

APR 13 1992

KDAI

ENVIRONMENTAL ENGINEERING
& LABORATORY SERVICES

06 April, 1992

Mr. Charles B. Schwer
Site Management Section
Agency of Natural Resources
Department of Environmental Conservation
163 South Main Street / West Bldg.
Waterbury, Vermont 05671-0404

RE: Petroleum Contamination / Winooski School District
(Site No. 91-1182)

Dear Mr. Schwer:

K-D Associates, Inc. has completed its preliminary work plan investigating the presence and degree, if any, of contamination resulting from leaking underground storage tanks located at John F. Kennedy School in Winooski, Vermont. Included in this report is a brief site history which replays the events of tank removal, sampling and analysis procedures, test results, area maps and project summary.

In 1964 when the John F. Kennedy School was constructed, one 4000 gallon tank was installed on a concrete pad to store No. 2 fuel oil for the school as indicated on the school blueprints. Some years later, a second 4000 gallon tank was installed and connected to the first by a manifold piping system. This system was used until approximately 1982, when water-contaminated fuel oil damaged the pumps of the heating system, prompting a conversion to a natural gas system. At that time, the tanks were not cleaned before discontinuing their use, instead the majority of remaining fuel oil was used up according to the best recollection of the Maintenance Supervisor.

On 20 and 21 December, 1991 the two 4000 gallon tanks were removed by Jet-Line Services, Inc. along with another 10,000 gallon tank located at Winooski High School. After pumping the water and remaining 5" of product from the 4000 gallon tanks, they were cleaned and removed from the ground where numerous small holes were discovered in both tanks. Due to the high water table, the excavation hole began to fill with water immediately after removal of the tanks which prompted the quick collection of PID readings in the area. Readings of less than 10ppm were noted in the excavation area, however a very light sheen had developed on the water filling the hole. At that time Underground Tank Inspector, Marc Coleman, was notified and arranged to come to the site the next day.

During his site visit, Mr. Coleman estimated the extent of contaminated soil to be approximately 80 yards at 20-50ppm using information about the excavation hole as described by K-D Associates, Inc. and the removal contractor. PID readings by Mr. Coleman taken that day were 5-10ppm. It was then agreed upon that the site could be backfilled with the soil from the excavation and three monitoring wells would be installed.

On 06 March, 1992, K-D Associates, Inc. recorded the water levels and collected water samples from each test well for analysis by EPA Methods 602 and 418.1 (sampling methodology and results are provided). With the exception of one parameter on one sample (well No. 2), the results indicate that no contamination was detected or was below detection and quantification limits.

Results of water sampling from the three monitoring wells indicates a concentration of 24.8 µg/L (0.025 mg/L) of toluene in monitoring well No. 2. Compared to the Preventative Action Limit for Primary Ground Water Quality Standards¹ of 1.21 mg/L, this level of toluene is not a significant concern. Also based on this information, we feel that the need to install test pits to determine the extent of contamination migration, and the development of a soil and groundwater remediation plan is not necessary.

A survey of drinking water wells in the vicinity lists only five private wells in the town (Winooski - Area I-25), the nearest to the Winooski School Site being approximately a quarter mile from the site. Another potential receptor is a small pond and wetland area located directly east on the abutting property. Used as aesthetic landscaping for the development park, these waters are not known to be used for drinking or any other potable water supply.

In conclusion, we feel that any impacts on the ground water as a result of leaks from the underground storage tanks are minimal. Considering the period of time from when the tanks were last used for the storage of fuel oil to when they were actually removed (nine years), it is conceivable that much of the degradation of the tanks occurred after their use for oil storage was discontinued. This would have minimized the amount of product which had leaked from the tanks, and consequently, lessened any soil and ground water contamination. Also, since low or no levels of contamination were detectable directly at the potential source, the overall impact to the surrounding soil and water appears to be negligible.

The Winooski School District is presently undergoing a major expansion of their school buildings which has altered the area surrounding the former tank site. If the Sites Management Section feels that sampling of the monitoring wells should continue, K-D Associates, Inc. suggests that future sampling be delayed until the construction is completed to minimize the risk of contamination from heavy equipment and construction vehicles which currently frequent the well area.

Should you have any questions regarding this report, please feel free to contact me.

Sincerely,



Bryan Schultz

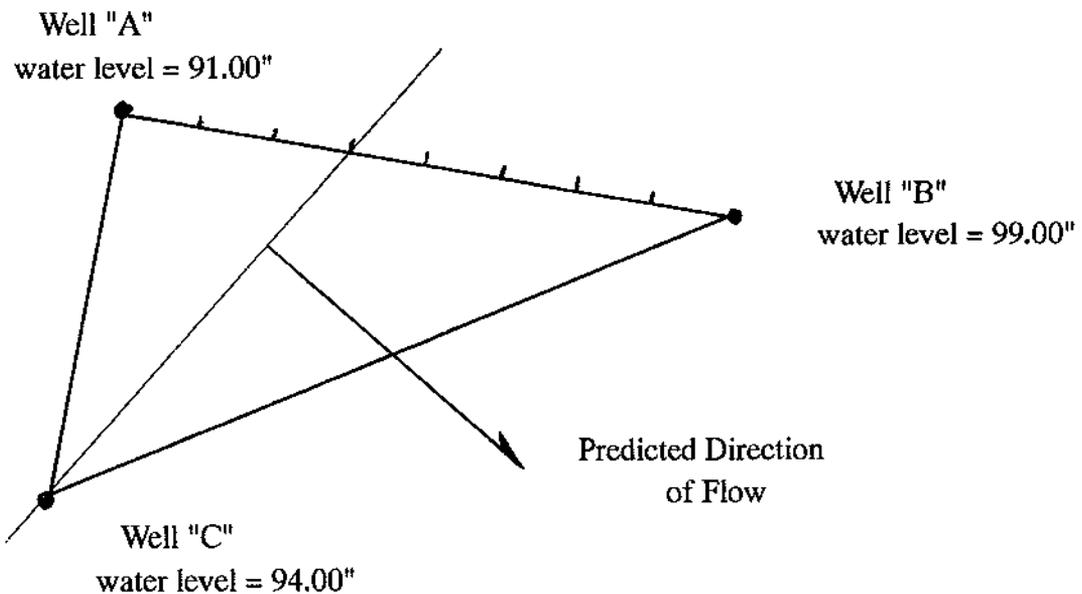
cc: Thomas Kane
file 9177-005

¹ Chapter 12 - GROUND WATER PROTECTION RULE & STRATEGY. September 29, 1988.
Vermont Agency of Natural Resources, Dept. of Environmental Conservation,

SAMPLING & ANALYTICAL METHODOLOGIES

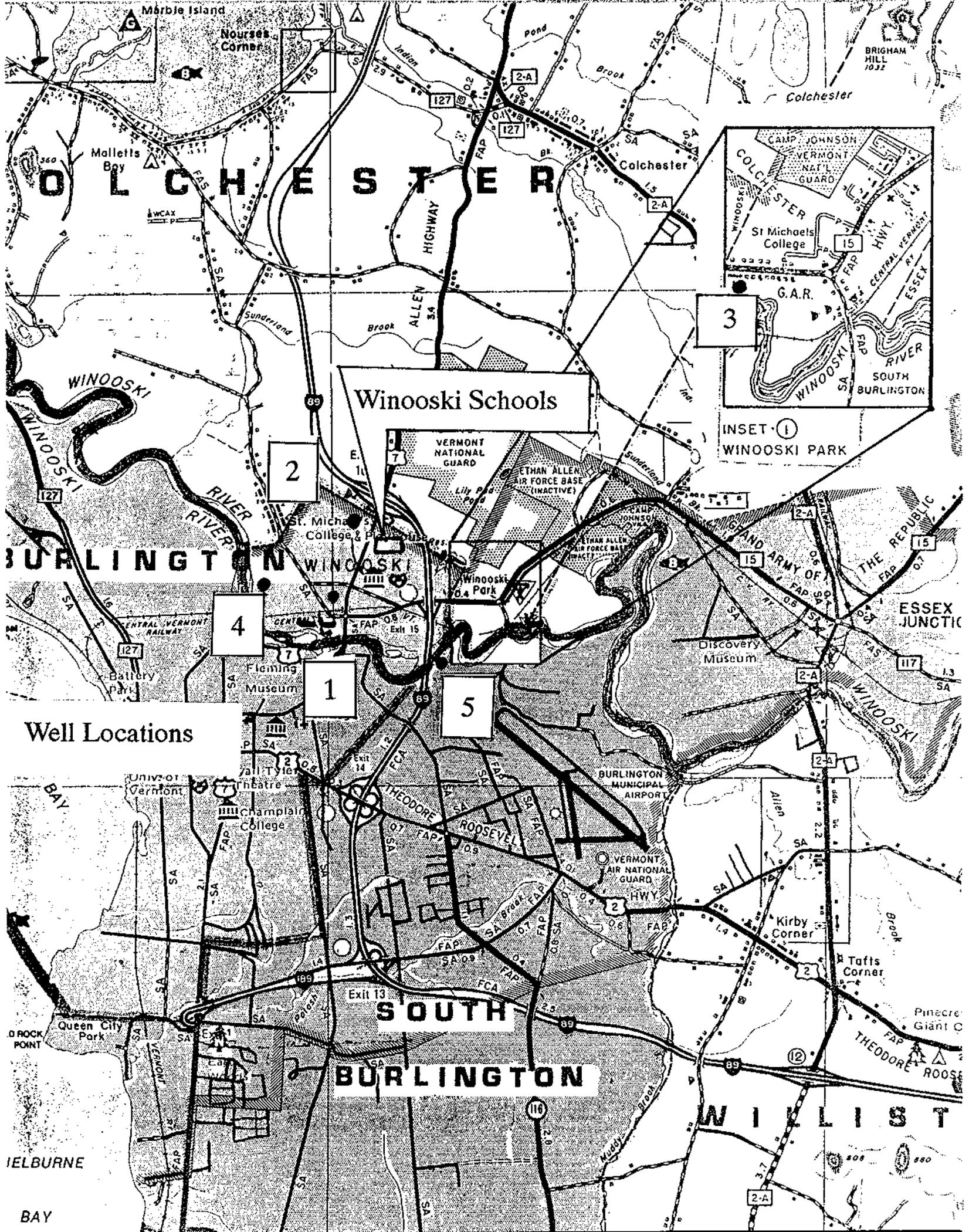
Ground Water Flow Determination Prior to the purging of the monitoring wells or sample collection, the water levels are recorded. Using a builders transit level and water surface detection probe, the water levels of three monitoring wells are measured. The predicted direction of ground water flow can then be determined using the line of highest slope.

Example:



Monitoring Well Water Sampling Using an electric pump (preferred) to reduce contamination from gas-powered pumps or generators and new 3/8" hose, prime the pump if necessary and insert hose to the bottom of the well. After pumping at least three well volumes (or other calculated volume), or until the well is dry, or until the water is free of turbidity, lower the pre-cleaned hand bailer down the well to collect the water sample pouring directly from the bailer into a VOC sample bottle making sure not to leave any airspace before capping. The bailer is to be rinsed before use and between separate well sampling with DDH₂O and methanol. A "blank" sample should also be collected and submitted to the laboratory as soon as possible.

Laboratory Analysis Analytical methods EPA 418.1 "Total Hydrocarbons" and EPA 602 "Purgeable Aromatics" are used by a qualified Laboratory. (Test results are submitted with this report.)



COLCHESTER

BURLINGTON

Well Locations

SOUTH BURLINGTON

WILLISTON

Winooski Schools

INSET ①
WINOOSKI PARK

2

4

1

5

3

15

2-A

2-A

2-A

2-A

2-A

2-A

2-A

2-A

2-A

Marble Island

Malletts Bay

Sunderland

WINOOSKI RIVER

WINOOSKI RIVER

WINOOSKI RIVER

BAY

Queen City Park

Queen City Park

Queen City Park

BAY

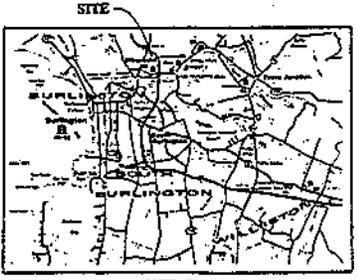
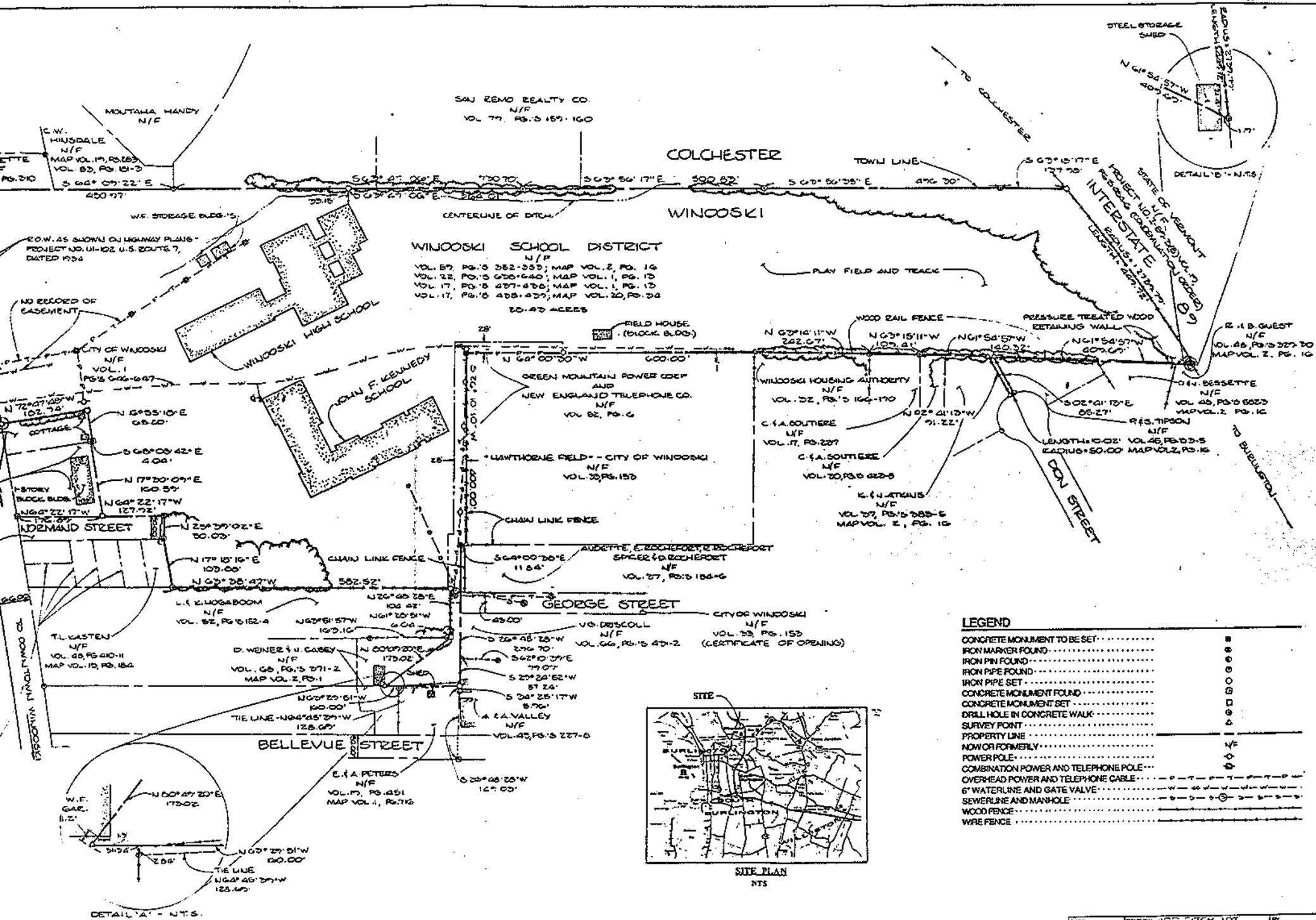
Nurses Corner

Winooski

Allen Highway

Colchester

Winooski



2. THE SURVEYED PARCEL INCLUDES A 10' WIDE SEWER LINE RIGHT OF WAY RECORDED IN WARRANTY DEED IN VOLUME 17, PAGES 438-439. THIS RIGHT OF WAY IS LOCATED TO THE SOUTH OF THE SURVEYED PARCEL AND LEADS SOUTHERLY TO BELLEVUE STREET. SUBSEQUENTLY A SEWER LINE HAS BEEN CONSTRUCTED FROM GEORGE STREET TO THE KENNEDY SCHOOL BUILDING.

3. BEARINGS ARE BASED ON MAGNETIC NORTH AS TAKEN FROM STREET RESURVEYS SHOWN ON PLAN REFERRED TO IN NOTE 1A.

4. ENCROACHMENTS EXIST ALONG THE WESTERLY AND SOUTHERLY BOUNDARIES OF THIS PARCEL. ANY ARE SHOWN ON THIS PLAN.

5. THE PARCEL IS SUBJECT TO THE FOLLOWING EASEMENTS AND MAY BE SUBJECT TO OTHERS ALSO ON RECORD:
- RIGHTS FOR WATER LINE TO THE CITY OF WINOOSKI AS RECORDED IN VOLUME 1, PAGES 646-647 (LINE LOCATION SHOWN IS APPROXIMATE)
- 25' EASEMENT FOR POWER AND TELEPHONE LINES TO GREEN MOUNTAIN POWER CORP. AND NEW ENGLAND TELEPHONE CO. AS RECORDED IN VOLUME 52, PAGE 6

I CERTIFY THAT THIS PLAN WAS BASED ON A THEODOLITE AND EDM SURVEY AND IS CONSISTENT WITH PERTINENT DEEDS, OTHER OFFICIAL RECORDS, AND EVIDENCE RECOVERED ON THE PROPERTY EXCEPT AS SHOWN ON THE PLAN.

Dated this 21st day of March, 1990

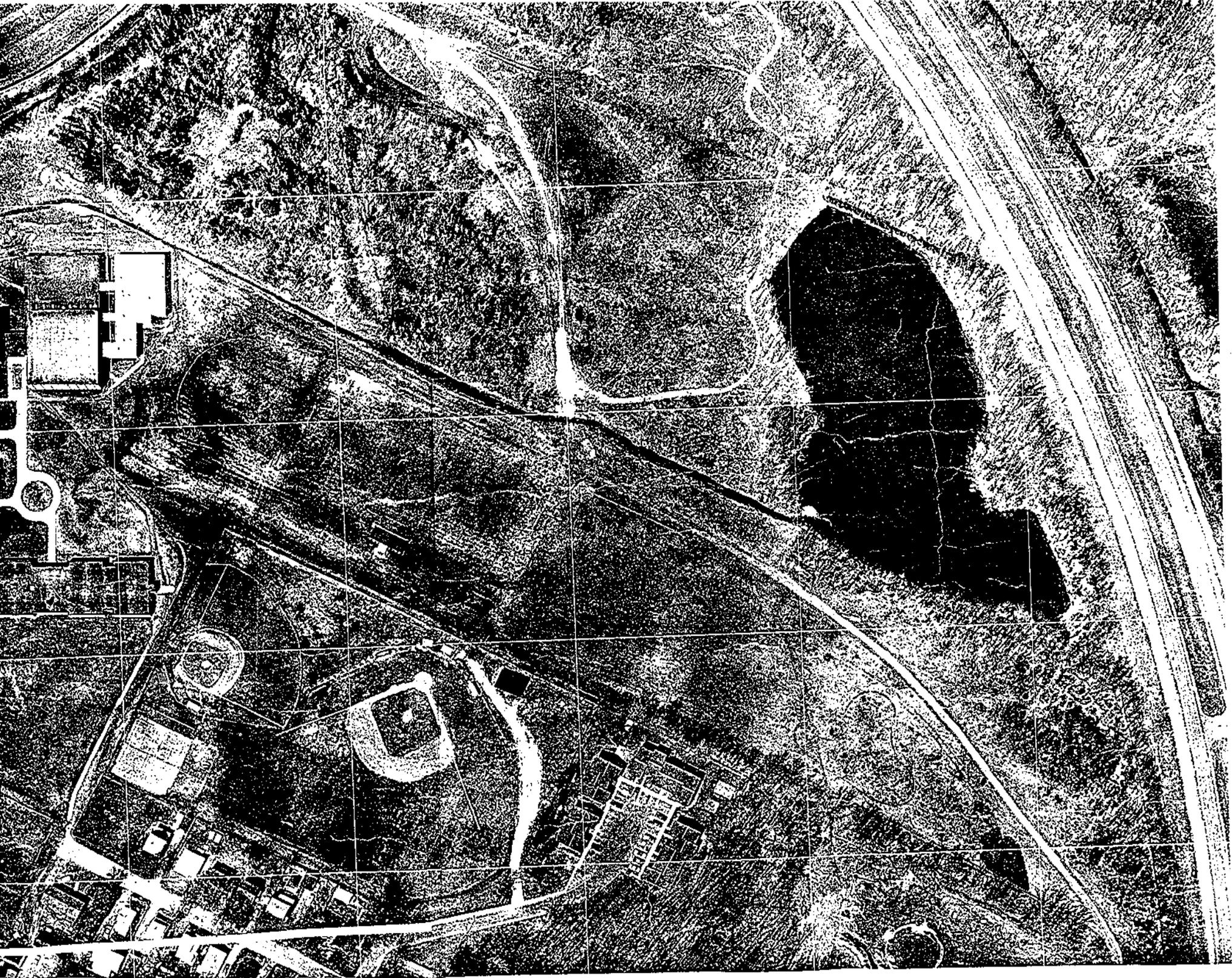
Richard P. Ryan

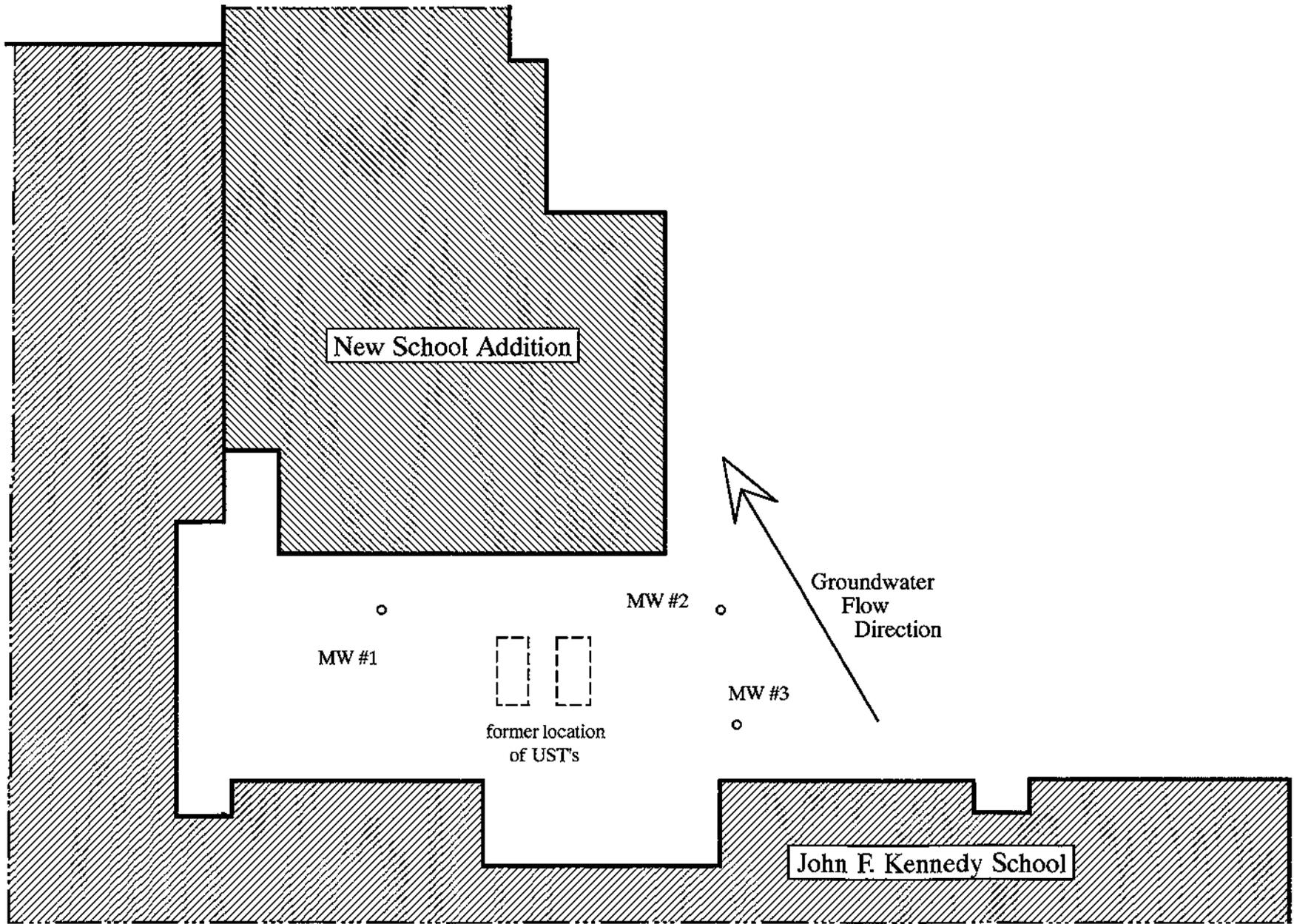
L.S. VT. 611

DATE CHECKED	REVISION AND EPOCH, LOT	BY	MEMO

Winooski School District
Superintendents Office, Main Street
Winooski, Vermont 05404

WINOOSKI SCHOOL DISTRICT
BOUNDARY PLAT





KDAI
 P.O. Box 4326
 Burlington, Vermont 05406-4326
 (802) 862-7490

site: Winooski School District
 60 Normand Street
 Winooski, Vermont
 scale: 1" = 30'

LEGEND
 ○ = Monitoring Well Location



ENDYNE, INC.

Laboratory Services

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

LABORATORY REPORT

TOTAL HYDROCARBONS - EPA METHOD 418.1

CLIENT: K-D Associates
REPORT DATE: March 20, 1992
PROJECT NAME: K-D Associates
PROJECT CODE: KDKD7024
DATE SAMPLED: March 6, 1992
DATE RECEIVED: March 9, 1992
DATE ANALYZED: March 19, 1992
SAMPLER: Bryan Schultz

Reference number:

Concentration (mg/L)¹

28,729
28,730
28,731
28,732

ND²
ND
ND
ND

Sample ID:

28,729: Well #1
28,730: Well #2
28,731: Well #3
28,732: Blank (#4)

Notes:

- 1 Method detection limit is 0.8 ppm
- 2 None detected

Reviewed by _____



ENDYNE, INC.

Laboratory Services

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

LABORATORY REPORT

EPA METHOD 602 -- PURGEABLE AROMATICS

CLIENT: K.D. Associates
PROJECT NAME: K.D. Associates
REPORT DATE: March 20, 1992
SAMPLER: Bryan Schultz
DATE SAMPLED: March 6, 1992
DATE RECEIVED: March 9, 1992

PROJECT CODE: KDKD7023
ANALYSIS DATE: March 17, 1992
STATION: Well #1
REF.#: 28,725
TIME SAMPLED: Not Indicated

<u>Parameter</u>	<u>Minimum Detection Limit</u>	<u>Concentration (ug/L)</u>
Benzene	2.	ND ¹
Chlorobenzene	1.	ND
1,2-Dichlorobenzene	2.	ND
1,3-Dichlorobenzene	2.	ND
1,4-Dichlorobenzene	2.	ND
Ethylbenzene	1.	ND
Toluene	1.	ND
Xylenes	5.	ND
MTBE	1.	ND

NUMBER OF UNIDENTIFIED PEAKS FOUND: 0

NOTES:

1 None detected

Reviewed by _____



ENDYNE, INC.

Laboratory Services

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

LABORATORY REPORT

EPA METHOD 602 -- PURGEABLE AROMATICS

CLIENT: K.D. Associates
PROJECT NAME: K.D. Associates
REPORT DATE: March 20, 1992
SAMPLER: Bryan Schultz
DATE SAMPLED: March 6, 1992
DATE RECEIVED: March 9, 1992

PROJECT CODE: KDKD7023
ANALYSIS DATE: March 17, 1992
STATION: Well #2
REF.#: 28,726
TIME SAMPLED: Not Indicated

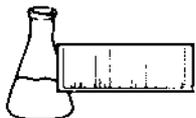
<u>Parameter</u>	<u>Minimum Detection Limit</u>	<u>Concentration (ug/L)</u>
Benzene	2.	TBQ ²
Chlorobenzene	1.	ND ¹
1,2-Dichlorobenzene	2.	ND
1,3-Dichlorobenzene	2.	ND
1,4-Dichlorobenzene	2.	ND
Ethylbenzene	1.	TBQ
Toluene	1.	24.8
Xylenes	5.	ND
MTBE	1.	ND

NUMBER OF UNIDENTIFIED PEAKS FOUND: 3

NOTES:

- 1 None detected
- 2 Trace below quantitation limits

Reviewed by _____



ENDYNE, INC.

Laboratory Services

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

LABORATORY REPORT

EPA METHOD 602 -- PURGEABLE AROMATICS

CLIENT: K.D. Associates
PROJECT NAME: K.D. Associates
REPORT DATE: March 20, 1992
SAMPLER: Bryan Schultz
DATE SAMPLED: March 6, 1992
DATE RECEIVED: March 9, 1992

PROJECT CODE: KDKD7023
ANALYSIS DATE: March 17, 1992
STATION: Well #3
REF.#: 28,727
TIME SAMPLED: Not Indicated

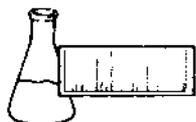
<u>Parameter</u>	<u>Minimum Detection Limit</u>	<u>Concentration (ug/L)</u>
Benzene	2.	ND ¹
Chlorobenzene	1.	ND
1,2-Dichlorobenzene	2.	ND
1,3-Dichlorobenzene	2.	ND
1,4-Dichlorobenzene	2.	ND
Ethylbenzene	1.	ND
Toluene	1.	ND
Xylenes	5.	ND
MTBE	1.	ND

NUMBER OF UNIDENTIFIED PEAKS FOUND: 0

NOTES:

1 None detected

Reviewed by _____



ENDYNE, INC.

Laboratory Services

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

LABORATORY REPORT

EPA METHOD 602 -- PURGEABLE AROMATICS

CLIENT: K.D. Associates
PROJECT NAME: K.D. Associates
REPORT DATE: March 20, 1992
SAMPLER: Bryan Schultz
DATE SAMPLED: March 6, 1992
DATE RECEIVED: March 9, 1992

PROJECT CODE: KDKD7023
ANALYSIS DATE: March 17, 1992
STATION: Blank (#4)
REF.#: 28,728
TIME SAMPLED: Not Indicated

<u>Parameter</u>	<u>Minimum Detection Limit</u>	<u>Concentration (ug/L)</u>
Benzene	2.	ND ¹
Chlorobenzene	1.	ND
1,2-Dichlorobenzene	2.	ND
1,3-Dichlorobenzene	2.	ND
1,4-Dichlorobenzene	2.	ND
Ethylbenzene	1.	ND
Toluene	1.	ND
Xylenes	5.	ND
MTBE	1.	ND

NUMBER OF UNIDENTIFIED PEAKS FOUND: 0

NOTES:

1 None detected

Reviewed by _____