Marin Environmental, Inc.
Hydrogeology, Engineering & GIS Services

9 02 AM '98

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Internet:
www.marinenv.com

31 August 1998

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

RE: Initial Site Investigation Report,
Bread & Bottle Citgo, Essex Jct., VT

2351

Dear Mr. Schwer,

Enclosed one bound copy of the Initial Site Investigation Report for Bread & Bottle Citgo, located in Essex Junction, Vermont. This report outlines the findings of the expressway investigation completed in June 1998.

Please contact me or Ron Miller, Regional Manager, if you have any questions or comments regarding this report.

Sincerely,

Marin Environmental, Inc.

Robert J. Ross, CGWP
Sr. Hydrogeologist

enclosure

cc: Mr. Eugene Pushee, Bradford Oil Company (w/o enclosure)

RJR/98012C01.doc

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30 July, 1998

Mr. Gene Pushee
Bradford Oil Company
P.O. Box 394
Bradford, VT 05033

RE: *Initial Site Investigation Report*
Bread & Bottle Citgo, Essex Junction, VT

Dear Mr. Pushee:

On 20 May 1998 Marin Environmental, Inc. (**Marin**) collected samples from four monitoring wells (MW-1, MW-2, MW-3, and MW-4) and an abandoned supply well at Bread & Bottle Citgo located on Vermont Route 117 in Essex Junction, Vermont (Figure 1, Attachment A). Methyl-tertiary butyl ether (MTBE), a gasoline additive, was the only compound detected at the site. MTBE was detected in MW-1 at 1.6 parts per billion (ppb) and in MW-3 at 4.5 ppb. No gasoline related compounds were detected in any of the other samples collected at the site. Based on these findings, **Marin** recommends no further investigation at the site related to the former underground storage tanks USTs); however, semi-annual monitoring of the on-site soil stockpile should be conducted beginning in October 1998 in accordance with state guidelines.

Attachment A includes figures showing the site location (Figure 1), approximate monitoring well locations (Figure 2), ground-water flow direction (Figure 3), and contaminant distribution (Figure 4). Copies of the laboratory analytical reports are included in Attachment B.

Site Background

On 10 and 11 March, 1998, six underground storage tanks (USTs) were removed at the site. All of the USTs were found to be in poor condition upon removal; three holes were observed in UST #4. Strong petroleum odors, characteristic of gasoline, were also noted along the western portion of the excavation in the vicinity of UST #1 and UST #6. Soil samples collected in these areas exhibited petroleum odors, and had readings as high as 406 parts per million (ppm) on the on-site "photoionization detector" (PID) screening instrument. The extent of subsurface soil contamination could not be determined at the time of the UST closure; however, approximately 80 cubic yards of petroleum contaminated soil were stockpiled on-site to accommodate the installation a new 15,000 gallon UST.

Soils in the excavation consisted of poorly sorted medium brown sands to depth of approximately 8.5 feet below ground surface (bgs). Ground water was encountered in the excavation at a depth of 8.5 feet bgs, with petroleum odors observed at ground water.

During the installation of the new 15,000-gallon UST between 16 and 18 March 1998, Marin provided oversight for excavation dewatering. At that time, approximately 10,000 gallons of petroleum contaminated water were pumped through a granular activated carbon treatment system. None of the discharge permit criteria were exceeded, based on laboratory analysis of samples collected of the treatment system effluent.

Ground Water Elevations and Flow Direction

On 20 May 1998, ground-water flow in the unconfined surficial aquifer at the site was toward the southeast, with a hydraulic gradient of approximately 0.5 percent. Water-level measurements and elevation calculations for 20 May 1998 are presented in Table 1. The ground-water contour map (Figure 3, Appendix A) was prepared using this data.

TABLE 1.
Ground-Water Elevation Calculations

Well I. D.	Top of Casing Elevation *	Depth to Water (feet, TOC)	Ground Water Elevation
MW-1	100.00	8.36	91.64
MW-2	99.07	7.45	91.62
MW-3	98.73	7.31	91.42
MW-4	98.75	7.44	91.31

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

Water Sampling and Analysis

On 20 May 1998, ground-water samples were collected from four on-site monitoring wells — two wells previously installed for leak detection and two wells installed in excavations during the UST closure. A water sample was also collected from an abandoned gravel supply well, owned by Mr. Robert Marcotte, located approximately 180 feet south of the former USTs. Two other leak-detection monitoring wells, which Marin had proposed to sample, were destroyed during the UST closure/replacement activities. Methyl-tertiary butyl ether (MTBE), a gasoline additive, was the only compound detected at the site. MTBE was detected in MW-1 at 1.6 parts per billion (ppb) and in MW-3 at 4.5 ppb. No gasoline related compounds were detected in any of the other samples collected at the site. A summary of the analytical results is included on Table 2, and copies of the laboratory analytical reports are included as Attachment B.

A Marin field scientist collected ground-water samples from the four existing on-site monitoring wells and the abandoned gravel supply well, using pre-cleaned, disposable bailers. Trip blank and duplicate samples were collected for quality assurance/quality control (QA/QC) as required by the VT DEC. Monitoring well samples were collected after purging approximately three volumes of standing water from each well. All samples were submitted for laboratory analysis of volatile petroleum compounds by EPA Method 8020.

TABLE 2.
Summary of Ground-Water Analytical Results

Well I.D.	benzene	toluene	ethyl benzene	xylenes	Total BTEX	MTBE
MW-1	ND <1	ND <1	ND <1	ND <1	ND <1	1.6
MW-2	ND <1	ND <1	ND <1	ND <1	ND <1	ND <1
MW-3	ND <1	ND <1	ND <1	ND <1	ND <1	4.5
MW-4	ND <1	ND <1	ND <1	ND <1	ND <1	ND <1
Supply well	ND <1	ND <1	ND <1	ND <1	ND <1	ND <1
dup. MW-2	ND <1	ND <1	ND <1	ND <1	ND <1	ND <1
trip blank	ND <1	ND <1	ND <1	ND <1	ND <1	ND <1
VGES	5	1,000	700	10,000		40

Results reported as parts per billion (ppb). ND = Not detected above indicated detection limit.
VGES = Vermont Groundwater Enforcement Standard.

Receptor Evaluation

At this time, none of the identified sensitive receptors appear to be impacted or threatened by residual petroleum contamination at the site. The site and the majority of adjacent properties are supplied with municipal water and sewer services. A 14-foot deep abandoned gravel supply well, owned by Mr. Robert Marcotte and constructed of pre-cast concrete tiles, is located approximately 180 feet northeast of the former USTs. No petroleum contamination was detected in the Marcotte supply well. The An unnamed tributary of the Winooski River is located approximately 200 feet to the northeast and the Winooski River, which flows from the east, is located approximately 700 feet southeast of the site.

Please call me if you have any questions regarding the enclosed information or recommendations.

Sincerely,

Marin Environmental, Inc.

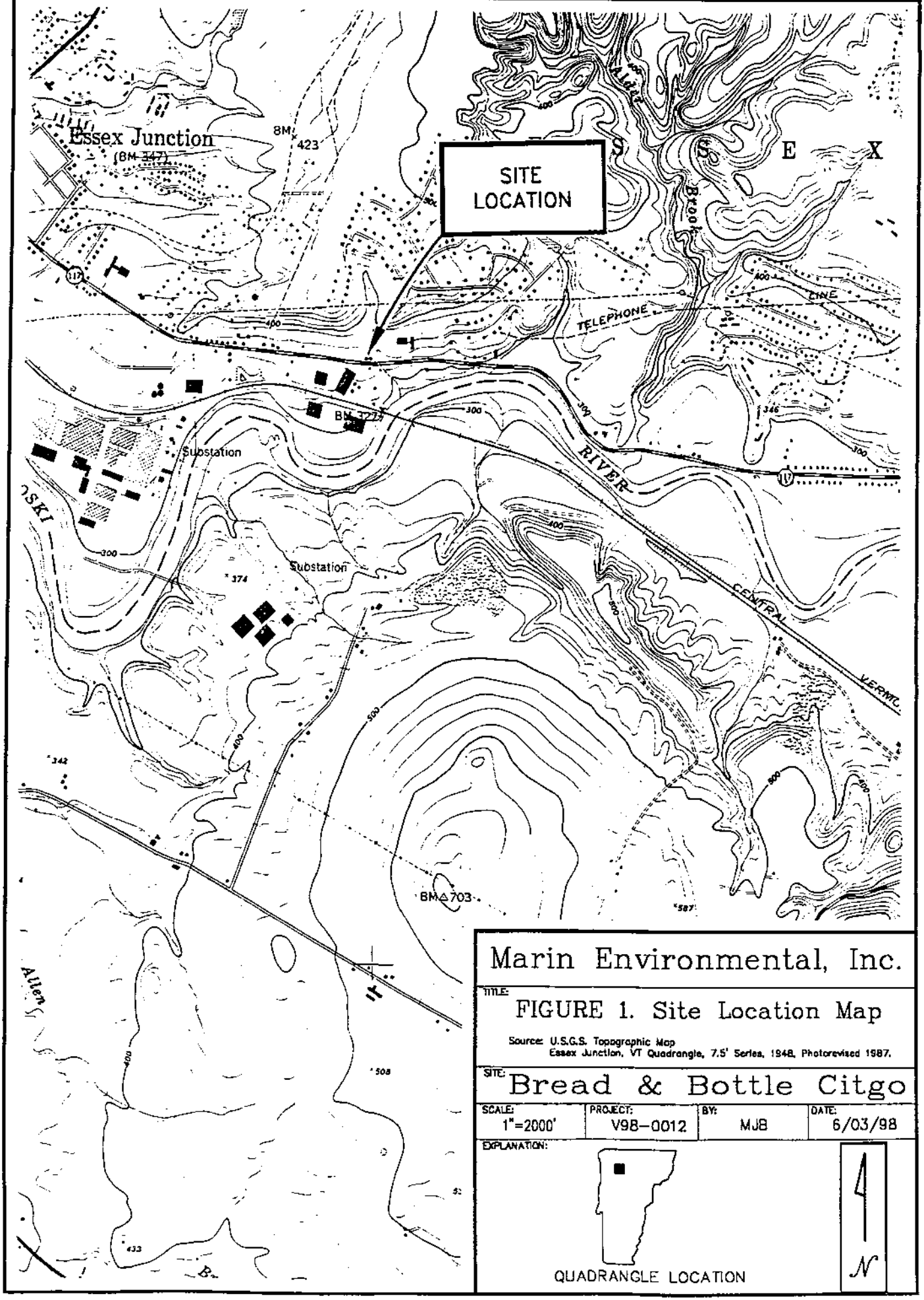
Robert J. Ross, CGWP
Hydrogeologist

enclosure

Attachment A - Figures
Attachment B- Laboratory Reports

RJR/ref: 98012R02.DOC

ATTACHMENT A
Figures



Marin Environmental, Inc.

TITLE:

FIGURE 1. Site Location Map

Source: U.S.G.S. Topographic Map
Essex Junction, VT Quadrangle, 7.5' Series, 1948, Photorevised 1987.

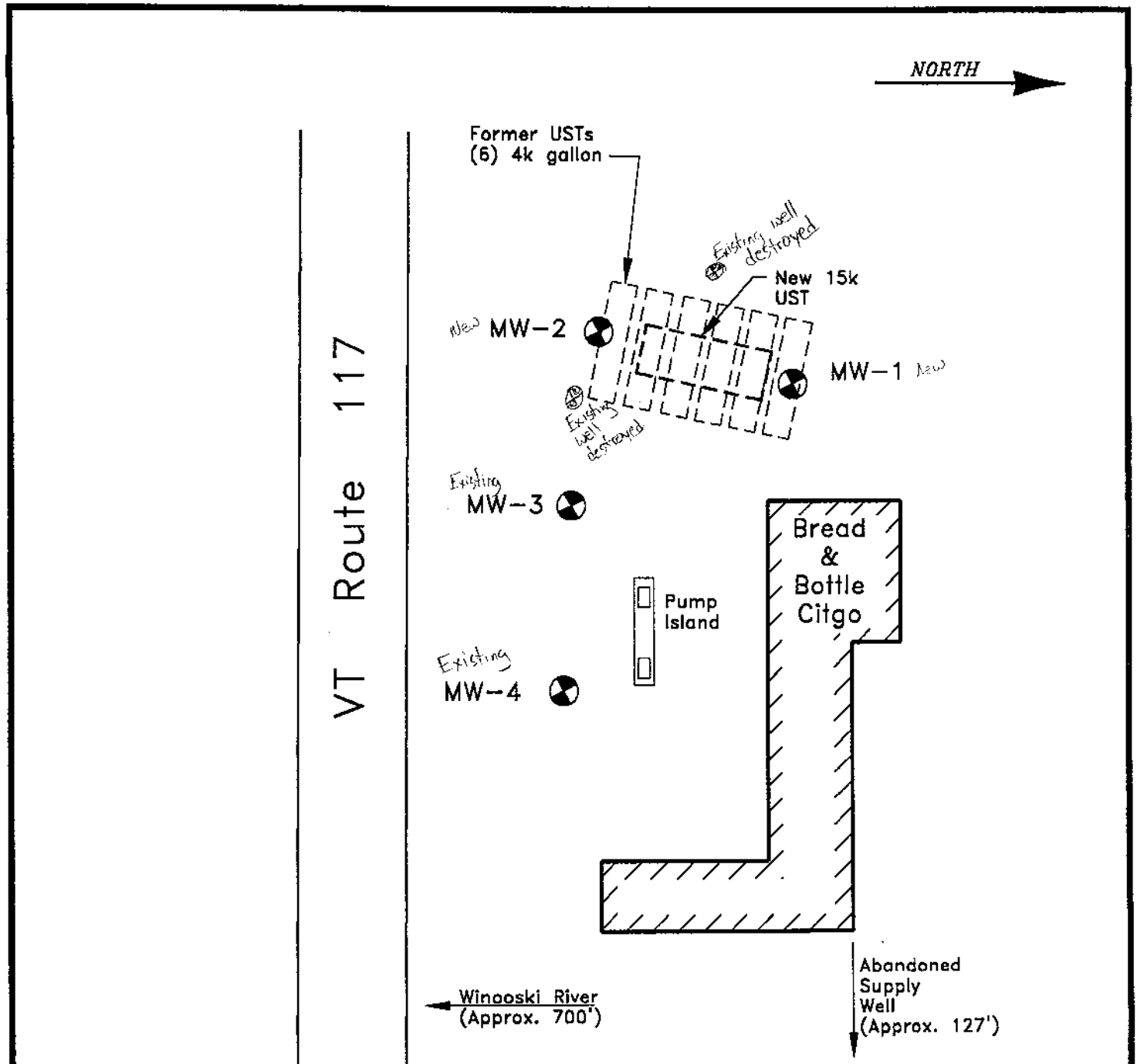
SITE: **Bread & Bottle Citgo**

SCALE:	PROJECT:	BY:	DATE:
1"=2000'	V98-0012	MJB	6/03/98

EXPLANATION:

QUADRANGLE LOCATION

N



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SITE: BREAD & BOTTLE CITGO
ESSEX JUNCTION, VT

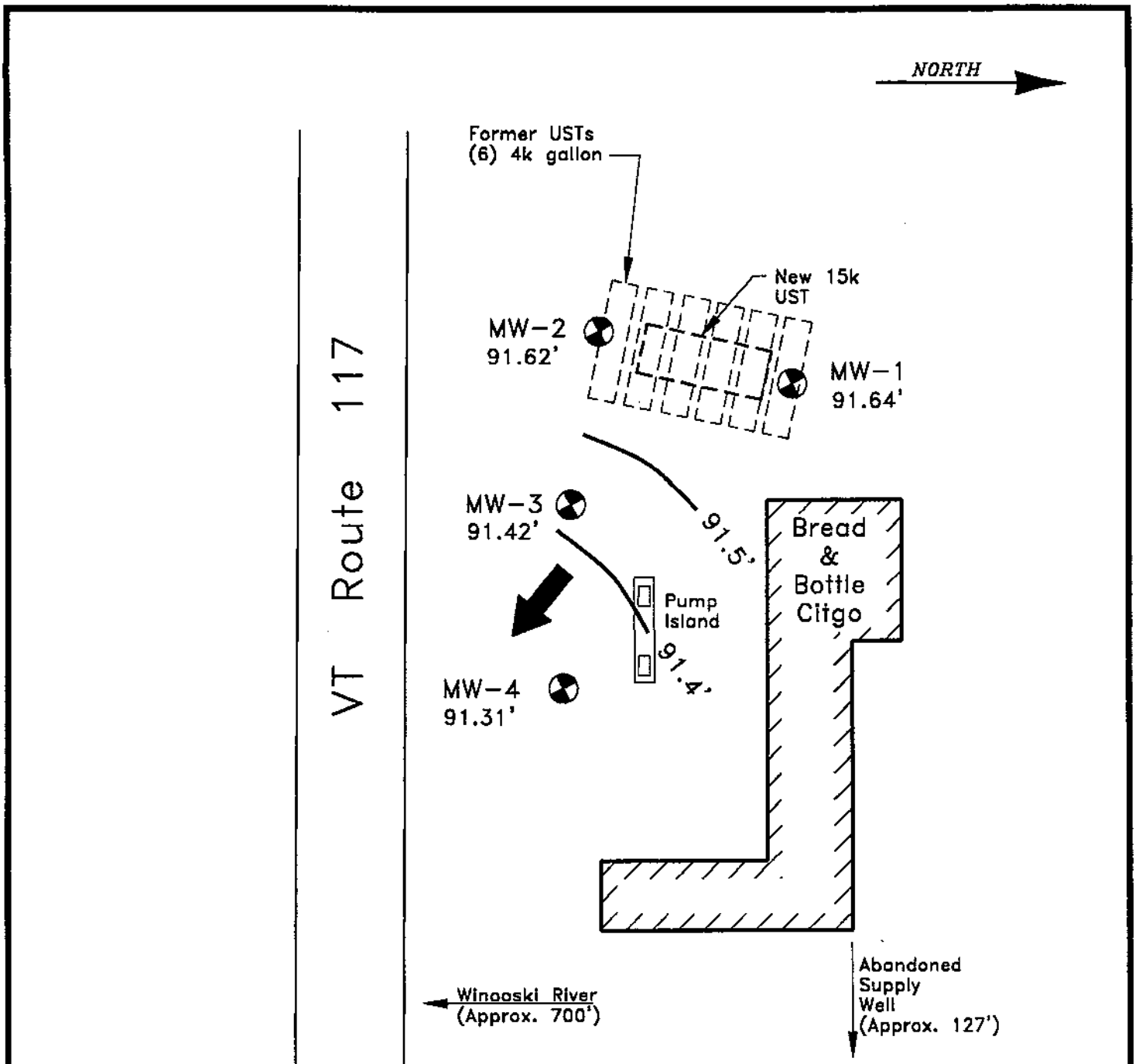
TITLE: FIGURE 2.
SITE MAP
With Monitoring Well Locations

LEGEND:
Proposed Monitoring Well

DRAWN BY: MJB	DATE: JUNE 98
APPROVED BY: BR/BD	FILE No.: 980012

0 30'
SCALE

ALL LOCATIONS ARE APPROXIMATE



Marin Environmental, Inc.
1700 Hegeman Ave.
Colchester, VT 05446
(802) 655-0011

SITE:
BREAD & BOTTLE CITGO
ESSEX JUNCTION, VT

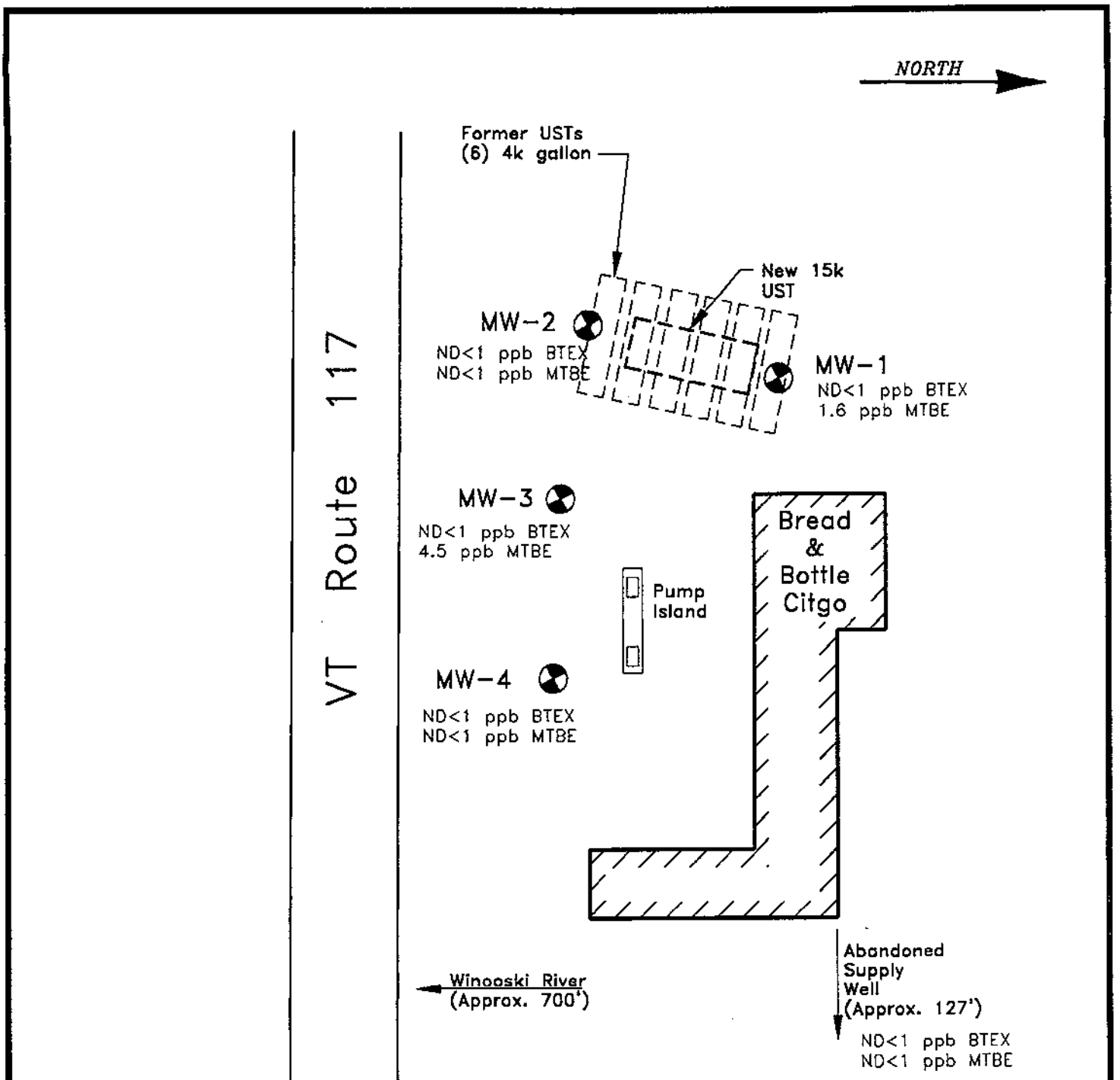
TITLE:
FIGURE 3.
GROUND-WATER CONTOUR MAP
MONITORING DATE: 20 MAY 1998

LEGEND: — GROUND-WATER CONTOUR
● Proposed Monitoring Well

DRAWN BY: MJB	DATE: JUNE 98
APPROVED BY: BR/BD	FILE No.: 980012

0 30'
SCALE

ALL LOCATIONS ARE APPROXIMATE



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SITE:
BREAD & BOTTLE CITGO
ESSEX JUNCTION, VT

TITLE:
FIGURE 4.
CONTAMINANT DISTRIBUTION MAP
MONITORING DATE: 20 MAY 1998

LEGEND: ND NONE DETECTED
Proposed Monitoring Well

DRAWN BY: MJB	DATE: JUNE 98
APPROVED BY: BR/BD	FILE No.: 980012

ATTACHMENT B
Laboratory Analytical Reports

ENDYNE, INC.

Laboratory Services

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

EPA METHOD 602--PURGEABLE AROMATICS

CLIENT: Marin Environmental
PROJECT NAME: Bread & Bottle
CLIENT PROJ. #: VT 980012-160

DATE RECEIVED: May 21, 1998
REPORT DATE: May 28, 1998
PROJECT CODE: GWVT1779

Ref. #:	121,142	121,143	121,144	121,145	121,146
Site:	MW-1	MW-2	MW-3	MW-4	Marcotte Well
Date Sampled:	5/20/98	5/20/98	5/20/98	5/20/98	5/20/98
Time Sampled:	12:45	13:08	13:21	13:36	13:54
Sampler:	T. Robbins	T. Robbins	T. Robbins	T. Robbins	T. Robbins
Date Analyzed:	5/27/98	5/27/98	5/27/98	5/28/98	5/27/98
UIP Count:	0	0	0	0	0
Dil. Factor (%):	100	100	100	100	100
Surr % Rec. (%):	97	94	89	87	108
Parameter	Conc. (ug/L)	Conc. (ug/L)	Conc. (ug/L)	Conc. (ug/L)	Conc. (ug/L)
Benzene	<1	<1	<1	<1	<1
Chlorobenzene	<1	<1	<1	<1	<1
1,2-Dichlorobenzene	<1	<1	<1	<1	<1
1,3-Dichlorobenzene	<1	<1	<1	<1	<1
1,4-Dichlorobenzene	<1	<1	<1	<1	<1
Ethylbenzene	<1	<1	<1	<1	<1
Toluene	<1	<1	<1	<1	<1
Xylenes	<1	<1	<1	<1	<1
MTBE	1.6	<1	4.5	<1	<1

Ref. #:	121,147	121,148
Site:	Duplicate	Trip Blank
Date Sampled:	5/20/98	5/20/98
Time Sampled:	NI	11:30
Sampler:	T. Robbins	T. Robbins
Date Analyzed:	5/28/98	5/27/98
UIP Count:	0	0
Dil. Factor (%):	100	100
Surr % Rec. (%):	100	98
Parameter	Conc. (ug/L)	Conc. (ug/L)
Benzene	<1	<1
Chlorobenzene	<1	<1
1,2-Dichlorobenzene	<1	<1
1,3-Dichlorobenzene	<1	<1
1,4-Dichlorobenzene	<1	<1
Ethylbenzene	<1	<1
Toluene	<1	<1
Xylenes	<1	<1
MTBE	<1	<1

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

ENDYNE, INC.

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

CHAIN-OF-CUSTODY RECORD

26434

Project Name: Brad & Bottle VT980012.60 Site Location: Essex Jct.	Reporting Address: 1700 Hegeman Ave. Colchester, VT 05446	Billing Address:
Endyne Project Number: GWVT 1779	Company: Marin Environmental Contact Name/Phone #: Brent Doshier 655-0011	Sampler Name: Terry Robbins Phone #: 655-0041

Lab #	Sample Location	Matrix	GRAB	COMP	Date/Time 5-20-98	Sample Containers No.	Sample Containers Type/Size	Field Results/Remarks	Analysis Required	Sample Preservation	Rush
121,142	MW-1	H_2O	✓		1245	2	Clear glass 40ml VOA		19	HCL	
121,143	MW-2				1306						
121,144	MW-3				1321						
121,145	MW-4				1336						
121,146	Marcotte Dug Well				1354						
121,147	Duplicate										
121,148	Trip Blank				1130						

Relinquished by: Signature Brent R. Doshier	Received by: Signature Kerry Pacian	Date/Time 5-21-98 1445
Relinquished by: Signature Kerry Pacian	Received by: Signature Tamia M. Chambers	Date/Time 5-21-98 3:00

New York State Project: Yes ____ No 1

Requested Analyses

Cx01

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,	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):										