risk based concentrations; however, the quantitation limit for benzene in the sample in which trace levels of benzene was detected is five times greater than the corresponding risk-based concentration.

The indoor air samples were collected over a four-hour period using high-volume pumps, calibrated prior to sample collection. Samples were collected from three locations in the Schuppin/McGrath home— kitchen, upstairs, and crawlspace areas. A duplicate from the crawlspace area and a trip blank sample were collected for quality assurance/ quality control (QA/QC) purposes. Each air sample was collected onto charcoal-filled glass tenax tubes. Each tube was baked at approximately 240 degrees Celsius for one hour and screened by the laboratory prior to use.

All samples were transported in an ice-filled cooler under chain-of-custody to Endyne, Inc. of Williston, Vermont for laboratory analysis. Indoor-air samples were analyzed for the possible presence of benzene, toluene, ethylbenzene, xylenes, (BTEX) and methyl-tertiary butyl ether (MTBE) according to EPA Method TO2.

The QA/QC analytical results indicate that adequate QA/QC protocols were maintained throughout the sample collection, transport, and analytical processes. No contaminants were detected in the air trip blank sample, and duplicate results were identical to one another for both air samples collected from the crawlspace (no contaminants detected in either set).

3.2.2 Crawlspace Sump

Water samples were collected from the sump located in the crawlspace area of the Schuppin/McGrath home on 16 October and 12 November 1996 to evaluate whether the sump is drawing contamination into the Schuppin/McGrath home via ground water. An attempt was made to collect a water sample from a depression in the crawlspace along the south wall where the water-line enters the Schuppin/McGrath home; however, no water was present during either site visit. No gasoline compounds were detected in any of the crawlspace sump-water samples. Copies of the laboratory analytical reports are included in Appendix B.

A water trip blank was collected during both sampling events and duplicate samples were collected on 16 October for QA/QC purposes. Each water sample was collected in two 40-milliliter (mL) glass vials with Teflon-lined-septa lids and preserved with hydrochloric acid. All samples were transported in an ice-filled cooler under chain-of-custody to Endyne. Inc. of Williston, Vermont for laboratory analysis. Water samples were analyzed for the possible presence of BTEX and MTBE according to EPA Method 8020.

4.0 CONCLUSIONS

Based on the results of the site investigation described above, GWV concludes the following:

- Two abandoned gasoline underground storage tanks (USTs) removed from the site on 9 October 1996 are the likely principal source of gasoline contamination identified at the site — two holes were discovered in one tank and six holes were discovered in the other tank. The gasoline USTs were reportedly abandoned prior to 1979, when Mr. Chernesky purchased the property.
- Analytical results of ground water samples collected from on-site monitoring wells detected low concentrations of gasoline compounds and indicate that residual subsurface contamination is limited primarily to the immediate vicinity of the former location of the USTs.
- Observations made during the UST closure, which included excavation of approximately 180 cubic yards of gasoline contaminated soils, and recent ground-water sample results from monitoring wells completed in and downgradient of the former UST locations suggest that a majority of the contaminated soil was removed during the UST closure.
- Benzene was detected above the Vermont Groundwater Enforcement Standard (VGES) of 5 parts per billion in samples collected from MW-1 and MW-2, both of which were installed in the area excavated to remove petroleum contaminated soil from the site.
- The source of methyl-tertiary butyl ether (MTBE) detected at low concentrations (less than 6.5 parts per billion - ppb) in three on-site monitoring wells may be the nearby Grand Isle Store which is located approximately 300 feet south of the site and appears to be obliquely upgradient. MTBE was detected in an on-site well located upgradient of the former USTs and the USTs were reportedly abandoned prior to 1979 when MTBE began to be used as an octane-busting gasoline additive.
- Toluene and xylenes were detected at low concentrations, less than 1.3 ppb on a volume/volume (v/v) basis, in ambient air samples collected in the kitchen and upstairs area of the adjacent Schuppin/McGrath home. Trace concentrations of benzene and ethylbenzene, less than 0.35 ppb v/v, were also detected in these samples. None of the BTEX compounds or MTBE were detected in the samples collected from the crawl space of the Schuppin/McGrath home.
- Subsurface contamination at the site does not appear to have migrated to a sump located in the crawlspace in the Schuppin/McGrath home — analysis of two ground-water samples from separate sampling events did not detect the presence of BTEX compounds or MTBE.
- The water line serving the Schuppin/McGrath home passes through an area of residual soil contamination.

- No drinking-water supplies appear to be at risk from the residual soil contamination at the site— the site and all buildings within a half-mile radius of the garage are served by a community drinking-water supply system which receives drinking-water from Lake Champlain.
- Ground water in the unconfined surficial aquifer directly beneath the site appears to be flowing in a northeasterly direction. The average gradient of the local ground-water table on 12 November 1996 was about 2 percent. Average flow velocities in the ground water moving through the moderately-dense glacial till deposits are estimated to be in the range of 0.006 to 0.03 feet per day (ft/day).

5.0 RECOMMENDATIONS

On the basis of the results of this investigation and the conclusions stated above, Ground Water of Vermont recommends the following:

1. The on-site monitoring wells should be resampled to confirm the November 1996 analytical results. The samples should be analyzed for BTEX compounds and MTBE by EPA Method 8020. At that time, ground-water level measurements should be obtained from the monitoring wells located at the Grand Isle Store property, which have been tied into the site survey for the Chernesky site, to assist with determining the source of MTBE contamination identified on the Chernesky property.
2. Indoor air in the Schuppin/McGrath home should be resampled in January/February 1997 to confirm the October 1996 analytical results. The samples should be analyzed for BTEX compounds and MTBE by EPA Method TO2.
3. The tap-water of the Schuppin/McGrath home should be sampled to evaluate possible contaminant entry into the water line that passes through residual soil contamination at the site. The sample should be analyzed for BTEX compounds and MTBE by EPA Method 8020.
4. The soil stockpile, located on Lovers Lane in Grand Isle, should be monitored semi-annually with a photoionization detector (PID), and the integrity of the stockpile cover maintained. When PID readings have decreased to below one part per million (ppm), permission should be sought from the VT DEC to return the soils to the site for thin-spreading. If thin spreading on-site is not feasible, soil samples should be collected from the piles and analyzed for petroleum compounds, in accordance with VT DEC guidelines.
5. The area of the Schuppin/McGrath front lawn damaged during test pit installation and monitoring well installation should be landscaped, and the area of the drive-way that was excavated during removal of contaminated soil checked for settling and repaired as necessary in the Spring of 1997.

6.0 REFERENCES

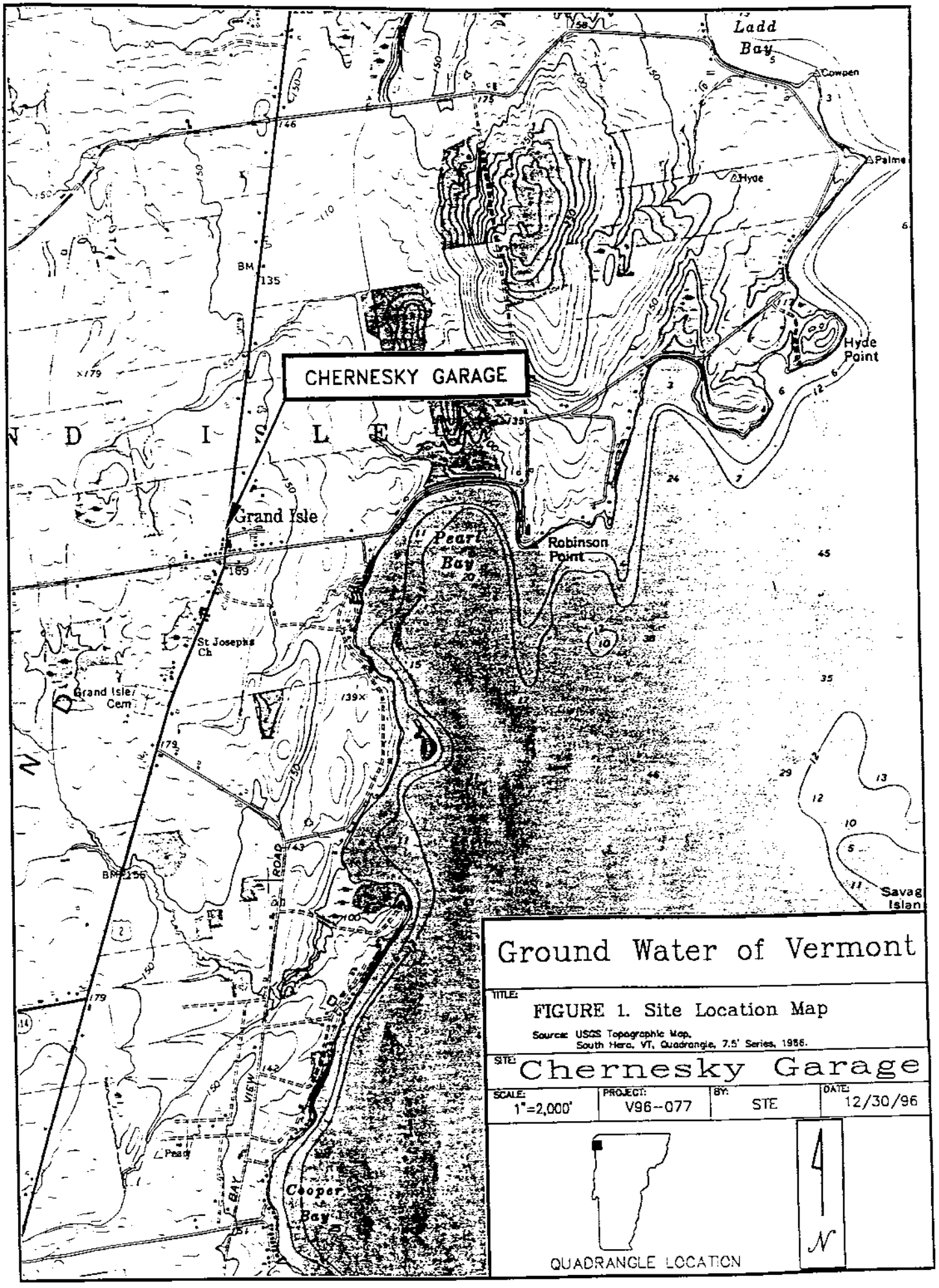
Doll, C.G. and others, 1961. *Geologic Map of Vermont*, Office of the State Geologist.

Domenico, P.A., and Schwartz, F.W., 1990. *Physical and Chemical Hydrogeology*, John Wiley and Sons, New York, 824 p.

Fetter, C.W., 1994. *Applied Hydrogeology, 3rd Ed.*, Prentice Hall, Englewood Cliffs, New Jersey, 691 p.

Stewart, D.P. and MacClintock, P., *1970. Surficial Geologic Map of Vermont*, Office of the State Geologist.

USGS, 1984. Putney Quadrangle Vermont-New Hampshire. U.S. Geological Survey. 7.5x15 minute series (topographic). Provisional Edition, 1984.



Ground Water of Vermont

TITLE:

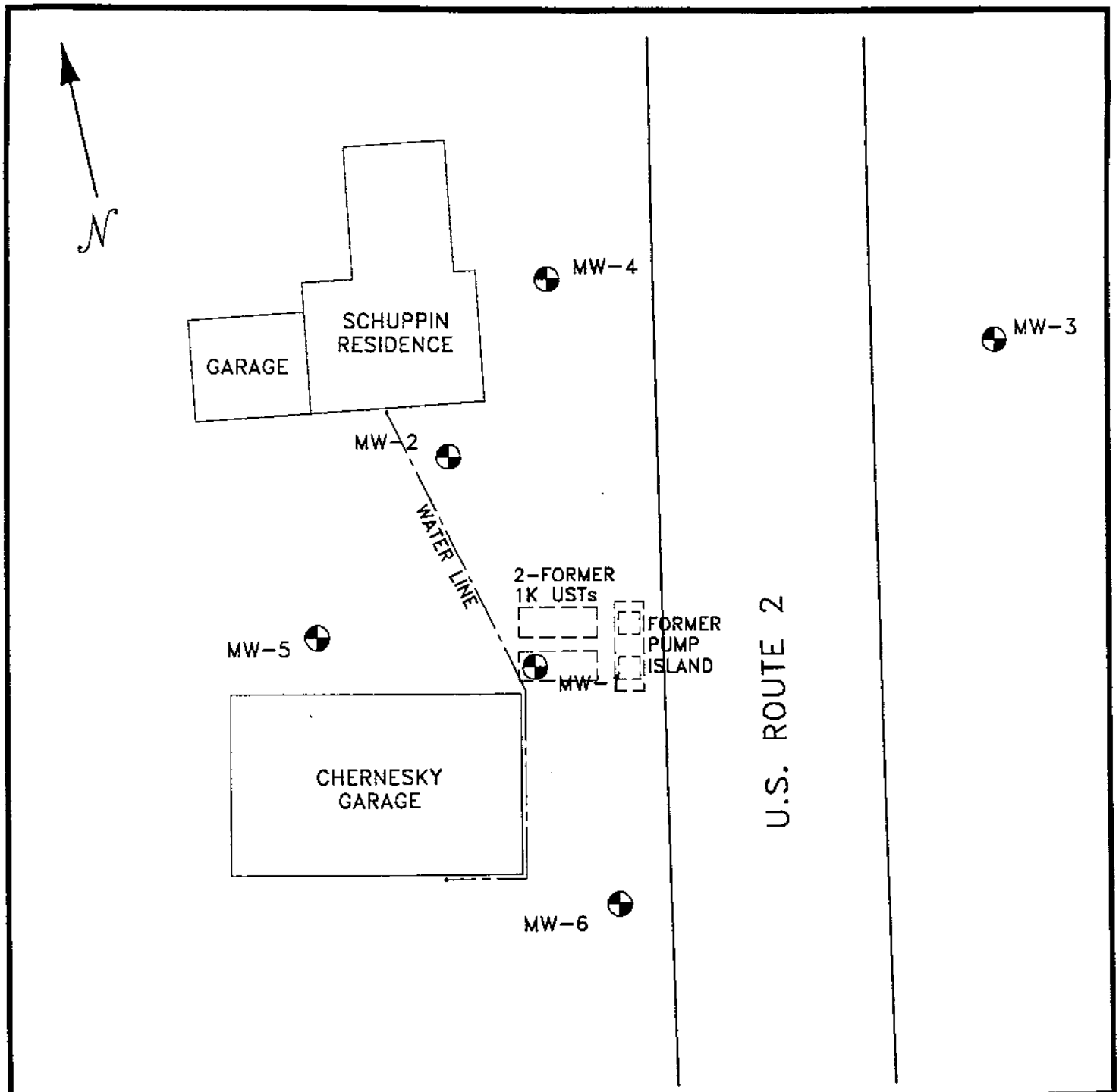
FIGURE 1. Site Location Map

Source: USGS Topographic Map,
South Hero, VT, Quadrangle, 7.5' Series, 1956.

SITE: Chernesky Garage

SCALE:	PROJECT:	BY:	DATE:
1"=2,000'	V96-077	STE	12/30/96

QUADRANGLE LOCATION



ALL LOCATIONS ARE APPROXIMATE

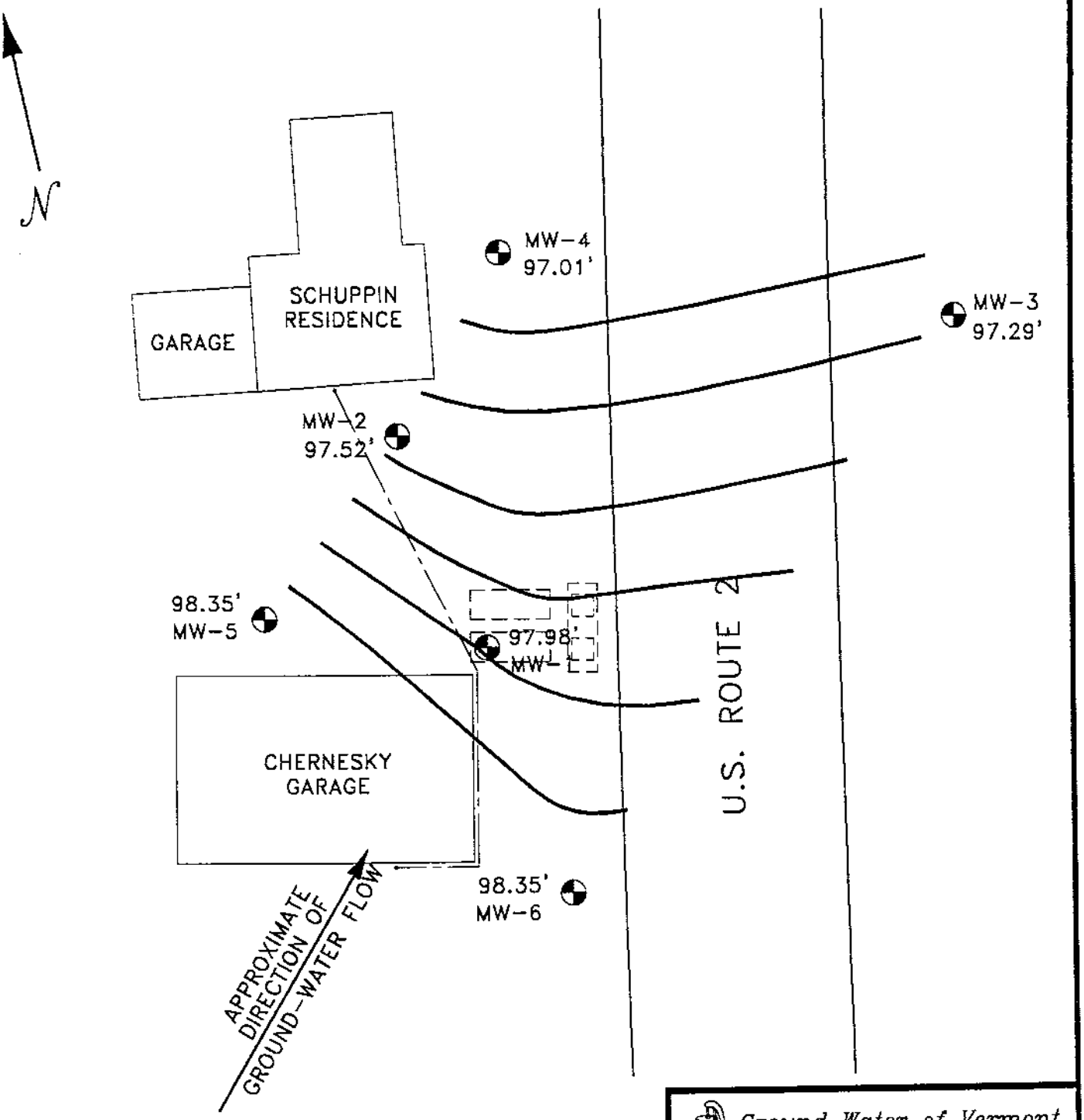
Ground Water of Vermont
1 Mill St., Box C-5
Burlington, VT 05401
(802) 860-6065

CHERNESKY GARAGE
GRAND ISLE, VT

FIGURE 2.
SITE MAP
WITH MONITORING WELL LOCATIONS

LEGEND:
MONITORING WELL

DRAWN BY: STE	DATE: DEC 1996
APPROVED BY: RM	FILE No.: 96077



ALL LOCATIONS ARE APPROXIMATE

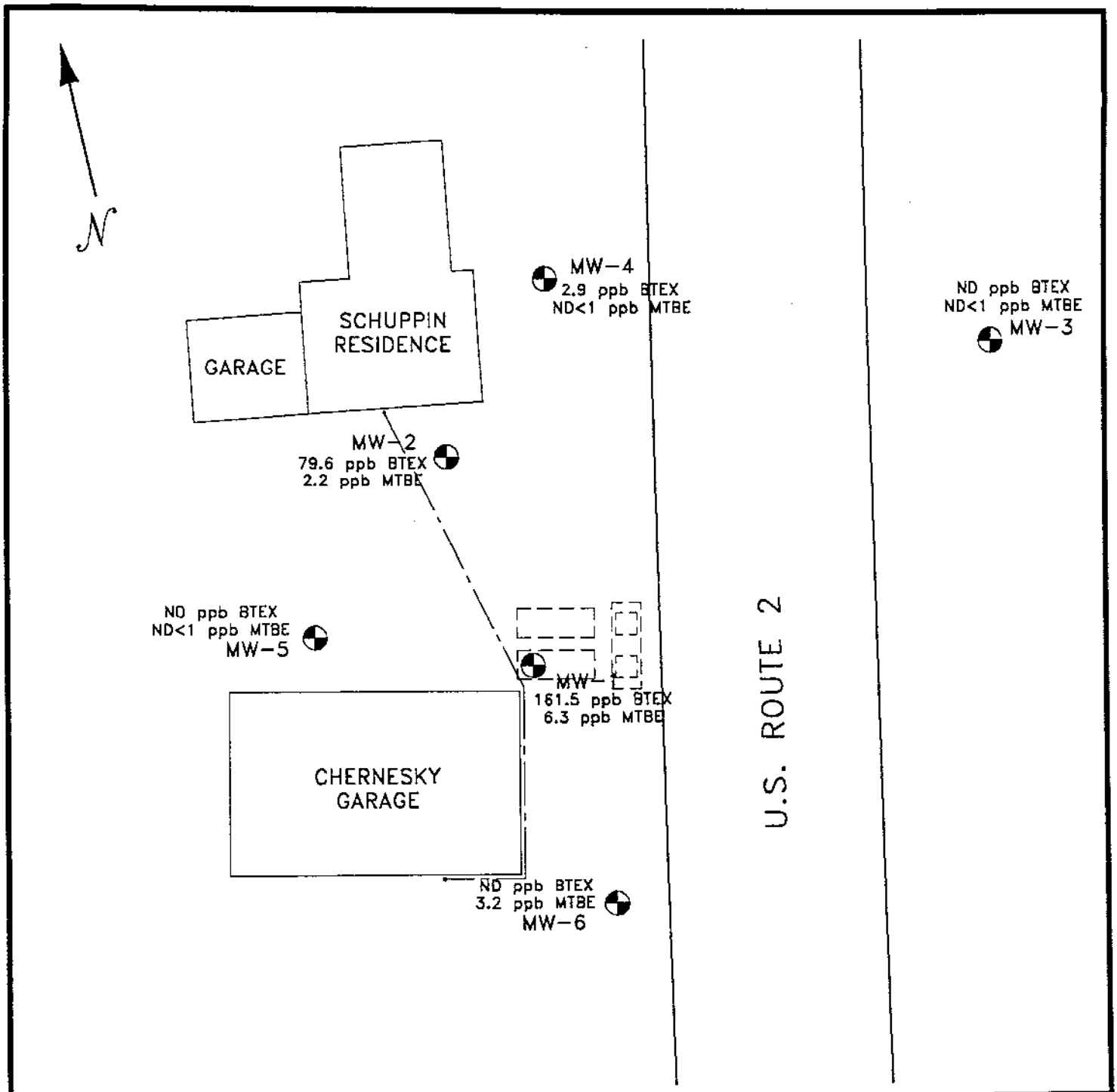
Ground Water of Vermont
1 Mill St., Box C-5
Burlington, VT 05401
(802) 860-6065

CHERNESKY GARAGE
GRAND ISLE, VT

FIGURE 3.
GROUND-WATER CONTOUR MAP
MONITORING DATE: 12 NOVEMBER 1996

LEGEND: — GROUND-WATER CONTOUR
MONITORING WELL

DRAWN BY: STE	DATE: DEC 1996
APPROVED BY: RM	FILE No.: 96077



Ground Water of Vermont
1 Mill St., Box C-5
Burlington, VT 05401
(802) 860-6065

CHERNESKY GARAGE
GRAND ISLE, VT

FIGURE 4.
CONTAMINANT DISTRIBUTION MAP
MONITORING DATE: 12 NOVEMBER 1996

LEGEND:
MONITORING WELL
ND NONE DETECTED

DRAWN BY: STE	DATE: DEC 1996
APPROVED BY: RM	FILE No.: 96077

APPENDIX A

Soil Boring and Well Construction Logs

Ground Water of Vermont

FIELD SUPERVISOR Bob Ross
CONTRACTOR T. L. Boise
DRILLERS Tom Boise

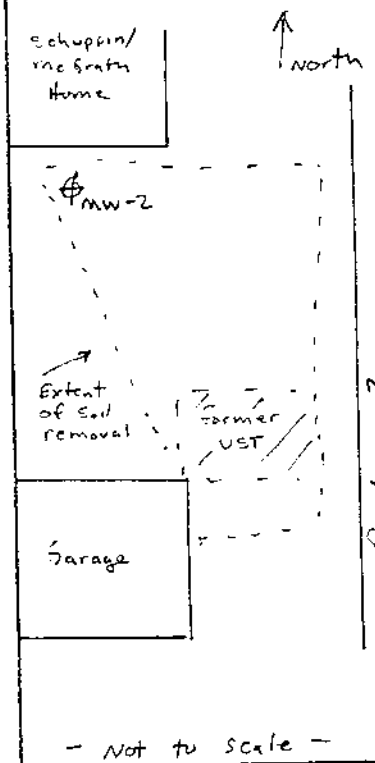
JOB LOCATION VT96-077 Grand Isle
DATE 10/10/96

DRILLING METHOD Excavator
BORING DIAMETER

AND 40 – 50%
SOME 10 – 40%
TRACE 0 – 10%

BORING LOCATION sketch on back or on-site plan with measurements
BORING # MW-2
TOTAL DEPTH 6'

DEPTH	SAMPLES	SAMPLE NUMBER	BLOWS PER 6" 0/6	6/12	12/18	18/24	REC.	SAMPLE DESCRIPTION	STRAT CHG	GENERAL DESCRIPTION	WELL DETAIL	DEPTH
5'										Installed in Excavation during soil removal		5'
10'												10'
15'												15'
20'												20'
25'												25'
30'												30'
35'												35'
40'												40'



MATERIALS USED	SIZE/TYPE	QUANTITY
WELL SCREEN	2" Sch 40 PVC	
SLOT SIZE	10 Slot	5'
RISER PIPE	2" Sch 40 PVC	1'
GRADED SAND	–	–
PELLET BENTONITE	–	–
GRANULAR BENTONITE	–	–

MATERIALS USED	SIZE/TYPE	QUANTITY
GROUT	–	–
BACKFILL	yes	–
WATER USED	–	–
STEAM CLEANER	–	–
Road box		

Ground Water of Vermont

FIELD SUPERVISOR Bob Ross
CONTRACTOR Adams Engineering
DRILLERS Gerry Adams

JOB LOCATION V96-077 Grand Isle
DATE 11/5/96

DRILLING METHOD vibratory
BORING DIAMETER 3"

AND 40 – 50%
SOME 10 – 40%
TRACE 0 – 10%

BORING LOCATION sketch on back or on-site plan with measurements
BORING # MW-3
TOTAL DEPTH 7'

DEPTH	SAMPLES	SAMPLE NUMBER	BLOWS PER 6" (0/6, 6/12, 12/18, 18/24)	REC.	SAMPLE DESCRIPTION	STRAT CHG	GENERAL DESCRIPTION	WELL DETAIL	DEPTH
		SS-1		3.5/5'	Gray CLAY and SILT trace Gravel (mottles)		PID - (ppm) 3' – NR 5' – NR		
5'				4/5'	gray-brown CLAY and SILT, Trace Gravel (TILL)		7' – NR 9' – NR		5'
		SS-2			BoB 7'				
10'							NR - No Response		10'
15'									15'
20'									20'
25'									25'
30'							North MW-3 former USTs Barn Garage Route 2 Barn - Not to Scale -		30'
35'									35'
40'									40'

MATERIALS USED	SIZE/TYPE	QUANTITY	MATERIALS USED	SIZE/TYPE	QUANTITY
WELL SCREEN	2" Sch 40 PVC		GROUT	—	—
SLOT SIZE	10 Slot	5'	BACKFILL	yes	
RISER PIPE	2" Sch 40 PVC	4'	WATER USED	no	
GRADED SAND	yes	—	STEAM CLEANER	yes	
PELLET BENTONITE	—	—	Road box		
GRANULAR BENTONITE	yes	—			

Ground Water of Vermont

FIELD SUPERVISOR Bob Ross
CONTRACTOR Adams Engineering
DRILLERS Gerry Adams

JOB LOCATION VT96-077 Grand Isle
DATE 11/5/96

DRILLING METHOD Vibratory
BORING DIAMETER 3"

AND 40 – 50%
SOME 10 – 40%
TRACE 0 – 10%

BORING LOCATION sketch on back or on-site plan with measurements
BORING # MW-4
TOTAL DEPTH 10'

DEPTH	SAMPLES	SAMPLE NUMBER	BLOWS PER 6" (0/6, 6/12, 12/18, 18/24)	REC.	SAMPLE DESCRIPTION	STRAT CHG	GENERAL DESCRIPTION	WELL DETAIL	DEPTH
		SS-1		3/5'	dark brown SILT and fine SAND (moist)		PID (ppm)		
					gray-brown CLAY and SILT, trace Gravel		NR		
5'							NR		5'
		SS-2		5/5	gray-brown CLAY and SILT, trace Gravel (Till)		NR		
							NR		
10'					BoB 10'				10'
15'							NR = No Response		15'
20'									20'
25'							Schuppin McGrath Home; MW-4; North		25'
30'							former USTs; Route 2		30'
35'							Garage		35'
40'							— Not to Scale —		40'

MATERIALS USED	SIZE/TYPE	QUANTITY
WELL SCREEN	2" Sch 40 PVC	
SLOT SIZE	10 Slot	5'
RISER PIPE	2" Sch 40 PVC	4.5'
GRADED SAND	yes	—
PELLET BENTONITE	—	—
GRANULAR BENTONITE	yes	—

MATERIALS USED	SIZE/TYPE	QUANTITY
GROUT	—	—
BACKFILL	yes	—
WATER USED	30	
STEAM CLEANER	yes	
	Road Box	

Ground Water of Vermont

FIELD SUPERVISOR Bob Ross
CONTRACTOR Adams Engineering
DRILLERS Gerry Adams

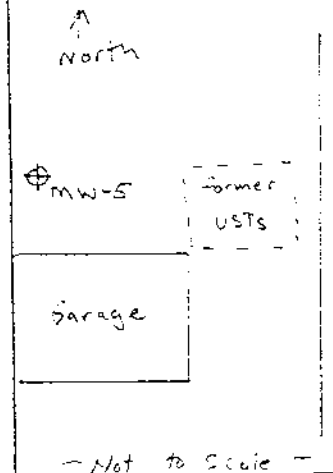
JOB LOCATION VT96-077 Grand Isle
DATE 11/5/96

DRILLING METHOD Vibratory
BORING DIAMETER 3"

AND 40 – 50%
SOME 10 – 40%
TRACE 0 – 10%

BORING LOCATION sketch on back or on site plan with measurements
BORING # MW-5
TOTAL DEPTH 8'

DEPTH	SAMPLES	SAMPLE NUMBER	BLOWS PER 6" (0/6, 6/12, 12/18, 18/24)	REC.	SAMPLE DESCRIPTION	STRAT CHG	GENERAL DESCRIPTION	WELL DETAIL	DEPTH
	SS	SS-1		3/5	– Fill – gray CLAY and SILT trace Gravel		PID (ppm) NR NR		
5'	SS	SS-2		3/3	gray-brown CLAY and SILT, trace Gravel (saturated) BOB 8'		NR NR		5'
10'							NR = No Response		10'
15'									15'
20'									20'
25'									25'
30'									30'
35'									35'
40'									40'



MATERIALS USED	SIZE/TYPE	QUANTITY
WELL SCREEN	3" Sch 40 PVC	
SLOT SIZE	10 Slot	5'
RISER PIPE	2" Sch 40 PVC	1.5'
GRADED SAND	yes	
PELLET BENTONITE	–	–
GRANULAR BENTONITE	30S	

MATERIALS USED	SIZE/TYPE	QUANTITY
GROUT	–	–
BACKFILL	yes	
WATER USED	no	
STEAM CLEANER	yes	
	road box	

Ground Water of Vermont

FIELD SUPERVISOR Bob Ross
CONTRACTOR Adams Engineering
DRILLERS Gerry Adams

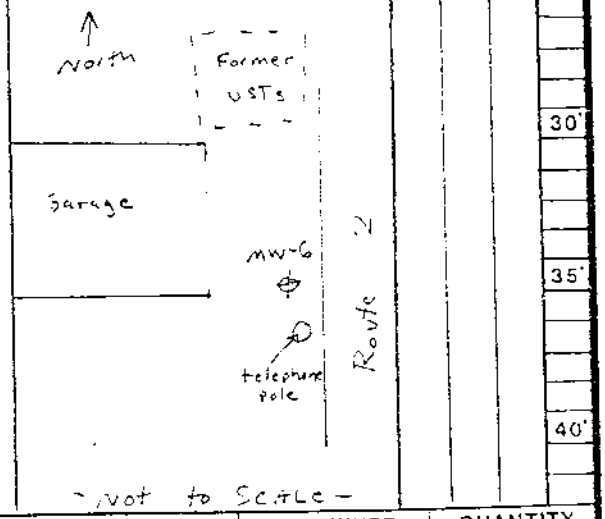
JOB LOCATION 096-077 Grand Isle
DATE 11/5/96

DRILLING METHOD Vibratory
BORING DIAMETER 3"

AND 40 – 50%
SOME 10 – 40%
TRACE 0 – 10%

BORING LOCATION sketch on back or on-site plan with measurements
BORING # MW-6
TOTAL DEPTH 10'

DEPTH	SAMPLES	SAMPLE NUMBER	BLOWS PER 6" 0/6	6/12	12/18	18/24	REC.	SAMPLE DESCRIPTION	STRAT CHG	GENERAL DESCRIPTION	WELL DETAIL	DEPTH
								Fill - SAND and GRAVEL		PID (PPM)		
		SS-1					3/5	gray-brown CLAY & SILT, trace GRAVEL		NR		
5'										NR		5'
		SS-2					5/5	gray-brown CLAY and SILT, trace Gravel (TILL)		NR		
10'								dark gray TILL		NR		10'
								Bob 10'		NR = No Response		
15'												15'
20'												20'
25'												25'
30'												30'
35'												35'
40'												40'



MATERIALS USED	SIZE/TYPE	QUANTITY	MATERIALS USED	SIZE/TYPE	QUANTITY
WELL SCREEN	2" Sch 40 PVC		GROUT	–	–
SLOT SIZE	10 Slot	5'	BACKFILL	yes	
RISER PIPE	2" Sch 40 PVC	4'	WATER USED	no	
GRADED SAND	yes		STEAM CLEANER	yes	
PELLET BENTONITE	–	–		Road Box	
GRANULAR BENTONITE	yes				

APPENDIX B

Laboratory Report Forms

ENDYNE, INC.

Laboratory Services

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

REPORT OF LABORATORY ANALYSIS

CLIENT: GroundWater of Vermont
PROJECT NAME: Grand Isle/V96-077
REPORT DATE: November 20, 1996
DATE SAMPLED: November 12, 1996

PROJECT CODE: GWVT1970
REF.#: 96,527 - 96,535

Enclosed please find the results of the analyses performed for the samples referenced on the attached chain of custody. Chain of custody indicated sample preservation 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

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

EPA METHOD 602--PURGEABLE AROMATICS

CLIENT: GroundWater of Vermont
PROJECT NAME: Grand Isle/V96-077
CLIENT PROJ. #: V96-077

DATE RECEIVED: November 12, 1996
REPORT DATE: November 20, 1996
PROJECT CODE: GWVT1970

Ref. #:	96,527	96,528	96,529	96,530	96,531
Site:	Trip Blank	MW-1	MW-2	MW-3	MW-4
Date Sampled:	11/12/96	11/12/96	11/12/96	11/12/96	11/12/96
Time Sampled:	7:00	10:25	10:17	10:00	10:10
Sampler:	B. Ross	B. Ross	B. Ross	B. Ross	B. Ross
Date Analyzed:	11/18/96	11/19/96	11/19/96	11/19/96	11/20/96
UIP Count:	0	>10	>10	0	4
Dil. Factor (%):	100	20	100	100	100
Surr % Rec. (%):	95	103	94	96	84
Parameter	Conc. (ug/L)	Conc. (ug/L)	Conc. (ug/L)	Conc. (ug/L)	Conc. (ug/L)
Benzene	<1	19.2	8.4	<1	<1
Chlorobenzene	<1	<5	<1	<1	<1
1,2-Dichlorobenzene	<1	<5	<1	<1	<1
1,3-Dichlorobenzene	<1	<5	<1	<1	<1
1,4-Dichlorobenzene	<1	<5	<1	<1	<1
Ethylbenzene	<1	14.1	5.4	<1	<1
Toluene	<1	30.6	19.7	2.5	2.9
Xylenes	<1	97.6	46.1	<1	TBQ <1
MTBE	<1	6.3	2.2	<1	<1

Ref. #:	96,532	96,533	96,534	96,535	
Site:	MW-5	MW-6	Duplicate	Sump	
Date Sampled:	11/12/96	11/12/96	11/12/96	11/12/96	
Time Sampled:	10:12	10:05	NI	10:35	
Sampler:	B. Ross	B. Ross	B. Ross	B. Ross	
Date Analyzed:	11/19/96	11/20/96	11/20/96	11/20/96	
UIP Count:	1	0	>10	6	
Dil. Factor (%):	100	100	20	100	
Surr % Rec. (%):	94	96	100	96	
Parameter	Conc. (ug/L)	Conc. (ug/L)	Conc. (ug/L)	Conc. (ug/L)	
Benzene	<1	<1	20.3	<1	
Chlorobenzene	<1	<1	<5	<1	
1,2-Dichlorobenzene	<1	<1	<5	<1	
1,3-Dichlorobenzene	<1	<1	<5	<1	
1,4-Dichlorobenzene	<1	<1	<5	<1	
Ethylbenzene	<1	<1	14.7	<1	
Toluene	<1	<1	31.9	<1	
Xylenes	<1	<1	103.	<1	
MTBE	<1	3.2	5.3	<1	

Note: UIP = Unidentified Peaks TBQ = Trace Below Quantitation NI = Not Indicated

ENDYNE, INC.

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

19596

CHAIN-OF-CUSTODY RECORD

Project Name: V96-077 Site Location: Grand Isle	Reporting Address: GWV Box C-5 Main St Burlington VT	Billing Address: Same
Endyne Project Number: GWVT1970	Company: GWV Contact Name/Phone #: B. Ross / 860-6065	Sampler Name: B. Ross Phone #: 860-6065

Lab #	Sample Location	Matrix	GRAB	COMP	Date/Time	Sample Containers No.	Sample Containers Type/Size	Field Results/Remarks	Analysis Required	Sample Preservation	Rush
96,527	Trip Blank	water	X		11/12/96 0700	2	40ml G/Glass	BTEX + MTBE	19	HCl	
96,528	mw-1		X		1025						
96,529	mw-2				1017						
96,530	mw-3				1000						
96,531	mw-4				1010						
96,532	mw-5				1012						
96,533	mw-6				1005						
96,534	Duplicate				-						
96,535	Sump				11/12/96 1035	2	40ml G/Glass		19	HCl	

Relinquished by: Signature	Received by: Signature	Date/Time 11/12/96 1145
Relinquished by: Signature	Received by: Signature	Date/Time

New York State Project: Yes ____ No X

Requested Analyses

1	pH	6	TKN	11	Total Solids	16	Metals (Specify)	21	EPA 624	26	EPA 8270 B/N or Acid
2	Chloride	7	Total P	12	TSS	17	Coliform (Specify)	22	EPA 625 B/N or A	27	EPA 8010/8020
3	Ammonia N	8	Total Diss. P	13	TDS	18	COD	23	EPA 418.1	28	EPA 8080 Pest/PCB
4	Nitrite N	9	BOD_5	14	Turbidity	(19)	BTEX + MTBE	24	EPA 608 Pest/PCB		
5	Nitrate N	10	Alkalinity	15	Conductivity	20	EPA 601/602	25	EPA 8240		
29	TCLP (Specify: volatiles, semi-volatiles, metals, pesticides, herbicides)										
30	Other (Specify):										