PROJECT FOR PERFORMANCE OF REMEDIAL RESPONSE ACTIVITIES AT UNCONTROLLED HAZARDOUS SUBSTANCE FACILITIES—ZONE 1

NUS CORPORATION
SUPERFUND DIVISION

D-583-11-5-9
Revision 0

AUBURN ROAD LANDFILL
REMEDIAL INVESTIGATION REPORT

TDD NO. F1-8407-07
NUS JOB NO. 0393
EPA SITE NO. NHD 980 524 086
CONTRACT NO. 68-01-6699

VOLUME III: APPENDIX I-Q

FOR THE

REGION I
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SUPERFUND BRANCH

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NUS CORPORATION
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APPENDIX SUMMARY (VOLUME III)

I. VLF and EM-34

This section describes the methodologies and procedures involved in the electromagnetic surveys conducted as part of the Remedial Investigation.

J. Magnetometer

Description of methodologies and procedures used to conduct the magnetometer survey by NUS/FIT. Results of this study are discussed in Section 4.1. The vertical gradient and corrected total field readings are presented in this appendix.

K. Borehole Geophysics

Description of methodologies and procedures are presented in this section along with an interpretation of the data and the geophysical well logs.

L. Seismic

This section presents the report prepared by K & M Associates of the seismic survey conducted of the study area.

M. Air Monitoring

Air monitoring methodologies are described in detail. NUS/FIT and EPA sample results are presented.

N. Surface Water/Sediment Sampling

Descriptions of surface water/sediment sampling methods are followed by data from NUS/FIT and other contractors.

O. Soil Sampling

Soil sampling methodology is presented for test pit and grab samples. Results for NUS/FIT and other contractors are included.

P. Groundwater Sampling

Groundwater sampling methodologies for monitoring and residential wells are described. Data are presented for sampling conducted by NUS/FIT, GZA, E & E, EPA, and the State of New Hampshire.

Q. Analytical Protocols

Analytical procedures are detailed for the Photovac 10A10 Gas Chromatograph (GC) and the Foxboro Organic Vapor Analyzer (OVA-128), used in NUS/FIT screening. An explanation of Contract Laboratory Program (CLP) and Data Validation (quality control data review) follows.

APPENDIX I

VLF AND EM-34

SECTIONS IN APPENDIX I

- METHODOLOGIES AND PROCEDURES

VLF (VERY LOW FREQUENCY) RESISTIVITY SURVEY

Because there was some question with regard to the interpretation of groundwater contaminant plume locations defined by previous studies, NUS/FIT developed an approach to more completely characterize contaminant plume distribution.

Groundwater contaminant plumes typically exhibit a different capacity to conduct electromagnetic (EM) fields, than is associated with the surrounding "less-contaminated" ground water, due to the presence of conductive or resistive chemicals. This electromagnetic property was used by NUS/FIT to characterize and track groundwater contaminant plumes. Electromagnetic (EM) surface geophysical methods were identified as a rapid, cost effective way to define the location of contaminant plumes and ensure that a significant source area or contaminant plume was not overlooked. A VLF (Very Low Frequency) survey was conducted at the site for this purpose.

Because VLF resistivity techniques were not commonly used for plume delineation, and are often considered to be experimental in application, the VLF survey was conducted under a separate research project (TDD No. F1-8409-06) as part of an evaluation of the method for the U.S. EPA.

Very Low Frequency (VLF) electromagnetic waves in the United States are constantly produced by U.S. Navy transmission stations located in Cutler, Maine; Annapolis, Maryland; Seattle, Washington; and Lualualei, Hawaii. Other VLF stations are operated by several different organizations and governments throughout the world. A dozen stations are located such that at least two are detectable anywhere on the globe. These VLF transmissions are used primarily for submarine navigation, although recently mineral exploration firms have been utilizing this constant signal network for reconnaissance geophysical surveys.

The VLF resistivity survey was conducted in-house by NUS/FIT geophysics and geology staff utilizing Geonics Limited Model EM-16R equipment (EM-16 unit with a resistivity attachment). The EM-16R differs from the EM-16 unit in that the former measures the VLF electrical field and the latter measures the VLF magnetic field. The EM-16R utilizes the EM-16 unit by adapting an optional console to the side of the instrument. To permit direct electrical field measurements, two ground contacting electrodes separated by 10 meters of cable are attached to the EM-16R console.

The actual field operation starts by using the EM-16 (mode switch) to locate the direction to the transmitter, by using the audible null as a direction indicator. Once the direction to the station is determined, the two electrodes are placed in the ground so that the front electrode, the console unit, and the rear electrode are on a line pointing towards the transmitter. Then the mode switch is changed to EM-16R. A phase angle control knob is then rotated until a minimum in the audible tone is located. The next step is similar to a fine tuning by using the resistivity index ring to minimize the tone further.

The two readings generated by the EM-16R unit are apparent electrical resistivity and phase angle. The range of resistivity readings is 10 to 30,000 ohm-meters. The range of the phase angle is from 0° to 90°. The apparent electrical resistivity is the total resistivity to the depth of penetration. If the earth is electrically homogeneous down to the depth of penetration, the phase angle will be about 45°. If a two (or more) layered earth case exists within the zone of penetration, a phase angle reading at that point will be either above or below 45°, depending upon the particular characteristics of the layers. If the upper layer in a two layer case is more conductive than the lower, the phase angle will be less than 45°. This case is typical of a conductive overburden overlying a more resistive bedrock. If the lower layer in a two layer case is more conductive, the phase angle will be greater than 45°. This could be encountered with semi-conductive sands being underlain by highly conductive marine clay.

Eight roughly parallel lines (1, 1A, 1B, 2, 2A, 3, 4, 5) were surveyed utilizing the Em-16R with readings spaced at approximately ten meter spacings along each line. These lines, while generally oriented east to west, did take advantage of cultural features such as trails and roads for ease of access (Plate 2). In designing the survey lines, efforts were made to keep the unsaturated overburden thickness nearly constant along each line. This minimized any change in apparent resistivity due to a fluctuating depth to water table, which would make interpretation difficult. A few resistivity readings were taken near a phyllite outcrop, presumed to be upgradient of all source areas. Survey lines were designed to cross cut groundwater flow directions, to enable the site to be more fully characterized and to define plume source areas and flow directions. Two background lines (1A and 1B) were run upgradient of any known disposal areas on site to ensure that there was no significant upgradient, off-site, source area that was responsible for contamination plumes on site. All other lines were placed to intersect potential or known contaminant plumes emanating from the site. The data from each line are represented as resistivity profiles in Section 5.4 of this report.

The EM-16R readings indicated that the probable true resistivity for the bedrock unit was approximately 8,000 to 12,000 ohm-meters. Background apparent resistvity values fluctuated across the site depending upon geological and hydrological influences, but generally ranged from 700 ohm-meters to over 4,000 ohm-meters. Where the background resistivity was high (several thousand ohm-meters), it could be inferred that either the thickness of unsaturated (resistive) overburden increased, or resistive bedrock was near the surface.

To minimize variations in background values, and to accentuate anomalous areas of low resistivity (such as within a conductive plume), the apparent resistivity profiles were plotted using a semi-logarithmic scale due to factors, such as the phase angle, profile shape, trends, and background values varied drastically, making data interpretation quite subjective. As a rule, however, the values below 500 ohm-meters were further examined to determine whether they represented an

FIELD DATA
VLF RESISTIVITY (EM-16R) AND EM-34

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NUS CORP.
EM-16R RESISTIVITY SURVEY

PROJECT NO. NA-08-MI PAGE 1

DATE 10-9-84 SITE Auburn

OPERATOR LJF - AKA GRID

STATION NAA/*NSS

LINE	STATION	RESISTIVITY	MULTIPLIER	PHASE ANGLE	REMARKS
TEST	1	4	x 1000 = 4000	30	SSE of landfill (near Phylite outcrop)
TEST	2	5	x 1000 = 5000	32	
TEST	3	3	x 1000 = 3000	36	
VLF- LINE 1	1	20	x 100 = 2000	25	SE of Landfill Near Boulders
	2	8.5	x 100 = 850	32	
	3	6	x 100 = 600	28	
	4	6.5	x 100 = 650	22	
	5	8	x 100 = 800	18	By Well A · 38
	6	8.5	x 100 = 850	22	
	7	21	x 100 = 2100	12	in line w/well A·5
	8	3.5	x 1000 = 3500	10	
	9	10	x 1000 = 10,000	8	
	10	11	x 1000 = 11,000	7	
	11	14	x 1000 = 14,000	8	measurement straddle
	12	11	x 1000 = 11,000	8	dirt access road
	13	8	x 1000 = 8000	10	
	14	5.5	x 1000 = 5500	10	
	15	8	x 1000 = 8000	10	
	16	8	x 1000 = 8000	10	

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NUS CORP.
EM-16R RESISTIVITY SURVEY

PROJECT NO. NA-08-MI PAGE 2
DATE 9-10 Oct. 84 SITE Auburn
OPERATOR LJF - AKA GRID
STATION NAA/*NSS

LINE	STATION	RESISTIVITY	MULTIPLIER	PHASE ANGLE	REMARKS
VLF #1	21	—	Pavement problems	no measurement	
	22	10	x 1000 = 10,000	34	
	23	4	x 1000 = 4000	37	
	24	13	x 100 = 1300	40	
	25	13	x 100 = 1300	36	
	26	7.5	x 100 = 750	32	
	27	4	x 100 = 400	34	East of well GZ-1
	28	21	x 10 = 210	19	
	29	4	x 100 = 400	15	
	30	19	x 10 = 190	12	
	31	13	x 10 = 130	18	By small Beaver Pond before (culvert)
	32	7.5	x 10 = 75	12	
	33	18	x 10 = 180	20	New Day
	*33	22	x 10 = 220	15	
	*34	3	x 100 = 300	17 ± 2	
	34	3	x 100 = 300	25	
	35	9	x 100 = 900	20	
	36	27	x 100 = 2700	25	
	*36	17	x 100 = 1700	22	
	37	14			

NUS CORP.
EM-16R RESISTIVITY SURVEY

PROJECT NO. NA-08-MI PAGE ___

DATE 10-10-84 SITE Auburn

OPERATOR LJF - AKA GRID ___

STATION NAA/*NSS

LINE	Approx. 10 meter spacing STATION	RESISTIVITY	MULTIPLIER	PHASE ANGLE	REMARKS
VLF #1	41	10.5	x 100 = 1050	28	
	42	13	x 100 = 1300	25	
	43	17	x 100 = 1700	25	
	44	18	x 100 = 1800	30	
	45 West	17	x 100 = 1700	28	

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NUS CORP.
EM-16R RESISTIVITY SURVEY

PROJECT NO. NA-08-MI PAGE

DATE 10-22-84 SITE Auburn

OPERATOR LJF-AKA-RJR GRID

STATION *NSS*

Approximately 10 meters- station spacing

LINE	STATION	RESISTIVITY	MULTIPLIER	PHASE ANGLE	REMARKS
VLF - 1A	East *1		3 x 1000 = 3000	26	100 feet South of magnetometer grid 500E + 0
	*2		skipped due to creek		
	*3		14 x 100 = 1400	28	
	*4		16 x 100 = 1600	33	
	*5		13 x 100 = 1300	30	
	*6		18 x 100 = 1800	28	
	*7		16 x 100 = 1600	32	
	*8		14 x 100 = 1400	34	
	*9		8.5 x 100 = 850	34	
	*10		6 x 100 = 600	28	
	*11		10 x 100 = 1000	32	
	*12		7 x 100 = 700	37	
	*13		5 x 100 = 500	36	
	*14		7.5 x 100 = 750	32	crossed Pond Station 15 on Auburn Road side of Pond
	*15		6 x 100 = 600	37	
	*16		5 x 100 = 500	38	
	*17		8 x 100 = 800	34	
	*18		12 x 100 = 1200	34	
	*19		10 x 100 = 1000	28	

NUS CORP. EM-16R RESISTIVITY SURVEY

PROJECT NO. NA-08-MI PAGE ____

DATE 10/24/84 SITE Auburn

OPERATOR B. Ross, J. Baldyga GRID ____

STATION NAA/NSS*

LINE	STATION	RESISTIVITY	MULTIPLIER	PHASE ANGLE	REMARKS
VLF-1B	1	8 x	1000 = 8000	18	Beginning point East en
	2	4.5 x	1000 = 4500	20	
	3	3 x	1000= 3000	18	
	4	4 x	1000 = 4000	19	
	5	3.5 x	1000 = 3500	20	Water (swampy area)
	6	3.5 x	1000 = 3500	22	
	7	3 x	1000 = 3000	24	At bend in Road
	8	3 x	1000 = 3000	22	Wet
	9	2.5 x	1000 = 2500	20	between scales
	10	18 x	100 = 1800	20	
	11	18 x	100 = 1800	22	End of swampy area
	12	17.5 x	100 = 1750	24	
	13	3 x	1000 = 3000	22	
	14	3 x	1000 = 3000	22	
	*14	3 x	1000 = 3000	24	Re-shot
	*15	4 x	1000 = 4000	26	
	15	5 x	1000 = 5000	24	West end END OF LINE

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NUS CORP.
EM-16R RESISTIVITY SURVEY

PROJECT NO. NA-08-MI PAGE

DATE 10-16-84 SITE Aubu

OPERATOR LJF - AKA GRID

STATION NAA/*NSS*

LINE	STATION	RESISTIVITY	MULTIPLIER	PHASE ANGLE	REMARKS
VLF #2	9 West End	7	x 100 = 700	42	(Tree Line) Stake
	8	9	x 100 = 900	40	
	7	7	x 100 = 700	36	
	6	9.5	x 100 = 950	29	
	5	7.5	x 100 = 750	30	
	4	7	x 100 = 700	22	Next to Well A-33 (Front Probe)
	3	7	x 100 = 700	22	flag - Rx
	2	10	x 100 = 1000	28	
	1 East End	8.5	x 100 = 850	30	staked near edge of woo

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NUS CORP.
EM-16R RESISTIVITY SURVEY

PROJECT NO. NA-08-MI PAGE ____

DATE 10-16-84 SITE Auburn

OPERATOR LJF - AKA GRID ____

STATION NAA

LINE	STATION	RESISTIVITY	MULTIPLIER	PHASE ANGLE	REMARKS
VLF #2A	9 East End	9	x 100 = 900	36	moist, silty
	10	14	x 100 = 1400	34	overgrown area
	11	13	x 100 = 1300	27	Roadway
	12	24	x 100 = 2400	33	Excavated Area
	13	3.5	x 1000 = 3500	30	
	14	4.5	x 1000 = 4500	28	Dry fine sand
	15	22	x 100 = 2200	35	silt
	16 West	21	x 100 = 2100	23	

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NUS CORP.
EM-16R
RESISTIVITY
SURVEY

PROJECT NO. NA-08-MI PAGE

DATE 10-15-84 SITE Aubu

OPERATOR LJF - AKA GRID

STATION NAA/*NSS

LINE	STATION	RESISTIVITY	MULTIPLIER	PHASE ANGLE	REMARKS
VLF #3	37 West	3.5	x 1000 = 3500	21	100' SE to Town Dump
	36	19	x 100 = 1900	24	edge Wet Area
	35	20	x 100 = 2000	26	along
	34	19	x 100 = 1900	24	small dirt road
	33	9	x 100 = 900	26	
	32	4.5	x 100 = 450	34	
	31	21	x 10 = 210	43	
	30	8	x 10 = 80	48	
	29	9	x 10 = 90	45	
	28	6	x 10 = 60	37	Truck Turnaround
	27	4	x 10 = 40	34	
	26	6	x 10 = 60	34	Staked ~~Stated~~ (@ Rx)
	25	5	x 10 = 50	32	across ponded area
	24	too conductive can't read			
	27*	(7)	x 10 = (70)	(30)	
	26*	(9.5)	x 10 = 95	32	
	25*	(9)	x 10 = 90	28	
	24*	(23)	x 10 = 230	38	
	23*	(23)	x 10 = 230	30	

NUS CORP. EM-16R RESISTIVITY SURVEY

PROJECT NO. NA-08-MI PAGE

DATE 10-15-84 SITE Aubur

OPERATOR LJF - AKA GRID

STATION NAA /NSS*

LINE	STATION	RESISTIVITY	MULTIPLIER	PHASE ANGLE	REMARKS
VLF #3	17*	(15)	x 100 = 1500	16	
	16*	(9)	x 100 = 900	17	crossed stream change
	15*	(8.5) ± 2	x 100 = 850	20	in overburden - silty sand - marshy flood
	14*	(6)	x 100 = 600	21	plain highly organic
	13*	(6)	x 100 = 600	22	
	12*	No reading heavy brush			
	11*	(7)	x 100 = 700	27	
	10*	(5)	x 100 = 500	23 ± 2	
	9*	4	x 100 = 400	23 ± 2	
	8*	5	x 100 = 500	25 ± 2	
	7*	15	x 10 = 150	34	
	6*	13 ± 2	x 10 = 130	45	Brown leachate
	5*	10	x 10 = 100	36	ZONE
	4*	10	x 10 = 100	35	* oily sheen
	3*	11	x 10 = 110	32	on surface water
	2*	14	x 10 = 140	28	
	East 1*	19 *	x 10 = 190	26	10/15/84 end of day
		100 yards and 15° - 20° mag. to end of line from Well #A - 33			
	Sta #24	too conductive			

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EM-16R RESISTIVITY SURVEY

PROJECT NO. NA-08-MI PAGE

DATE 10-16-84 SITE Aub

OPERATOR LJF - AKA GRID

STATION NAA

LINE	STATION	RESISTIVITY	MULTIPLIER	PHASE ANGLE	REMARKS
	Start 10-17-84	(Peter McGlew Present)		Wooded Area	
	East End				
VLF #4	1	9	x 100 = 900	45	south side of pond
	2	4	x 100 = 400	37	
	3	11	x 100 = 1100	37	
	4	15	x 100 = 1500	35	
	5	18	x 100 = 1800	31	10 meters E of A-46
	6	20	x 100 = 2000	30	10 ft. W of Well A-46
	7	15	x 100 = 1500	31	
	8	9.5	x 100 = 950	36	
	9	11	x 100 = 1100	37	
	10	10	x 100 = 1000	37	
	11	7	x 100 = 700	47	25' S of GZ-9
	12	4.5	x 100 = 450	41 ± 1	
	13	16	x 10 = 160	36	
	14	3	x 100 = 300	43	in between scales
	15	5	x 100 = 500	43	F.P. in H²O/Sharp increase in slope
	16	skipped due to severe slope & undergrowth			
	17	5	x 100 = 500	12	GZ-10 variations in slope
	18	6	x 100 = 600	16	

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NUS CORP.
EM-16R RESISTIVITY SURVEY

PROJECT NO. NA-08-MI PAGE ____

DATE 10-17-84 SITE Auburn

OPERATOR LJF, AKA, PJM GRID ____

STATION NAA

LINE	STATION	RESISTIVITY	MULTIPLIER	PHASE ANGLE	REMARKS
VLF #5	East End 1	5.5	x 100 = 550	20	Between the 4 Whispering Pines Wells
	2	7.5	x 100 = 750	22	
	3	7.5	x 100 = 750	22	
	4	7.5	x 100 = 750	22	
	5	6	x 100 = 600	24	by GZ-11
	6	5	x 100 = 500	27	
	7	5	x 100 = 500	27	by NUS-1
	8	3.5	x 100 = 350	26	
	9	12	x 10 = 120	30	surface
	10	17	x 10 = 170	26	by NUS-3
	11	3.6	x 100 = 360	34	
	12	12	x 100 = 1200	30	
	13	8	x 100 = 800	32	
	West 14	9	x 100 = 900	34	

EM-34-3 Data

Site: Auburn Road/VLF Project
TDD: F1-8409-06
Date: 10-17-84
Project: NA-08-MI

Line: VLF #3
TX: A. Angers, P. McGlew (EPA)
RX: L. Fitzgerald
Seperatim: 10 meters

Station	Horizontal	Vertical
19	2	3
20	2	4
21	3	4
22	3	5
23	5	7
24	10	7
25	11	16
26	10	15
27	10	14
28	10	12
29	10	12
30	9.1	10
31	7.5	7.7
32	5.6	5.8
33	3.6	5.3
34	3.0	

Note: Horizontal and Vertical refer to the dipole orientation.

This page contains all the data from the limited EM-34-3 survey.

MAGNETOMETER

SECTIONS IN APPENDIX J

- METHODOLOGIES AND PROCEDURES

TABLES IN APPENDIX J

RECONNAISSANCE MAGNETOMETER DATA (CORRECTED)

J-1 (AREA A)
J-2 (AREA B)
J-3 (AREA C)
J-4 (AREA D)
J-5 (AREA E)

DETAILED MAGNETOMETER DATA (CORRECTED)

J-6 GRID NO. 1 - SOLID WASTE LANDFILL AREA
J-7 GRID NO. 2 - TIRE DUMP AREA
J-8 GRID NO. 3 - TOWN LANDFILL AREA

FIGURES IN APPENDIX J

J-1 RECONNAISSANCE MAGNETOMETER SURVEYS

MAGNETOMETER

A detailed magnetometer geophysical survey was conducted over each of the four main source areas on site. The survey locations were based on data collected by NUS/FIT during the excavation of test pits, reconnaissance magnetic surveys, interpretations of aerial photographs and visual observations of ground disturbance. The main objective of the survey was to define areas likely to contain buried drums and to provide data on which to base estimates of the number of possible buried drums. This information had not been generated by previous studies, but was deemed necessary for the Feasibility Study and any removal type actions.

At each of the four major source areas (town landfill, tire dump area, solid waste landfill and septage lagoon area), a grid was established using a transit to locate the perimeter lines. The remaining inner lines were established by using a tape measure and measuring in from the surveyed perimeter lines. Each grid consisted of a series of parallel lines spaced at twenty foot intervals. The magnetometer grid over the town landill was approximately 2.6 acres in size and the grid over the tire dump was approximately 5.0 acres. The grid established over the solid waste landfill, including the septage lagoon area, was approximately 6.0 acres in area (Plate 2).

The magnetometer field survey was conducted using an EDA Instruments PPM-500 as a portable field magnetometer, and an EDA Instruments PPM-400 as a stationary magnetic base station. These instruments are sensitive to magnetically susceptible materials such as, steel, iron and magnetite which can enhance the local magnetic field. The Proton Procession Magnetometers (PPM-500 and PPM-400) are capable of measuring this enhancement (anomaly) with two parameters: Total Field and Vertical gradient readings. Total field measurements are indicative of the combined enhancement of the magnetically anomalous features in the proximity of the instrument, diurnal variations due to solar wind, and micropulsations. Vertical gradient readings are indicative of the density of magnetic flux and are considered to be free from the effect of diurnal variations and micropulsations.

Prior to conducting the field magnetometer survey the stationary base station magnetometer (PPM-400) was set up in a pre-established non-anomalous area (near 0 vertical gradient or background total field readings). The PPM-400 was programmed to continuously record (twice every minute) the diurnal magnetic variations and micropulsations occurring on the day of the survey. Information obtained from the PPM-400 was used to electronically correct for the undesired variations of the field data (PPM-500).

To ensure the collection of reproducible results, the field survey was conducted with the PPM-500 always oriented to magnetic north. Total field and vertical gradient readings were recorded at twenty foot intervals along each line and electronically stored within the instrument (PPM-500). In addition to recording the total field and vertical gradient readings, the PPM-500 also recorded the date, time, station location (line and position number) and estimated error for each station location. Field observations of metalliferous objects exposed on the ground surface were recorded in a project logbook to enable buried anomalous magnetic sources to be distinguished from surface anomalous magnetic sources. The field survey and data interpretation were conducted by trained geophysics personnel and according to NUS SOG No. 31, Revision 0.

To more fully characterize the magnetic characteristics of the major source areas with respect to shallow and deep anomalies, a total field and vertical gradient survey of gridded areas onsite was conducted. The survey identified numerous areas, shallow and deep, possessing magnetic characteristics which appear anomalous. These anomalous areas are due to magnetic materials, the identity of which cannot be discerned using this technique. Buried metallic waste containers (55 gallon drums) will alter the earth's magnetic field at locations where it is buried.

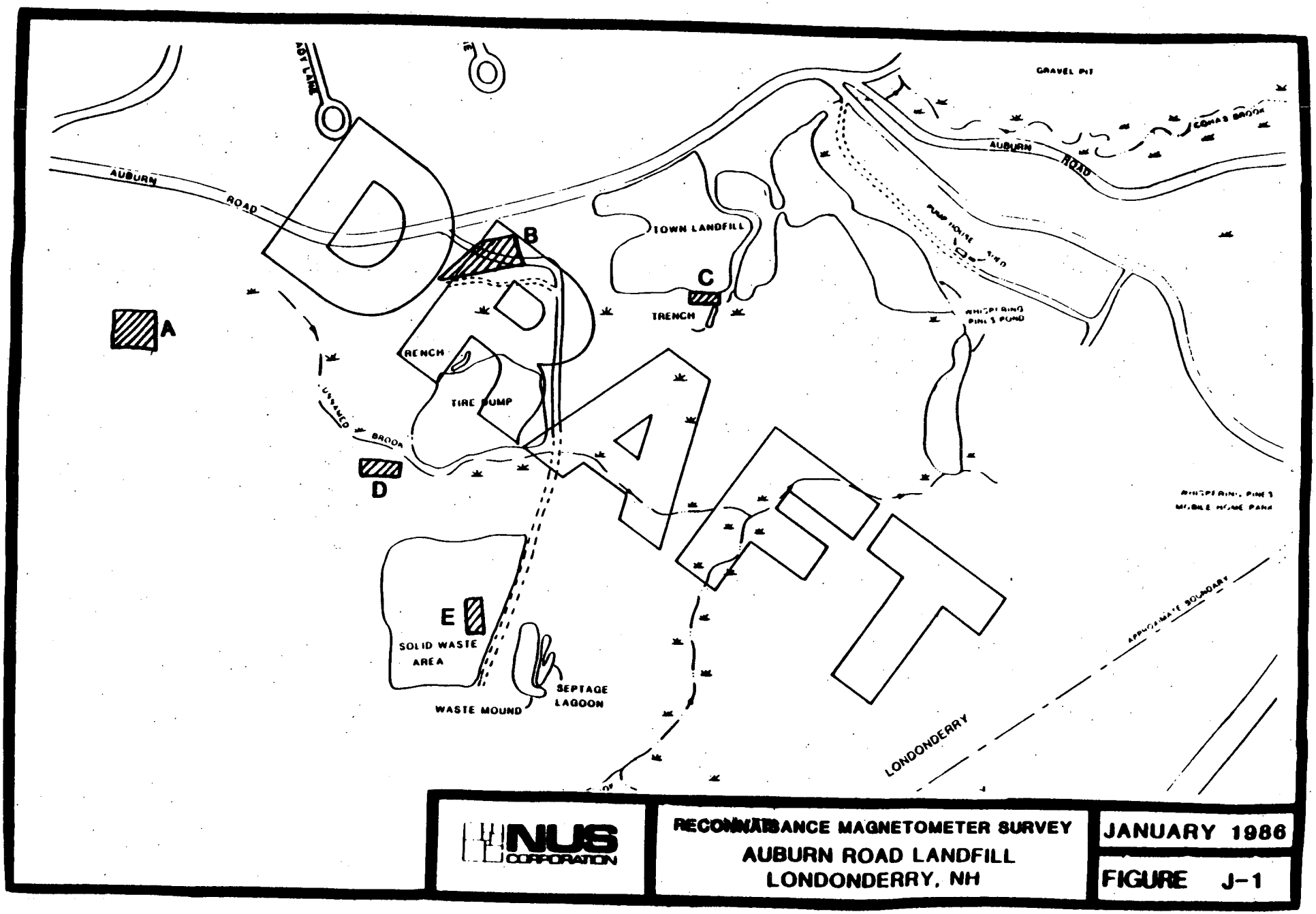
The magnitude and configuration of the alteration will be dictated by the condition and quantity of disposed magnetically susceptible materials and its spatial distribution. The magnetic geophysical method does not by itself enable the distinction between metallic 55 gallon drums and other metalliferous debris, and this fact is an important limitation of the method. Magnetic contour plots of the survey areas are presented in Section 4.1 of this report along with an interpretation of the results.

TABLE J-1
RECONNAISSANCE MAGNETOMETER DATA
(AREA A)*

Station Number Line	Position	Vertical Gradient Reading (Gammas)	* Remarks
01	00	62.8	Test Reading
01	01	62.2	Test Reading
02	00	4.9	
02	01	0.1	
02	02	1.4	
02	03	1.2	
02	04	4.1	
02	05	4.1	
02	06	3.9	
03	06	2.5	
03	05	4.6	
03	04	4.8	
03	03	5.2	
03	02	3.6	
03	01	3.9	
03	00	4.2	
04	00	4.0	
04	01	4.1	
04	02	5.2	
04	03	5.1	
04	04	4.7	
04	05	3.0	
04	06	29.1	Metal Objects on Ground
05	06	4.6	
05	05	13.8	Metal Objects on Ground
05	04	10.8	
05	03	2.1	
05	02	4.3	

* See Figure J-1 for location.

RECONNAISSANCE MAGNETOMETER SURVEY
(CORRECTED DATA)



NUS CORPORATION

RECONNAISSANCE MAGNETOMETER SURVEY
AUBURN ROAD LANDFILL
LONDONDERRY, NH

JANUARY 1986

FIGURE J-1

TABLE J-2

RECONNAISSANCE MAGNETOMETER DATA (AREA B)*

```
PPM500  #20030 B=75
10/08 15:04:00
10/09 10:28:47
10/09 11:56:24
10/08 15:04:00
10/09 10:13:49
10/09 11:56:27
DP#4365
          55000.0
   775.3 54961.2  .12
                -5.4
   775.4 54955.4  .12
                 1.7
   775.1 54964.0  .14
                 4.3
   774.8 54971.7  .12
                 5.2
   775.5 54964.9  .12
                 2.4
   775.5 54966.0  .14
                16.6
   775.7 54929.7  .17
               -55.0
   775.5 54950.6  .12
                -4.3
   775.7 54925.0  .12
                -4.6
   775.2 54954.7  .13
                 0.3
   775.1 54992.0  .12
                -2.1
   774.9 55132.1  .20
               106.5
   776.7 54966.4  .14
               -31.0
   776.3 54947.9  .12
                -4.6
   776.5 54970.8  .14
                 9.5
   777.0 54972.1  .12
                 5.7
   776.9 54962.6  .15
                 4.5

     0     0
     0     0   #1
     0     0   88
     0    20   88
     0    40   88
     0    60   88
    20    30   #5
    20    30   88
    20    60   88
    20    40   88
    20    20   88
    20     0   88
    40     0  #10
    40     0   88
    40    20   88
    40    40   88
    40    60   88
    40    80   88
    40   100   88
    40   120   88
    40   140   88

   777.1 54961.1  .12
                 3.4
   777.5 54965.2  .12
                 4.7
   777.6 54960.3  .12
                 2.4
   777.8 54929.2  .18
               -28.1
   778.2 55108.3  .23
                31.0
   779.0 54847.4  .21
              -186.1
   778.8 54933.9  .12
                 3.1
   780.1 54964.2  .14
                 5.7
   780.0 54963.6  .12
                 3.8
   780.0 54962.1  .11
                 3.5
   780.1 54960.7  .14
                 3.9
   780.2 54954.4  .14
                 3.2
   780.7 54947.9  .14
                 3.3
   781.0 54959.3  .12
                 4.0
   780.9 54963.4  .12
                 4.0
   780.5 54957.5  .14
                 4.5
   780.6 54971.1  .14
                 3.0
   780.6 54963.3  .11
                 4.7
   780.9 54954.6  .15
                 4.1

    60   140   #13
    60   140    88
    60   120    88
    60   100    88
    60    80    88
    60    60    88
    60    40    88
    80    80   #24
    80    80    88
    80   100    88
    80   120    88
    80   140    88
    80   160    88
    80   180    88
   100   200   #30
   100   200    88
   100   180    88
   100   160    88
   100   140    88
   100   120    88
   100   100    88
   100    80    88
```


* See Figure J-1 for location.

TABLE J-2
(cont.)
(AREA B)

					120	80	#37					160	100	#6
780.8	54954.8	.14			120	80	88	780.5	54944.8	.12		160	100	8
	3.0								6.6					
781.2	54962.1	.15			120	100	88	780.1	54957.3	.12		160	120	8
	4.7								3.8					
780.9	54970.8	.13			120	120	88	780.2	54960.2	.12		160	140	8
	7.3								4.0					
780.9	54967.3	.12			120	140	88	780.4	54970.5	.12		160	160	8
	4.2								14.8					
780.9	54965.2	.14			120	160	88	780.6	54963.5	.15		160	180	8
	4.1								4.3					
780.5	54962.4	.12			120	180	88	780.5	54961.5	.13		160	200	8
	4.9								2.8					
780.5	54963.0	.14			120	200	88	780.3	54985.6	.12		160	220	8
	5.2								8.2					
780.8	54953.9	.12			120	220	88	780.5	54971.6	.13		160	240	8
	4.2								1.3					
780.6	54949.5	.14			120	240	88	780.4	54979.3	.13		160	260	8
	2.2								3.5					
780.5	54950.8	.12			120	260	88	780.3	55000.0	.13		160	280	8
	5.1								6.1					
780.4	54942.9	.16			120	280	88	780.2	55022.0	.13		160	300	8
	3.4								12.1					
780.3	54889.9	.18			120	300	88	780.3	55007.9	.14		160	320	8
	-21.2								7.3					
					140	340	#49	780.3	54990.9	.12		160	340	8
780.2	54972.4	.14			140	340	88		3.8					
	3.2											180	340	#7
780.0	54981.1	.12			140	320	88	780.6	54999.1	.16		180	340	8
	6.3								-25.3					
780.1	54995.5	.14			140	300	88	780.6	55029.7	.12		180	320	8
	10.0								11.1					
780.1	54991.3	.14			140	280	88	780.5	55035.8	.13		180	300	8
	9.1								13.5					
780.0	54975.6	.13			140	260	88	780.3	54998.1	.13		180	280	8
	4.6								4.4					
779.9	54974.1	.12			140	240	88	780.5	54979.8	.13		180	260	8
	5.6								3.9					
780.0	54970.3	.12			140	220	88	780.6	54971.1	.15		180	240	8
	5.8								2.7					
780.3	54967.9	.11			140	200	88					200	240	#8
	4.5							780.9	54972.6	.12		200	240	8
780.4	54962.8	.14			140	180	88		4.2					
	3.7							780.5	54980.0	.14		200	260	8
780.4	54968.4	.14			140	160	88		4.0					
	7.5							780.8	54992.5	.14		200	280	8
780.3	54967.8	.14			140	140	88		3.8					
	5.3							781.0	55026.3	.14		200	300	8
780.3	54966.6	.12			140	120	88		3.1					
	5.6							781.1	55040.6	.14		200	320	
780.1	54933.0	.15			140	100	88		13.9					
	-20.7							780.8	55008.5	.14		200	340	8
									5.4					

TABLE J-2
(cont.)
(AREA B)

				220	320	#87				320	240 #111
779.8	55038.0	.14		220	320	88	779.8	54966.9	.14	320	240 88
	14.9							5.2			
780.4	55000.8	.14		220	300	88	779.8	54957.7	.14	320	260 88
	1.9							1.9			
780.1	54982.7	.11		220	280	88	779.9	54959.1	.14	320	280 88
	3.0							2.1			
780.1	54973.6	.14		220	260	88	779.3	54973.0	.14	320	300 88
	2.1							4.6			
780.4	54967.2	.14		220	240	88					
	-0.9										
				240	240	#92					
780.6	54990.7	.15		240	240	88					
	-20.1										
780.4	54969.1	.14		240	260	88					
	-6.2										
779.9	54978.2	.12		240	280	88					
	3.3										
779.5	55031.2	.15		240	300	88					
	29.8										
780.0	55013.0	.12		240	320	88					
	1.4										
				260	320	#97					
779.9	54979.6	.14		260	320	88					
	-7.9										
780.0	54989.2	.12		260	300	88					
	4.5										
780.3	54977.0	.14		260	280	88					
	3.9										
779.5	54964.2	.14		260	260	88					
	-9.6										
779.5	54964.6	.15		260	240	88					
	-19.1										
				280	240	#102					
779.6	54967.0	.12		280	240	88					
	4.2										
779.7	54972.3	.13		280	260	88					
	5.4										
779.4	54972.0	.13		280	280	88					
	3.1										
780.0	54969.7	.15		280	300	88					
	2.3										
779.5	54968.3	.14		280	320	88					
	-1.2										
				300	300	#107					
780.0	54971.2	.16		300	300	88					
	3.4										
779.8	54971.6	.12		300	280	88					
	5.2										
779.9	54963.3	.14		300	260	88					
	1.8										
779.7	54966.2	.12		300	240	88					
	5.0										

TABLE J-3
RECONNAISSANCE MAGNETOMETER DATA (AREA C)*

			0	0	#16
19.8	56474.8 324.3	.41	0	0	88
20.7	55381.0 -178.7	.22	0	25	88
18.4	55545.0 -82.8	.18	0	50	88
18.3	55491.2 -140.0	.21	0	75	88
20.2	55921.7 439.4	2.2	0	100	88
			25	100	#21
19.9	55259.2 -58.1	.17	25	100	88
21.1	55446.5 13.0	.15	25	75	88
20.8	55562.6 -111.4	.23	25	50	88
21.0	55918.9 -27.8	.17	25	25	88
21.0	56218.5 106.8	.22	25	0	88
			50	0	#20
20.9	55770.6 26.7	.14	50	0	88
22.0	55526.1 8.8	.14	50	100	88
22.2	55368.3 -25.5	.14	50	75	88
22.9	55160.9 -249.8	.31	50	50	88

* See Figure J-1 for location.

TABLE J-4
RECONNAISSANCE MAGNETOMETER DATA
(AREA D)*

			500	0	#30
27.0	55732.6	.12	500	0	88
	3.7				
26.8	55731.3	.14	500	10	88
	5.0				
26.7	55730.6	.14	500	20	88
	4.6				
26.7	55730.1	.14	500	30	88
	5.1				
26.6	55730.5	.12	500	40	88
	4.5				
26.5	55729.5	.12	500	50	88
	4.3				
26.4	55729.3	.14	500	60	88
	3.5				
26.2	55731.5	.14	500	70	88
	2.9				
26.1	55735.5	.12	500	80	88
	3.7				
26.4	55730.8	.12	500	90	88
	-1.1				
26.8	55718.2	.12	500	100	88
	1.2				
27.1	55714.9	.12	500	110	88
	3.3				
27.8	55715.3	.15	500	120	88
	3.2				
28.3	55719.0	.14	500	130	88
	3.3				

* See Figure J-1 for location.

0309710

TABLE J-5
RECONNAISSANCE MAGNETOMETER DATA
(AREA E)*

PPM500 #20030 B=85
10/10 9:59:00
10/10 11:56:43
10/11 13:26:44
10/10 9:59:00
10/10 10:06:47
10/11 13:26:49
OP#4365

	55771.0		0	0	
			0	0	#1
9.3	55487.6	.18	0	0	88
	-35.2				
9.3	55193.9	.15	0	25	88
	-37.4				
9.4	55293.7	.21	0	50	88
	-76.6				
			25	50	#4
9.4	54999.2	.27	25	50	88
	-167.6				
9.4	55059.5	.15	25	25	88
	-49.3				
9.6	55310.2	.23	25	0	88
	-126.6				
			50	0	#7
9.7	55167.1	.23	50	0	88
	-130.8				
9.4	55032.5	.21	50	25	88
	-70.4				
9.1	55262.4	.20	50	50	88
	-77.7				
			75	50	#10
9.2	55315.7	.17	75	50	88
	62.7				
9.4	55212.3	.16	75	25	88
	-39.4				
9.2	55079.9	.23	75	0	88
	-157.1				
			100	0	#13
9.1	55792.9	.27	100	0	88
	256.0				
9.2	54899.0	.24	100	25	88
	-169.7				
9.7	54854.6	.22	100	50	88
	-103.4				

* See Figure J-1 for location.

DETAILED MAGNETOMETER SURVEY
(CORRECTED DATA)

TABLE J-6
CORRECTED DATA
SOLID WASTE LANDFILL AREA
(GRID No. 1)

PFM500 #20030 B=66
09/13 8:41:00
09/13 8:33:18
09/24 15:49:41
09/13 8:41:00
09/13 8:36:09
09/24 15:50:20
UR#4365

	55700.0		0	0	
08:33:15					
-38.9	55707.2	.23	0	-40	88
	-90.4				
-38.8	55417.0	.18	0	-20	88
	60.1				
-39.2	55551.7	.27	0	0	88
	93.3				
-39.3	55535.4	.15	0	20	88
	25.2				
-39.0	55578.7	.15	0	40	88
	29.3				
-39.0	55591.9	.14	0	60	88
	17.8				
-39.4	55611.6	.14	0	80	88
	17.4				
-39.7	55630.9	.14	0	100	88
	13.7				
-39.8	55648.7	.13	0	120	88
	11.2				
-39.4	55668.3	.14	0	140	88
	4.0				

0309713

TABLE J-6
page 2 of 19

-39.1	55662.2	.14	0	160	88
	12.0				
-39.8	55706.0	.14	0	200	88
	11.5				
			20	200	#15
-39.2	55674.3	.12	20	200	88
	12.1				
-39.9	55465.5	.24	20	180	88
	-66.4				
-40.0	55961.4	.79	20	160	88
	380.6				
-39.8	55662.9	.14	20	140	88
	6.4				
-40.2	55610.1	.15	20	120	88
	17.1				
-40.0	55569.3	.13	20	100	88
	19.5				
-39.8	55548.4	.15	20	80	88
	35.0				
-39.9	55534.2	.15	20	60	88
	43.1				
-39.6	55522.5	.15	20	40	88
	57.4				
-40.2	55414.8	.17	20	20	88
	64.3				
-40.2	55532.1	.25	20	0	88
	245.7				
-39.6	54968.2	.17	20	-20	88
	44.0				
-39.9	55674.1	.97	20	-40	88
	512.1				
			40	0	#28
-40.7	54802.6	.25	40	0	88
	226.0				
-39.8	55030.7	.23	40	20	88
	247.2				
-39.8	55091.1	.23	40	40	88
	141.7				
-40.3	55260.6	.25	40	60	88
	112.1				
-40.7	55182.1	.21	40	80	88
	74.2				
-40.9	55152.4	.15	40	100	88
	58.4				
-40.1	55488.2	.17	40	120	88
	67.9				
-40.4	55606.0	.15	40	140	88
	58.2				
-40.5	55722.1	.15	40	160	88
	27.4				
-40.5	55637.4	.15	40	180	88
	9.6				
-40.5	55667.8	.13	40	200	88
	10.7				
			60	200	#39
-40.2	55673.8	.12	60	200	88
	19.2				
-40.4	55618.9	.12	60	180	88
	22.8				
-40.7	55496.6	.15	60	160	88
	34.1				
-40.7	54864.8	.21	60	140	88
	-101.3				

TABLE J-6
page 3of 19

	1.3..				
-40.4	54787.1	.21	-60	100	89
	-139.5				
-41.0	54844.4	.13	-60	80	98
	-66.3				
-41.4	54324.6	.29	60	60	89
	-193.9				
-41.0	54416.9	.24	60	40	88
	-215.1				
-41.1	53780.6	2.9	60	20	88
	-437.1				
-41.5	54444.1	.28	60	0	88
	-260.3				
-41.3	55462.6	.34	60	-20	88
	-2.5				
-41.3	55298.6	.33	60	-40	88
	-246.6				
			80	-40	#52
-41.8	57648.6	.31	80	-40	88
	419.6				
-41.4	56399.3	.21	80	-20	88
	198.9				
-41.5	56312.4	.18	80	20	88
	-2.7				
-42.4	56556.8	.20	80	40	98
	161.7				
-42.5	55853.8	.14	80	40	88
	-37.0				
-42.2	56244.7	.23	80	60	98
	126.7				
-42.2	55666.7	.22	80	80	88
	-69.9				
-42.7	55506.0	.15	80	100	98
	-43.4				
-43.0	55864.8	.19	80	120	88
	159.8				
-42.0	55467.9	.28	80	140	88
	193.1				
-42.3	55447.5	.22	80	160	88
	129.7				
-43.2	54965.6	.17	80	180	88
	-88.0				
-43.3	55857.7	.15	80	200	88
	22.5				
			100	200	#65
-43.4	55623.0	.15	100	200	88
	16.4				
-43.2	55202.4	.14	100	180	88
	20.9				
-43.3	55091.8	.22	100	160	88
	-78.9				
-43.6	54683.8	.25	100	140	88
	-192.9				
-43.6	55763.1	.25	100	120	98
	117.7				
-43.9	56042.5	.24	100	100	98
	180.8				
-44.3	55548.4	.23	100	80	88
	-119.5				
-43.8	56384.0	.21	100	60	88
	147.8				
-47.2	56753.1	.20	100	40	88
	134.3				
-49.6	57714.7	.86	100	20	88
	532.5				
-43.8	57676.0	.25	100	0	88

			120	0	#76
-44.5	57770.3	.19	120	0	88
	156.0				
-44.2	58140.1	.75	120	20	88
	513.7				
-43.8	57490.1	.26	120	40	88
	296.7				
-43.3	57137.9	.28	120	60	88
	331.9				
-43.7	56595.6	.19	120	80	88
	172.3				
-44.2	55638.8	.21	120	100	88
	-200.3				
-44.5	55840.4	.17	120	120	88
	-47.8				
-44.5	56069.2	.25	120	140	88
	154.0				
-44.9	55719.3	.21	120	160	88
	160.8				
-44.8	55068.4	.20	120	180	88
	-48.5				
-44.8	55615.0	.14	120	200	88
	20.0				
			140	200	#87
-44.9	55599.9	.13	140	200	88
	11.4				
-44.9	55330.7	.30	140	180	88
	-211.5				
-44.7	55403.8	.25	140	160	88
	78.4				
-44.3	55780.1	.31	140	140	88
	239.2				
-44.3	55751.3	.25	140	120	88
	104.4				
-44.7	55612.0	.23	140	100	88
	149.1				
-45.1	56244.5	.11	140	80	88
	27.8				
-45.0	57068.5	.66	140	60	88
	439.6				
-45.0	57314.8	.22	140	40	88
	245.0				
-44.9	57803.7	.40	140	20	88
	366.7				
-45.7	57475.0	.25	140	0	88
	237.8				
			160	0	#98
-45.2	55482.6	.23	160	0	88
	-205.9				
-45.8	54712.1	1.2	160	20	88
	-693.5				
-45.9	55183.3	.38	160	40	88
	-319.1				
-45.6	55296.7	.23	160	60	88
	-171.5				
-45.1	55143.7	.28	160	80	88
	-151.3				
-45.5	55279.8	.21	160	100	88
	-113.8				
-45.2	55281.7	.21	160	120	88
	-112.9				
-45.0	55472.7	.17	160	140	88
	-66.2				
-45.3	55437.6	.14	160	160	88
	-12.4				

TABLE J - 6
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	-10.7				
-45.7	55593.9	.14	180	360	88
	-10.6				
			180	0	#109
-45.2	55713.0	.15	180	0	88
	40.4				
-45.3	55749.9	.17	180	20	88
	-54.9				
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-45.2	55439.7	.14	180	100	88
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	11.7				
-44.9	55579.2	.15	180	200	88
	12.2				
-44.7	55575.6	.14	180	220	88
	9.6				
-44.9	55580.5	.12	180	240	88
	6.8				
-45.4	55586.3	.14	180	260	88
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-45.2	55585.2	.14	180	280	88
	6.7				
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	8.3				
-45.0	55552.8	.17	180	320	88
	4.3				
-45.1	55538.0	.15	180	340	88
	5.2				
-44.5	55507.2	.15	180	360	88
	2.6				
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	1.1				
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	2.4				
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	4.1				
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-44.7	55521.2	.14	200	280	88
	12.8				

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-44.7	55525.3	.14	200	220	88
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-41.4	55068.4	.17	280	240	88
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	-8.6					
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	322.7					
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	11.1					
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	19.5					
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	-37.4					

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	31.2				
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-34.5	55724.1	.22	320	100	88
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-34.3	55091.4	.27	340	220	88
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-34.1	57025.1	.[illegible]	[illegible]	[illegible]	[illegible]
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	55.2				
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	-34.2				
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	-90.6				
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	40.4				
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	394.1				
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	60.7				
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	161.6				
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	185.7				

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TABLE J - 6
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	19.7				

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TABLE J-7
CORRECTED DATA
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(GRID No. 2)


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page 3 of 16

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	6.8				
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	13.8				
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	4.3				
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	-23.9				
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-342.6	56[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
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	-21.4				
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-342.8	56033.2	.17	120	280	88
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	43.8				
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	70.1				
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-340.6	55753.4	.23	200	100	88	
	-83.2					
-340.6	55813.6	.23	200	120	88	
	-70.1					
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	21.2					
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	85.4					
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	-27.6					
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	-77.0					
-339.0	55953.8	.39	200	280	88	
	185.7					
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	-257.8					
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	285.7					
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	9.8					
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	6.2					
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	9.5					
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	154.2					
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	15.5					
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	-78.1				
-338.4	55957.8	.18	220	20	88
	-59.4				
-338.2	55819.3	.24	220	0	88
	-243.1				
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	-142.6				
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	177.6				
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-337.9	56607.4	.35	240	120	88
	235.5				
-337.3	55776.3	.23	240	140	88
	-103.1				
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	87.9				
-336.2	56064.9	.28	240	180	88
	79.8				
-336.2	56088.2	.14	240	200	88
	-6.4				
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	9.0				
-336.2	55778.8	.26	240	240	88
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-335.6	55872.9	.23	240	260	88
	-44.3				
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	31.9				
-336.0	55893.7	.17	240	300	88
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-335.2	56079.4	.26	260	280	88
	105.9				
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	-69.4				
-334.6	55945.8	.21	260	240	88
	-91.0				
-334.4	56317.6	.29	260	220	88
	208.5				
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	296.3				
-334.4	55989.2	.17	260	180	88

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-334.4	56040.1 15.2	.14	260	160	88
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-334.4	55794.8 -77.4	.25	260	80	88
-334.6	55899.2 -65.9	.19	260	60	88
-334.7	56068.4 -38.5	.17	260	40	88
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-334.4	55942.3 -36.9	.17	280	40	88
-334.4	55718.2 -98.7	.22	280	60	88
-334.4	55571.3 -94.1	.24	280	80	88
-334.4	55671.6 -29.4	.16	280	100	89
-334.5	55813.2 -43.2	.17	280	120	88
-334.7	56261.9 165.5	.27	280	140	88
-334.7	55596.4 -351.0	.37	280	160	88
-334.8	56283.9 73.6	.17	280	180	88
-334.4	56179.2 60.8	.15	280	200	88
-334.7	56015.3 -51.2	.17	280	220	88
-334.9	56082.9 58.3	.19	280	240	88
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	-23.3				
-335.6	55615.9	.14	300	120	88
	-6.6				
-335.3	55436.5	.21	300	100	88
	-194.7				
-335.0	55953.7	.26	300	80	88
	120.1				
-333.1	56137.9	.14	300	60	88
	-23.3				
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	162.9				
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	104.6				
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	33.3				
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	516.0				
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-335.3	55894.3	.15	320	180	88
	62.4				
-335.6	56045.8	.19	320	200	88
	62.3				
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	36.5				
-335.1	56037.8	.23	320	260	88
	-111.4				
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	51.5				
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	-35.8				
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-334.8	56135.1	.20	340	300	88
	91.7				
-335.1	56145.0	.19	340	280	88
	84.4				
-334.9	56066.5	.17	340	260	88

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-334.3	55943.4	.17	340	240	88
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-334.7	55987.2	.17	340	220	88
	39.8				
-334.2	55948.1	.20	340	200	88
	61.3				
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	16.7				
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	11.8				
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	78.6				
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	13.9				
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	-19.6				
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	-24.6				
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	-34.9				
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	22.7				
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	42.9				
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	-123.8				
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	93.3				
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	180.7				
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-331.8	56100.7	.30	400	20	88
	-224.5				
-331.5	56842.7	.18	400	40	88
	48.7				
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	366.2				
-331.7	55866.9	.22	400	80	88
	-194.4				
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	-162.8				
-330.9	57874.3	.28	400	120	88
	290.1				
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	1015.8				
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	-465.7				
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	-496.7				
-329.8	54987.8	1.1	420	160	88
	-765.7				
-330.0	57911.8	13.	420	140	78
	297.7				
-330.0	57609.6	.29	420	120	88
	20.2				
-329.5	56543.8	.14	420	100	88
	17.3				
-329.0	55916.2	.21	420	80	88
	-132.9				
-328.8	56186.4	.12	420	60	88

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	-10.7				
-328.9	56117.9	.16	420	40	88
	-54.6				
-329.0	56236.6	.15	420	20	88
	-7.6				
-329.0	56129.4	.15	420	0	88
	6.0				
-329.2	56111.3	.17	420	-20	88
	-19.0				
-329.3	55971.3	.19	420	-40	88
	-6.2				
			440	-40	#404
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	-128.6				
-329.8	56073.4	.21	440	60	88
	-109.9				
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	-204.8				
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	-55.8				
-328.1	56021.4	.21	480	20	88
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-328.8	56053.8	.14	480	40	88
	11.7				
-329.0	56157.9	.17	480	60	88
	-13.7				

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-327.7	56180.3	.1	480	80	88
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-328.8	56354.1	.21	480	100	88
	151.7				
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	-6.1				
-327.9	56546.9	.17	480	140	88
	-14.5				
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	-102.6				
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-328.6	56162.4	.15	500	80	88
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-328.8	56119.6	.23	500	60	88
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-328.9	55843.6	.26	500	40	88
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	-48.2				
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	-31.1				
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	-7.8				
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	-30.0				
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	-3.3				
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-328.7	55871.4	.23	540	0	88
	-87.8				
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	-1.1				
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	-36.5				
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	98.4				
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	283.5				
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	-335.4				
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	-155.1				
-327.4	56840.6	.34	560	60	88
	340.4				
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	-81.0				
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	19.6				
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	31.9				
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-328.7	55858.2	.23	580	80	88
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-326.8	55880.7	.23	580	60	88
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-326.4	55785.7	.33	580	20	88
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	779.1				

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TABLE J-8
CORRECTED DATA
TOWN LANDFILL AREA
(GRID No. 3)

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10/29 15:17:51
10/28 10:06:00
10/28 10:23:20
10/29 15:17:58
DP#4365

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	-134.8				
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-384.7	55869.8	.22	0	-20	88
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-361.2	55647.2	.15	0	0	88
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	692.7				
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	-181.8				

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-356.0	55662.9	.25	20	60	88
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-356.0	55589.3	.38	20	40	88
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	-189.8				
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	-482.2				
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	-418.1				
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	398.7				
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	769.9				
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	-449.9				
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	-335.3				
-356.8	55092.9	.28	40	40	88
	-194.2				
-356.7	55465.0	.27	40	60	88
	-196.0				
-356.3	55840.8	.31	40	80	88
	94.3				
-356.3	55482.7	.38	40	100	88
	219.6				
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-356.8	55527.5	.19	40	140	88
	-153.8				
-359.4	55830.5	.18	40	160	88
	46.5				

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	-898.9				
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	-172.6				
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	237.0				
-355.0	53942.4	.33	40	300	88
	-282.9				
-357.6	53779.2	.31	40	320	88
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-353.9	55253.2	.42	60	240	88
	166.7				
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	279.8				
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	817.2				
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	670.5				
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	410.4				
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	247.1				
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	-531.1				
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	728.2				
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	375.2				
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	144.5				
-354.0	56317.1	.16	60	-40	88
	40.9				
-354.0	57150.2	.15	60	-60	88
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-353.8	57592.1	.54	60	-80	88
	-164.9				
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	205.7				
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	251.6				
-353.7	57689.2	.28	80	-40	88
	294.4				
-358.8	57105.3	.18	80	-20	88
	-28.9				
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-353.2	56849.9	.21	80	20	88
	-163.3				
-352.9	56599.4	.26	80	40	88
	-135.4				
-353.0	55971.7	.63	80	60	88
	-271.7				
-353.2	54848.9	1.1	80	80	88
	-801.7				
-353.4	56296.9	6.3	80	100	88
	411.4				
-353.3	56241.8	.27	80	120	88
	227.2				
-353.1	55659.4	.45	80	140	88
	-384.0				
-355.2	55999.1	.17	80	160	88
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	-130.3				
-351.6	56067.9	.23	80	200	88
	87.9				
-344.5	54676.3	1.0	80	220	88
	-751.3				
-344.5	54800.7	.25	80	240	88
	-210.8				
-344.5	54710.7	.78	80	260	88
	-465.3				
-344.6	55865.5	.21	80	280	88
	176.5				
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	203.9				
-344.2	56282.8	.39	80	320	88
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	102.6				
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	501.1				
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-343.5	56389.8	.28	100	340	88
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-343.1	56312.9	.14	100	320	88
	-12.7				
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	-244.3				
-343.8	55933.2	.22	100	280	88
	19.5				
-344.0	55605.6	.16	100	260	88
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-343.7	55446.8	.38	100	240	88
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-343.6	55477.0	.30	100	220	88
	-353.7				
-343.8	55863.6	.29	100	200	88
	-307.4				
-343.3	56835.8	.32	100	180	88
	248.9				
-342.9	56465.8	.32	100	160	88

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-343.1	56042.8 -124.0	.17	100	140	88
-343.2	56028.3 -26.5	.18	100	120	88
-342.8	57347.9 455.2	2.3	100	100	88
-343.6	57218.4 602.6	1.5	100	80	88
-343.7	55269.8 -541.7	1.2	100	60	88
-343.4	57283.7 576.7	.82	100		88
-343.4	56438.1 -393.5	.56	100	20	88
-343.5	56751.0 -9.4	.14	100	0	88
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-342.1	55357.3 -598.0	1.6	120	40	88
-342.1	55564.0 -661.1	.78	120	60	78
-342.4	58087.8 550.6	15.	120	80	87
-342.3	56824.8 162.5	.38	120	100	88
-342.2	56467.9 214.8	.25	120	120	88
-342.1	56762.5 191.1	4.5	120	140	88
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-341.2	56005.8 -82.5	.19	120	260	88
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-340.8	56310.2	.52	140	260	88
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	-213.3				
-341.3	57669.7	.42	140	200	88
	378.9				
-341.4	56942.6	.23	140	180	88
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-340.8	56353.4	.18	140	140	88
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	-99.4				
-340.3	56210.0	.23	140	100	88
	14.1				
-340.3	56262.6	.32	140	80	88
	-268.8				
-340.4	58080.6	3.5	140	60	88
	288.2				
-340.4	57848.7	.33	140	40	88
	243.7				
-340.5	57600.7	.99	140	20	88
	247.3				
-340.9	56716.4	.30	140	0	88
	-176.0				
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-340.4	57881.5	.24	160	-0	88
	255.6				
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	354.9				
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-346.7	57276.2	.22	160	60	88
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	180.0				
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	-113.0				
-340.4	55850.8	.22	160	120	88
	-182.9				
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	-138.7				
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	-28.4				
-340.4	56960.7	.25	160	180	88
	3.6				

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	8.9				
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	172.2				
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	173.2				
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	547.2				
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	620.1				
-340.2	56269.9	.20	160	360	88
	93.2				
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	-141.7				
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	-12.8				
-339.9	56853.1	.29	180	300	88
	69.6				
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	-192.8				
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	-35.7				
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-339.5	56686.6	.21	180	0	88
	-210.2				
-339.7	57001.6	.19	180	-20	88
	-125.8				
			200	0	#201
-339.4	57972.8	4.9	200	0	88
	326.7				
-338.9	56890.2	.17	200	20	88
	-51.6				
-339.3	56406.9	.18	200	40	88
	-142.1				

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	-171.1				
-340.0	57612.0	.16	200	80	88
	47.7				
-340.1	57499.2	.28	200	100	88
	273.1				
-339.1	56994.1	.32	200	120	88
	-110.4				
-339.9	56102.5	.51	200	140	88
	-209.4				
-339.9	56661.5	.50	200	160	88
	367.5				
-339.6	56980.1	.21	200	180	88
	117.5				
-339.3	57031.8	.12	200	200	88
	3.2				
-339.3	58525.8	.52	200	220	88
	404.2				
-340.1	58551.7	.59	200	240	88
	161.1				
-339.9	59255.2	2.3	200	260	68
	-434.7				
-340.0	57159.8	.28	200	280	88
	-153.4				
-340.1	56540.7	.21	200	300	88
	-174.2				
-340.1	56692.1	.21	200	320	88
	148.9				
-339.8	56155.8	.20	200	340	88
	-71.2				
-339.3	55670.3	.22	200	360	88
	-121.4				
			220	360	#220
-339.9	56077.5	.23	220	360	88
	155.3				
-339.7	55935.7	.22	220	340	88
	-82.5				
-339.2	56369.0	.25	220	320	88
	-61.6				
-339.6	56621.7	.22	220	300	88
	-42.3				
-340.1	58364.1	.41	220	280	88
	331.7				
-339.7	57628.5	.29	220	260	88
	-275.8				
			240	340	#231
-340.0	56676.2	.18	240	340	88
	155.2				
-339.3	56309.2	.14	240	320	88
	-0.3				
-339.6	55858.7	.21	240	300	88
	-182.7				
-340.3	57029.5	.25	240	280	88
	170.6				
-363.6	56672.2	.21	240	260	88
	-125.8				
			260	260	#236
-350.3	58440.9	.88	260	260	88
	780.9				
-341.8	57900.2	.62	260	280	88
	535.6				
-339.8	56357.0	.42	260	300	88
	-264.3				
-339.9	56385.2	.24	260	320	88
	117.8				
-339.9	56459.5	.36	260	340	88

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			280	340	#241
-338.5	56205.7	.15	280	340	88
	9.9				
-339.6	56203.9	.24	280	320	88
	-261.3				
-338.9	57014.5	.26	280	300	88
	165.8				
-338.9	57972.0	.64	280	280	88
	495.3				
-339.2	58178.0	2.4	280	260	88
	408.9				
			300	260	#246
-339.4	56792.7	.46	300	260	88
	-80.5				
-339.5	57343.8	.21	300	280	88
	160.8				
-339.3	57447.1	.26	300	300	88
	229.0				
-339.3	56303.6	.23	300	320	88
	-75.2				
-339.6	55780.3	.18	300	340	88
	-160.1				
			320	340	#251
-339.7	56187.0	.26	320	340	88
	-129.7				
-340.9	56537.2	.43	320	320	88
	91.2				
-344.4	56893.7	.20	320	300	88
	-25.3				
-338.9	56636.5	.19	320	280	88
	-50.0				
-338.4	56008.8	.16	320	260	88
	-93.5				
			340	260	#256
-339.3	55912.2	.26	340	260	88
	-107.9				
-354.1	56630.3	.43	340	280	88
	-23.5				
-340.1	56286.0	.26	340	300	88
	-292.5				
-339.1	56227.2	.66	340	320	88
	-185.7				
-338.9	56724.5	.22	340	340	88
	189.0				
			360	340	#261
-338.3	55486.8	.95	360	340	88
	-608.8				
-339.4	57117.8	.25	360	320	88
	-75.7				
-338.7	59220.5	7.2	360	300	88
	609.8				
-340.2	59533.1	10.	360	280	78
	1145.3				
-339.3	56202.4	.20	360	260	88
	-35.2				
			220	-20	#280
-337.7	56829.0	.14	220	-20	88
	60.5				
-337.5	56792.8	.14	220	0	88
	50.1				
-337.2	56563.9	.16	220	20	88
	30.5				
-337.0	56242.7	.16	220	40	88
	-22.4				

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	12.9				
-337.4	56908.7	.78	220	80	88
	508.3				
-337.3	56631.4	.25	220	100	88
	-127.5				
			240	100	#287
-337.3	55605.5	.22	240	100	88
	-113.5				
-337.6	56383.0	.24	240	80	88
	-55.1				
-338.0	56334.1	.19	240	60	88
	12.5				
-337.8	55929.8	.25	240	40	88
	-211.9				
-337.3	56143.9	.19	240	20	88
	-81.8				
-340.5	55908.1	.22	240	0	88
	-252.6				
-363.2	56428.4	.12	240	-20	88
	7.4				
			260	-20	#294
-349.2	56138.3	.18	260	-20	88
	-85.5				
-337.0	56252.5	.13	260	0	88
	9.1				
-336.9	56180.5	.25	260	20	88
	-224.1				
-337.5	55877.7	.28	260	40	88
	-254.3				
-337.9	56552.1	.24	260	60	88
	197.0				
-337.4	56946.9	.37	260	80	88
	317.0				
-336.7	55774.1	.33	260	100	88
	-252.3				
			280	100	#301
-340.6	56695.7	.22	280	100	88
	178.8				
-337.2	56912.9	.20	280	80	88
	10.5				
-336.8	56219.7	.21	280	60	88
	-179.4				
-336.8	56628.4	.28	280	40	88
	182.2				
-336.9	57207.9	.23	280	20	88
	290.7				
-336.9	56708.0	.15	280	0	88
	39.7				
-337.0	56180.4	.18	280	-20	88
	-83.5				
			300	-20	#308
-336.7	56304.6	.21	300	-20	88
	-68.2				
-337.0	56843.7	.25	300	0	88
	151.1				
-345.9	56303.5	.21	300	20	88
	-203.1				
-348.2	56682.6	.36	300	40	88
	125.0				
-341.9	56271.1	.26	300	60	88
	-155.8				
-336.9	56506.4	.25	300	80	88
	76.3				
-337.2	56489.4	.28	300	100	88
	236.5				

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-337.6	56162.7 -4.9	.15	320	100	88
-337.4	56270.9 -85.1	.20	320	80	88
-337.0	56481.6 -158.7	.31	320	60	88
-336.6	56806.9 366.1	.57	320	40	88
-336.4	56412.2 -112.9	.24	320	20	88
-336.3	56845.8 146.3	.18	320	0	88
-336.2	56317.6 -59.6	.18	320	-20	88
			340	-20	#322
-362.3	56410.2 -18.3	.16	340	-20	88
-338.0	56301.2 -49.7	.16	340	0	88
-338.1	56701.1 145.7	.25	340	20	88
-338.2	56230.7 -221.0	.21	340	40	88
-337.4	56155.2 -154.8	.21	340	60	88
-336.9	56355.1 68.5	.19	340	80	88
-337.0	56025.2 -63.9	.22	340	100	88

BOREHOLE GEOPHYSICS

SECTIONS IN APPENDIX K

- METHODOLOGIES AND PROCEDURES
- DATA INTERPRETATION

TABLES IN APPENDIX K

SUMMARY OF LOG FUNCTIONS RUN AT EACH WELL LOCATION

FIGURES IN APPENDIX K

GEOPHYSICAL WELL LOGS NUS-3

K-1 CALIPER AND NEUTRON (USGS)
K-2 RESISTIVITY AND TEMPERATURE (USGS)
K-3 CALIPER AND SINGLE POINT RESISTANCE (USGS)
K-4 CALIPER, TEMPERATURE, SINGLE POINT RESISTANCE AND SPONTANEOUS POTENTIAL (NUS/FIT)

GEOPHYSICAL WELL LOGS W-3

K-6 CALIPER AND NEUTRON (USGS)
K-7 RESISTIVITY AND TEMPERATURE (USGS)
K-8 CALIPER AND SINGLE POINT RESISTANCE (USGS)
K-9 CALIPER, SINGLE POINT RESISTANCE AND SPONTANEOUS POTENTIAL (NUS/FIT)

GEOPHYSICAL WELL LOGS W-4

K-10 CALIPER AND NEUTRON (USGS)
K-11 RESISTIVITY AND TEMPERATURE (USGS)
K-12 CALIPER AND SINGLE POINT RESISTANCE (USGS)

BOREHOLE GEOPHYSICS

This appendix explains the objectives, procedures and data interpretation of the borehole geophysical investigation conducted by NUS/FIT and the United States Geological Survey (USGS). The main objective of these investigations was to define fracture zones within the bedrock formation and to delineate, if possible, the primary water bearing zones. This information was not provided in previous hydrogeologic investigations conducted at the site.

Two separate investigations were conducted, one by NUS/FIT (June, 1985) and the other by the USGS (May, 1985). The geophysical logging methods used during both investigations required open (uncased) bedrock boreholes. NUS/FIT geophysical personnel logged three open bedrock wells (NUS-3, W-2, and W-3) using a Mount Sopris Model 2500 portable borehole logger. Four geophysical logs were run at well location NUS-3; caliper, single point resistance, spontaneous potential (SP) and temperature. At well locations W-2 and W-3, only three geophysical logs were run; caliper, single point resistance and SP. The USGS also logged three bedrock wells which included NUS-3, W-3 and W-4. The USGS borehole investigation utilized seven logging functions at each well location including; temperature, resistivity, neutron, caliper, gamma, single point resistance and acoustic televiewing. The wells NUS-3 and W-3 were each logged by the USGS and NUS/FIT to aid in an evaluation of the reliability of the data generated by the borehole logging equipment.

The logging procedures for each investigation were basically the same. Prior to logging any of the wells, all the probes were calibrated and the recording instrumentation was checked for proper operation. The appropriate probe (many of which perform two log functions) was then attached to the connecting cable which completes the circuit between the probe and the recording device. While the probe was lowered down the borehole, the appropriate scale or the log function was determined. The actual log was run and recorded while the probe was being

brought uphole (Note: the temperature log was always run first and logged while being lowered into the borehole). A strip chart was used to record the log data. Different colored pens were used for recording each log function. The scale used for each log function was recorded on the corresponding chart. A brief description of each log function and its applicability to groundwater investigations is presented below.

The caliper log is a straightforward and reliable tool which provides direct information about bedrock fractures. Single hinged caliper arms (point contacts) are in direct contact with the borehole wall and provide good vertical resolution in a consolidated rock environment. Caliper logging has been used successfully by NUS/FIT in both igneous and metamorphic environments to delineate fractures and fracture zones.

The neutron log is primarily a function of the hydrogen content (therefore also water content) in the borehole environment and is quite useful in groundwater investigations, providing direct information on water bearing fracture zones in the borehole. Due to the need for an active radiation source, neutron logging can only be performed by licensed professionals (and was only performed by USGS personnel).

The temperature log is a simple straightforward tool that is also very useful in groundwater investigations. The probe senses the temperature change within the borehole environment, providing direct information on water-bearing fractures and fracture zones. The temperature log also provides information on water movement and thermal conductivity of the bedrock formation.

Acoustic televiewing has also proved to be quite useful in groundwater investigations. Acoustic televiewing has a limited radius of investigation (the borehole wall) but provides direct information about the condition of the bedrock formation. The acoustic televiewer uses sonar to create a "picture" of the borehole wall. When used in conjunction with other geophysical logs, fractures and fracture zones can be easily identified.

The natural gamma log records the amount of natural gamma radiation emitted by the borehole formation. The primary use of this log is for the identification of lithology or stratigraphic changes and this function is generally not as applicable to groundwater investigations as are the other geophysical logs. Clays (possibly found in voids or fractures within the bedrock formation) and feldspar-bearing rocks emit radiation originating from radioisotopes such as potassium-40 that are detected by the natural gamma probe. Therefore, the natural gamma log can be useful when used in conjunction with other logs, and can be used to determine whether a fracture is open or closed (filled with clay).

Electrical logging techniques, including single point resistance, spontaneous potential and resistivity, have been found to be useful to identify possible water filled voids and to detect water movement within the borehole environment. The single point resistance log has a small radius of investigation which is limited to the borehole environment. The probe is sensitive to changes in borehole diameter and conductivity of the borehole fluid. The spontaneous potential probe measures the small differences in voltage between the borehole fluid and the surrounding formation. The location of water-bearing fractures can be determined by the streaming potentials caused by groundwater movement through the borehole. The resistivity log measures the conductivity of the borehole fluid. Water bearing fracture zones can be identified by changes in the fluid conductivity. The resistivity log is also very useful in determining water quality. Electrical logs are most useful when used in conjunction with other geophysical logs such as the caliper, temperature, or neutron log.

The logging functions which proved most useful during the investigation were the caliper, temperature, acoustic televiewing and neutron logs. The other log functions provided data that reinforced the information obtained from these logs. All borehole geophysical work conducted by NUS/FIT was performed in accordance to NUS SOG No. 35, Revision 0. Field data from both investigations (NUS/FIT and USGS) was recorded in an NUS/FIT logbook. The location of monitoring wells logged during both geophysical investigations are identified on Plate 2. Results are discussed in Section 5.2 of this report.

BOREHOLE GEOPHYSICS
SUMMARY OF LOG FUNCTIONS RUN AT EACH WELL LOCATION

Log Function	Well Number NUS-3	W-2	W-3	W-4
Caliper	X *	X	X *	*
Single Point Resistance	X *	X	X *	*
Spontaneous Potential	X	X	X	
Temperature	X *		*	*
Resistivity	*		*	*
Neutron	*		*	*
Natural Gamma	*		*	*
Acoustic Televiewing	*		*	*

X - Logged by NUS/FIT (June, 1985)
* - Logged by USGS (May, 1985)

BOREHOLE GEOPHYSICS WELL LOGS AND DATA INTERPRETATION

Well NUS-3
Logged by USGS (Figures K1, K2 & K3)
Well Depth 215 feet
Boring Log Available (Appendix A)

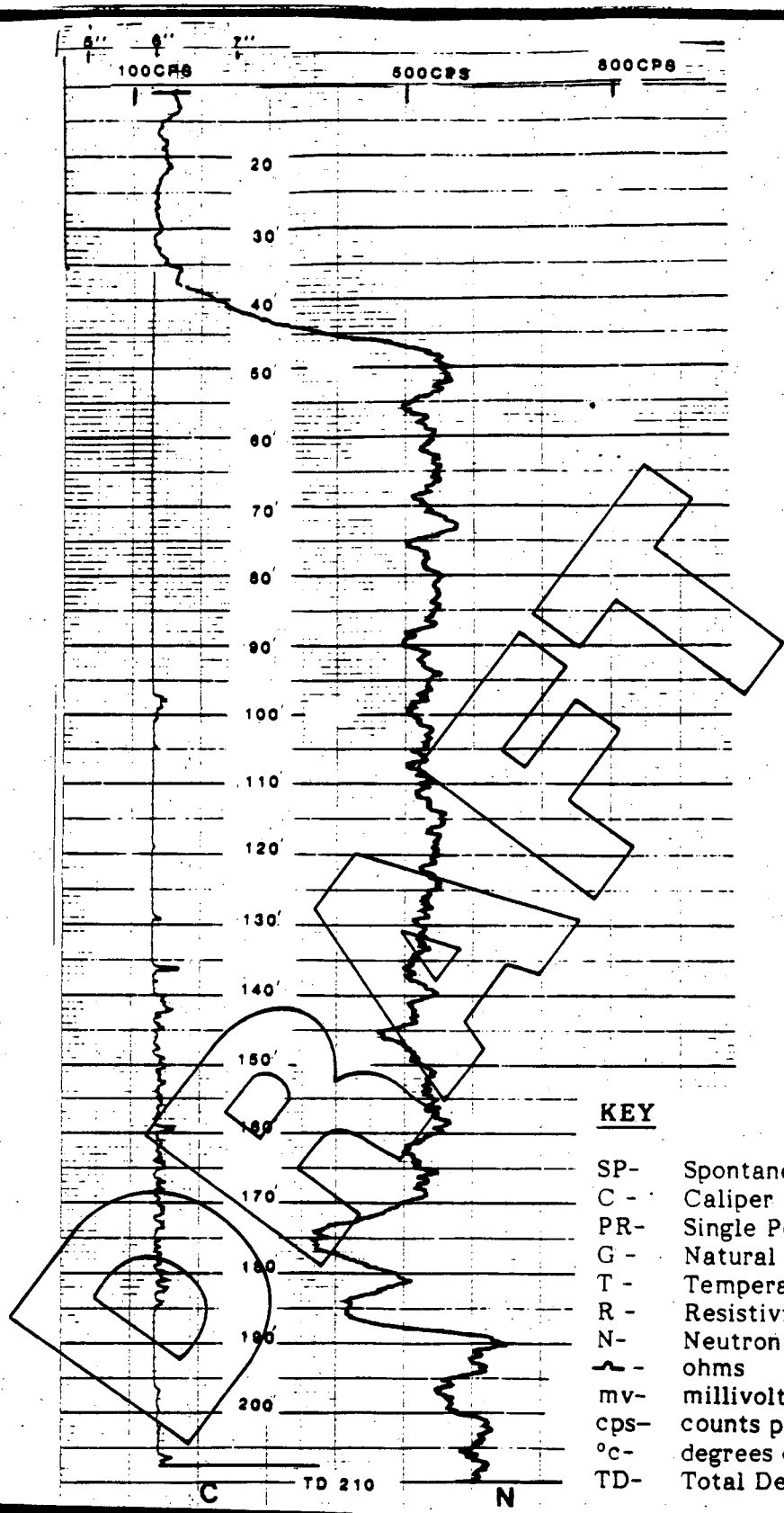
The caliper log identified three fracture zones and two isolated fractures in this well. The most significant fracture zone identified was a fifty foot section between 135 and 185 feet. The neutron log within the fifty foot section showed two large deflections to the left at 175 and 185 feet and a smaller deflection at 145 feet. This is an indication of an increase in hydrogen content and a possible water bearing zone. The natural gamma log also showed two large deflections to the left at 175 and 185 feet.

Two smaller fracture zones were also identified. The uppermost fracture zone was an eight foot section between 97 and 105 feet. The other fracture zone identified by the caliper log was located between 196 and 208 feet. At both fracture zones, only slight deflections were noted on the neutron and natural gamma logs. The two isolated fractures were located at 119 and 129 feet. Only minor deflections were noted on the neutron log, while on the natural gamma log showed a deflection corresponding to the fracture identified at 129 feet.

The single point resistance and resistivity logs were both uniform with only slight deflections for the entire depth of the well. The temperature log showed an increase in temperature between 15 and 60 feet from 8.8°C to 9.8°C and gradually decreased and remained constant at 9.5°C below 115 feet.

The acoustic televiewing log, in comparison with the caliper log, identified two isolated fractures and one fracture zone. The two isolated fractures were located at 98 and 129 feet and the fracture zone was located between 135 and 182 feet. Several other possible fractures and fracture zones were also identified on the acoustic televiewing log. Two fracture zones were identified from 52 to 55 feet and several isolated fractures were located at 38, 44, 82, and 191 feet. These fractures may have been filled or too small to be detected by the caliper log.

The primary water-bearing zone appeared to be between 135 and 185 feet. This is based upon data from the caliper and neutron logs. The natural gamma and acoustic televiewing logs also supported this conclusion.



KEY

SP-	Spontaneous Potential
C -	Caliper
PR-	Single Point Resistance
G -	Natural Gamma
T -	Temperature
R -	Resistivity
N-	Neutron
~ -	ohms
mv-	millivolts
cps-	counts per second
°c-	degrees celcius
TD-	Total Depth

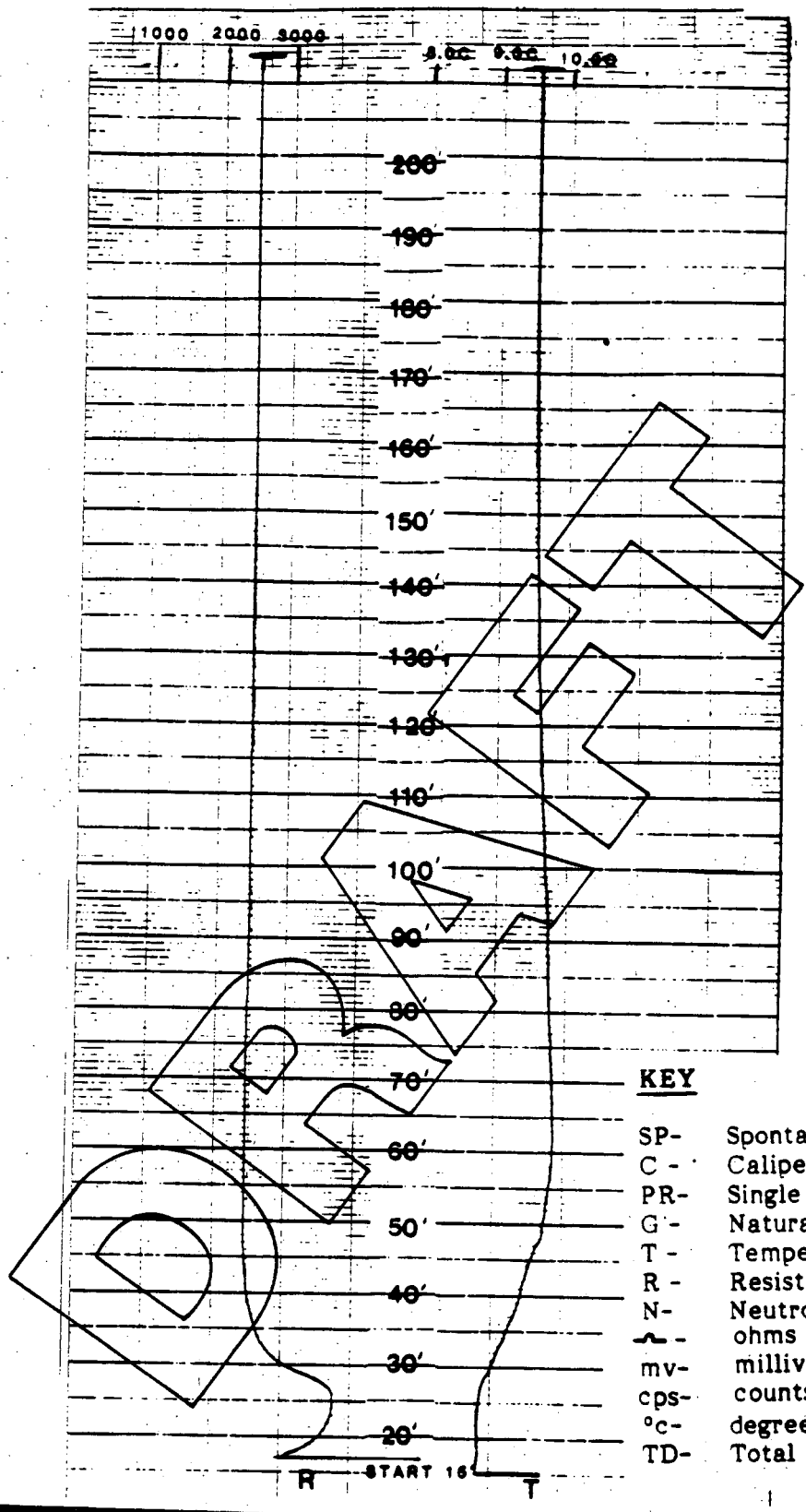
WELL #NUS-3 LOGGED BY USGS (MAY 1985)

NUS CORPORATION

BOREHOLE GEOPHYSICS WELL LOGS
AUBURN ROAD LANDFILL
LONDONDERRY, NH

JANUARY 1986

FIGURE K1



WELL #NUS-3 LOGGED BY USGS (MAY 1985)

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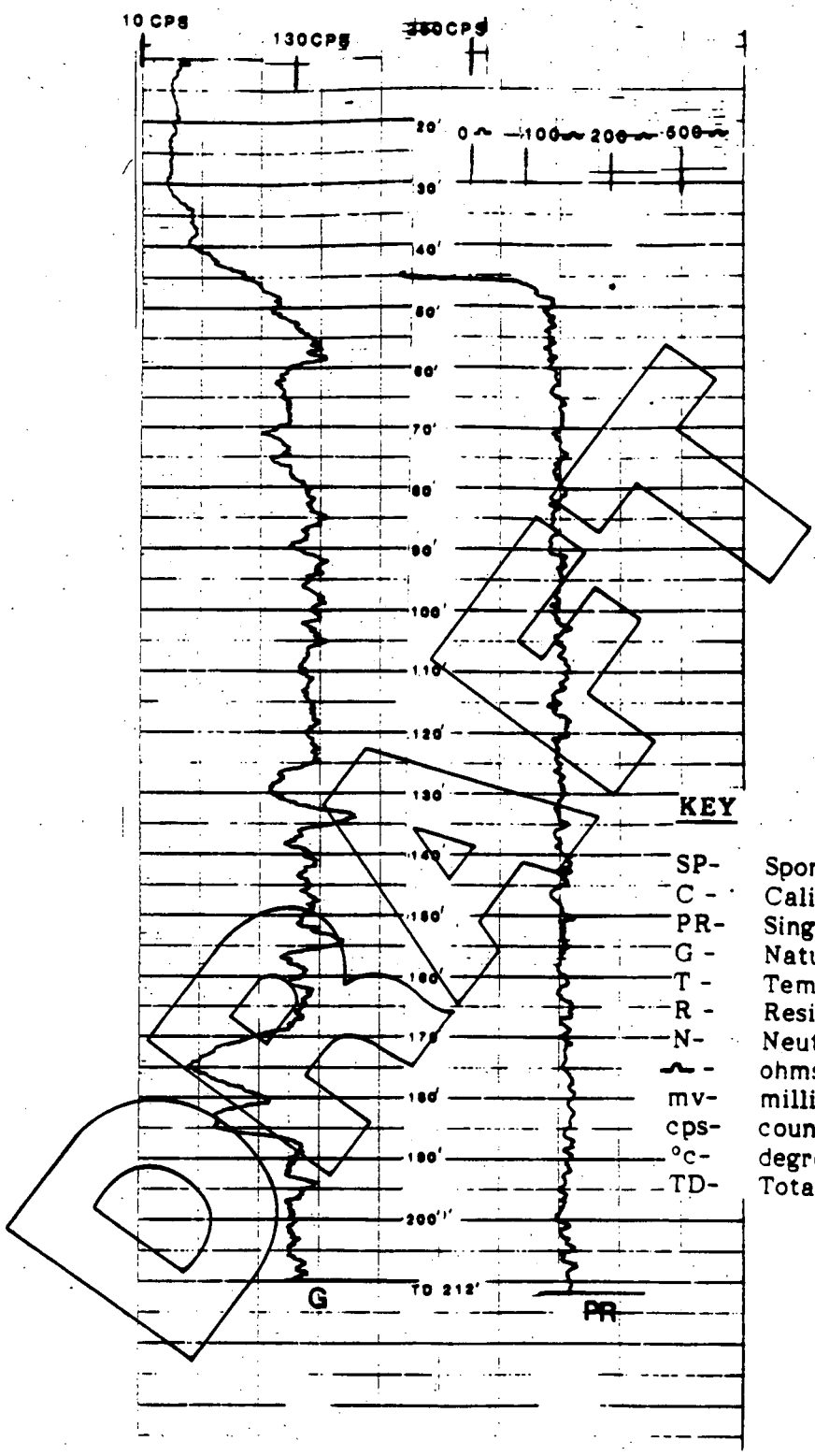
BOREHOLE GEOPHYSICS WELL LOGS
AUBURN ROAD LANDFILL
LONDONDERRY, NH

JANUARY 1986

FIGURE K2



WELL #NUS-3 LOGGED BY USGS (MAY 1985)

NUS CORPORATION

BOREHOLE GEOPHYSICS WELL LOGS
AUBURN ROAD LANDFILL
LONDONDERRY, NH

JANUARY 1986

FIGURE K3

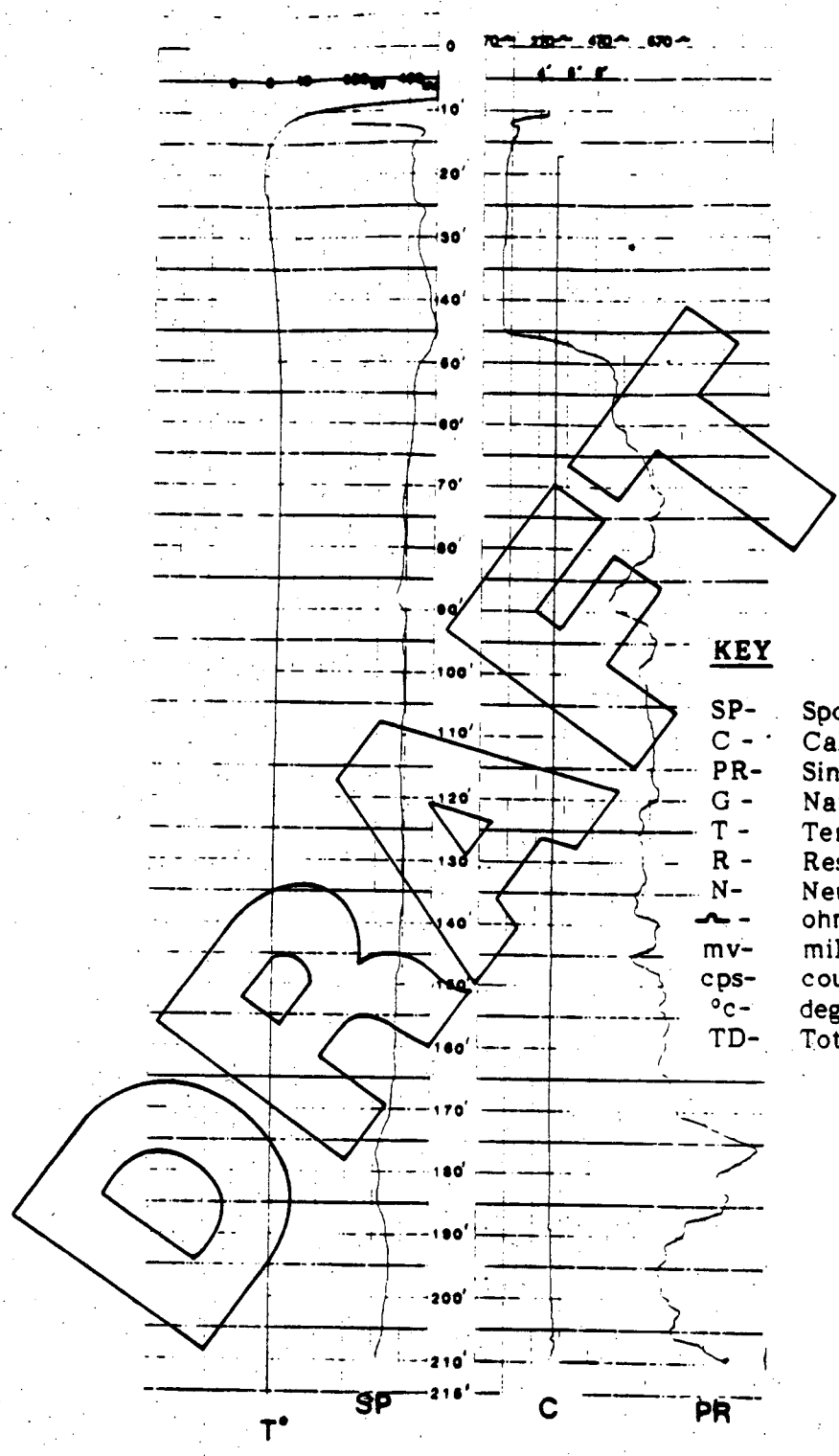
Well NUS-3
Logged by NUS/FIT (Figure K4)
Well Depth 215 feet
Logged Depth 210 feet
Boring Log Available (Appendix A)

The caliper log identified two well defined fracture zones and one isolated fracture in this well. The uppermost fracture zone was a 20 foot section located between 131 and 151 feet below ground surface. The caliper log identified several small fractures in this section. The single point resistance log showed deflections to the left at 137 and 145 feet indicating less resistance and possible water bearing zones. The SP log in this section showed little response and was of little use in this interpretation.

Another fracture zone was also identified by the caliper log between 197 and 210 feet. The largest fracture in this zone is at 206 feet. The single point resistance log showed a slight deflection to the left at this depth indicating a less resistive section and a possible water filled void. These two fracture zones correlate well with data from the USGS borehole investigation.

At 189 feet, a small isolated fracture was identified by the caliper log. The SP and single point resistance logs show only minor deflections at this depth. The caliper log from the USGS investigation did not indicate a fracture at 189 feet, but a fracture was identified on this acoustic televiewing log at this depth.

The temperature log was also run on this well. This log indicates a uniform temperature within the well of approximately 8.7°C. The major water bearing fractures appear to be located within the fracture zones between 131 and 151 feet and from 197 to 206 feet.



WELL #NUS-3 LOGGED BY NUS/FIT (JUNE 1985)

NUS CORPORATION

BOREHOLE GEOPHYSICS WELL LOGS
AUBURN ROAD LANDFILL
LONDONDERRY, NH

JANUARY 1986

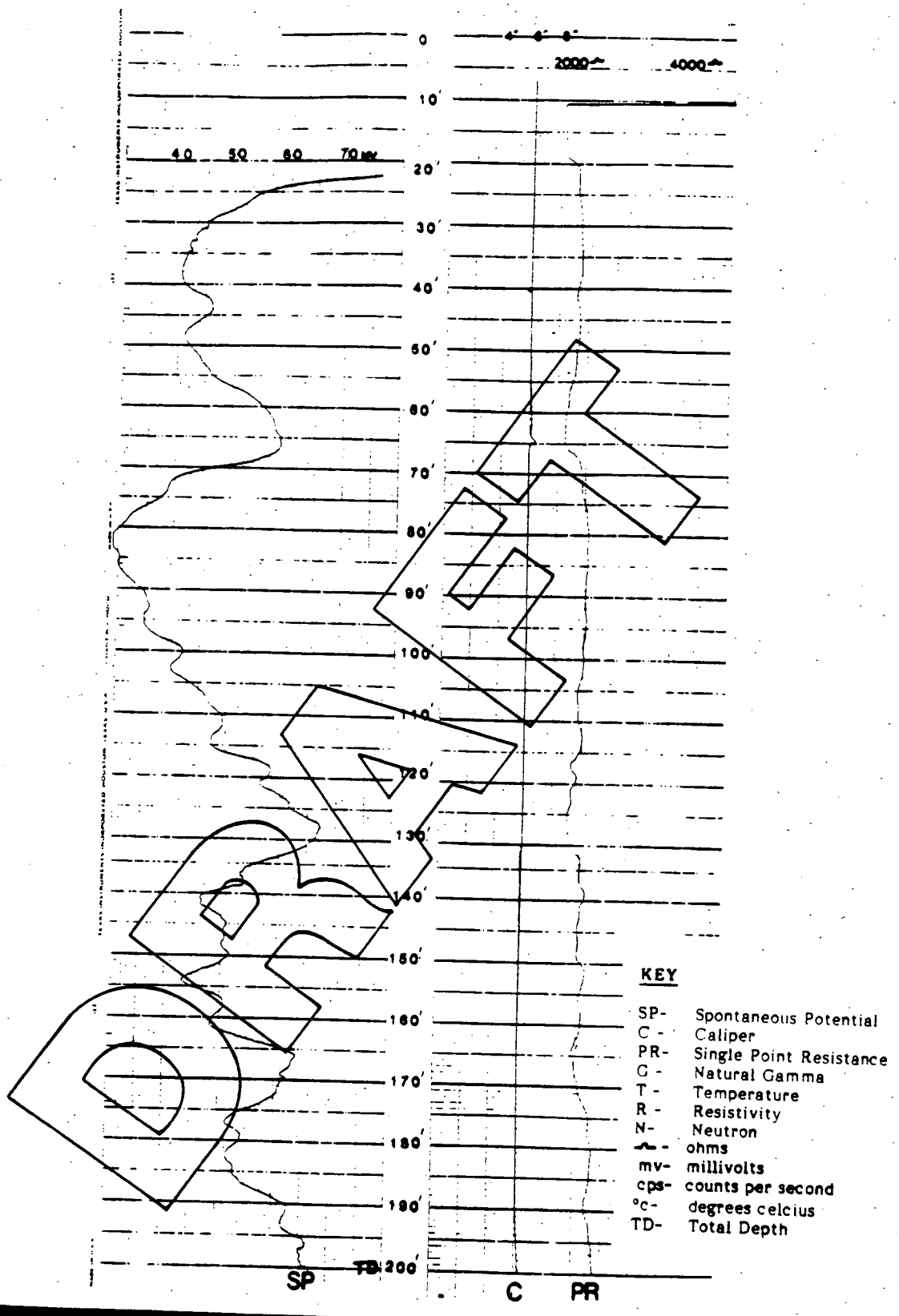
FIGURE K4

Well W-2
Logged by NUS/FIT (Figure K5)
Well Depth 205 feet
Logged Depth 200 feet
Boring Log Available (Appendix A)

The caliper log identified a fracture zone from 54 to 63 feet in this well. The largest fracture in this zone was located at 63 feet. The single point resistance log showed a slight deflecton to the left at 63 feet indicating less resistance and a possible water-filled void. The SP log also showed a deflection to the right at this depth.

A minor fracture zone was also identified between 128 and 141 feet below ground surface. The caliper log showed minor deflection in this zone. At 128 feet, there was a slight deflection to the left on the single point resistance log and a deflection to the right on the SP log. This would suggest that a small amount of water was entering the well at this depth.

The major water bearing zone appeared to be at 63 feet in this well. Below 141 feet, there did not appear to be any significant fracture zones. This well was not included in the USGS borehole investigation, therefore no comparison of results can be made.



WELL #W-2 LOGGED BY NUS/FIT (JUNE 1985)

NUS CORPORATION

BOREHOLE GEOPHYSICS WELL LOGS
AUBURN ROAD LANDFILL
LONDONDERRY, NH

JANUARY 1986

FIGURE K5

Well W-3
Logged by USGS (Figures K6, K7 & K8)
Well Depth 205 feet
Boring Log Available (Appendix A)

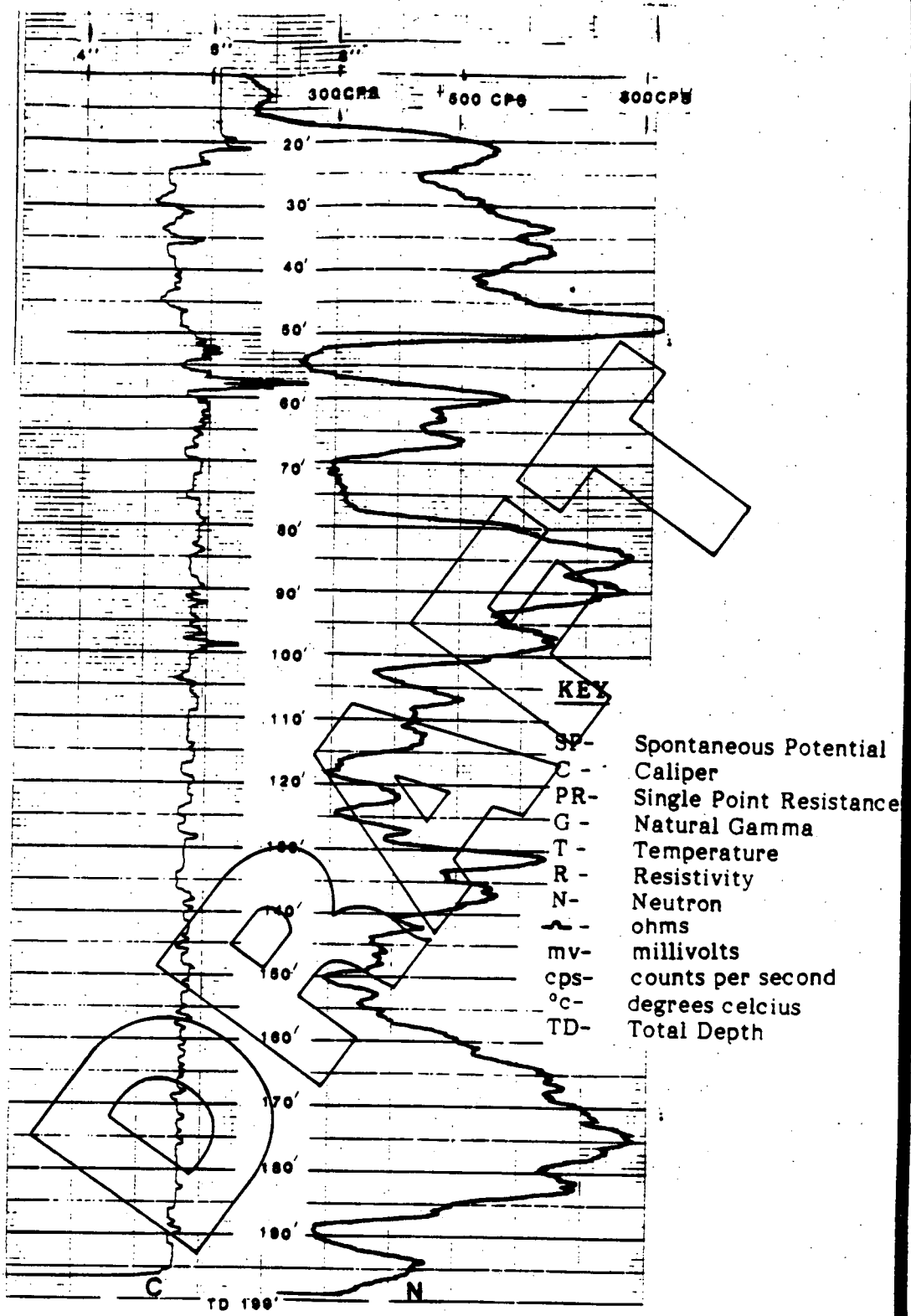
The caliper and acoustic televiewing logs from this well indicated that the well was highly fractured its entire depth. The largest fracture, between 55 and 60 feet, represented on the caliper log appeared to be five feet long and several inches deep. The acoustic televiewing log also showed a large void at this depth and a change in hydrogen content was noted on the neutron log between 50 and 60 feet. A sharp deflection was also recorded on the single point resistance log between 54 and 58 feet indicating a less resistive zone and a possible water filled void.

A 25 foot vertical fracture was identified on the acoustic televiewing log between 19 and 44 feet. This fracture was confirmed by the caliper log which showed an erratic response between 20 and 50 feet. A slight change in resistivity was noted between 30 and 50 feet on the resistivity log, and a change in temperature from 8.2°C to 9.3°C was recorded by the temperature probe between 15 and 60 feet. The neutron log showed a large change in hydrogen content within the borehole between 16 and 52 feet. This, along with the resistivity and temperature logs, is an indication of possible water movement through the well and bedrock formation.

Another fracture zone was identified between 78 and 103 feet on both the caliper and acoustic televiewing logs. Several large fractures were located within this zone. The neutron log at this depth showed a similar response as was associated with the fracture zone identified between 16 and 52 feet. The natural gamma log also showed a response between 78 and 95 feet. The temperture decreased 0.1°C between 70 and 90 feet and then remained constant at 9.3°C.

Based on the acoustic televiewing log and caliper log, the remaining depth of this well appeared to be highly fractured, with the most significant fractures found between 150 and 190 feet. A drop in resistivity was noted from 150 to 177 feet and again from 177 feet to 200 feet. This corresponded well with changes in the hydrogen content as noted on the neutron log, and a slight increase in temperature which was noted between 177 and 200 feet. The natural gamma log also showed a change between 157 and 190 feet. This data again indicates possible water movement through the well within these two fracture zones. The single point resistance log remained fairly uniform through this section of the well.

Based on the interpretation of the geophysical logs from this well, there appear to be three major pathways for water to enter or pass through the borehole. The uppermost fracture zone consisted of a 25 foot vertical fracture from 19 to 44 feet and a five foot void between 55 and 60 feet. This zone showed the largest response on the neutron log and also recorded a 1.1°C increase in temperature. The most significant water-bearing zone appeared to consist of the fractures located between 150 and 200 feet. The largest change in resistivity was recorded in this zone along with large deflections on the neutron and natural gamma logs. The other fracture zone identified between 78 and 103 feet also showed large deflections on the neutron and natural gamma logs.



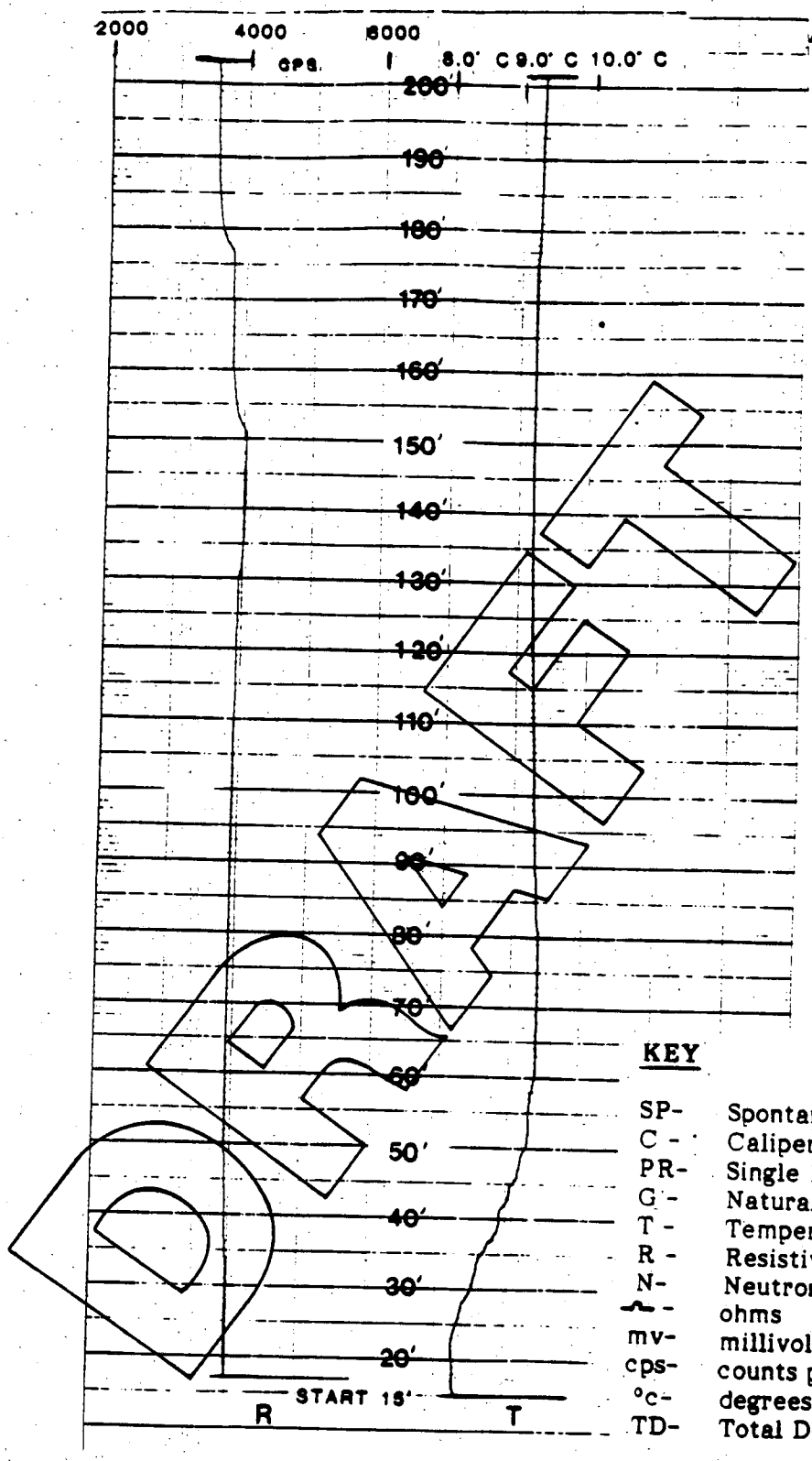
WELL #W-3 LOGGED BY USGS (MAY 1985)

NUS CORPORATION

BOREHOLE GEOPHYSICS WELL LOGS
AUBURN ROAD LANDFILL
LONDONDERRY, NH

JANUARY 1986

FIGURE K6



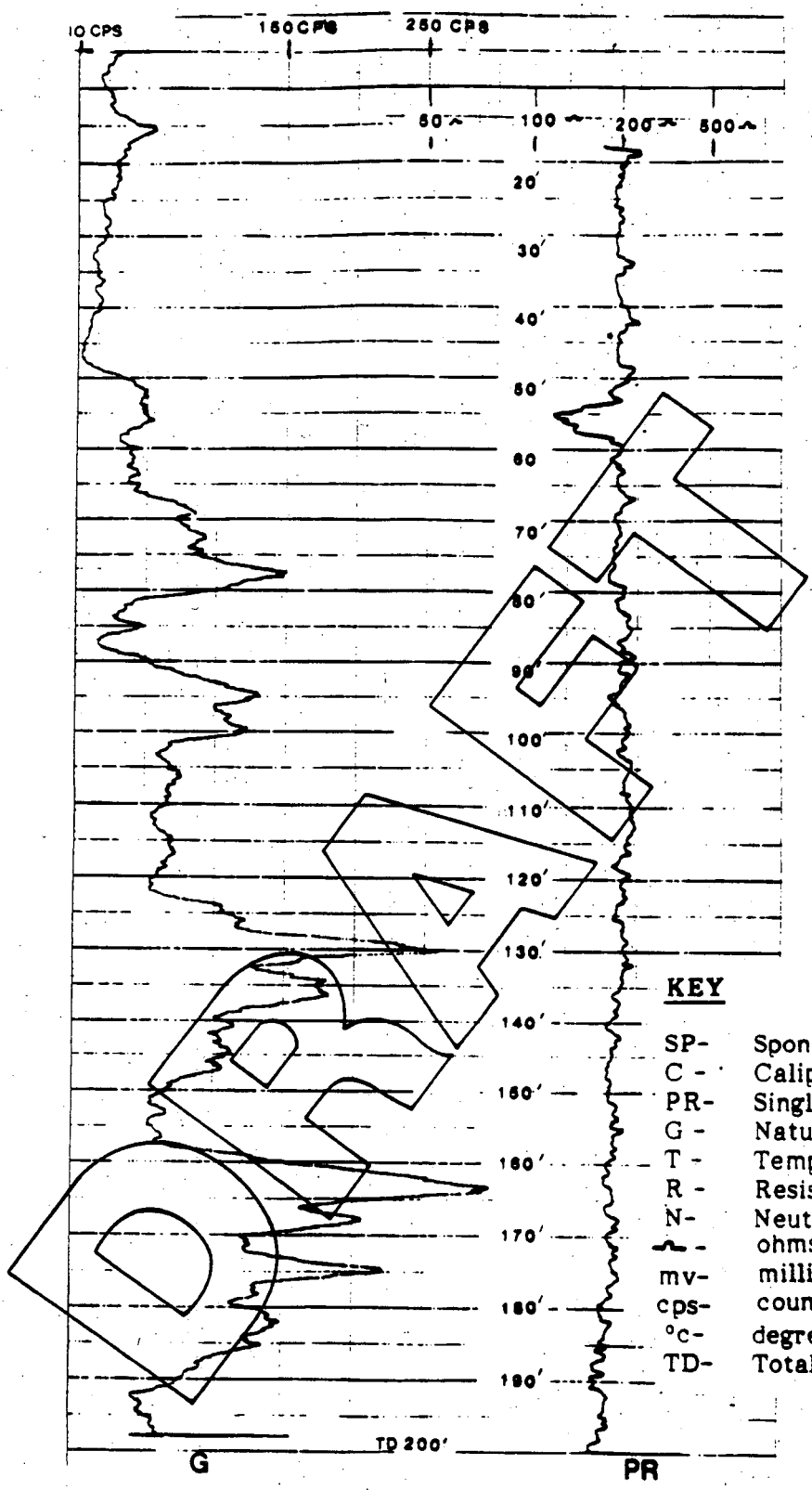
WELL #W-3 LOGGED BY USGS (MAY 1985)

NUS CORPORATION

BOREHOLE GEOPHYSICS WELL LOGS
AUBURN ROAD LANDFILL
LONDONDERRY, NH

JANUARY 1986

FIGURE K7



WELL #W-3 LOGGED BY USGS (MAY 1985)

NUS CORPORATION

BOREHOLE GEOPHYSICS WELL LOGS
AUBURN ROAD LANDFILL
LONDONDERRY, NH

JANUARY 1986

FIGURE K8

Well W-3
Logged by NUS/FIT (Figure K9)
Well Depth 205 feet
Logged Depth 205 feet
Boring Log Available (Appendix A)

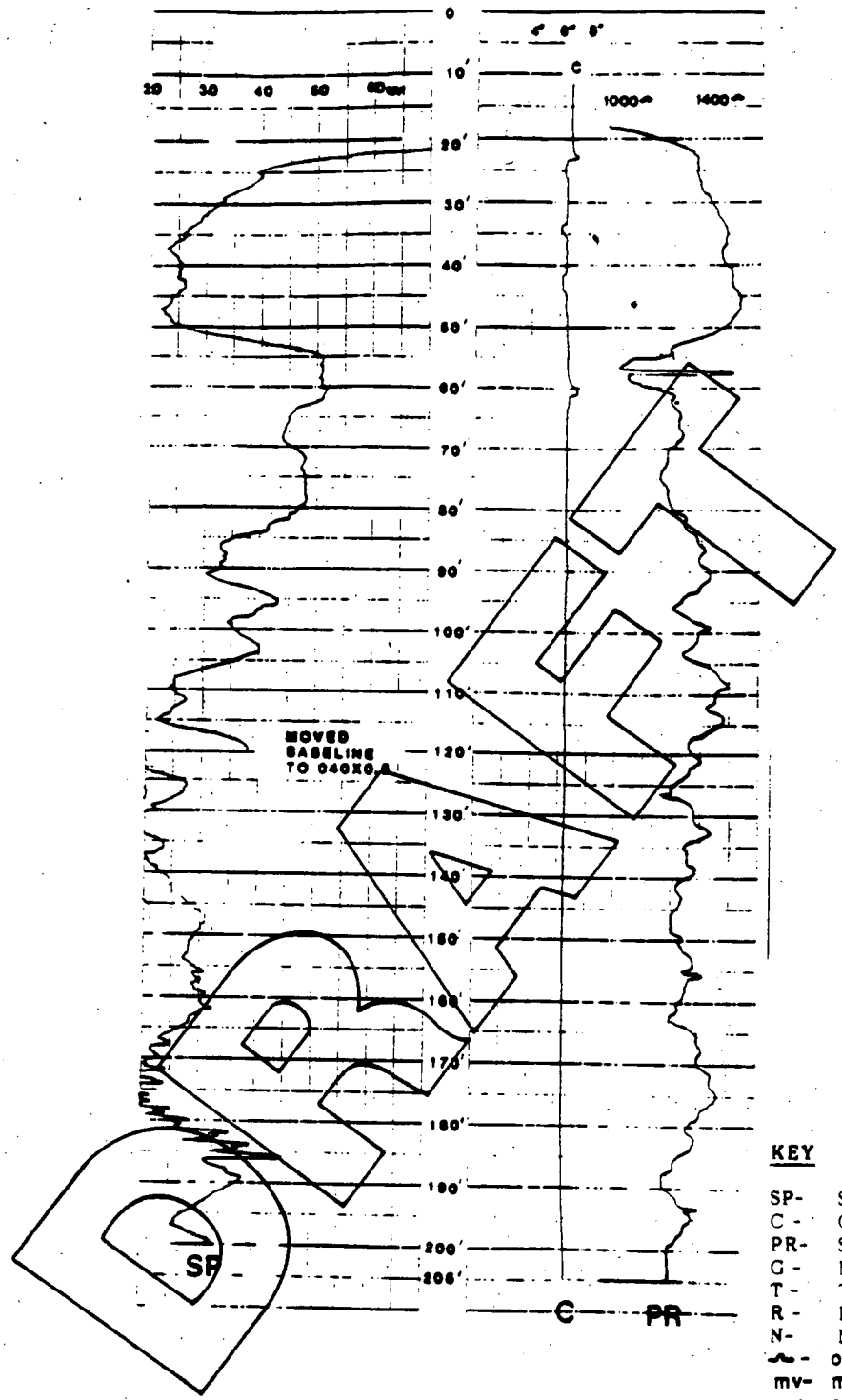
The caliper log identified three major fracture zones in this well. The uppermost fracture zone appeared to be a 5 foot section from 22 to 27 feet. This zone was located near the bedrock surface just below the well casing. The SP and single point resistance logs did not indicate any deflections. This was most likely due to interference caused by the steel casing.

The second well defined fracture zone was a 12 foot section from 33 to 45 feet. At 34 feet and 43 feet, the caliper log identified two large fractures. The SP and single point resistance logs also showed large deflections in this segment which are an indication of a possible water-filled void.

Another fracture zone identified by the caliper log was located between 58 and 63 feet. The single point resistance log at this depth deflected sharply to the left indicating less resistance and a possible water-filled void. The SP log also showed a deflection to the right at this depth.

Most of the fracturing appears to be above 63 feet with the predominant water bearing zone between 58 and 63 feet. There did not appear to be any signficant fractures below 63 feet based on information from the caliper log of this well.

The findings of the USGS borehole investigation correspond quite well with the data collected from the NUS/FIT investigation. The two fracture zones mentioned above from 22 to 27 feet and from 33 to 45 feet, were identified on the acoustic televiewing and caliper logs from the USGS as a 25 foot vertical fracture. The other fracture zone identified by NUS/FIT between 58 and 63 feet was also identified on the USGS geophysical borehole logs. The other fractures identified on the USGS geophysical logs were most likely detected due to the high sensitivity of the USGS borehole geophysical logging equipment.



KEY

SP-	Spontaneous Potential
C -	Caliper
PR-	Single Point Resistance
G -	Natural Gamma
T -	Temperature
R -	Resistivity
N-	Neutron
~	ohms
mv-	millivolts
cps-	counts per second
°c-	degrees celcius
TD-	Total Depth

WELL #W-3 LOGGED BY NUS/FIT (JUNE 1985)

NUS CORPORATION

BOREHOLE GEOPHYSICS WELL LOGS
AUBURN ROAD LANDFILL
LONDONDERRY, NH

JANUARY 1986

FIGURE K9

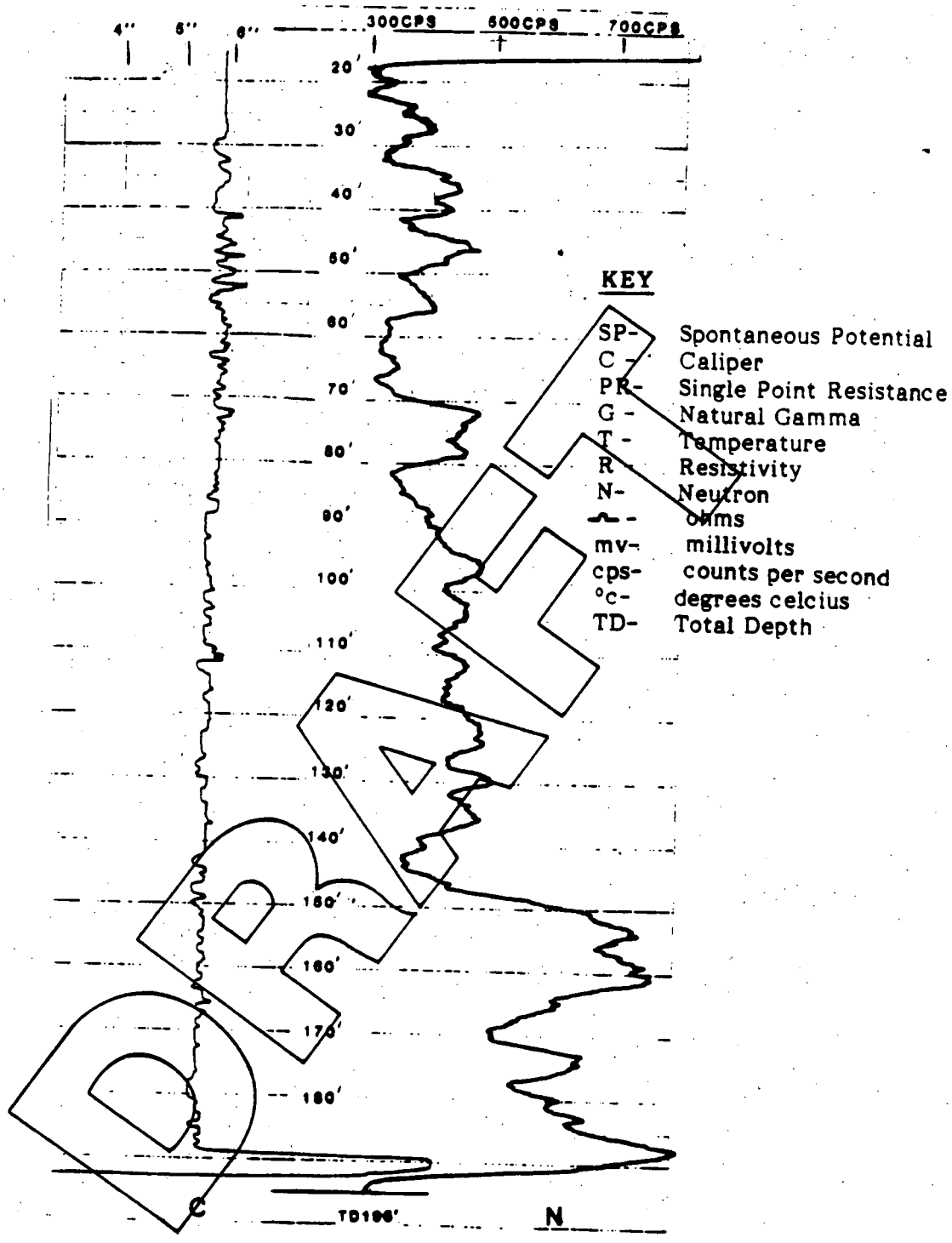
Well W-4
Logged by USGS (Figures K10, K11, & K12)
Well Depth 205 feet
Boring Log Available (Appendix A)

The geophysical logs for this well indicated that the bedrock intersected by this well was highly fractured between 25 and 190 feet. The uppermost fracture zone identified on the caliper and acoustic televiewing logs was located between 28 and 87 feet. Several large fractures were identified in this zone at 41, 46, 48, 50, and 52 feet. Minor deflections were recorded on the single point resistance log and neutron log indicating a possible water bearing zone. A large deflection was noted on the natural gamma log between 25 and 33 feet. This corresponded with a change in temperature from 8.5°C to 8.8°C between 25 and 61 feet.

Between 87 and 143 feet, the caliper log indicated a high degree of fracturing, but none of the other geophysical logs showed any significant changes. The temperature within the borehole remained constant at 8.8°C from 61 feet to 150 feet while the resistivity and single point resistance logs showed little response. Minor deflections were noted on the neutron and natural gamma logs. The acoustic televiewing log also showed numerous fractures within this zone.

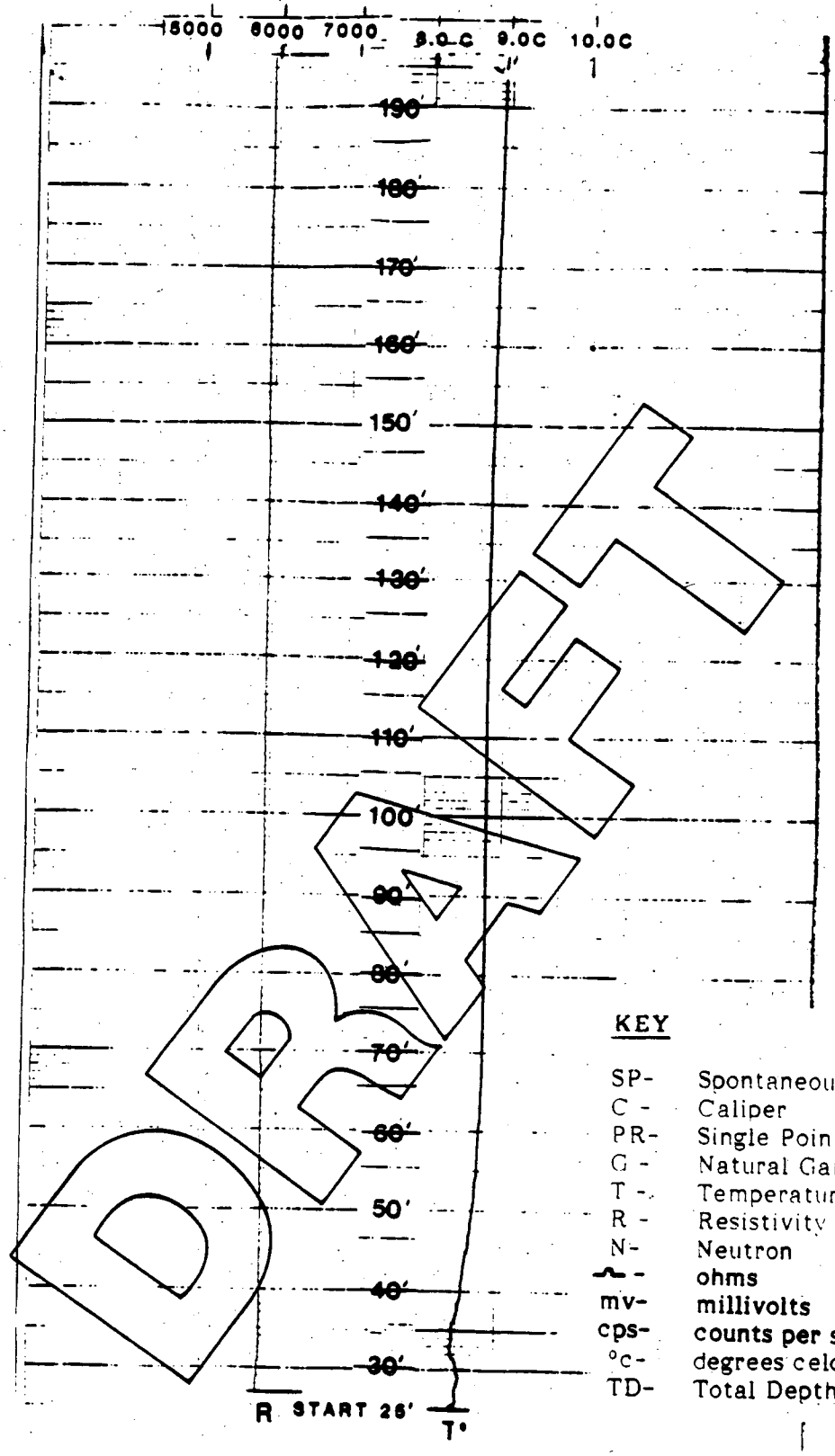
A gradual increase in temperature of 0.1°C was recorded between 150 and 195 feet. This corresponded well with changes noted on the neutron log, where several large deflections were recorded between 144 and 193 feet. A slight decrease in resistivity was recorded on the resistivity log from 148 to 195 feet and minor deflections were noted on the natural gamma and single point resistance logs in this zone. Similar fracture patterns identified in the upper portion of the borehole were also identified below 145 feet. The caliper log indicated the presence of a large fracture at 190 feet that corresponded to deflections recorded on the neutron, natural gamma and single point resistance logs.

The data generated from the borehole geophysical logs run at this well location indicated the presence of two major water-bearing fracture zones. The most significant zone identified was between 150 and 195 feet. The neutron log of this zone showed the largest change in hydrogen content within the borehole. The other water bearing zone was located between 28 and 87 feet. This zone showed minor deflections on the neutron log, but recorded a significant (0.3°C) increase in temperature.



WELL #W-4 LOGGED BY USGS (MAY 1985)

NUS CORPORATION	BOREHOLE GEOPHYSICS WELL LOGS AUBURN ROAD LANDFILL LONDONDERRY, NH	JANUARY 1986 FIGURE K10



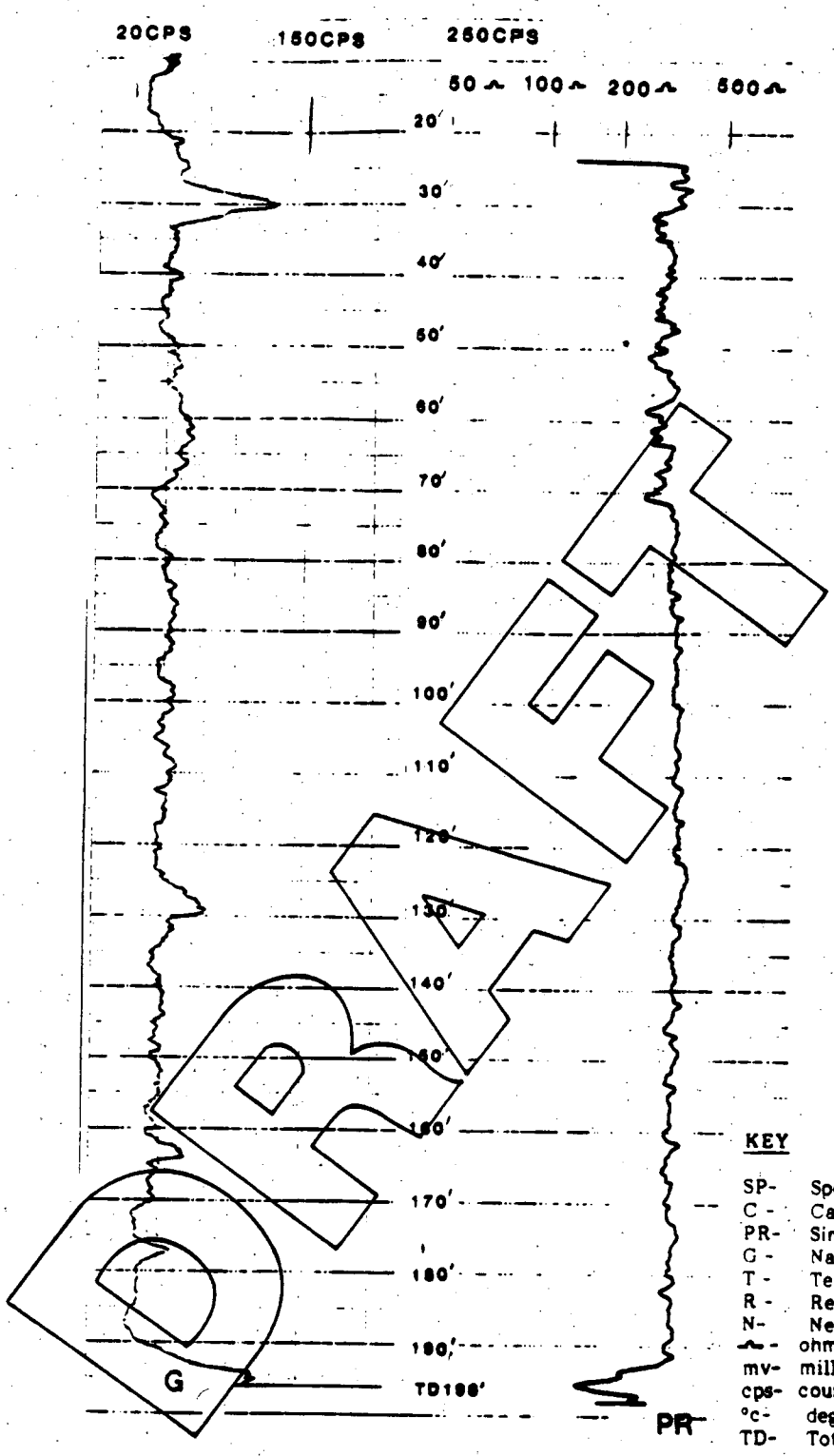
WELL #W-4 LOGGED BY USGS (MAY 1985)

NUS CORPORATION

BOREHOLE GEOPHYSICS WELL LOGS
AUBURN ROAD LANDFILL
LONDONDERRY, NH

JANUARY 1986

FIGURE K11



WELL #W-4 LOGGED BY USGS (MAY 1985)

NUS CORPORATION

BOREHOLE GEOPHYSICS WELL LOGS
AUBURN ROAD LANDFILL
LONDONDERRY, NH

JANUARY 1986

FIGURE K12

APPENDIX L

SEISMIC

SECTIONS IN APPENDIX L

- METHODOLOGIES AND PROCEDURES
- REPORT - S.A. ALSUP & ASSOCIATES, INC.

SEISMIC REFRACTION

To provide additional information on site stratigraphy, NUS/FIT, through the aid of a subcontractor, K & M Associates, performed a seismic refraction survey on and around the site. This work was performed in April, 1985 and included nearly 7,000 linear feet of seismic survey on four lines (0, 0A, 1, 1A, 1B, 1C, 2, 2A, 3) (Plate 2). The purpose of conducting a seismic survey was to characterize bedrock topography (bedrock surface), bedrock competency (presence of open or water filled fault systems), and general overburden stratigraphy. It became apparent part way through the RI that information of this nature in off-site areas was critical for future evaluations of the site. Calibration for the survey was completed by running a seismic array next to several monitoring wells where depth to bedrock and stratographic information were available for comparison. It should be noted, however, that seismic refraction depth data is a remote sensing technique that is only considered accurate to within a ten percent degree of error (see attached report).

A multichannel (12-channel) seismic refraction recording system was used to conduct the survey utilizing explosive charges (gel dynamite) as an energy source. A 240 foot spread cable was used with vertical geophones spaced at 20 foot intervals. A 120 foot spread cable was used at one location where it was anticipated that shallow bedrock would be encountered. Shotpoints were established at 60 (120 foot spread) and 80 (the more common 240 foot spread) foot intervals along the spread cable. The seismic refraction data were recorded in the field on a strip chart recorder.

The location and elevation of the geophone stations were surveyed and reproduced on a base map (scale: 1 inch: 200 feet). The location of the geophone stations were surveyed to a one foot accuracy and the vertical accuracy (elevation) was surveyed to within 0.1 foot.

A detailed outline of the procedures and results are presented in the following report prepared by S.A. Alsup & Associates, Inc. Data from the seismic survey is presented in Section 5.2 of this report.

s.a. alsup
& associates, inc.
617-281-4223

Consultants in
Engineering Geology
Engineering Geophysics

File 85379
July 1, 1985

NUS Corporation
19 Crosby Drive
Bedford, Massachusetts 01730

ATTN: Mr. Larry Fitzgerald

RE: Seismic Refraction Study
Auburn Road Landfill

Dear Mr. Fitzgerald:

In accordance with our telephone conversations, the data submitted with the original report of findings for the site referenced above included a reversal of the stationing for Line Ø, and a reinterpretation of the data from one of the shotpoints. Corrections have been made, and the appropriate data for this particular seismic line are attached.

We have found no other such conditions for the other data reported. Please contact the undersigned if further information or detail is required.

Yours Very Truly,

Stephen A. Alsup

Stephen A. Alsup, Ph.D.
President

cy: K & M Associates, Javid Malek

FILE NUMBER 85379
DATE OF CALCULATIONS 06/27/85

PROJECT: AUBURN ROAD LANDFILL
LOCATION: LONDONDERRY NH
DATE OF FIELD SURVEY: 04/08/85

REVISION 06/27/85

REFRACTION LINE NUMBER: 0

SHOT	VEL	XOVER	THICK	DEPTH
1	1800	15	5.3	0.0
1	5400	96	32.6	5.3
1	14600	0	0.0	37.9
1	0	0	0.0	0.0
1	0	0	0.0	0.0
1	0	0	0.0	0.0
SHOT	VEL	XOVER	THICK	DEPTH
2	2000	8	2.7	0.0
2	5400	104	35.3	2.7
2	14600	0	0.0	38.0
2	0	0	0.0	0.0
2	0	0	0.0	0.0
2	0	0	0.0	0.0
SHOT	VEL	XOVER	THICK	DEPTH
3	1600	8	2.9	0.0
3	5200	111	38.2	2.9
3	14600	0	0.0	41.2
3	0	0	0.0	0.0
3	0	0	0.0	0.0
3	0	0	0.0	0.0
SHOT	VEL	XOVER	THICK	DEPTH
4	800	11	4.7	0.0
4	5400	122	41.4	4.7
4	14600	0	0.0	46.1
4	0	0	0.0	0.0
4	0	0	0.0	0.0
4	0	0	0.0	0.0

s.e. olsup

SEISMIC REFRACTION INVESTIGATIONS
AUBURN ROAD LANDFILL SITE
LONDONDERRY, NEW HAMPSHIRE

PREPARED FOR: K&W ASSOCIATES/NUS CORPORATION

FILE 85379
APRIL 22, 1985

File 85379
April 22, 1985

s.a. alsup

SEISMIC REFRACTION INVESTIGATIONS
AUBURN ROAD LANDFILL SITE
LONDONDERRY, NEW HAMPSHIRE

1.00 INTRODUCTION

This report presents the results of seismic refraction investigations performed by S.A.Alsup & Associates, Inc. as subcontractor to K&M Associates and the NUS Corporation. Field efforts for the investigation were made on April 8, 9, 10, and 11, 1985, with subsequent analysis of data and report preparation in our offices in Gloucester, Massachusetts. Locus of the site is shown in Figure 1.

The purpose of the investigation was to determine depth to bedrock and other subsurface information beneath alignments specified by the on-site NUS representative as the field investigations were underway. Toward that end, some 6,840 linear feet of seismic refraction profiling were completed, with subsequent location and elevation of the alignments provided by K&M Associates.

Overall data quality for the investigation is good to very good, with anticipated accuracies of 10% in terms of depths and velocities in the information presented in the profiles. Minor amounts of frost in the ground were

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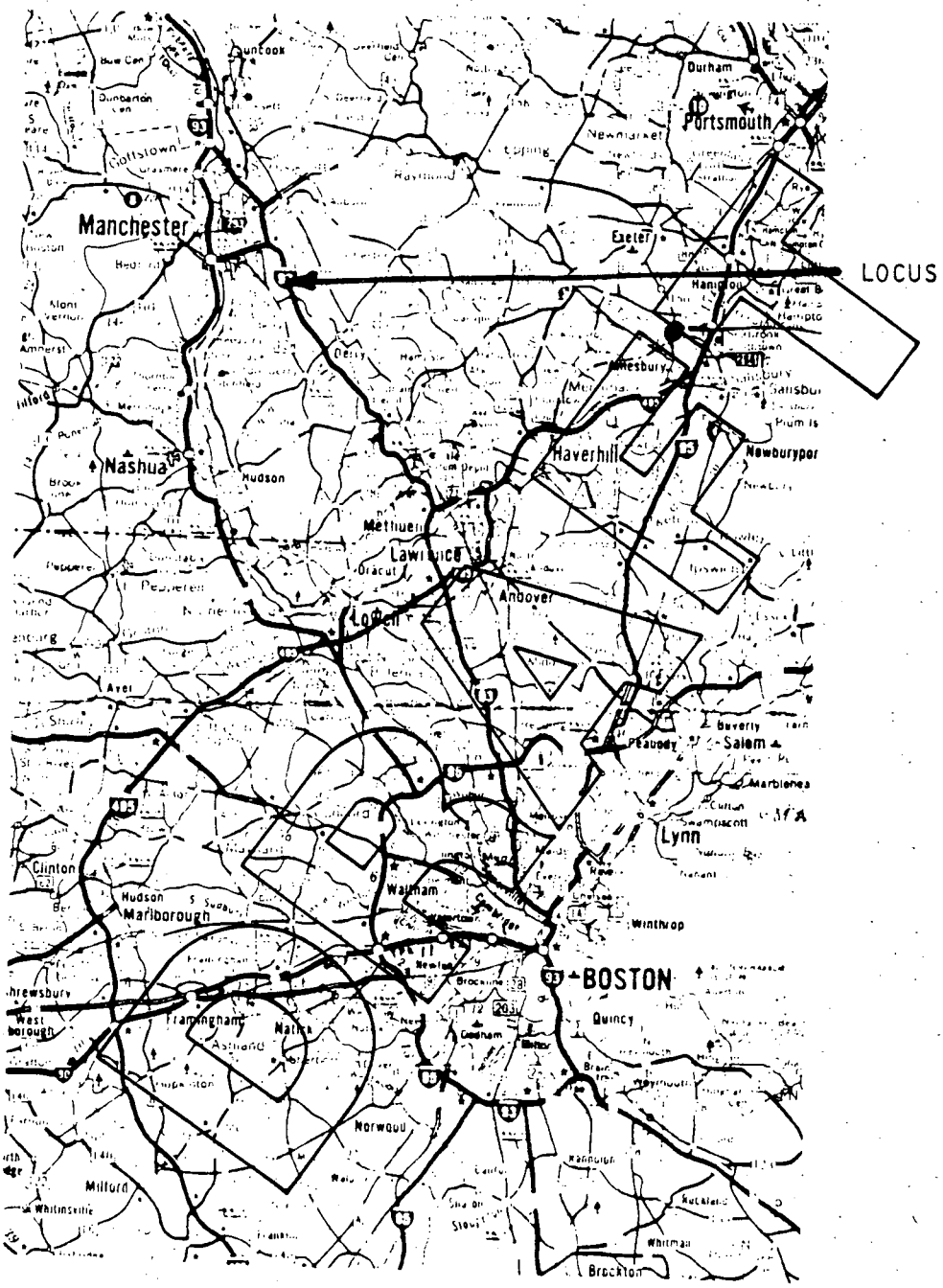

Figure 1. Locus of Investigation, Auburn Road Landfill Site.

encountered (3 or 4 inches), but this thickness was not sufficient to cause difficulty in analysis of data or interpretation of the analytical results.

2.00 EQUIPMENT AND PROCEDURES

An EG&G/GEOMETRICS Model ES1210F Multiple Channel Signal Enhancement Seismograph coupled to a 12-element 240-foot refraction spread cable was used for the investigation, employing Mark Products L-15 vertical geophones as motion-voltage transducers at 20-foot intervals along the spread cable. In one location of this investigation, a 12-element 120-foot spread cable was used where shallow bedrock was present beneath the alignment. The ES1210F provides permanent electrostatically written seismograms of the 12 active data channels simultaneously, with crystal-controlled timing lines written across the seismogram at 0.001 second intervals by independent timing circuitry. All recordings were made with a pre-set 0.100 second record length, with record start at the instant of detonation of the explosive charge used for generation of the required seismic energy.

Small explosive charges (1/8 lb typical) of 40% extra gel dynamite initiated by Instadet electric blasting caps were used as an energy source, with the charge placed at

about 1.5 foot depth in the ground. Shot points were made at the ends and at 80-foot intervals along the spread cable (60 feet for the shorter spread), providing completely reversed refraction spreads with intermediate partial reversals. All alignments with length greater than the basic 240 foot spread length were examined with end-to-end extensions of the cable along the alignment, repeating the end shot point of one spread as the beginning shot point of the next spread for continuity and data redundancy purposes.

The data were analyzed according to the standard crossover-distance method, where the arrival times of the fastest traveling seismic wave is timed on each data channel, with such times plotted on a time-distance graph as a function of distance from the shotpoint. Straight line segments are then constructed through data points showing similar time-distance increments, with the intersections of the line segments forming the required crossover distance. The distances are then entered into standard formulations aling with the inverse slopes of the line segments (i.e., distance/time = velocity) for calculation of depth to refracting interfaces in the subsurface. A graphical example of the procedure is shown in Figure 2.

The speeds of seismic waves of the types used in this procedure are strong functions of the bulk density of materials that the waves pass through, and this relationship

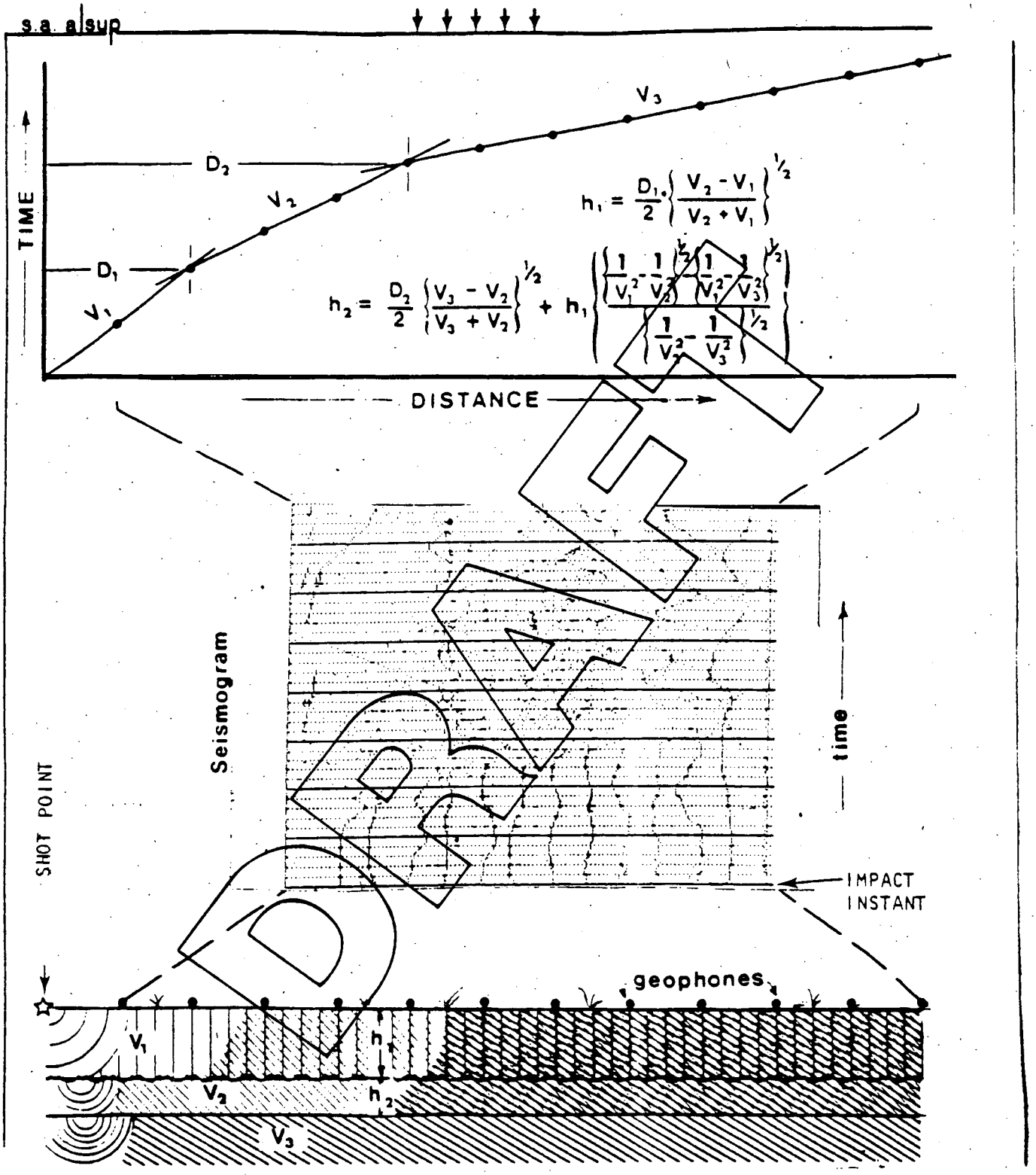

Figure 2. Seismic Refraction Analysis Method (General).

s.a. alsup

is used to interpret the kinds of geological materials that may be present in the subsurface beneath the alignments examined. For this particular investigation, the following velocity/material relationships are expected:

VELOCITY (FT/SEC)	ANTICIPATED GEOLOGIC TYPE
800 - 2800	Soft and uncompact low density materials, including forest litter and marsh vegetation, and dry to moist silt, sand, gravel, and cobbles. May also include random boulders on or in such deposits. Highly permeable and readily excavated.
4400 - 5200	Materials of the types above, but saturated with groundwater. The groundwater table is usually found at or near the upper surface of zones showing this velocity range in seismic refraction profiles.
6000 - 6600	Usually clay or silty clay of low to very low permeability - may be interlayered with tills or alluvial deposits at this site.

s.a. a|sup

7200 - 8600	Well-graded (poorly sorted) mixture of silts, sands, and gravels with some angular-sub-angular cobbles and boulders (Glacial Till). Typically of low to very low permeability.
10,000+	Dense and competent bedrock, with low permeability overall, may have zones of high permeability where fractured or in localized zones of weathering

In the results following, profiles or cross-sections of subsurface conditions were constructed using elevation data at each shot point provided by K&M Associates to indicate ground surface, with depths to refracting interfaces plotted directly beneath the shot point providing the seismogram from which the depth velocity data were obtained. Smoothed line delineations of zones showing similar velocity ranges were then constructed between the shot points to develop a separation of velocity zones for interpretation according to the relationships above.

3.00 RESULTS OF INVESTIGATION

The results of this investigation are shown in Figures I and II (in pocket) as profiles or cross-sections of conditions beneath the alignments examined and in Appendix A, where velocities, depths, and related factors for each shot point are tabulated. Individual shot points along the alignment are indicated in the Figures as a small "v" at the ground surface elevation.

LINE 0

The seismic results for Line 0, which was conducted as a calibration line adjacent to existing borings, is shown in the lower left of Figure 1. The seismic data indicate a thin zone of unsaturated low density materials near surface, with as much as 41 feet of this or similar material above the bedrock surface. The groundwater table is indictated to range between 2.7 and 5.3 feet below ground surface in the seismic data. A deposit of glacial till is indicated at about 11 foot depth below STA 2+40.

LINE 0A

Line 0A is plotted adjacent to Line 0 in Figure 1, and the results show similar subsurface conditions - 4.3 to 5.1 feet of unsaturated low density materials near surface, and a saturated zone on the order of 40 to 45 feet above bedrock. A sharp rise of the bedrock surface is indicated between STA 0+00 and 0+80, with the bedrock elevation of

less than EL 220 beneath STA 0+00 being the lowest measured during any part of this investigation. This particular measurement should be viewed with some caution because it is the ending shot point of an alignment (i.e., no continuity or redundancy for the calculated depth is available), and it marks a significant change in bedrock elevation when compared to the other Line 0A and Line 0 results. A bedrock elevation change of about 18 feet over 80 foot distance is not unusual, however, and the indicated result may be accurate within the capability of the refraction method to resolve such features.

LINE 1

The results for seismic Line 1, which was conducted in four separate segments to accommodate the presence of two river crossings and a segment where shallow rock is known to be present, is shown in Figure 1 as the alignment would be wiewed from left to right looking south (Lines 1, 1A, 1C, and 1B, in order). Conditions beneath Line 1 show a low density surficial zone thinning from about 17 feet (0+00) to about 2 feet in the lower elevations. Marsh conditions prevail from STA 5+60 to 7+20, and all shots were in water for this section of Line 1. Bedrock is shown to be at shallow depth from STA 0+00 to 1+60, with a thick zone of materials showing velocities typical of glacial till over bedrock between STAS 1+60 and 4+80. Faulting is suspected in this part of the site, and such velocities might represent

s.a. alsup

fractured rock or gouge, or both. From STA 4+80 to 7+20, water saturated low density materials are indicated, and a low in the bedrock surface is indicated beneath STA 6+40.

Conditions beneath Line 1A show a thin zone of unstaturated low density deposits over the bedrock surface from STA 0+00 to 9+60, and offsets in the bedrock refraction trends indicate either narrow fault zones or abrupt changes of a few feet in the bedrock surface beneath STAS 3+60 and 6+10. The changes occur between shot points, and can only be indicated as present in the method of data analysis employed.

Line 1C shows a continuation of the trend above, excepting beneath the shot point at the edge of river (2+40), where a trend toward slightly deeper bedrock and saturated granular materials is indicated.

Conditions beneath Line 1B show a continuation of the trend toward deeper bedrock, with a rising trend beneath the easternmost shot point (2+40). As with the Line 1 section, a fault is suspected to be present beneath Line 1B, and the materials with velocities typical of New England glacial till may represent fault zone fracturing or gouge effects.

LINE 2

Seismic Line 2 was also conducted in separate segments, with the break made to accomodate a zone of ~~know~~ shallow bedrock. Conditions beneath the alignment (Figure II) indicate a gradually rising bedrock surface from STA 0+00 to

6+00 with an overlying zone of saturation in granular materials and a groundwater table at about Elev 268 except where the bedrock surface is very shallow.

Continuation along Line 2A shows a generally undulating bedrock surface elevation, with pockets of groundwater saturation in granular materials between bedrock highs and clay/till deposits. Materials immediately above the bedrock surface between STAS 6+00 and 16+80 are expected to include either clay or till with significant amounts of clay or clay layers on the basis of the refracting velocities. The granular materials above bedrock between STAS 32+00 to 33+60 are expected to be partially saturated or to include perched zones of groundwater saturation.

Two possible zones of faulting are also indicated in the Line 2A refraction data, with a narrow zone beneath STA 20+10 and a wider zone beneath STAS 26+60 to 29+00. The bedrock velocity in the wider zone doesn't suggest highly fractured or weather rock, however, and the data may simply indicate rapid changes in bedrock surface elevation over short distances beneath the refraction spread.

LINE 3

The results for Seismic Line 3 are shown in the upper right of Figure I, typically showing a saturated zone of granular materials over the bedrock surface. The groundwater table is at ground surface beneath STA 2+40, with a thin zone of unsaturated materials beneath ground surface along the higher elevations of the alignment.

s.a. alsup

APPENDIX A

CALCULATED DEPTHS AND RELATED FACTORS FOR SEISMIC REFRACTION DATA

FILE NUMBER 85379
DATE OF CALCULATIONS 04/15/85

PROJECT: AUBURN ROAD LANDFILL
LOCATION: LONDONDERRY NH
DATE OF FIELD SURVEY: 04/08-11/85

REFRACTION LINE NUMBER: 0

SHOT	VEL	XOVER	THICK	DEPTH
1	800	11	4.7	0.0
1	5200	28	6.1	4.7
1	7600	122	33.9	10.8
1	14600	0	0.0	44.7
1	0	0	0.0	0.0
1	0	0	0.0	0.0
SHOT	VEL	XOVER	THICK	DEPTH
2	1600	8	2.9	0.0
2	5200	111	38.2	2.9
2	14600	0	0.0	41.2
2	0	0	0.0	0.0
2	0	0	0.0	0.0
2	0	0	0.0	0.0
SHOT	VEL	XOVER	THICK	DEPTH
3	2000	8	2.7	0.0
3	5400	104	35.3	2.7
3	14600	0	0.0	38.0
3	0	0	0.0	0.0
3	0	0	0.0	0.0
3	0	0	0.0	0.0

SHOT	VEL	XOVER	THICK	DEPTH
4	1800	15	5.3	0.0
4	5400	96	32.6	5.3
4	14600	0	0.0	37.9
4	0	0	0.0	0.0
4	0	0	0.0	0.0
4	0	0	0.0	0.0

FILE NUMBER 85379
DATE OF CALCULATIONS 04/15/85

PROJECT: AUBURN ROAD LANDFILL
LOCATION: LONDONDERRY NH
DATE OF FIELD SURVEY: 04/08-11/85

REFRACTION LINE NUMBER: 0A

SHOT	VEL	XOVER	THICK	DEPTH
1	800	10	4.3	0.0
1	5200	131	45.1	4.3
1	14600	0	0.0	49.4
1	0	0	0.0	0.0
1	0	0	0.0	0.0
1	0	0	0.0	0.0
SHOT	VEL	XOVER	THICK	DEPTH
2	1100	12	4.8	0.0
2	5200	124	42.7	4.8
2	14600	0	0.0	47.6
2	0	0	0.0	0.0
2	0	0	0.0	0.0
2	0	0	0.0	0.0
SHOT	VEL	XOVER	THICK	DEPTH
3	1200	13	5.1	0.0
3	5200	108	37.2	5.1
3	14600	0	0.0	42.3
3	0	0	0.0	0.0
3	0	0	0.0	0.0
3	0	0	0.0	0.0
SHOT	VEL	XOVER	THICK	DEPTH
4	1800	15	5.2	0.0
4	5100	158	54.9	5.2
4	14600	0	0.0	60.0
4	0	0	0.0	0.0
4	0	0	0.0	0.0
4	0	0	0.0	0.0

FILE NUMBER 85379
DATE OF CALCULATIONS 04/15/85

PROJECT: AUBURN ROAD LANDFILL
LOCATION: LONDONDERRY NH
DATE OF FIELD SURVEY: 04/08-11/85

REFRACTION LINE NUMBER: 1

SHOT	VEL	XOVER	THICK	DEPTH
1	2000	38	16.7	0.0
1	15600	0	0.0	16.7
1	0	0	0.0	0.0
1	0	0	0.0	0.0
1	0	0	0.0	0.0
1	0	0	0.0	0.0
SHOT	VEL	XOVER	THICK	DEPTH
2	1400	16	7.3	0.0
2	15600	0	0.0	7.3
2	0	0	0.0	0.0
2	0	0	0.0	0.0
2	0	0	0.0	0.0
2	0	0	0.0	0.0
SHOT	VEL	XOVER	THICK	DEPTH
3	1200	18	8.3	0.0
3	15600	0	0.0	8.3
3	0	0	0.0	0.0
3	0	0	0.0	0.0
3	0	0	0.0	0.0
3	0	0	0.0	0.0
SHOT	VEL	XOVER	THICK	DEPTH
4	1400	22	9.0	0.0
4	7200	82	26.6	9.0
4	17600	0	0.0	35.6
4	0	0	0.0	0.0
4	0	0	0.0	0.0
4	0	0	0.0	0.0
SHOT	VEL	XOVER	THICK	DEPTH
5	1400	18	7.6	0.0
5	8400	86	25.6	7.6
5	17600	0	0.0	33.2
5	0	0	0.0	0.0
5	0	0	0.0	0.0
5	0	0	0.0	0.0
SHOT	VEL	XOVER	THICK	DEPTH
6	1200	16	6.8	0.0
6	7600	86	27.1	6.8
6	17600	0	0.0	33.9
6	0	0	0.0	0.0
6	0	0	0.0	0.0
6	0	0	0.0	0.0
SHOT	VEL	XOVER	THICK	DEPTH
7	1200	11	4.7	0.0
7	7600	95	29.9	4.7
7	17600	0	0.0	34.6
7	0	0	0.0	0.0
7	0	0	0.0	0.0
7	0	0	0.0	0.0

SHOT	VEL	XOVER	THICK	DEPTH
8	800	5	2.1	0.0
8	4600	49	18.6	2.1
8	17200	0	0.0	20.7
8	0	0	0.0	0.0
8	0	0	0.0	0.0
8	0	0	0.0	0.0
SHOT	VEL	XOVER	THICK	DEPTH
9	800	4	1.7	0.0
9	4600	82	31.2	1.7
9	17200	0	0.0	32.8
9	0	0	0.0	0.0
9	0	0	0.0	0.0
9	0	0	0.0	0.0
SHOT	VEL	XOVER	THICK	DEPTH
10	1800	10	3.5	0.0
10	5400	48	17.3	3.5
10	17200	0	0.0	20.9
10	0	0	0.0	0.0
10	0	0	0.0	0.0
10	0	0	0.0	0.0

FILE NUMBER
DATE OF CALCULATIONS

PROJECT:
LOCATION:
DATE OF FIELD SURVEY:

REFRACTION LINE NUMBER: 1A

SHOT	VEL	XOVER	THICK	DEPTH
1	800	18	8.6	0.0
1	16200	31	11.1	8.6
1	16200	0	0.0	19.7
1	0	0	0.0	0.0
1	0	0	0.0	0.0
1	0	0	0.0	0.0
SHOT	VEL	XOVER	THICK	DEPTH
2	900	21	9.9	0.0
2	16200	0	0.0	9.9
2	0	0	0.0	0.0
2	0	0	0.0	0.0
2	0	0	0.0	0.0
2	0	0	0.0	0.0
SHOT	VEL	XOVER	THICK	DEPTH
3	1200	18	8.4	0.0
3	16200	0	0.0	8.4
3	0	0	0.0	0.0
3	0	0	0.0	0.0
3	0	0	0.0	0.0
3	0	0	0.0	0.0
SHOT	VEL	XOVER	THICK	DEPTH
4	800	16	7.6	0.0
4	16300	0	0.0	7.6
4	0	0	0.0	0.0
4	0	0	0.0	0.0
4	0	0	0.0	0.0
4	0	0	0.0	0.0
SHOT	VEL	XOVER	THICK	DEPTH
5	1100	17	7.9	0.0
5	16400	0	0.0	7.9
5	0	0	0.0	0.0
5	0	0	0.0	0.0
5	0	0	0.0	0.0
5	0	0	0.0	0.0
SHOT	VEL	XOVER	THICK	DEPTH
6	1400	22	10.1	0.0
6	16400	0	0.0	10.1
6	0	0	0.0	0.0
6	0	0	0.0	0.0
6	0	0	0.0	0.0
6	0	0	0.0	0.0
SHOT	VEL	XOVER	THICK	DEPTH
7	800	13	6.2	0.0
7	17000	0	0.0	6.2
7	0	0	0.0	0.0
7	0	0	0.0	0.0
7	0	0	0.0	0.0
7	0	0	0.0	0.0

SHOT	VEL	XOVER	THICK	DEPTH
8	2200	20	8.8	0.0
8	17000	0	0.0	8.8
8	0	0	0.0	0.0
8	0	0	0.0	0.0
8	0	0	0.0	0.0
8	0	0	0.0	0.0
SHOT	VEL	XOVER	THICK	DEPTH
9	1500	15	6.9	0.0
9	17000	0	0.0	6.9
9	0	0	0.0	0.0
9	0	0	0.0	0.0
9	0	0	0.0	0.0
9	0	0	0.0	0.0
SHOT	VEL	XOVER	THICK	DEPTH
10	800	10	4.8	0.0
10	16400	0	0.0	4.8
10	0	0	0.0	0.0
10	0	0	0.0	0.0
10	0	0	0.0	0.0
10	0	0	0.0	0.0
SHOT	VEL	XOVER	THICK	DEPTH
11	800	10	4.7	0.0
11	15600	0	0.0	4.7
11	0	0	0.0	0.0
11	0	0	0.0	0.0
11	0	0	0.0	0.0
11	0	0	0.0	0.0
SHOT	VEL	XOVER	THICK	DEPTH
12	1600	8	3.6	0.0
12	15600	0	0.0	3.6
12	0	0	0.0	0.0
12	0	0	0.0	0.0
12	0	0	0.0	0.0
12	0	0	0.0	0.0
SHOT	VEL	XOVER	THICK	DEPTH
13	2200	22	9.5	0.0
13	15600	0	0.0	9.5
13	0	0	0.0	0.0
13	0	0	0.0	0.0
13	0	0	0.0	0.0
13	0	0	0.0	0.0

FILE NUMBER
DATE OF CALCULATIONS

PROJECT:
LOCATION:
DATE OF FIELD SURVEY:

REFRACTION LINE NUMBER: 1B

SHOT	VEL	XOVER	THICK	DEPTH
1	1800	14	5.6	0.0
1	8400	76	19.5	5.6
1	14400	0	0.0	25.1
1	0	0	0.0	0.0
1	0	0	0.0	0.0
1	0	0	0.0	0.0
SHOT	VEL	XOVER	THICK	DEPTH
2	1400	12	5.0	0.0
2	7400	96	27.2	5.0
2	14400	0	0.0	32.2
2	0	0	0.0	0.0
2	0	0	0.0	0.0
2	0	0	0.0	0.0
SHOT	VEL	XOVER	THICK	DEPTH
3	2000	18	6.8	0.0
3	7400	70	19.8	6.8
3	14400	0	0.0	26.7
3	0	0	0.0	0.0
3	0	0	0.0	0.0
3	0	0	0.0	0.0
SHOT	VEL	XOVER	THICK	DEPTH
4	4600	64	23.0	0.0
4	14400	0	0.0	23.0
4	0	0	0.0	0.0
4	0	0	0.0	0.0
4	0	0	0.0	0.0
4	0	0	0.0	0.0

FILE NUMBER
DATE OF CALCULATIONS

PROJECT:
LOCATION:
DATE OF FIELD SURVEY:

REFRACTION LINE NUMBER: 1C

SHOT	VEL	XOVER	THICK	DEPTH
1	1200	18	8.3	0.0
1	15800	0	0.0	8.3
1	0	0	0.0	0.0
1	0	0	0.0	0.0
1	0	0	0.0	0.0
1	0	0	0.0	0.0
SHOT	VEL	XOVER	THICK	DEPTH
2	1400	24	11.0	0.0
2	15800	0	0.0	11.0
2	0	0	0.0	0.0
2	0	0	0.0	0.0
2	0	0	0.0	0.0
2	0	0	0.0	0.0
SHOT	VEL	XOVER	THICK	DEPTH
3	2400	27	11.6	0.0
3	15800	0	0.0	11.6
3	0	0	0.0	0.0
3	0	0	0.0	0.0
3	0	0	0.0	0.0
3	0	0	0.0	0.0
SHOT	VEL	XOVER	THICK	DEPTH
4	4500	30	11.2	0.0
4	15800	0	0.0	11.2
4	0	0	0.0	0.0
4	0	0	0.0	0.0
4	0	0	0.0	0.0
4	0	0	0.0	0.0

FILE NUMBER
DATE OF CALCULATIONS

PROJECT:
LOCATION:
DATE OF FIELD SURVEY:

REFRACTION LINE NUMBER: 2

SHOT	VEL	XOVER	THICK	DEPTH
1	800	10	4.2	0.0
1	4400	86	31.5	4.2
1	14600	0	0.0	35.7
1	0	0	0.0	0.0
1	0	0	0.0	0.0
1	0	0	0.0	0.0
SHOT	VEL	XOVER	THICK	DEPTH
2	800	18	7.6	0.0
2	4800	62	22.0	7.6
2	14600	0	0.0	29.6
2	0	0	0.0	0.0
2	0	0	0.0	0.0
2	0	0	0.0	0.0
SHOT	VEL	XOVER	THICK	DEPTH
3	800	14	5.9	0.0
3	4800	62	22.0	5.9
3	14600	0	0.0	27.9
3	0	0	0.0	0.0
3	0	0	0.0	0.0
3	0	0	0.0	0.0
SHOT	VEL	XOVER	THICK	DEPTH
4	800	9	3.8	0.0
4	4800	33	12.0	3.8
4	15400	0	0.0	15.8
4	0	0	0.0	0.0
4	0	0	0.0	0.0
4	0	0	0.0	0.0
SHOT	VEL	XOVER	THICK	DEPTH
5	1400	12	4.6	0.0
5	5200	40	14.3	4.6
5	16200	0	0.0	18.9
5	0	0	0.0	0.0
5	0	0	0.0	0.0
5	0	0	0.0	0.0
SHOT	VEL	XOVER	THICK	DEPTH
6	1400	6	2.3	0.0
6	5200	31	11.1	2.3
6	16200	0	0.0	13.4
6	0	0	0.0	0.0
6	0	0	0.0	0.0
6	0	0	0.0	0.0

SHOT	VEL	XOVER	THICK	DEPTH
7	1400	18	8.3	0.0
7	16200	0	0.0	8.3
7	0	0	0.0	0.0
7	0	0	0.0	0.0
7	0	0	0.0	0.0
7	0	0	0.0	0.0
SHOT	VEL	XOVER	THICK	DEPTH
8	7600	9	2.6	0.0
8	15500	0	0.0	2.6
8	0	0	0.0	0.0
8	0	0	0.0	0.0
8	0	0	0.0	0.0
8	0	0	0.0	0.0
SHOT	VEL	XOVER	THICK	DEPTH
9	2800	28	11.7	0.0
9	15500	0	0.0	11.7
9	0	0	0.0	0.0
9	0	0	0.0	0.0
9	0	0	0.0	0.0
9	0	0	0.0	0.0

FILE NUMBER 85379
DATE OF CALCULATIONS 04/15/85

PROJECT: AUBURN ROAD LANDFILL
LOCATION: LONDONDERRY NH
DATE OF FIELD SURVEY: 04/08-11/85

REFRACTION LINE NUMBER: 2A

SHOT	VEL	XOVER	THICK	DEPTH
1	2200	11	4.8	0.0
1	15600	0	0.0	4.8
1	0	0	0.0	0.0
1	0	0	0.0	0.0
1	0	0	0.0	0.0
1	0	0	0.0	0.0
SHOT	VEL	XOVER	THICK	DEPTH
2	1100	11	4.3	0.0
2	4600	49	18.1	4.3
2	15600	0	0.0	22.4
2	0	0	0.0	0.0
2	0	0	0.0	0.0
2	0	0	0.0	0.0
SHOT	VEL	XOVER	THICK	DEPTH
3	800	11	4.7	0.0
3	5200	42	14.8	4.7
3	15600	0	0.0	19.6
3	0	0	0.0	0.0
3	0	0	0.0	0.0
3	0	0	0.0	0.0
SHOT	VEL	XOVER	THICK	DEPTH
4	1000	12	5.6	0.0
4	15600	0	0.0	5.6
4	0	0	0.0	0.0
4	0	0	0.0	0.0
4	0	0	0.0	0.0
4	0	0	0.0	0.0
SHOT	VEL	XOVER	THICK	DEPTH
5	1800	14	4.8	0.0
5	5000	53	19.0	4.8
5	15600	0	0.0	23.8
5	0	0	0.0	0.0
5	0	0	0.0	0.0
5	0	0	0.0	0.0
SHOT	VEL	XOVER	THICK	DEPTH
6	800	11	5.0	0.0
6	8600	32	8.6	5.0
6	15600	0	0.0	13.6
6	0	0	0.0	0.0
6	0	0	0.0	0.0
6	0	0	0.0	0.0

SHOT	VEL	XOVER	THICK	DEPTH
7	1100	30	7.4	0.0
7	8600	98	27.5	7.4
7	16500	0	0.0	34.9
7	0	0	0.0	0.0
7	0	0	0.0	0.0
7	0	0	0.0	0.0

SHOT	VEL	XOVER	THICK	DEPTH
8	800	3	1.3	0.0
8	5000	68	25.3	1.3
8	17400	0	0.0	26.6
8	0	0	0.0	0.0
8	0	0	0.0	0.0
8	0	0	0.0	0.0

SHOT	VEL	XOVER	THICK	DEPTH
9	800	5	2.1	0.0
9	5200	52	19.1	2.1
9	17400	0	0.0	21.2
9	0	0	0.0	0.0
9	0	0	0.0	0.0
9	0	0	0.0	0.0

SHOT	VEL	XOVER	THICK	DEPTH
10	1800	9	3.4	0.0
10	6400	98	32.9	3.4
10	16900	0	0.0	36.3
10	0	0	0.0	0.0
10	0	0	0.0	0.0
10	0	0	0.0	0.0

SHOT	VEL	XOVER	THICK	DEPTH
11	4600	62	12.5	0.0
11	6400	84	28.0	12.5
11	16600	0	0.0	40.5
11	0	0	0.0	0.0
11	0	0	0.0	0.0
11	0	0	0.0	0.0

SHOT	VEL	XOVER	THICK	DEPTH
12	1800	10	3.5	0.0
12	5200	88	31.8	3.5
12	16600	0	0.0	35.3
12	0	0	0.0	0.0
12	0	0	0.0	0.0
12	0	0	0.0	0.0

SHOT	VEL	XOVER	THICK	DEPTH
13	4600	66	13.9	0.0
13	6600	106	35.0	13.9
13	16800	0	0.0	48.9
13	0	0	0.0	0.0
13	0	0	0.0	0.0
13	0	0	0.0	0.0

SHOT	VEL	XOVER	THICK	DEPTH
14	4800	23	4.3	0.0
14	6400	110	36.8	4.3
14	16800	0	0.0	41.2
14	0	0	0.0	0.0
14	0	0	0.0	0.0
14	0	0	0.0	0.0

SHOT	VEL	XOVER	THICK	DEPTH
15	1200	25	10.7	0.0
15	7600	105	32.2	10.7
15	16800	0	0.0	42.9
15	0	0	0.0	0.0
15	0	0	0.0	0.0
15	0	0	0.0	0.0
SHOT	VEL	XOVER	THICK	DEPTH
16	800	11	4.9	0.0
16	7400	129	37.2	4.9
16	14800	0	0.0	42.2
16	0	0	0.0	0.0
16	0	0	0.0	0.0
16	0	0	0.0	0.0
SHOT	VEL	XOVER	THICK	DEPTH
17	1100	10	4.3	0.0
17	7600	119	33.7	4.3
17	14800	0	0.0	38.1
17	0	0	0.0	0.0
17	0	0	0.0	0.0
17	0	0	0.0	0.0
SHOT	VEL	XOVER	THICK	DEPTH
18	800	6	2.7	0.0
18	7600	75	21.3	2.7
18	14800	0	0.0	24.0
18	0	0	0.0	0.0
18	0	0	0.0	0.0
18	0	0	0.0	0.0
SHOT	VEL	XOVER	THICK	DEPTH
19	7800	130	36.2	0.0
19	14800	0	0.0	36.2
19	0	0	0.0	0.0
19	0	0	0.0	0.0
19	0	0	0.0	0.0
19	0	0	0.0	0.0
SHOT	VEL	XOVER	THICK	DEPTH
20	7800	154	44.1	0.0
20	15400	0	0.0	44.1
20	0	0	0.0	0.0
20	0	0	0.0	0.0
20	0	0	0.0	0.0
20	0	0	0.0	0.0
SHOT	VEL	XOVER	THICK	DEPTH
21	800	18	7.7	0.0
21	6800	60	21.1	7.7
21	15400	0	0.0	28.8
21	0	0	0.0	0.0
21	0	0	0.0	0.0
21	0	0	0.0	0.0

SHOT	VEL	XOVER	THICK	DEPTH
22	900	16	6.9	0.0
22	6400	55	17.7	6.9
22	15400	0	0.0	24.6
22	0	0	0.0	0.0
22	0	0	0.0	0.0
22	0	0	0.0	0.0
SHOT	VEL	XOVER	THICK	DEPTH
23	900	14	6.1	0.0
23	6400	77	24.8	6.1
23	15500	0	0.0	30.9
23	0	0	0.0	0.0
23	0	0	0.0	0.0
23	0	0	0.0	0.0
SHOT	VEL	XOVER	THICK	DEPTH
24	1200	12	4.7	0.0
24	5200	75	26.5	4.7
24	15600	0	0.0	31.3
24	0	0	0.0	0.0
24	0	0	0.0	0.0
24	0	0	0.0	0.0
SHOT	VEL	XOVER	THICK	DEPTH
25	1400	10	3.8	0.0
25	5200	72	25.5	3.8
25	15600	0	0.0	29.2
25	0	0	0.0	0.0
25	0	0	0.0	0.0
25	0	0	0.0	0.0
SHOT	VEL	XOVER	THICK	DEPTH
26	5000	45	16.0	0.0
26	15300	0	0.0	16.0
26	0	0	0.0	0.0
26	0	0	0.0	0.0
26	0	0	0.0	0.0
26	0	0	0.0	0.0
SHOT	VEL	XOVER	THICK	DEPTH
27	5100	86	30.2	0.0
27	15000	0	0.0	30.2
27	0	0	0.0	0.0
27	0	0	0.0	0.0
27	0	0	0.0	0.0
27	0	0	0.0	0.0
SHOT	VEL	XOVER	THICK	DEPTH
28	800	12	5.7	0.0
28	15000	0	0.0	5.7
28	0	0	0.0	0.0
28	0	0	0.0	0.0
28	0	0	0.0	0.0
28	0	0	0.0	0.0
SHOT	VEL	XOVER	THICK	DEPTH
29	800	10	4.3	0.0
29	5100	35	12.2	4.3
29	14800	0	0.0	16.5
29	0	0	0.0	0.0
29	0	0	0.0	0.0
29	0	0	0.0	0.0

SHOT	VEL	XOVER	THICK	DEPTH
30	1200	14	5.6	0.0
30	5400	30	10.2	5.6
30	14800	0	0.0	15.8
30	0	0	0.0	0.0
30	0	0	0.0	0.0
30	0	0	0.0	0.0
SHOT	VEL	XOVER	THICK	DEPTH
31	1000	10	4.1	0.0
31	5000	68	23.9	4.1
31	14800	0	0.0	28.0
31	0	0	0.0	0.0
31	0	0	0.0	0.0
31	0	0	0.0	0.0
SHOT	VEL	XOVER	THICK	DEPTH
32	4600	41	14.6	0.0
32	14200	0	0.0	14.6
32	0	0	0.0	0.0
32	0	0	0.0	0.0
32	0	0	0.0	0.0
32	0	0	0.0	0.0
SHOT	VEL	XOVER	THICK	DEPTH
33	800	12	5.1	0.0
33	4800	30	10.4	5.1
33	13800	0	0.0	15.5
33	0	0	0.0	0.0
33	0	0	0.0	0.0
33	0	0	0.0	0.0
SHOT	VEL	XOVER	THICK	DEPTH
34	900	25	11.7	0.0
34	13800	0	0.0	11.7
34	0	0	0.0	0.0
34	0	0	0.0	0.0
34	0	0	0.0	0.0
34	0	0	0.0	0.0
SHOT	VEL	XOVER	THICK	DEPTH
35	1200	21	9.7	0.0
35	14500	0	0.0	9.7
35	0	0	0.0	0.0
35	0	0	0.0	0.0
35	0	0	0.0	0.0
35	0	0	0.0	0.0
SHOT	VEL	XOVER	THICK	DEPTH
36	1200	18	7.2	0.0
36	5400	129	44.0	7.2
36	14800	0	0.0	51.2
36	0	0	0.0	0.0
36	0	0	0.0	0.0
36	0	0	0.0	0.0
SHOT	VEL	XOVER	THICK	DEPTH
37	1100	17	6.9	0.0
37	5400	40	13.6	6.9
37	14800	0	0.0	20.6
37	0	0	0.0	0.0
37	0	0	0.0	0.0
37	0	0	0.0	0.0

SHOT	VEL	XOVER	THICK	DEPTH
38	2800	24	6.5	0.0
38	5100	65	22.7	6.5
38	14800	0	0.0	29.2
38	0	0	0.0	0.0
38	0	0	0.0	0.0
38	0	0	0.0	0.0
SHOT	VEL	XOVER	THICK	DEPTH
39	1200	11	5.1	0.0
39	14800	0	0.0	5.1
39	0	0	0.0	0.0
39	0	0	0.0	0.0
39	0	0	0.0	0.0
39	0	0	0.0	0.0
SHOT	VEL	XOVER	THICK	DEPTH
40	2800	28	11.6	0.0
40	14800	0	0.0	11.6
40	0	0	0.0	0.0
40	0	0	0.0	0.0
40	0	0	0.0	0.0
40	0	0	0.0	0.0
SHOT	VEL	XOVER	THICK	DEPTH
41	1200	9	3.5	0.0
41	4900	37	13.3	3.5
41	15300	0	0.0	16.8
41	0	0	0.0	0.0
41	0	0	0.0	0.0
41	0	0	0.0	0.0
SHOT	VEL	XOVER	THICK	DEPTH
42	800	12	5.1	0.0
42	5200	38	13.5	5.1
42	15800	0	0.0	18.6
42	0	0	0.0	0.0
42	0	0	0.0	0.0
42	0	0	0.0	0.0
SHOT	VEL	XOVER	THICK	DEPTH
43	800	14	5.7	0.0
43	4000	45	17.4	5.7
43	15800	0	0.0	23.1
43	0	0	0.0	0.0
43	0	0	0.0	0.0
43	0	0	0.0	0.0
SHOT	VEL	XOVER	THICK	DEPTH
44	800	16	6.5	0.0
44	4000	70	27.0	6.5
44	15800	0	0.0	33.6
44	0	0	0.0	0.0
44	0	0	0.0	0.0
44	0	0	0.0	0.0

FILE NUMBER 85379
DATE OF CALCULATIONS 05/15/85

PROJECT: AUBURN ROAD LANDFILL
LOCATION: LONDONDERRY NH
DATE OF FIELD SURVEY: 04/08-11/85

REFRACTION LINE NUMBER: 3

SHOT	VEL	XOVER	THICK	DEPTH
1	1100	12	4.7	0.0
1	4600	49	17.0	4.7
1	13200	0	0.0	21.7
1	0	0	0.0	0.0
1	0	0	0.0	0.0
1	0	0	0.0	0.0
SHOT	VEL	XOVER	THICK	DEPTH
2	1100	12	4.7	0.0
2	4600	53	18.4	4.7
2	13200	0	0.0	23.1
2	0	0	0.0	0.0
2	0	0	0.0	0.0
2	0	0	0.0	0.0
SHOT	VEL	XOVER	THICK	DEPTH
3	1600	9	3.1	0.0
3	4600	47	16.3	3.1
3	13200	0	0.0	19.5
3	0	0	0.0	0.0
3	0	0	0.0	0.0
3	0	0	0.0	0.0
SHOT	VEL	XOVER	THICK	DEPTH
4	5000	50	16.8	0.0
4	13200	0	0.0	16.8
4	0	0	0.0	0.0
4	0	0	0.0	0.0
4	0	0	0.0	0.0
4	0	0	0.0	0.0

0309819

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WOBURN, MASSACHUSETTS 01801
(617) 935-6988

JOB Auburn Road - N.H.
SHEET NO. 1 OF
CALCULATED BY MJM DATE
CHECKED BY DATE
SCALE

LINE 01

STATION	ELEVATION
0 : 0+0	272.41
0 : 0+80	270.11
0 : 1+60	271.31
0 : 2+40	272.21

LINE 0A

STATION	ELEVATION
0A : 0+0	276.34
0A : 0+80	275.06
0A : 1+60	273.01
0A : 2+40	270.62

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8 STN. THIS PAGE

0309820

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JOB Auburn Road
SHEET NO. 6 OF
CALCULATED BY DATE
CHECKED BY DATE
SCALE

LINE 1

STATION	ELEVATION
1 : 0 + 0	281.63
1 : 0 + 80	272.53
1 : 1 + 60	270.49
1 : 2 + 40	273.16
1 : 3 + 20	268.28
1 : 4 + 00	267.92
1 : 4 + 80	269.56
1 : 5 + 60	260.96
1 : 6 + 40	260.73
1 : 7 + 20	260.40

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10 Points.

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JOB Auburn Road
SHEET NO. 8 OF
CALCULATED BY DATE
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SCALE

LINE 1A

STATION	ELEVATION
1A: 0+0	271.22
1A: 0+80	270.42
1A: 1+60	270.34
1A: 2+40	270.14
1A: 3+20	270.17
1A: 4+00	269.75
1A: 4+80	264.45
1A: 5+60	269.51
1A: 6+40	272.416
1A: 7+20	271.05
1A: 8+00	272.07
Ref. Point X	268.98 *
Ref. Point Y	265.66 *

Extra Points requested by NVS

13 Points

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JOB Auburn Road
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CALCULATED BY DATE
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LINE 1B

STATION	ELEVATION
1B : 0+0	259.20
1B : 0+80	261.38
1B : 1+60	260.97
1B : 2+40	260.41

4 POINTS.

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JOB Auburn Road
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LINE 1C

STATION	Elevation
1C: 0+0	263.76
1C: 0+80	264.94
1C: 1+60	265.86
1C: 2+40	263.86

4 Points.

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SCALE

LINE 2A CONT.

2A : 25+60	296.56
2A : 26+40	297.45
2A : 27+20	307.39
2A : 28+00	308.84
2A : 28+80	308.42
2A : 29+60	313.58
2A : 30+40	311.11
2A : 31+20	317.18
2A : 32+00	323.56
2A : 32+80	329.25
2A : 33+60	333.39

11 Points

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JOB Auburn Road
SHEET NO. 4 OF
CALCULATED BY MJM DATE
CHECKED BY DATE
SCALE

LINE 2A CONT.

2A: 12+80	282.42
2A: 13+60	287.95
2A: 14+40 (A)	284.25
2A: 14+40 (B)	283.64
2A: 15+20	292.07
2A: 16+00	296.92
2A: 16+80	287.91
2A: 17+60	286.40
2A: 18+40	286.36
2A: 19+20	284.21
2A: 20+00	283.78
2A: 20+80	285.53
2A: 21+60	292.43
2A: 22+40	290.99
2A: 23+20	292.16
2A: 24+00	290.98
2A: 24+80	299.61

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JOB AUBURN ROAD
SHEET NO. 3 OF
CALCULATED BY MJM DATE
CHECKED BY DATE
SCALE

LINE 2A

STATION	ELEVATION
2A: 0+0	272.43
2A: 0+80	272.51
2A: 1+60	285.98
2A: 2+40	283.41
2A: 3+20	277.93
2A: 4+00	279.06
2A: 4+80	277.34
2A: 5+60	277.00
2A: 6+40	281.19
2A: 7+20	281.79
2A: 8+00	282.15
2A: 8+80	281.12
2A: 9+60	282.46
2A: 10+40	282.85
2A: 11+20	283.25
2A: 12+00	282.74

16 POINTS THIS sheet.

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JOB Auburn Road NH
SHEET NO. 2 OF
CALCULATED BY MJM DATE
CHECKED BY DATE
SCALE

LINE 2

STATION	ELEVATION
2:0+0	275.89
BOT. OF STREAM	270.72
2:0+80	277.00
2:1+60	275.86
2:2+40	275.98
2:3+20	275.67
2:4+00	273.87
2:4+80	275.13
2:5+60	272.82
2:6+40	272.7
BED ROCK REF. POINT	283.896

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11 STN. THIS PAGE

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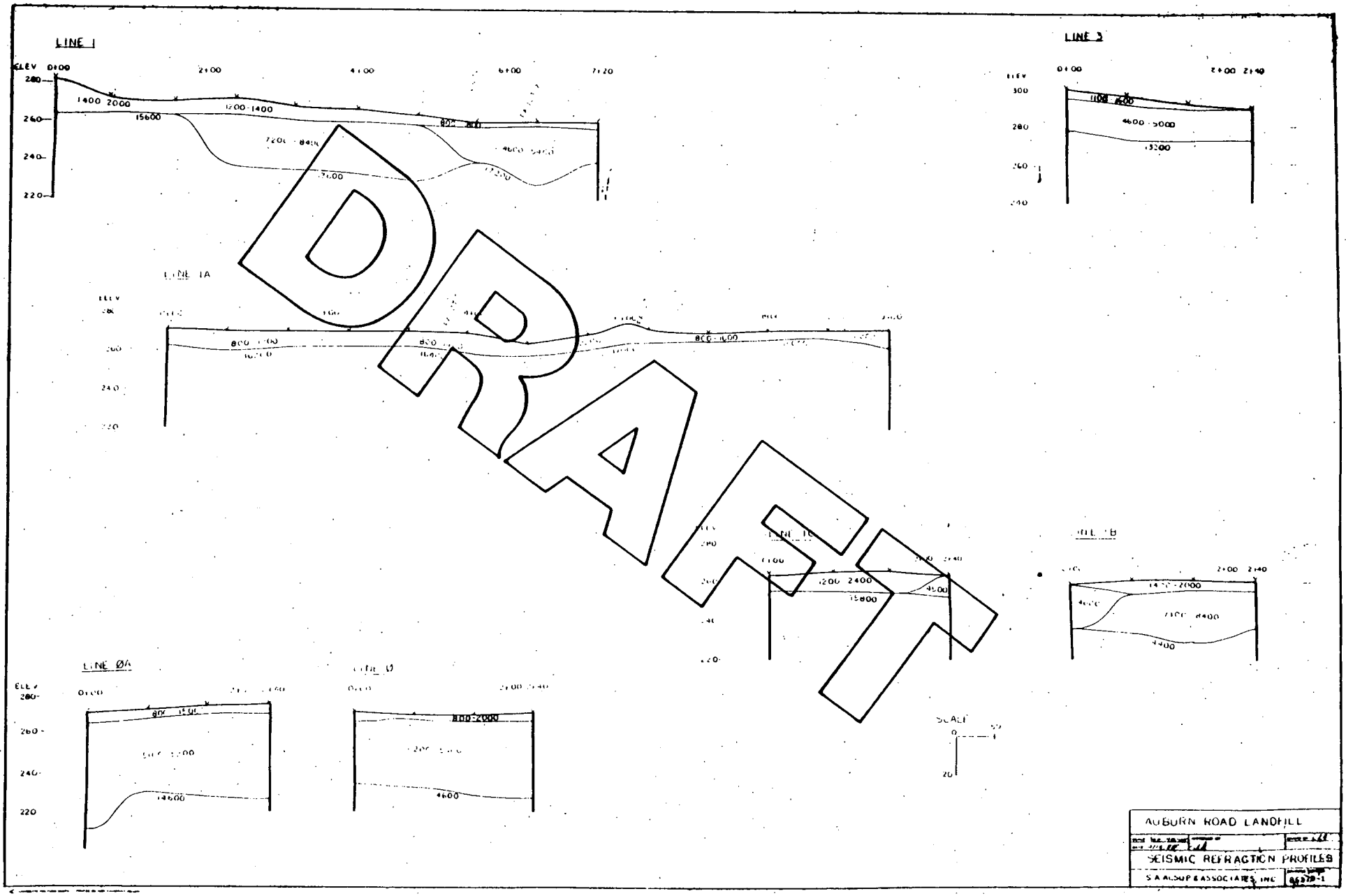
JOB Auburn Road
SHEET NO. 10 OF
CALCULATED BY DATE
CHECKED BY DATE
SCALE

LINE 3

STATION	ELEVATION
3 : 0+0	300.07
3 : 0+80	297.11
3 : 1+60	292.47
3 : 2+40	289.36

4 Points


LINE 1
LINE 3
LINE 1A
LINE 1B
LINE ØA
LINE Ø
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SCALE
AUBURN ROAD LANDFILL
SEISMIC REFRACTION PROFILES
SAIC/DP & ASSOCIATES, INC

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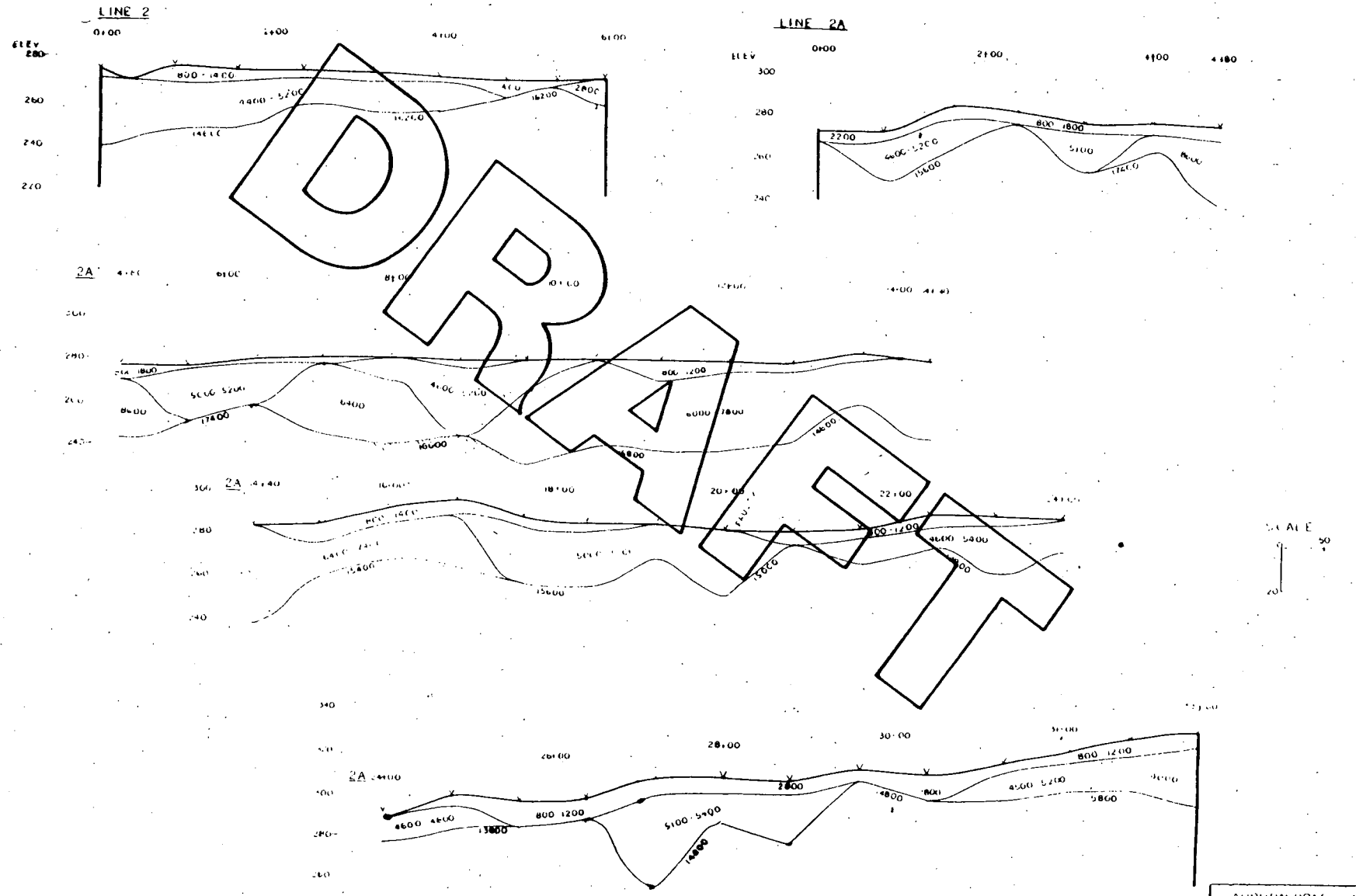

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AUBURN ROAD LANDFILL

SEISMIC REFRACTION PROFILES

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APPENDIX M

AIR MONITORING

SECTIONS IN APPENDIX M

- AIR MONITORING METHODOLOGY
- NUS METEOROLOGICAL/SAMPLING DATA
- AIR MONITORING RESULTS (NUS)
- AIR MONITORING RESULTS (STATE OF NEW HAMPSHIRE)
- AIR MONITORING RESULTS (EPA)

TABLES IN APPENDIX M

M-1 APPROXIMATED RETENTION TIME VOLUME AT 38°C (100°F)
M-2 NUS METEOROLOGICAL/SAMPLING DATA (7-10-85)
M-3 NUS METEOROLOGICAL/SAMPLING DATA (7-17-85)
M-4 NUS AIR SAMPLING SUMMARY
M-5 AIR MONITORING RESULTS (7-10-85)
M-6 AIR MONITORING RESULTS (7-17-85)
M-7 U.S. EPA AIR MONITORING RESULTS (9-31-81)

The air sampling at the Auburn Road Landfill Site followed procedures that were established at the Region I NUS/FIT Office for the successful completion of ambient air sampling at hazardous waste sites and or waste facilities. The logic and rationale of the air sampling project that occurred at the Auburn Road Landfill Site for the detection of volatile organic compounds is described in this section.

Air sampling station locations were determined so as to provide a database for upwind, downwind, and on-site sampling stations. Ten sampling stations were established. A charcoal tube and a Tenax tube sample were taken at each station location for samples to be analyzed (by CLP) for volatile organic compounds. Only Tenax tubes were used for NUS/FIT in-house volatile organic analyses. All of the Tenax samples consisted of main and back-up tubes attached in series, while the charcoal samples had back-up tubes attached on-site only.

When the air sampling was complete, all of the sampling tubes were recovered and preserved until shipment. Sample preservation consisted of capping both ends of the tubes with polyethylene caps, placing the tubes in a VOA vial and placing the vial in a cooler containing ice.

The contract laboratory used EPA method no. 624 to analyze the Tenax and charcoal filled stainless steel tubes. This method involved thermally desorbing each tube and subsequently injecting an aliquot into a gas chromatograph/mass spectrometer (GC/MS). The mass spectrometer is a type of instrument that is used to positively identify a peak that has been quantitated by the gas chromatograph. The instrument is designed to bring about the ionization and fragmentation of an organic molecule by bombarding it with high-energy particles, such as electrons, and the resulting mixture of molecular ionic fragments are analyzed by determining their mass/charge ratio (m/e) and measuring their relative abundances. The intensity and mass/charge ratio (m/e) is recorded as a chart called a mass spectrum.

Tenax tubes used for NUS/FIT screening of volatile organic compounds were thermally desorbed in a similar manner as those destined for a contract laboratory. Instead, aliquots were injected into a Photovac 10A10GC, yielding qualitative results for most compounds. Separate standards were run for benzene and toluene to permit semi-quantitation of data.

The method for establishing a comprehensive air monitoring program is described below.

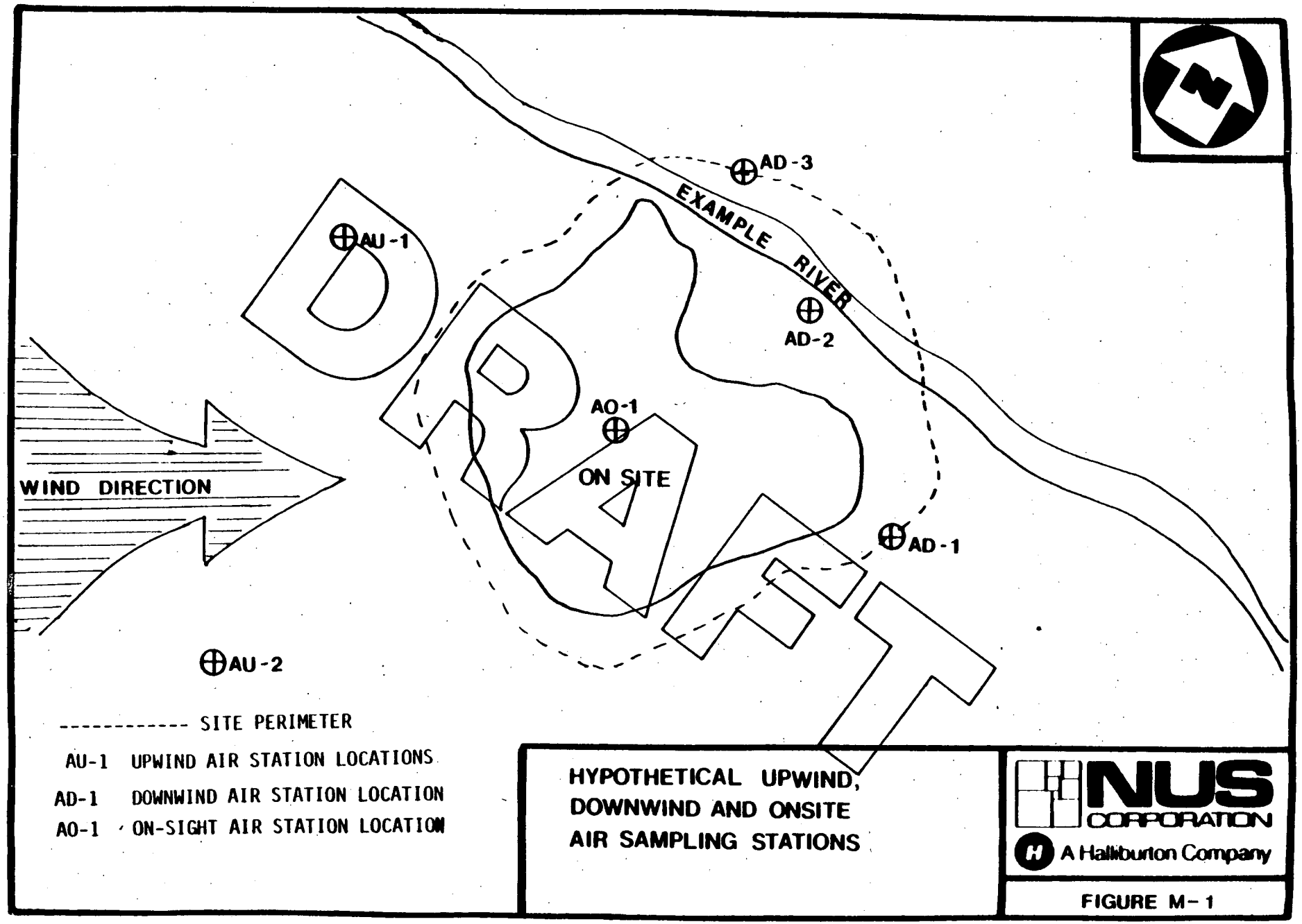
- Set up and activate the 2361 Wind Recording System at some central location on-site to determine upwind and downwind direction. Record in the field logbook the wind direction, speed, time of reading, etc.

- With upwind direction in hand, set out to establish upwind sample location stations. At least two locations were established to maximize upwind coverage due to slight changes in wind direction. Refer to Figure M-1.

- At each upwind location, one air pump equipped with a Tenax solid sorbent tube and back-up section were installed at a height of approximately 4 to 6 feet above the ground surface (representative of the breathing zone). An air pump equipped with a charcoal solid sorbent tube (no back-up required here) was installed directly adjacent to the Tenax station.

Background samples were intended to assess the local pollutant levels in the area. It was intended that the background samples should not be affected by any of the suspected pollutants from the site of concern. Background samples were placed at least 1/4 mile upwind of the site. When setting the background stations, it was important to avoid areas which could have a negative effect on the sampling such as areas where gasoline is being stored.

The on-site or "hot spot" sample was used to monitor the concentration of pollutants on the site. It was located near a "hot spot" that had elevated levels of



HYPOTHETICAL UPWIND, DOWNWIND AND ONSITE AIR SAMPLING STATIONS

NUS CORPORATION
A Halliburton Company

FIGURE M-1

the volatile organic compounds of interest. If no "hot spots" were found on the site, this station would be located in the physical middle of the site (directly adjacent to the 2361 Wind Recording System). As with all sampling stations, they were assembled at a height of 4 to 6 feet. One air pump was located there for each type of solid sorbent utilized (each adsorbant tube contained a back-up tube also).

Tenax adsorbant tubes were used because of their efficiency in collecting toluene and other volatile aromatic compounds higher in molecular weight. Charcoal tubes were utilized because of their efficiency in collecting compounds of low molecular weight. Approximately 10 liters of air were sampled when using Tenax tubes; 30 liters were sampled for charcoal tubes. Both types of samples were collected over a period of 4 to 8 hours. An attempt was made to collect specific air volumes for the purpose of maximizing the effectiveness of the adsorbant tubes to certain groups of compounds suspected at the site. The retention volumes listed in Table M-1 were used in conjunction with the following equations to determine the flow rates required for sampling with each type of adsorbant tube at a certain temperature.

below 29°C $\quad Q = \frac{.15V}{t}$

above 29°C $\quad Q = \frac{.075V}{t}$

Where: Q = flow rate to be used in cubic centimeters per minute
V = retention volume (individual contaminant - Table M-1)
t = sampling time in minutes

Three downwind station locations were selected in order to maximize the downrange ambient air collection, through slight changes in wind direction. When wind direction shifted significantly for longer than 15 minutes, the stations were relocated accordingly and noted in the field logbook along with rationale for the changes.

TABLE M-1

APPROXIMATED RETENTION VOLUME AT 38°C (100°F)
(liters/gram of Tenax)

Amines	dimethylamine	0.8
	isobutylamine	9
	t-butylamine	0.8
	di-(n-butyl)amine	1200
	pyridine	56
	aniline	1000
Ethers	diethyl ether	4
	propylene oxide	3
Esters	ethyl acetate	20
	methyl acrylate	20
	methyl methacrylate	70
Ketones	acetone	3
	methyl ethyl ketone	10
	methyl vinyl ketone	10
	acetophenone	860
Aldehydes	acetaldehyde	0.6
	benzaldehyde	920
Alcohols	methanol	0.3
	n-propanol	4
	allyl alcohol	5
Aromatics	benzene	19
	toluene	97
	ethylbenzene	200
	cumene	440
Hydrocarbons	n-hexane	5
	n-heptane	20
	1-hexene	5
	1-heptene	40
	2,2-dimethylbutane	0.1
	2,4-dimethylpentane	20

TABLE M-1
APPROXIMATED RETENTION VOLUME AT 38°C (100°F)
(liters/gram of Tenax)
PAGE TWO

	4-methyl-1-pentene	3
	cyclohexane	8
Halogenated hydlrocarbons	methyl chloride	2
	methyl bromide	0.8
	vinyl chloride	0.5
	methyl chloride	2
	chloroform	8
	carbon tetrachloride	8
	1,2-dichloroethane	10
	1,1,1-trichloroethane	6
	tetrachloroethylene	80
	trichloroethylene	20
	1-chloro-2-methylpropene	6
	3-chloro-2-methylpropene	7
	1,2-dichloropropane	30
	1,3-dichloropropane	90
	epichlorohydrin (1-chloro-2,3-epoxypropane)	30
	3-chloro-1-butene	5
	allyl chloride	4
	4-chloro-1-butene	10
	1-chloro-2-butene	20
	chlorobenzene	150
	o-dichorobenzene	300
	m-dichlorobenzene	400
	benzyl chloride	500
	bromoform	100
	ethylene dibromide	60
	bromobenzene	300
Halogenated ethers	2-chloroethyl ethyl ether	70
	Bis-(chloromethyl)ether	120
Nitrosamines	N-nitrosodimethylamine	90
	N-nitrosodiethylamine	420

TABLE M-1
APPROXIMATED RETENTION VOLUME AT 38°C (100°F)
(liters/gram of Tenax)
PAGE THREE

Oxygenated hydrocarbons	acrolein	3
	glycidaldehyde	40
	propylene oxide	4
	butadiene diepoxide	210
	cyclohexene oxide	330
	styrene oxide	930
	phenol	330
	acetophenone	600
	B-propiolactone	100
Nitrogenous hydrocarbons	nitromethane	9
	aniline	680
Sulfur compounds	diethyl sulfate	7
	ethyl methane sulfate	830

Source: Krost, Kenneth J. and Pellizzari, Edo D "Analysis of Hazardous Organic Emissions," North Carolina: Research Triangle Park, 1982.

R.H. Brown and C.J. Purnell. Collection and Analysis of Trace Organic Vapor Pollutants in Ambient Atmospheres. London: Occupational Hygiene and Medicine Laboratories, 1979.

The time and date of each sample pump operation were recorded in the field logbook. During the run time for a survey (typically 4 to 8 hours), the flow rates of each pump were inspected when wind direction, temperature and humidity were recorded on an hourly basis.

Before air samples were collected, the sample collection tubes had been thoroughly cleaned by thermal desorption through a Century System Thermal Desorber. Each sample tube was desorbed through the instrument at approximately 200°C. This procedure was performed until a one milliliter injection into the short column of the Photovac (attenuation-50) yielded a contamination peak of 1 1/2 inches or less.

Following tube desorption, the sample tube was then capped at both ends (with supplied polyethylene caps or teflon tape) and placed in a 44 ml septumed VOA vial for storage and transport to the site. The outside of the VOA vial was marked in such a way as to keep track of the tube for calibration purposes and location number. Since Tenax is easily contaminated, the tubes were not taken from their respective VOA vials until just before they were attached to the sampling pump at the desired sampling location.

Each pump required a pre-runtime and post-runtime calibration.

Pre-Runtime Calibration

The sample collection tube (front and back section) was connected to a low volume pump via tygon tubing. The flow direction was marked on the outside of the sample tube when calibrating (making sure not to use any ink containing volatile organic compounds). The opposite end of the sample collection tube was connected to a tygon tube that was also connected to 100 cc/min bubble meter.

The low volume pump was started and timing with a stopwatch began on the volume of air being collected. The time it took to initially reach a volume of 10 cc was recorded. The volume of air collected over a 1 minute time period was calculated. Then the resultant number (cc/min) was multiplied by 60 to arrive at the volume of air collected over a 1 hour time period. As mentioned earlier, the ideal collection time period for an air monitoring survey is four to eight hours.

Ideal volumes obtained during this period are approximately 30 liters for charcoal and approximately 10 liters for Tenax (if the contaminants have not been determined). Pumps were adjusted to obtain this volume accordingly.

A minimum of three calibration runs were required for pre-runtime calibration. The time, temperature and relative humidity was recorded before the initialization of sampling.

Post-Runtime Calibration

Immediately after sample collection, a post-runtime pump calibration was required. The post-runtime calibration was conducted in the same manner as the pre-runtime calibration exept that no final adjustments were made to pump apparatus.

Three readings of the flow rate through the sample tube were required for post-runtime calibration. The average of the flow rates was then reported in the logbook. With the average pre-runtime calibration and the average post-runtime calibraton in hand, the average flow rate was calculated and the value was used to calculate the total flow collected over the four to eight hour run time. This value was recorded in the field logbook.

When sample collection was completed, the instrumentation was recovered and each sample tube was capped at both ends, placed in a VOA vial for storage or shipment and iced (in a cooler). Wind direction, wind speed, temperature, humidity and time of pump shut down were all recorded in the logbook.

Before shipment to the designated laboratory, the VOA vials containing the capped sample tubes were packed in a metal can with a small amount of activated charcoal on the bottom. The VOA vials were also cushioned so as to not touch each other. The metal can(s) were then placed in a cooler with ice (bagged) and cushioned with vermiculite. Since the effects of holding times on certain compounds are unknown, samples were shipped shortly after collection and analysis was performed as soon as possible after arrival at the laboratory.

When the analyses were completed (EPA method 624), the laboratory delivered the results in nanograms. The following formula was used to convert the results to parts per billion (at 20°C and 760 mm Hg):

$$\frac{\text{nanograms of compound in sample} \times 24.042 \text{ nanoliters/nanomole}}{(\text{molecular weight of contaminant-nanograms/nanomole}) \times (\text{volume of sample collected in liters})}$$

24.042 nanoliters/nanomole would become 24.48 at 25°C.

Tenax tubes used for NUS/FIT in-house screening of volatile organic compounds were also capped at both ends after air samples were collected. They were immediately placed in VOA vials for storage and placed on ice in a cooler. Analyses were conducted on the day after sampling.

AIR MONITORING RESULTS (NUS)

TABLE M-2
NUS METEOROLOGICAL/SAMPLING DATA (7-10-85)

MET STATION STRIP CHART DATA

Average Wind Speed (mph)	Average Wind Direction
1.71	from the southeast

TEMPERATURE AND RELATIVE HUMIDITY

Time (hours)	Relative Humidity(%)	Temperature(°C)
0915	52.1	27.6
1025	51.0	28.0
1130	51.0	28.5
1230	47.1	29.8
1330	45.0	30.4
1430	44.2	30.7
1530	44.0	31.2

TABLE M-2
NUS METEOROLOGICAL/SAMPLING DATA (7-10-85)
PAGE TWO

The air sampling stations were determined by the wind direction and by predetermined areas identified on the site by the NUS project manager. A total of ten sampling stations were established. Charcoal and Tenax tube samples were collected at each location. All Tenax samples consisted of main and back-up tubes attached in series, while charcoal samples had back-up tubes attached on-site only.

Sampling stations are described below and depicted in Chapter 7.

1AS-1 - Next to the MET station (approximately at the physical middle of the site).

1AS-2 - At the solid waste landfill area (a predetermined source area)

1AS-3 - At the town dump area (a predetermined source area)

1AS-4 - Near the sand pit (a predetermined source area)

1AS-5 - Near the gravel pit at the southeast corner of the site (a predetermined source area)

1AS-6 - Between station 1AS-5 and the site access road. The station was located on the embankment (a predetermined source area)

1AS-7 - Off site (downwind) near the pump house

1AS-8 - Off site, near the dirt road gate below the trailer park (also next to the beaver pond - downwind)

1AS-9 - Off site, near the site entrance - across the street between two houses (in the woods)

1AS-10 - Off site and upwind - next to Old Derry Road (southwest of site)

TABLE M-3
NUS METEOROLOGICAL/SAMPLING DATA (10-17-85)
MET STATION STRIP CHART DATA

Average Wind Speed (mph)	Average Wind Direction
1.80	from the north

TEMPERATURE AND RELATIVE HUMIDITY

Time (hours)	Relative Humidity (%)	Temperature (°C)
1020	35	25.9
1115	31	26.9
1210	34	26.4
1313	28	28.4
1425	26	30.3
1514	26	30.2
1605		31.0

TABLE M-3
NUS METEOROLOGICAL/SAMPLING DATA (7-17-85)
PAGE TWO

The air sampling stations were determined by the wind direction and by predetermined areas identified on the site by the NUS project manager. A total of 11 sampling stations were established. Only Tenax tube samples were collected at each location. All Tenax samples consisted of a main and back-up tube attached in series.

Sampling stations are described below and depicted in Chapter 7.

2AS-1 - MET station (approximate physical middle of the site).

2AS-2 - Solid waste landfill area (a predetermined source area)

2AS-3 - Town dump area (a predetermined source area)

2AS-4 - Near the sand pit (a predetermined source area)

2AS-5 - Near the gravel pit at the southeast corner of the site (a predetermined source area)

2AS-6 - Between station No. 5 and the site access road. The station was located approximately three feet off the dirt road (a predetermined source area)

2AS-7 - Off site (upwind) near the pump house

2AS-8 - Off site (upwind) in the trailer park at the dirt road intersection.

2AS-9 - Off site (downwind) approximately 100 feet east of Old Derry Road/Auburn Road intersection.

2AS-10 - Off site (downwind) off Old Derry Road (southwest of site)

2AS-11 - Off site (downwind) off Old Derry Road.

TABLE M-4
NUS AIR SAMPLING SUMMARY

Samples Collected on 7-10-85						Samples Collected on 7-17-85				
Station	Sample Number	Total Flow (liters)	Number* of Tubes	Tenax	Charcoal	Station	Sample Number	Total Flow (liters)	Number* of Tubes	Tenax
1AS-1	12510	12.00	2	X		2AS-1	13432	13.44	2	X
1AS-1	12511	32.04	2		X	2AS-1	13433	12.84	2	X
1AS-2	12512	12.00	2	X		2AS-2	13434	13.44	2	X
1AS-2	12513	26.40	2		X	2AS-3	13435	13.80	2	X
1AS-3	12514	11.40	2	X		2AS-4	13436	12.00	2	X
1AS-3	12515	30.60	2		X	2AS-5	13437	12.72	2	X
1AS-4	12516	12.00	2	X		2AS-6	13438	13.32	2	X
1AS-4	12517	30.36	2		X	2AS-7	13427	12.48	2	X
1AS-5	12518	10.80	2	X		2AS-8	13428	11.04	2	X
1AS-5	12519	30.96	2		X	2AS-9	13429	10.92	2	X
1AS-6	12520	19.20	2	X		2AS-10	13430	10.56	2	X
1AS-6	12521	31.20	2		X	2AS-11	13431	11.04	2	X
1AS-7	12522	10.85	2	X		Blank	13439	-	2	X
1AS-7	12523	30.96	1		X					
1AS-8	12524	11.40	2	X						
1AS-8	12525	31.20	1		X					
1AS-9	12526	12.20	2	X						
1AS-9	12527	32.40	1		X					
1AS-10	12528	12.84	2	X						
1AS-10	12529	32.40	1		X					
Blank	12530	-	1	X						
Blank	12531	-	1		X					

Notes: Average Winds
(7-10-85) from SE at 1.7 mph
(7-17-85) from N at 1.8 mph
* 2 tubes indicates use of a main tube and backup tube (A & B).
1 tube indicates use of main tube only.

TABLE M-5
AIR MONITORING RESULTS (7-10-85)
Tenax/Charcoal Sampling
Volatile Organic Analysis
All results reported in ug/l (ppb)

Station		IAS-1				IAS-2				IAS-3			
Sample Number		12510A	12510B	12511A	12511B	12512A	12512B	12513A	12513B	12514A	12514B	12515A	12515B
Tenax/Charcoal		T	T	C	C	T	T	C	C	T	T	C	C
Volatile Compounds	CRDL (ug/l)												
Chloromethane	10	-	-	-	-	-	-	-	-	-	-	-	-
Bromomethane	10	-	-	-	-	-	-	-	-	-	-	-	-
Vinyl Chloride	10	-	-	-	-	-	-	-	-	-	-	-	-
Chloroethane	10	-	-	-	-	-	-	-	-	-	-	-	-
Methylene Chloride	5	-	-	-	-	-	-	-	-	-	-	-	-
Acetone	10	-	-	-	-	-	-	-	-	-	-	-	-
Carbon Disulfide	5	-	-	-	-	-	-	-	-	-	-	-	-
1,1-Dichloroethene	5	-	-	-	-	-	-	-	-	3.1J	-	-	-
1,1-Dichloroethane	5	-	-	-	-	-	-	-	-	-	-	0.7J	-
Trans-1,2-Dichloroethene	5	-	-	-	-	-	-	-	-	-	-	-	-
Chloroform	5	-	-	-	-	-	-	-	-	-	-	-	-
1,2-Dichloroethane	5	-	-	-	-	-	-	-	-	-	-	-	-
2-Butanone	10	-	-	-	-	1.2J	-	-	-	-	-	-	-
1,1,1-Trichloroethane	5	-	-	5.7J	-	-	-	-	-	-	-	-	-
Carbon Tetrachloride	5	-	-	-	-	-	-	-	-	-	-	-	-
Vinyl Acetate	10	-	-	-	-	-	-	-	-	-	-	-	-
Bromodichloromethane	5	-	-	-	-	-	-	-	-	-	-	-	-
1,1,2,2-Tetrachloroethane	5	-	-	-	-	-	-	-	-	-	-	-	-
1,2-Dichloropropane	5	-	-	-	-	-	-	-	-	-	-	-	-
Trans- 1,3-Dichloropropene	5	-	-	-	-	-	-	-	-	-	-	-	-
Trichloroethene	5	-	-	0.9J	-	-	-	-	-	-	-	-	-
Dibromochloromethane	5	-	-	-	-	-	-	-	-	-	-	-	-
1,1,2-Trichloroethane	5	-	-	-	-	-	-	-	-	-	-	-	-
Benzene	5	-	-	0.3J	0.1J	0.3J	-	-	-	0.5J	-	0.3J	-
Cis- 1,3-Dichloropropene	5	-	-	-	-	-	-	-	-	-	-	-	-
2-Chloroethylvinyl Ether	10	-	-	-	-	-	-	-	-	-	-	-	-
Bromoform	5	-	-	-	-	-	-	-	-	-	-	-	-
2-Hexanone	10	-	-	-	-	-	-	-	-	-	-	-	-
4-Methyl-2-Pentanone	10	-	-	-	-	-	-	-	-	-	-	-	-
Tetrachloroethene	5	0.3J	-	0.1J	-	0.3J	-	-	-	2.4J	-	-	-
Toluene	5	1.6J	-	0.7J	0.4J	1.4J	-	-	-	0.3J	-	0.2J	-
Chlorobenzene	5	-	-	-	-	-	-	-	-	1.9J	0.6J	15.6J	0.1J
Ethylbenzene	5	*	-	*	-	*	-	-	-	-	-	-	-
Styrene	5	*	-	-	-	*	-	-	-	*	*	*	-
Total Xylenes	5	*	-	*	-	*	-	-	-	15.0J	-	0.3J	-
										*	*	*	-
Dilution Factor		1	1	1	1	1	1	1	1	1	1	1	1

- = Not detected
J = Quantitation is approximate due to quality control review (data validation)
* = Value is rejected due to blank contamination identified in quality control review.
CRDL = Contract required detection limit.
"A" Designation on sample number indicates main tube.
"B" Designation on sample number indicates back up tube.

Note: The following information has been established by the Contract Laboratory conducting the analyses and approved by the U.S. EPA. Quantification of all compounds may be in error by an average factor of +/- 20 percent and may be as great as a factor of five. Compounds with the highest error include acetone, 1,2-dichloroethane, 2-butanone, 2-chloroethylvinylether, 2-hexanone and 4-methyl-2-pentanone.

TABLE M-5
AIR MONITORING RESULTS (7-10-85)
Tenax/Charcoal Sampling
Volatile Organic Analysis All results reported in ug/l (ppb)
PAGE TWO

Station		IAS-4				IAS-5				IAS-6			
Sample Number		12516A	12516B	12517A	12517B	12518A	12518B	12519A	12519B	12520A	12520B	12521A	12521B
Tenax/Charcoal		T	T	C	C	T	T	C	C	T	T	C	C
Volatile Compounds	CRDL (ug/l)												
Chloromethane	10	-	-	-	-	-	-	-	-	-	-	-	-
Bromomethane	10	-	-	-	-	-	-	-	-	-	-	-	-
Vinyl Chloride	10	-	-	-	-	-	-	-	-	-	-	-	-
Chloroethane	10	-	-	-	-	-	-	-	-	-	-	-	-
Methylene Chloride	5	2.3J	-	-	-	-	-	-	-	-	-	-	-
Acetone	10	-	-	-	-	-	-	-	-	11.6J	-	-	-
Carbon Disulfide	5	5.4J	-	-	-	-	-	-	-	-	-	-	-
1,1-Dichloroethene	5	-	-	-	-	-	*	1.3J	-	-	-	-	-
1,1-Dichloroethane	5	-	-	-	-	-	-	-	-	-	-	-	-
Trans-1,2-Dichloroethene	5	-	-	-	-	-	*	-	-	-	-	-	-
Chloroform	5	-	-	-	-	-	-	-	-	-	-	-	-
1,2-Dichloroethane	5	-	-	-	-	-	-	-	-	-	-	-	-
2-Butanone	10	-	-	-	-	-	-	-	-	-	-	-	-
1,1,1-Trichloroethane	5	-	-	0.1J	-	-	*	-	-	-	-	-	-
Carbon Tetrachloride	5	-	-	-	-	-	-	-	-	-	-	-	-
Vinyl Acetate	10	-	-	-	-	-	-	-	-	-	-	-	-
Bromodichloromethane	5	-	-	-	-	-	-	-	-	-	-	-	-
1,1,2,2-Tetrachloroethane	5	-	-	-	-	-	-	-	-	-	-	-	-
1,2-Dichloropropane	5	-	-	-	-	-	-	-	-	-	-	-	-
Trans- 1,3-Dichloropropene	5	-	-	-	-	-	-	-	-	-	-	-	-
Trichloroethene	5	-	-	-	-	-	*	-	-	-	-	-	-
Dibromochloromethane	5	-	-	-	-	-	-	-	-	-	-	-	-
1,1,2-Trichloroethane	5	-	-	-	-	-	-	-	-	-	-	-	-
Benzene	5	-	-	-	-	-	-	-	-	-	-	-	-
Cis- 1,3-Dichloropropene	5	-	-	-	-	-	-	-	-	0.2J	-	-	-
2-Chloroethylvinyl Ether	10	-	-	-	-	-	-	-	-	-	-	-	-
Bromoform	5	-	-	-	-	-	-	-	-	-	-	-	-
2-Hexanone	10	-	-	-	-	-	-	-	-	-	-	-	-
4-Methyl-2-Pentanone	10	-	-	-	-	-	-	-	-	-	-	-	-
Tetrachloroethene	5	0.3J	-	-	-	0.2J	-	-	-	0.3J	-	-	-
Toluene	5	1.4J	-	-	-	1.3J	-	-	-	1.8J	-	-	-
Chlorobenzene	5	-	-	-	-	-	-	-	-	-	-	-	-
Ethylbenzene	5	*	-	-	-	*	-	-	-	*	*	-	-
Styrene	5	*	-	-	-	*	-	-	-	-	*	-	-
Total Xylenes	5	*	-	-	-	*	-	-	-	*	-	-	-
Dilution Factor		1	1	1	1	1	1	1	1	1	1	1	1

- = not detected
J = Quantitation is approximate due to quality control review (data validation)
* = Value is rejected due to blank contamination identified in quality control review.
CRDL = Contract required detection limit.
"A" Designation on sample number indicates main tube.
"B" Designation on sample number indicates back up tube.
Note: The following information has been established by the Contract Laboratory conducting the analyses and approved by the U.S. EPA. Quantification of all compounds may be in error by an average factor of +/- 20 percent and may be as great as a factor of five. Compounds with the highest error include acetone, 1,2-dichloroethane, 2-butanone, 2-chloroethylvinylether, 2-hexnone and 4-methyl-2-pentanone.

TABLE M-5
AIR MONITORING RESULTS (7-10-85)
Tenax/Charcoal Sampling
Volatile Organic Analysis All results reported in ug/l (ppb)
PAGE THREE

Station		IAS-7			IAS-8			IAS-9			IAS-10			Blank	Blank
Sample Number		12522A	12522B	12523A	12524A	12524B	12525A	12526A	12526B	12527A	12528A	12528B	12529A	12530	12531
Tenax/Charcoal		T	T	C	T	T	C	T	T	C	T	T	C	T	C
Volatile Compounds	CRDL (ug/l)													(in ng/tube)	
Chloromethane	10	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Bromomethane	10	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Vinyl Chloride	10	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Chloroethane	10	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Methylene Chloride	5	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Acetone	10	-	*	-	-	-	-	-	-	-	-	-	-	-	-
Carbon Disulfide	5	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1,1-Dichloroethene	5	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1,1-Dichloroethane	5	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Trans-1,2-Dichloroethene	5	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Chloroform	5	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1,2-Dichloroethane	5	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2-Butanone	10	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1,1,1-Trichloroethane	5	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Carbon Tetrachloride	5	-	-	-	-	-	-	-	-	-	-	-	0.1J	-	-
Vinyl Acetate	10	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Bromodichloromethane	5	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1,1,2,2-Tetrachloroethane	5	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1,2-Dichloropropane	5	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Trans- 1,3-Dichloropropene	5	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Trichloroethene	5	*	-	-	-	-	-	-	-	-	-	-	-	-	-
Dibromochloromethane	5	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1,1,2-Trichloroethane	5	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Benzene	5	0.2J	-	-	-	-	-	-	-	-	-	-	-	-	-
Cis- 1,3-Dichloropropene	5	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2-Chloroethylvinyl Ether	10	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Bromoform	5	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2-Hexanone	10	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4-Methyl-2-Pentanone	10	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Tetrachloroethene	5	-	-	-	0.2J	-	-	0.2J	-	-	0.1J	-	-	-	-
Toluene	5	3.2J	1.2J	-	2.2J	0.7J	-	1.6J	-	-	1.2J	-	-	53J	-
Chlorobenzene	5	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ethylbenzene	5	*	*	-	*	-	-	*	-	-	*	-	-	120J	22J
Styrene	5	*	*	-	3.9J	*	-	-	*	-	*	-	-	-	-
Total Xylenes	5	-	-	-	*	*	-	-	-	-	-	-	*	300J	75J
Dilution Factor		1	1	1	1	1	1	1	1	1	1	1	1	1	1

- = not detected
J = Quantitation is approximate due to quality control review (data validation)
* = Value is rejected due to blank contamination identified in quality control review.
CRDL = Contract required detection limit.
"A" Designation on sample number indicates main tube.
"B" Designation on sample number indicates back up tube.

Note: The following information has been established by the Contract Laboratory conducting the analyses and approved by the U.S. EPA. Quantification of all compounds may be in error by an average factor of +/- 20 percent and may be as great as a factor of five. Compounds with the highest error include acetone, 1,2-dichloroethane, 2-butanone, 2-chloroethylvinylether, 2-hexnone and 4-methyl-2-pentanone.

TABLE M-6
AIR MONITORING RESULTS (7-17-85)
Tenax Sampling - NUS/FIT In-House Screening[a]
Volatile Organic Analysis
All results reported in ug/l (ppb)

Station		2AS-1		2AS-1 (Dup)		2AS-2		2AS-3		2AS-4		2AS-5		2AS-6	
Sample Number		13432A	13432B	13433A	13433B	13434A	13434B	13435A	13435B	13436A	13436B	13437A	13437B	13438A	13438B
Tentatively Identified Compounds	Detection Limit[b] (ug/L)														
Trichloroethene		-	-	-	-	-	-	-	-	-	-	-	-	-	-
Benzene	0.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Toluene	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Tetrachloroethene		-	-	-	-	-	-	-	-	-	-	-	-	BDL	-
Chlorobenzene		-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ethylbenzene		-	-	-	-	-	-	-	-	-	-	-	-	-	-
m-Xylene		-	-	-	-	-	-	-	-	-	-	-	-	-	-
o-Xylene		-	-	-	-	-	-	-	-	-	-	-	-	-	-
Coeluters[c]		-	-	-	-	-	-	-	-	-	-	-	X	X	-

- = not detected
BDL = below detection limit
X = detected

a The above results are from NUS/FIT in-house screening using a Photovac 10A10 Gas Chromatograph. All results must be interpreted with the understanding that they represent the end product of a screening technique and that the reported values are only approximate. This technique is not meant to replace analysis using greater sophistication and analytical control.

b Detection Limit is based on standards specific for benzene and toluene. No attempt was made to quantify other compounds.

c Coeluters represent the following group of compounds which generally can not be distinguished in screening: 1,1-dichloroethylene, trans-1,2-dichloroethylene, 1,1-dichloroethane, methylene chloride, chlorform, 1,2-dichloroethane, and 1,1,1-trichloroethane. The presence of one or more of these may be indicated.

"A" Designation on sample number indicates main tube.
"B" Designation on sample number indicates back up tube.

TABLE M-6
AIR MONITORING RESULTS (7-17-85)
Tenax Sampling - NUS/FIT In-House Screening[a]
Volatile Organic Analysis All results reported in ug/l (ppb)
Page Two

Station		2AS-7		2AS-8		2AS-9		2AS-10		2AS-11	Blank
Sample Number		13247A	13247B	13248A	13248B	13249A	13249B	13430A	13430B	13431B	13439A
Tentatively Identified Compounds	Detection Limit[b] (ug/L)										
Trichloroethene	0.2	-	-	-	-	BDL	BDL	-	BDL	-	-
Benzene	2	-	-	-	-	BDL	BDL	-	-	-	BDL
Toluene		-	-	-	-	-	-	-	-	-	-
Tetrachloroethene		-	-	-	-	-	-	-	-	-	-
Chlorobenzene		-	-	-	-	-	-	-	-	-	X
Ethylbenzene		-	-	-	-	-	-	-	-	-	-
m-Xylene		-	-	-	-	-	-	-	-	-	X
o-Xylene		-	-	-	-	X	X	-	X	X	-
Coeluters[c]											

- = not detected
BDL = below detection limit
X = detected

a The above results are from NUS/FIT in-house screening using a Photovac 10A10 Gas Chromatograph. All results must be interpreted with the understanding that they represent the end product of a screening technique and that the reported values are only approximate. This technique is not meant to replace analysis using greater sophistication and analytical control.

b Detection Limit is based on standards specific for benzene and toluene. No attempt was made to quantify other compounds.

c Coeluters represent the following group of compounds which generally can not be distinguished in screening: 1,1-dichloroethylene, trans-1,2-dichloroethylene, 1,1-dichloroethane, methylene chloride, chlorform, 1,2-dichloroethane, and 1,1,1-trichloroethane. The presence of one or more of these may be indicated.

"A" Designation on sample number indicates main tube.
"B" Designation on sample number indicates back up tube.

AIR MONITORING RESULTS
(STATE OF NEW HAMPSHIRE)

FROM: Mark H. Greenberg, Laboratory Scientist IV DATE: July 30, 1981

SUBJECT: Addendum to Londonderry Landfill Study Report July 28, 1981 AT: Air Resources Agency

TO: Dennis R. Lunderville, Director/File

After analysis of a study just completed and performed by our Agency on the air in the Health and Welfare Building, some qualifying statements must be made on the data presented in the July 28, 1981 Londonderry report. The hydrocarbon quantities found at the Londonderry landfill are reliable and correct as shown in this memo except for the chloroform concentrations. There are some changes in concentrations of some very low level hydrocarbons due to a calculation error, but the major problem is the chloroform results. There is a certain degree of uncertainty about the values of chloroform in the air at the landfill due to relatively higher chloroform values in the reagents, activated charcoal, and laboratory air then first observed. Also, the variability of this chloroform concentrations make taking it into consideration as a positive bias to the reported values almost impossible. An attempt is made to calculate using the highest, lowest, and average amount of chloroform in the blank to see the range of possible chloroform concentrations at the landfill. The problem is that the chloroform background blank values are sometime 50% of the total catch at a site.

CHLOROFORM RANGE UNITS=PPM

Chloroform Blank Value	Site 1	Site 2	Site 3	Provencal
Low Blank	4.605	5.017	5.321	0.0624
High Blank	2.649	3.641	3.900	0.0000
Average Blank	3.975	4.574	4.8631	0.0287

Due to this problem of background chloroform levels and the presence of many unidentifiable peaks, it is suggested that a retest of the area is warrented by our Agency and with EPA's technical assistance.

In conclusion using the OSHA standards for comparison, the values of hydrocarbons at the landfill are low except for chloroform. There seems to be no threat in the air to the environment. No conclusion could be made about chloroform until further analysis can be performed.

MHG/kab

LONDONDERRY STUDY

Date: May 20, 1981 Wind: N-NW Temp.: 65°F Relative Humidity: 36%

Site 1 - Logs SW of designated hut
Sipin Pump 0142
Initial 61076
Final 83428
Activted Charcoal
Dupont pump 3174 78 minutes 1 liter/min Tenax

Site 2 - NW side of tire area and SE of drums
Sipin Pump 0143
Initial 121367
Final 153133
Activated Charcoal
Dupont pump 2956 54.5 minutes 1 liter/min Tenax

Site 3 - Outside of Gruner residence, 101 Auburn Road, south side
Sipin Pump 0149
Initial 411169
Final 441939
Activated Charcoal

Site 4 - West side of old pump
MSA Pump #6 20 minutes 1 liter/min Tenax

Provencal House Interior - by Paul Lincoln
Activated Charcoal 71 minutes 1 liter/min

HYDROCARBON QUANTIFICATION AND QUALIFICATION FOR LONDONDERRY LANDFILL (REVISION)

(PPM)

CHEMICAL	SITE 1	SITE 2	SITE 3	PROVENCAL
Benzene	0.0098	0.0104	------	0.0180
1, 1, 2, Trichloroethylene	0.0092	0.0165	0.0078	0.0067
Chloroform	4.3213	4.8115	4.1079	0.0479
Tetrachloroethylene	0.0637	0.0802	------	0.0356
Methylene Chloride	0.8938	0.9353	1.7402	------
Toluene	0.8249	1.0004	1.0836	0.0615
P-Xylene	------	------	------	0.0203
O-Xylene	------	------	------	0.0028

MHG/kab

AIR MONITORING RESULTS (EPA)

TABLE M-7
U.S. EPA AIR MONITORING RESULTS (9-3-81)
AUBURN ROAD LANDFILL
CHARCOAL TUBE SAMPLING

Sample No.	Volume Collected (liters)	Detected Contaminants
50300	13.2	ND
50301	13.8	ND
50302 (101 Auburn Road)	13.7	ND
50303 (95 Auburn Road)	14.3	ND
50304	6.3	toluene (9 ppb)
50305 (field blank)	NA	ND

NOTES:
- For sampling locations, see map in Chapter 7
- Analyses conducted at U.S. EPA Laboratory - Lexington (9-3-81)
- ND = not detected

APPENDIX N

SURFACE WATER/SEDIMENT SAMPLING METHODOLOGY

SURFACE WATER/SEDIMENT SAMPLING

SECTIONS IN APPENDIX N

- SURFACE WATER/SEDIMENT SAMPLING METHODOLOGY
- SURFACE WATER RESULTS (NUS)
- SEDIMENT RESULTS (NUS)
- SURFACE WATER RESULTS (PREVIOUS ANALYSES)

TABLES IN APPENDIX N

N-1 SURFACE WATER RESULTS - VOLATILE ORGANICS (1984)
N-2 SURFACE WATER RESULTS - VOLATILE ORGANICS (1985)
N-3 SURFACE WATER RESULTS - SEMIVOLATILE ORGANICS (1985)
N-4 SURFACE WATER RESULTS - PESTICIDES/PCBs (1985)
N-5 SURFACE WATER RESULTS - INORGANICS (1985)
N-6 SEDIMENT RESULTS - INORGANICS (1984)
N-7 SEDIMENT RESULTS - VOLATILE ORGANICS (1985)
N-8 SEDIMENT RESULTS - SEMIVOLATILE ORGANICS (1985)
N-9 SEDIMENT RESULTS - PESTICIDES PCBS (1985)
N-10 SEDIMENT RESULTS - INORGANICS (1985)

Surface Water Sampling

The major objective of surface water sampling is to assess whether contaminants are migrating from the site via surface water. Analysis of surface water samples can help to establish the existence and extent of contaminant migration which may pose a risk to the human health and/or the environment.

Surface water grab samples were collected by NUS/FIT personnel at the Auburn Road Landfill site for analysis of compounds on the Hazardous Substance List (HSL). Surface water grab samples were collected from Cohas Brook, Whispering Pines Pond and an unnamed brook flowing through the Auburn Road Landfill Site. Surface water samples were collected by submerging the sample container below the surface of the water at mid-depth using a remote sampler according to NUS/FIT Region I Standard Operating Guideline (SOG) No. 9, Revision 0. Two 80 ounce (oz) amber glass bottles (unpreserved) were collected for extractable organic analysis of compounds on the Hazardous Substance List (HSL). Samples were also collected in two 44 milliliter glass volatile organic analysis (VOA) vials to which 100 microliters of 7,000 ppm mercuric chloride ($HgCl_2$) had been added as a preservative such that a final concentration of 16 ppm was reached in the sample for volatile organic compound analysis. One liter polyethylene bottles were utilized to collect surface water samples for inorganic analysis (metals). The surface water samples for inorganic analysis were preserved with concentrated nitric acid (HNO_3) to a final pH of less than two. A field blank and replicate sample were collected to assess field sampling and contract laboratory analytical techniques. Sample containers were decontaminated with an alconox-water rinse, and deionized water rinse. All surface water samples were labeled and stored on ice in a cooler. Samples scheduled for HSL organic contaminant analyses were analyzed according to EPA method 624 on a gas chromatograph/mass spectrometer. All information for the collection of surface water samples was recorded in the project logbook. Sample data such as sample location, time, type of sample, number of samples and container size, and were entered on a field chain

of custody form. This information was transferred to another chain of custody form and along with the samples, relinquished to Federal Express to deliver to the contract laboratory. Proper chain of custody was maintained throughout the sample collection and shipment.

Sediment Sampling

Sediment sampling is conducted to determine the presence of pollutants of low water solubility and high soil binding affinity. Moreover, the presence of contaminants in sediment samples can indicate whether contaminants found in associated surface water samples are, in fact, the result of offsite migration. Inorganic compounds (heavy metals) and halogenated hydrocarbons are examples of contaminants which may be found in higher concentrations in sediments than in surface water.

Sediment grab samples were collected at the sample locations as most surface water samples. Surface water samples were always taken first so that removal of benthic (sediment) samples would not be distributed or dispersed in the surface water. Sediment samples were collected with a remote sampler according to NUS/FIT Region I SOG No. 10A, Revision 0. The samples were collected in two 44 milliliter VOA vials for volatile organic compound analysis. Samples were collected in an 8 ounce (oz) jar for inorganic analysis. Samples for extractable organic analysis were collected in a 16 ounce (oz) jar. All samples were unpreserved and were stored on ice in a cooler. Background, blank and replicate samples were collected to assess field sampling and contract laboratory analytical techniques. Sampling equipment was decontaminated with an alconox-water rinse, methanol rinse, and deionized water rinse. Environmental sample jars were decontaminated with an alconox-water rinse and deionized water rinse prior to their storage on ice. All samples were to be analyzed (by CLP) for compounds on the Hazardous Substance List (HSL). All information concerning the collection of sediment samples was recorded in the project logbook. Information such as sample location, time, method of sample collection, number of samples and type of sample containers were entered on the field chain-of-custody form. This information was transferred to another chain-of-custody form along with the samples and relinquished to Federal Express for delivery to the contract laboratory. Proper chain of custody was maintained throughout the sample collection and shipment.

SURFACE WATER RESULTS (NUS)

TABLE N-1
SURFACE WATER RESULTS-VOLATILE ORGANICS
1984 SAMPLING ROUND

SAMPLE LOCATION		SW-1	SW-2	BLANK		SW-3	SW-4	SW-5	SW-6	SW-6(DUP)	BLANK
TRAFFIC REPORT NUMBER		AA061	AA072	AA074		AA077	AA076	AA078	AA079	AA080	AA081
SAMPLE NUMBER		12049	12062	12073		12067	12062	12064	12069	12070	12041
VOLATILE ORGANIC COMPOUNDS	CRDL (ug/l)				CRDL (ug/l)						
CHLOROMETHANE	57				10						
BROMOMETHANE	10				10						
VINYL CHLORIDE	68				10						
CHLOROETHANE	10				10						
METHYLENE CHLORIDE	5				5		17				
ACETONE	5				10	3J	21	8J			
CARBON DISULFIDE	5				5						
1,1-DICHLOROETHENE	5				5						
1,1-DICHLOROETHANE	5				5	1J					
TRANS-1,2-DICHLOROETHENE	5				5			4J			
CHLOROFORM	5				5						
1,2-DICHLOROETHANE	5				5						
2-BUTANONE	10				10						
1,1,1-TRICHLOROETHANE	5				5						
CARBON TETRACHLORIDE	9				5						
VINYL ACETATE	13				10						
BROMODICHLOROMETHANE	15				5						
1,1,2,2-TETRACHLOROETHANE	11				5						
1,2-DICHLOROPROPANE	10				5						
TRANS-1,3-DICHLOROPROPENE	7				5						
TRICHLOROETHENE	5				5						
DIBROMOCHLOROMETHANE	8				5						
1,1,2-TRICHLOROETHANE	5				5						
BENZENE	5				5						
CIS-1,3-DICHLOROPROPENE	5				5						
2-CHLOROETHYLVINYLETHER	10				10						
BROMOFORM	15				5						
2-HEXANONE	23				10						
4-METHYL-2-PENTANONE	33				10						
TETRACHLOROETHENE	15				5						
TOLUENE	15				5		1J				
CHLOROBENZENE	14				5						
ETHYLBENZENE	10				5						
STYRENE	15				5						
TOTAL XYLENES	18				5						
DILUTION FACTORS:		1	1	1		1	1	1	1	1	1

BLANK SPACE-INDICATES COMPOUND WAS NOT DETECTED
J -QUANTITATION IS APPROXIMATE DUE TO QUALITY CONTROL REVIEW
* -VALUE REJECTED DUE TO BLANK CONTAMINATION AS IDENTIFIED IN QUALITY REVIEW
** -VALUE REJECTED DUE TO OTHER CONTRACTUAL REQUIREMENTS IDENTIFIED IN QUALITY CONTROL REVIEW
CRDL -CONTRACT REQUIRED DETECTION LIMIT (MULTIPLY BY DILUTION FACTOR TO OBTAIN SAMPLE DETECTION LIMIT).

TABLE M-2
SURFACE WATER RESULTS-VOLATILE ORGANICS
1985 SAMPLING ROUNDS

SAMPLE LOCATION	SW-01	SW-02	SW-03	SW-04	SW-05	SW-06	SW-06(D)	SW-07	SW-08	BLANK	SW-01A	BLANK
TRAFFIC REPORT NUMBER	AD795	AD796	AD797	AD798	AD791	AD792	AD793	AD794	AD790	AD789	AD992	AD996
SAMPLE NUMBER	13725	13727	13729	13731	13717	13719	13720	13723	13715	13710	13968	13895
VOLATILE ORGANIC COMPOUNDS	CRDL (ug/L)											
CHLOROMETHANE	10				*		*		*	19		
BROMOMETHANE	10											
VINYL CHLORIDE	10											
CHLOROETHANE	10											
METHYLENE CHLORIDE	5		*	*		*	*			2	*	*
ACETONE	10	*	*	*		*	*		*	10		
CARBON DISULFIDE	5											
1,1-DICHLOROETHENE	5		5									
1,1-DICHLOROETHANE	5											
TRANS-1,2-DICHLOROETHENE	5				8							
CHLOROFORM	5											
1,2-DICHLOROETHANE	5											
2-BUTANONE	10				71							
1,1,1-TRICHLOROETHANE	5											
CARBON TETRACHLORIDE	5											
VINYL ACETATE	10											
BROMODICHLOROMETHANE	5											
1,1,2,2-TETRACHLOROETHANE	5											
1,2-DICHLOROPROPANE	5											
TRANS-1,3-DICHLOROPROPENE	5											
TRICHLOROETHENE	5											
DIBROMOCHLOROMETHANE	5											
1,1,2-TRICHLOROETHANE	5											
BENZENE	5										*	*
CIS-1,3-DICHLOROPROPENE	5											
2-CHLOROETHYLVINYLETHER	10											
BROMOFORM	5											
2-HEXANONE	10											
4-METHYL-2-PENTANONE	10	*	*	*	*							
TETRACHLOROETHENE	5				6				5			
TOLUENE	5				61	15		5				
CHLOROBENZENE	5											
ETHYLBENZENE	5											
STYRENE	5											
TOTAL XYLENES	5					*	*	*		2		
DILUTION FACTORS:		1	1	1	1	1	1	1	1	1	1	1	1

BLANK SPACE-INDICATES COMPOUND WAS NOT DETECTED
J -QUANTITATION IS APPROXIMATE DUE TO QUALITY CONTROL REVIEW (DATA VALIDATION)
* -VALUE REJECTED DUE TO BLANK CONTAMINATION AS IDENTIFIED IN QUALITY CONTROL REVIEW
** -VALUE REJECTED DUE TO OTHER CONTRACTUAL REQUIREMENTS IDENTIFIED IN QUALITY CONTROL REVIEW
CRDL -CONTRACT REQUIRED DETECTION LIMIT (MULTIPLY BY DILUTION FACTOR TO OBTAIN SAMPLE DETECTION LIMIT)
NOTE -DATA HAS UNDERGONE A QUALITY CONTROL REVIEW; EPA APPROVAL IS PENDING

TABLE N-3
SURFACE WATER RESULTS-SEMIVOLATILE ORGANICS
1985 SAMPLING ROUNDS

SAMPLE LOCATION		SW-01	SW-02	SW-03	SW-04	SW-05	SW-06	SW-06(D)	SW-07	SW-08	BLANK	SW-01A	BLANK
TRAFFIC REPORT NUMBER		AD795	AD796	AD797	AD798	AD791	AD792	AD793	AD794	AD790	AD789	AD992	AD996
SAMPLE NUMBER		13725	13727	13729	13731	13717	13719	13720	13723	13715	13710	13968	13695
	CRDL (ug/L)												
PHENOL	10												
ANILINE	10												
1,2-DICHLOROBENZENE	10												
2-METHYLPHENOL	10												
4-METHYLPHENOL	10												
ISOPHORONE	10												
BENZOIC ACID	50												
1,2,4-TRICHLOROBENZENE	10												
NAPHTHALENE	10												
4-CHLORO-3-METHYLPHENOL	10												
2-METHYLNAPHTHALENE	10												
HEXACHLOROCYCLOPENTADIENE	10												
2-CHLORONAPHTHALENE	10												
2-NITROANILINE	50												
DIMETHYL PHTHALATE	10												
ACENAPHTHYLENE	10												
ACENAPHTHENE	10												
DIBENZOFURAN	10												
DIETHYLPHTHALATE	10												
FLUORENE	10												
N-NITROSODIPHENYLAMINE	10												
PHENANTHRENE	10												
ANTHRACENE	10												
DI-n-BUTYLPHTHALATE	10												
FLUORANTHENE	10												
PYRENE	10												
BUTYLBENZYLPHTHALATE	10												
BENZO(A)ANTHRACENE	10												
bis(2-ETHYLHEXYL)PHTHALATE	10	*	*	*					*		*		
CHRYSENE	10												
DI-n OCTYL PHTHALATE	10												
BENZO(b)FLUORANTHENE	10												
BENZO(k)FLUORANTHENE	10												
BENZO(a)PYRENE	10												
DILUTION FACTORS:		1	1	1	1	1	1	1	1	1	1	1	1

BLANK SPACE-INDICATES COMPOUND WAS NOT DETECTED
J -QUANTITATION IS APPROXIMATE DUE TO QUALITY CONTROL REVIEW (DATA VALIDATION)
* -VALUE REJECTED DUE TO BLANK CONTAMINATION AS IDENTIFIED IN QUALITY CONTROL REVIEW
** -VALUE REJECTED DUE TO OTHER CONTRACTUAL REQUIREMENTS IDENTIFIED IN QUALITY CONTROL REVIEW
CRDL -CONTRACT REQUIRED DETECTION LIMIT (MULTIPLY BY DILUTION FACTOR TO OBTAIN SAMPLE DETECTION LIMIT).
NOTE -DATA HAS UNDERGONE A QUALITY CONTROL REVIEW; EPA APPROVAL IS PENDING
APPENDIX G LISTS ALL COMPOUNDS ANALYZED FOR IN THESE SAMPLES

TABLE N-4
SURFACE WATER RESULTS-PESTICIDES/PCBS
1985 SAMPLING ROUNDS

SAMPLE LOCATION		SW-01	SW-02	SW-03	SW-04	SW-05	SW-06	SW-06(D)	SW-07	SW-08	BLANK	SW-01A	BLANK
TRAFFIC REPORT NUMBER		AD795	AD796	AD797	AD798	AD791	AD792	AD793	AD794	AD790	AD789	AD992	AD996
SAMPLE NUMBER		13725	13727	13729	13731	13717	13719	13720	13723	13715	13710	13968	13895
	CRDL (ug/L)												
ALPHA-BHC	0.05												
BETA-BHC	0.05												
DELTA-BHC	0.05												
GAMMA-BHC(LINDANE)	0.05												
HEPTACHLOR	0.05												
ALDRIN	0.05												
HEPTACHLOR EPOXIDE	0.05												
ENDOSULFAN 1	0.05												
DIELDRIN	0.10												
4,4-DDE	0.10												
ENDRIN	0.10												
ENDOSULFAN 2	0.10												
4,4-DDD	0.10											0.004 J	
ENDRIN ALDEHYDE	0.10												
ENDOSULFAN SULFATE	0.10												
4,4-DDT	0.10												
METHOXYCHLOR	0.5												
ENDRIN KETONE	0.10												
CHLORDANE	0.5												
TOXAPHENE	1.0												
AROCLOR-1016	0.5												
AROCLOR-1221	0.5												
AROCLOR-1232	0.5												
AROCLOR-1242	0.5												
AROCLOR-1248	0.5												
AROCLOR-1254	1.0												
AROCLOR-1260	1.0												
DILUTION FACTORS:		1	1	1	1	1	1	1	1	1	1	1	1

BLANK SPACE-INDICATES COMPOUND WAS NOT DETECTED
J -QUANTITATION IS APPROXIMATE DUE TO QUALITY CONTROL REVIEW(DATA VALIDATION)
* -VALUE REJECTED DUE TO BLANK CONTAMINATION AS IDENTIFIED IN QUALITY CONTROL REVIEW
** VALUE REJECTED DUE TO OTHER CONTRACTUAL REQUIREMENTS IDENTIFIED IN QUALITY CONTROL REVIEW
CRDL -CONTRACT REQUIRED DETECTION LIMIT (MULTIPLY BY DILUTION FACTOR TO OBTAIN SAMPLE DETECTION LIMIT)
NOTE DATA HAS UNDERGONE A QUALITY CONTROL REVIEW; EPA APPROVAL IS PENDING

TABLE M-5
SURFACE WATER RESULTS-INORGANICS
1985 SAMPLING ROUND

SAMPLE LOCATION		SW-01B	BLANK	
TRAFFIC REPORT NUMBER		MAC003	MA8995	
SAMPLE NUMBER		13968	13895	
INORGANIC ELEMENTS	IDL (ug/L)			
ALUMINUM	120	120		
ANTIMONY	56		80	
ARSENIC	2.3			
BARIUM	76			
BERYLLIUM	3.0			
CADMIUM	4.0	11	9	
CALCIUM	1500	2470		
CHROMIUM	10	21	28	
COBALT	30			
COPPER	7.8	4		
IRON	35	700	240	
LEAD	1.4			
MAGNESIUM	360	1300	100	
MANGANESE	8.2	239	138	
MERCURY	0.12			
NICKEL	40	264	116	
POTASSIUM	3500	1300		
SELENIUM	1.7		5	
SILVER	9.2			
SODIUM	630	90000	200	
THALLIUM	4.2			
TIN	37			
VANADIUM	22			
ZINC	18	92	16	

BLANK SPACE-INDICATES COMPOUND WAS NOT DETECTED
J -QUANTITATION IS APPROXIMATE DUE TO QUALITY CONTROL REVIEW (DATA VALIDATION)
* -VALUE REJECTED DUE TO BLANK CONTAMINATION AS IDENTIFIED IN QUALITY CONTROL REVIEW
** -VALUE REJECTED DUE TO OTHER CONTRACTUAL REQUIREMENTS IDENTIFIED IN QUALITY CONTROL REVIEW
IDL -INSTRUMENT DETECTION LIMIT
NOTE -DATA HAS UNDERGONE A QUALITY CONTROL REVIEW; EPA APPROVAL IS PENDING

SEDIMENT RESULTS (NUS)

TABLE N-6
SEDIMENT RESULTS- INORGANICS
SEPTEMBER 1984 SAMPLING ROUND

SAMPLE LOCATION		SD-01	SD-02	SD-03	SD-04	SD-05	SD-05(D)
TRAFFIC REPORT NUMBER		MA-335	MA-336	MA-337	MA-338	MA-339	MA-340
SAMPLE NUMBER		12050	12059	1206B	12063	12065	12066
INORGANIC ELEMENTS	IDL (mg/kg)						
ALUMINUM	0.77	1000	600	1700	1800	1400	5500
ANTIMONY	0.11						
ARSENIC	0.11			0.94	4.3	0.77	1.2
BARIUM	0.65	6.2	5.3	10	9.4	7.2	12
BERYLLIUM	0.07						
CADMIUM	0.02		0.11		14		
CALCIUM	-	N/A	N/A	N/A	N/A	N/A	N/A
CHROMIUM	0.16	1.4	0.68	1.8	12	1.5	3
COBALT	0.81						
COPPER	0.38						
IRON	1.13	840	570	1600	4300	1100	2600
LEAD	0.23	3.6	3.6	4.5	6.3	2.9	3.3
MAGNESIUM	-	N/A	N/A	N/A	N/A	N/A	N/A
MANGANESE	0.18	32	18	52	81	26	260
MERCURY	0.009	7.8	6.6	0.18	0.30	0.28	0.35
NICKEL	1.13						
POTASSIUM	-	N/A	N/A	N/A	N/A	N/A	N/A
SELENIUM	0.09		0.15		0.17		0.12
SILVER	0.45						
SODIUM	-	N/A	N/A	N/A	N/A	N/A	N/A
THALLIUM	0.23						
TIN	0.45	*					
VANADIUM	0.68						
ZINC	0.34	*	7.9 J	9.0J	15	11 J	8.3 J

BLANK SPACE-INDICATES COMPOUND WAS NOT DETECTED
J -QUANTITATION IS APPROXIMATE DUE TO QUALITY CONTROL REVIEW
* -VALUE REJECTED DUE TO BLANK CONTAMINATION IDENTIFIED IN QUALITY CONTROL REVIEW
** -VALUE REJECTED DUE TO OTHER CONTRACTUAL REQUIREMENTS IDENTIFIED IN QUALITY CONTROL REVIEW
IDL -INSTRUMENT DETECTION LIMIT
N/A -NOT ANALYZED
NOTE -THESE SAMPLE DATA ARE REPORTED ON A WET WEIGHT BASIS

TABLE N-7
SEDIMENT RESULTS-VOLATILE ORGANICS
OCTOBER 1985 SAMPLING ROUND

SAMPLE LOCATION	SD-01	SD-02	SD-03	SD-04	SD-05	SD-06	SD-06(D)	SD-07	SD-08	BLANK
TRAFFIC REPORT NUMBER	AD821	AD822	AD823	AD824	AD817	AD818	AD819	AD820	AD816	AD815
SAMPLE NUMBER	13726	13728	13730	13732	13718	13721	13722	13724	13716	13711
VOLATILE ORGANIC COMPOUNDS	CRDL (ug/kg)									
CHLOROMETHANE	10									
BROMOMETHANE	10									
VINYL CHLORIDE	10									
CHLOROETHANE	10									
METHYLENE CHLORIDE	5	*			*	*			*	5 J
ACETONE	10								*	110
CARBON DISULFIDE	5	*			120 J	170 J	*	1000	*	16
1,1-DICHLOROETHENE	5									
1,1-DICHLOROETHANE	5									
TRANS-1,2-DICHLOROETHENE	5									
CHLOROFORM	5									
1,2-DICHLOROETHANE	5									
2-BUTANONE	10				330 J					20
1,1,1-TRICHLOROETHANE	5									
CARBON TETRACHLORIDE	5									
VINYL ACETATE	10									
BROMODICHLOROMETHANE	5									
1,1,2,2-TETRACHLOROETHANE	5									
1,2-DICHLOROPROPANE	5									
TRANS-1,3-DICHLOROPROPENE	5									
TRICHLOROETHENE	5									
DIBROMOCHLOROMETHANE	5									
1,1,2-TRICHLOROETHANE	5									
BENZENE	5									
CIS-1,3-DICHLOROPROPENE	5									
2-CHLOROETHYLVINYLETHER	10									
BROMOFORM	5									
2-HEXANONE	10									
4-METHYL-2-PENTANONE	10									
TETRACHLOROETHENE	5				*					3 J
TOLUENE	5				53			290		
CHLOROBENZENE	5									
ETHYLBENZENE	5									
STYRENE	5									
TOTAL XYLENES	5									
DILUTION FACTORS:		1	1	1	1	1	1	1	20	1

BLANK SPACE-INDICATES COMPOUND WAS NOT DETECTED
J -QUANTITATION IS APPROXIMATE DUE TO QUALITY CONTROL REVIEW (DATA VALIDATION)
* -VALUE REJECTED DUE TO BLANK CONTAMINATION AS IDENTIFIED IN QUALITY CONTROL REVIEW
** -VALUE REJECTED DUE TO OTHER CONTRACTUAL REQUIREMENTS IDENTIFIED IN QUALITY CONTROL REVIEW
CRDL -CONTRACT REQUIRED DETECTION LIMIT (MULTIPLY BY DILUTION FACTOR TO OBTAIN SAMPLE DETECTION LIMIT)
NOTE -DATA HAS UNDERGONE A QUALITY CONTROL REVIEW; EPA APPROVAL IS PENDING

TABLE N-8
SEDIMENT RESULTS-SEMIVOLATILE ORGANICS
OCTOBER 1985 SAMPLING ROUND

SAMPLE LOCATION		SD-01	SD-02	SD-03	SD-04	SD-05	SD-06	SD-06(D)	SD-07	SD-08	BLANK
TRAFFIC REPORT NUMBER		AD821	AD822	AD823	AD824	AD817	AD818	AD819	AD820	AD816	AD815
SAMPLE NUMBER		13726	13728	13730	13732	13718	13721	13722	13724	13716	13711
SEMI-VOLATILE ORGANIC COMPOUNDS	CRDL (ug/kg)										
PHENOL	10										
ANILINE	10										
2-CHLOROPHENOL	10										
1,4-DICHLOROBENZENE	10										
1,2-DICHLOROBENZENE	10										
2-METHYLPHENOL	10										
4-METHYLPHENOL	10										
ISOPHORONE	10										
2,4-DIMETHYLPHENOL	10										
BENZOIC ACID	50										
1,2,4-TRICHLORORENZENE	10										
NAPHTHALENE	10										
4-CHLORO-3-METHYLPHENOL	10										
2-METHYLNAPHTHALENE	10										
HEXACHLOROCYCLOPENTADIENE	10										
2-CHLORONAPHTHALENE	10										
2-NITROANILINE	50										
DIMETHYL PHTHALATE	10										
ACENAPHTHYLENE	10										
ACENARHTHENE	10										
DIBENZOFURAN	10										
DIETHYLPHTHALATE	10										
FLUORENE	10										
N-NITROSODIPHENYLAMINE	10										
PENTACHLOROPHENOL	10										
PHENANTHRENE	10										
ANTHRACENE	10										
DI-n-BUTYLPHTHALATE	10	300									
FLUORANTHENE	10										
PYRENE	10										
BUTYLBENZYLPHTHALATE	10										
BENZO(A)ANTHRACENE	10										
bis(2-ETHYLHEXYL)PHTHALATE	10										
CHRYSENE	10										
DI-n-OCTYL PHTHALATE	10										
BENZO(b)FLUORANTHENE	10										
BENZO(k)FLUORANTHENE	10										
BENZO(a)PYRENE	10										
DILUTION FACTORS:		1	1	1	1	1	1	1	1	1	1

BLANK SPACE-INDICATES COMPOUND WAS NOT DETECTED
J -QUANTITATION IS APPROXIMATE DUE TO QUALITY CONTROL REVIEW (DATA VALIDATION)
* -VALUE REJECTED DUE TO BLANK CONTAMINATION AS IDENTIFIED IN QUALITY CONTROL REVIEW
** -VALUE REJECTED DUE TO OTHER CONTRACTUAL REQUIREMENTS IDENTIFIED IN QUALITY CONTROL REVIEW
CRDL -CONTRACT REQUIRED DETECTION LIMIT (MULTIPLY BY DILUTION FACTOR TO OBTAIN SAMPLE DETECTION LIMIT).
NOTE -DATA HAS UNDERGONE A QUALITY CONTROL REVIEW; EPA APPROVAL IS PENDING
APPENDIX B LISTS ALL COMPOUNDS ANALYZED FOR IN THESE SAMPLES

TABLE N-9
SEDIMENT RESULTS-PESTICIDES/PCB'S
1985 SAMPLING ROUND

	CRDL (ug/Kg)
ALPHA-BHC	0.05
BETA-BHC	0.05
DELTA-BHC	0.05
GAMMA-BHC(LINDANE)	0.05
HEPTACHLOR	0.05
ALDRIN	0.05
HEPTACHLOR EPOXIDE	0.05
ENDOSULFAN 1	0.05
DIELDRIN	0.10
4,4-DDE	0.10
ENDRIN	0.10
ENDOSULFAN 2	0.10
4,4-DDD	0.10
ENDRIN ALDEHYDE	0.10
ENDOSULFAN SULFATE	0.10
4,4-DDT	0.10
METHOXYCHLOR	0.5
ENDRIN KETONE	0.10
CHLORDANE	0.5
TOXAPHENE	1.0
AROCLOR-1016	0.5
AROCLOR-1221	0.5
AROCLOR-1232	0.5
AROCLOR-1242	0.5
AROCLOR-1248	0.5
AROCLOR-1254	1.0
AROCLOR-1260	1.0

NO COMPOUND DETECTED
IN SEDIMENT SAMPLES BELOW

SAMPLE LOCATION	TRAFFIC REPORT NUMBER	SAMPLE NUMBER
SD-01	AD821	13726
SD-02	AD822	13728
SD-03	AD823	13730
SD-04	AD824	13732
SD-05	AD817	13718
SD-06	AD818	13721
SD-06(D)	AD819	13723
SD-07	AD820	13724
SD-08	AD816	13716
BLANK	AD815	13711

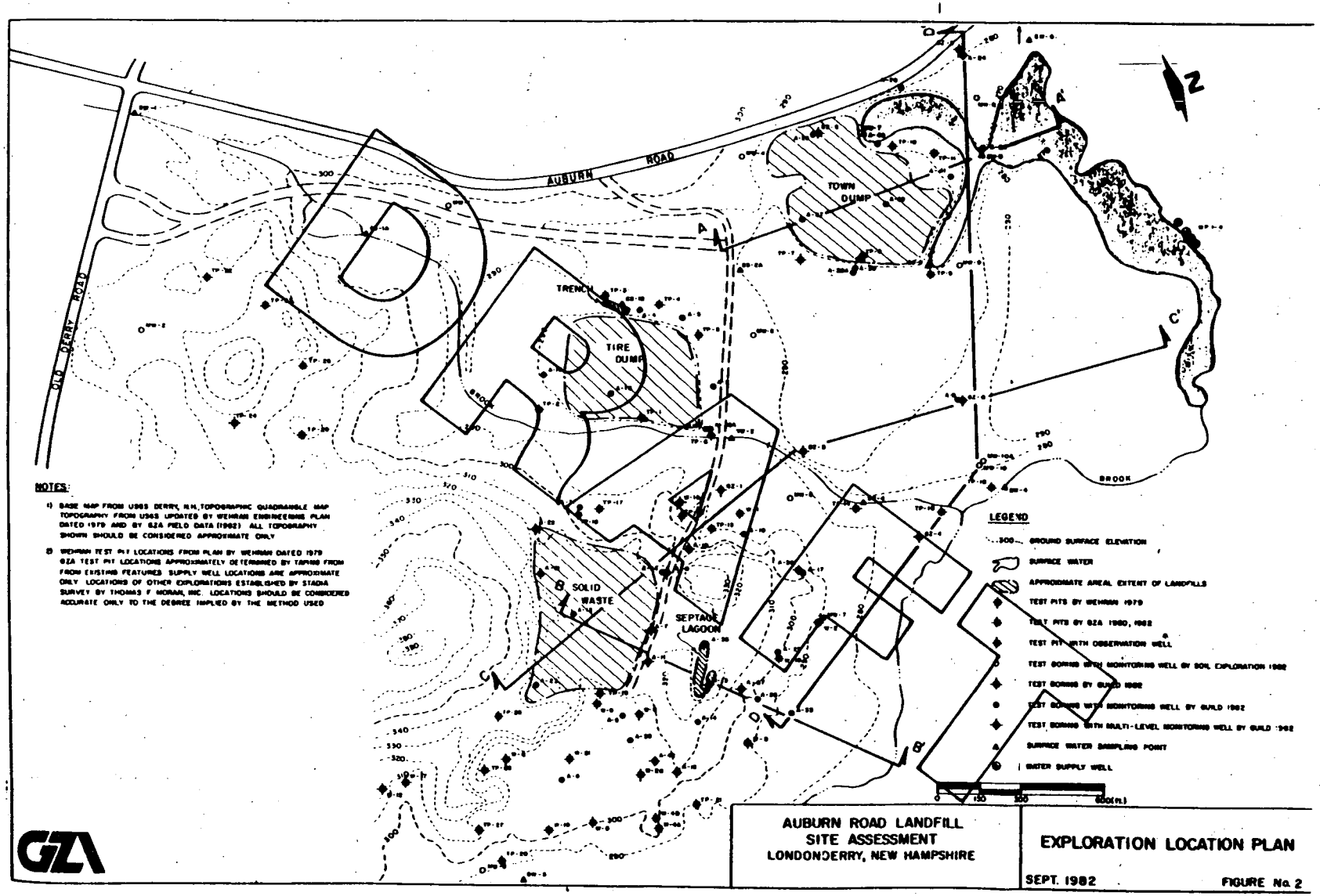
CRDL-CONTRACT DETECTION LIMIT
NOTE-DATA HAS UNDERGONE A QUALITY CONTROL REVIEW; EPA APPROVAL IS PENDING

TABLE N-10
SEDIMENT RESULTS-INORGANICS
1985 SAMPLING ROUND

SAMPLE LOCATION		SD-01	SD-02	SD-03	SD-04	SD-05	SD-06	SD-06(D)	SD-07	SD-08	BKGRD
TRAFFIC REPORT NUMBER		AD-821	AD-822	AD-823	AD-824	AD-817	AD-818	AD-819	AD-820	AD-816	AD-815
SAMPLE NUMBER		13721	13728	13730	13732	13718	13821	13722	13724	13716	13711
INORGANIC ELEMENTS	CRDL (mg/kg)										
ALUMINUM	20	7000	2500	2100	9400	1600	5200	4500	6600	7200	11900
ANTIMONY	6										
ARSENIC	1	15					7.9				4.0
BARIUM	20										77
BERYLLIUM	0.5										
CADMIUM	0.5										
CALCIUM	500	2400			3490	5600	3060	2400	3200		17100
CHROMIUM	1				47				14		18
COBALT	5										8
COPPER	2.5										
IRON	10	3400	3100	4000	10400	86400	3700	2600	7800	4300	23500
LEAD	0.5	21	2.2	1.5	35	4.1	37	18	21	4.7	93
MAGNESIUM	500										6600
MANGANESE	1.5	139	205	260	363	10400	274	228	91	27	663
MERCURY	0.02	0.34	0.11	0.08	0.28		0.38		0.27	0.21	0.19
NICKEL	4										
POTASSIUM	500										850
SELENIUM	0.5		3.2								
SILVER	1						11				
SODIUM	500		2900	3300	11500	3200				3100	2700
THALLIUM	1										
TIN	4	57	27								
VANADIUM	5										
ZINC	2		12								53

BLANK SPACE-INDICATES COMPOUND WAS NOT DETECTED
J -QUANTITATION IS APPROXIMATE DUE TO QUALITY CONTROL REVIEW (DATA VALIDATION)
* -VALUE REJECTED DUE TO BLANK CONTAMINATION AS IDENTIFIED IN QUALITY CONTROL REVIEW
** -VALUE REJECTED DUE TO OTHER CONTRACTUAL REQUIREMENTS IDENTIFIED IN QUALITY CONTROL REVIEW
CRDL -CONTRACT REQUIRED DETECTION LIMIT
NOTE -DATA HAS UNDERGONE A QUALITY CONTROL REVIEW; EPA APPROVAL IS PENDING

SURFACE WATER RESULTS
(PREVIOUS ANALYSES)


AUBURN ROAD
OLD DERRY ROAD
TOWN DUMP
TRENCH
TIRE DUMP
SOLID WASTE
SEPTAGE LAGOON
BROOK
A
A'
B
B'
C
C'
D
D'
NOTES:
1) BASE MAP FROM USGS DERRY, N.H., TOPOGRAPHIC QUADRANGLE MAP TOPOGRAPHY FROM USGS UPDATED BY WEHRAN ENGINEERING PLAN DATED 1979 AND BY GZA FIELD DATA (1982). ALL TOPOGRAPHY SHOWN SHOULD BE CONSIDERED APPROXIMATE ONLY
2) WEHRAN TEST PIT LOCATIONS FROM PLAN BY WEHRAN DATED 1979 GZA TEST PIT LOCATIONS APPROXIMATELY DETERMINED BY TAPING FROM FROM EXISTING FEATURES. SUPPLY WELL LOCATIONS ARE APPROXIMATE ONLY. LOCATIONS OF OTHER EXPLORATIONS ESTABLISHED BY STADIA SURVEY BY THOMAS F. MORAN, INC. LOCATIONS SHOULD BE CONSIDERED ACCURATE ONLY TO THE DEGREE IMPLIED BY THE METHOD USED
LEGEND
GROUND SURFACE ELEVATION
SURFACE WATER
APPROXIMATE AREAL EXTENT OF LANDFILLS
TEST PITS BY WEHRAN 1979
TEST PITS BY GZA 1980, 1982
TEST PIT WITH OBSERVATION WELL
TEST BORING WITH MONITORING WELL BY SOIL EXPLORATION 1982
TEST BORING BY GUILD 1982
TEST BORING WITH MONITORING WELL BY GUILD 1982
TEST BORING WITH MULTI-LEVEL MONITORING WELL BY GUILD 1982
SURFACE WATER SAMPLING POINT
WATER SUPPLY WELL
0 150 300 600(ft.)
GZA
AUBURN ROAD LANDFILL
SITE ASSESSMENT
LONDONDERRY, NEW HAMPSHIRE
EXPLORATION LOCATION PLAN
SEPT. 1982
FIGURE No. 2

APPENDIX E.4

SURFACE WATER SAMPLING DATA SUMMARY

PURGEABLE ORGANIC ANALYSIS RESULTS

	Sample No.	SW-1	SW-2	SW-4	SW-5	SW-6	SS-9
	Laboratory	GCA	GCA	GCA	GCA	GCA	GCA
	Analysis by	GC/MS	GC/MS	GC/MS	GC/MS	GC/MS	GC/MS
COMPOUNDS	Sampling Date	8/23/82	8/23/82	8/23/82	8/23/82	8/23/82	8/23/82
1. Chloromethane							
2. Bromomethane							
3. Dichlorodifluoromethane							
4. Vinyl chloride							
5. Chloroethane							
6. Methylene chloride							
7. Acrylonitrile							
8. Trichlorofluoromethane							
9. 1,1-dichloroethylene					Trace		Trace
10. 1,1-dichloroethane							
11. Trans-1,2-dichloroethylene				Trace	2.1	Trace	6.5
12. Chloroform		ND	ND	Trace	Trace	Trace	
13. 1,2-dichloroethane							
14. 1,1,1-trichloroethane							
15. Carbon tetrachloride					Trace	Trace	11
16. Bromodichloromethane							
17. 1,2-dichloropropane							
18. Trans-1,3-dichloropropylene							
19. Trichloroethylene					Trace		
20. Benzene							
21. Dibromochloromethane							
22. Cis-1,3-dichloropropylene							
23. 1,1,2-trichloroethane							
24. Bromoform							
25. 1,1,2,2-tetrachloroethane							
26. Tetrachloroethylene							
27. Toluene							
28. Chlorobenzene							
29. Ethyl benzene							
30. Bis-chloromethyl ether							
31. 2-chloroethyl vinyl ether							
32. Acrolein							
ADDITIONAL							

NOTES: 1) All results in parts per billion (ppb).
2) ND - no volatiles detected. Blank spaces indicate not detected.

PURGEABLE ORGANIC ANALYSIS RESULTS

COMPOUNDS	Sample No.	SW-1	SW-2	SW -3	
	Laboratory	Versar	Versar	Versar	
	Analysis by	GC/MS	GC/MS	GC/MS	
	Sampling Date				
1. Chloromethane					
2. Bromomethane					
3. Dichlorodifluoromethane					
4. Vinyl chloride					
5. Chloroethane					
6. Methylene chloride					
7. Acrylonitrile					
8. Trichlorofluoromethane					
9. 1,1-dichloroethylene					
10. 1,1-dichloroethane				13	
11. Trans-1,2-dichloroethylene					
12. Chloroform					
13. 1,2-dichloroethane					
14. 1,1,1-trichloroethane				20	
15. Carbon tetrachloride					
16. Bromodichloromethane					
17. 1,2-dichloropropane					
18. Trans-1,3-dichloropropylene					
19. Trichloroethylene					
20. Benzene					
21. Dibromochloromethane					
22. Cis-1,3-dichloropropylene					
23. 1,1,2-trichloroethane					
24. Bromoform					
25. 1,1,2,2-tetrachloroethane					
26. Tetrachloroethylene					
27. Toluene					
28. Chlorobenzene					
29. Ethyl benzene					
30. Bis-chloromethyl ether					
31. 2-chloroethyl vinyl ether					
32. Acrolein					
ADDITIONAL					

NOTES: 1) All results in parts per billion (ppb).
2) ND = not detected. Blank spaces indicate N.D.'s.

E & E TESTING

WATER QUALITY DATA

INORGANIC ANALYSES

PRIORITY POLLUTANT METALS	Station No.	SW-1	SW-2	SW-3
	Laboratory	LRE	LRE	LRE
	Analysis by			
	Sampling on			
Antimony		ND	ND	ND
Arsenic		10	ND	ND
Beryllium		ND	ND	ND
Cadmium		ND	0.2	ND
Chromium		ND	ND	ND
Copper		ND	ND	ND
Lead		2.0	2.0	1.5
Mercury		ND	ND	ND
Nickel		ND	6.7	6.4
Selenium		20	ND	ND
Silver		ND	11.1	ND
Thallium		ND	ND	ND
Zinc		17.6	16.8	14.5
Additional Metals				
Aluminum		15.8	13.9	ND
Barium		ND	25.0	17.7
Boron		ND	218	ND
Calcium		3,510	10,300	11,000
Cobalt		5.7	11.3	7.9
Iron		11.6	29.3	418
Manganese		ND	34.4	130
Magnesium		729	1,760	1,950
Sodium		2,220	11,300	24,800
Tin		ND	ND	ND
Vanadium		ND	ND	ND
Additional Parameters				

NOTES: 1) ND - Below detected limit
2) LRE - Lab of Radiation Ecology, University of Washington

TABLE 17
SURFACE WATER STATION SW-5
PURGEABLE ORGANIC ANALYSIS RESULTS

COMPOUNDS	Sample No.				
	Laboratory	GCA	RAI	RAI	RAI	RAI
	Analysis by	GC/MS	GC/MS	GC/MS	GC/MS	GC/MS
	Sampling Date	6/23/82	4/28/83	7/20/83	10/17/83	2/7/84
1. Chloromethane						
2. Bromomethane						
3. Dichlorodifluoromethane						
4. Vinyl chloride						
5. Chloroethane			Tr.			6
6. Methylene chloride						Tr.
7. Acrylonitrile						
8. Trichlorofluoromethane		<2				
9. 1,1-dichloroethylene						
10. 1,1-dichloroethane		2.1	8			15
11. Trans-1,2-dichloroethylene		<2	Tr.			Tr.
12. Chloroform						
13. 1,2-dichloroethane						
14. 1,1,1-trichloroethane		<2	15			10
15. Carbon tetrachloride						
16. Bromodichloromethane						
17. 1,2-dichloropropane				ND	ND	
18. Trans-1,3-dichloropropylene						
19. Trichloroethylene		<2				
20. Benzene						
21. Dibromochloromethane						
22. Cis-1,3-dichloropropylene						
23. 1,1,2-trichloroethane						
24. Bromoform						
25. 1,1,2,2-tetrachloroethane						
26. Tetrachloroethylene						
27. Toluene			Tr.			Tr.
28. Chlorobenzene						Tr.
29. Ethyl benzene						
30. Bis-chloromethyl ether						
31. 2-chloroethyl vinyl ether						
32. Acrolein						
ADDITIONAL						
MEK						200
MIBK						
Xylenes						
THF						50

NOTES: 1) All results in parts per billion (ppb). Tr. = <5 ppb

2) ND - Not detected. Blank spaces represent ND.

3) Laboratory - Resource Analysts, Inc. (RAI); GCA Corporation (GCA).

NORMANDEAU ASSOCIATES
LABORATORY REPORT

Report Date 07/22/82
Analysis Date Various
Reported By DOD/RGD

Project 526 Date Samples Submitted 06/23/82

ANALYSIS	SAMPLE OR STATION # SW-4	SW-5	
Alkalinity - total, mg $CaCO_3$/l	19.0	34.2	
BOD_5 mg/l			
COD mg/l	8.25	10.5	----
Chloride mg Cl/l	18.3	22.4	98.9% Spike Recovery
Dissolved oxygen mg/l			
Hardness mg/l			
Ammonia mg NH_3-N/l			
TKN mg N/l	0.41	0.48	102 % Spike Recovery
Nitrate mg NO_3-N/l	0.01	0.04	100 % Spike Recovery
Nitrite mg NO_2-N/l	< 0.005	< 0.005	100 % Spike Recovery*
Oils and Grease mg/l			
pH @ ___°C			
Orthophosphorus mg PO_4-P/l			
Total Phosphorus mg P/l			
Color - Platinum color units			
Solids			
Dissolved mg/l			
Suspended mg/l			
Total mg/l			
Volatile mg/l			
Settleable mg/l			
Turbidity FTU/NTU			
Conductance umhos/cm			

* Nitrite results generated during Nitrate analyses

Form No. AL 001

03098834

APPENDIX O

SOIL SAMPLING

SECTIONS IN APPENDIX O

- SOIL SAMPLING METHODOLOGY
- SOIL RESULTS (NUS)
- SOIL RESULTS (GZA)

TABLES IN APPENDIX O

SOIL SAMPLING METHODOLOGY

Soil Sampling

The chemical analysis of soils at uncontrolled hazardous waste sites can provide valuable information about the nature and extent of contaminant migration. Vertical contaminant migration may occur through soil strata to groundwater. Soil samples were generally collected at the Auburn Road Landfill site in a "grab" fashion. Grab sampling was utilized to characterize a waste or waste stream at a given time and location. The Fall 1985 Final RI Sampling Round was the only exception. These samples (Fall, 1985) were collected in a "composite" fashion. Composite sampling was utilized in some instances to provide useful data on the average concentration of contaminants or the presence or absence at different locations within the study area. The grab samples were collected with a stainless steel trowel approximately six inches below ground surface. The composite samples were collected with a stainles steel trowel and placed in a stainless steel mixing bowl. To minimize the loss of volatile organic contaminants, soil samples were not vigorously mixed. Soil samples for volatile organic analysis were then placed, with a stainless steel scoopula, into two 44 milliliter glass VOA vials. Soil samples were also collected with a sample trowel and placed in 8 ounce (oz) jars for inorganic (metals) compounds analysis and 16 ounce (oz) jars for extractable organic compound analysis on the Hazardous Substance List (HSL). All samples were unpreserved and stored on ice in a cooler. All field sample information on sample collection was recorded in the project logbook. Information consisted of sample location, time, method of sample collection, number of samples, and container size and was entered on a field chain-of-custody form. This information was then transferred to another chain-of-custody form and, along with the samples, relinquished to Federal Express for delivery to the contract laboratory. Proper chain-of-custody was maintained throughout the sample collection and shipment.

Test Pit Sampling

Soil and sludge samples were collected from each test pit for NUS/FIT's in-house analytical screening and or Contract Laboratory Program (CLP) Hazardous Substance List Analysis (HSL). Whenever possible, the soil samples were collected from the excavation equipment bucket in order to avoid having personnel enter the test pit. Soil samples were collected in two 44 ml glass VOA vials for volatile organic compound analysis, one 8 ounce jar for inorganic (metal) analysis and one 16-ounce jar for extractable organic analysis. No preservation additives were required for soil samples other than storing the samples on ice in a cooler. Soil samples for in-house screening were collected in one 44 ml glass septumed VOA vial, one 4-ounce jar for inorganic (metals) analysis and one 4-ounce jar for extractable organic analysis. Soil and sludge samples for on-site volatile organic contaminant screening were collected at various depths from the test pits for analysis on the OVA 128. All samples were collected in a "grab" fashion and sealed in appropriate containers. Sample containers were then decontaminated with an alconox rinse and deionized water rinse prior to storage on ice. Types of sample information recorded or referenced in the project logbook included the following: name and location of sample, date and time of excavation, surface elevation, depth of trench, sample number, sampling method, type and size of sample, and description of soil. Sample observations and measurements were recorded on sample cards and sample location, time and lot numbers were recorded on sample tags. Sample information was transferred to field chain-of-custody forms. Proper chain-of-custody procedures were followed throughout the sampling process.

SOIL RESULTS (NUS)

TABLE 0-1
TEST PIT RESULTS-VOLATILE ORGANICS
1984 SAMPLING ROUND

SAMPLE LOCATION		NTP-1B	NTP-1D	NTP-3A	NTP-4A	NTP-7B	NTP-7B(D)	NTP-8	NTP-9	NTP-10A	NTP-11A	NTP-11B	NTP-12B	NTP-13A	NTP-14	NTP-15B	NTP-16A	NTP-17	NTP-18A	NTP-18B	NTP-18C	NTP-18(D)
TRAFFIC REPORT NUMBER		AA-704	AA-705	AA-706	AA-707	AA-710	AA-711	AA-712	AA-713	AA-714	AA-715	AA-716	AA-717	AA-718	AA-719	AA-720	AA-723	AA-724	AA-725	AA-726	AA-727	AA-728
SAMPLE NUMBER		11505	11506	11504	11507	11509	11524	11525	11526	11527	11528	11529	11530	11531	11532	11533	11536	11537	11538	11539	11540	11541
VOLATILE ORGANIC COMPOUNDS	CRDL (ug/kg)																					
CHLOROMETHANE	10																					
BROMOMETHANE	10																					
VINYL CHLORIDE	10																					
CHLOROETHANE	10																					
METHYLENE CHLORIDE	5	*	*	520	*	*	*	19 J	32	25 J	16 J	260	1100	31	18 J	24 J	*	*	*	*	*	17 J
ACETONE	10	*	*	210 J	*	*	*	87 J	68	40 J	40 J	170	1700	53 J	54 J	52 J	160	1400	160	*	120 J	97 J
CARBON DISULFIDE	5	*		*	*	*																
1,1-DICHLOROETHENE	5																					
1,1-DICHLOROETHANE	5																					
TRANS-1,2-DICHLOROETHENE	5																					
CHLOROFORM	5											120								35		
1,2-DICHLOROETHANE	5												1300									
2-BUTANONE	10	13000 J		*								31										
1,1,1-TRICHLOROETHANE	5											210 J	4200				23		10		10 J	
CARBON TETRACHLORIDE	5																					
VINYL ACETATE	10																					
BROMODICHLOROMETHANE	5																					
1,1,2,2-TETRACHLOROETHANE	5																					
1,2-DICHLOROPROPANE	5											28										
TRANS-1,3-DICHLOROPROPENE	5																					
TRICHLOROETHENE	5			26		5 J																
DIBROMOCHLOROMETHANE	5																					
1,1,2-TRICHLOROETHANE	5																					
BENZENE	5											30										
CIS-1,3-DICHLOROPROPENE	5													7								
2-CHLOROETHYLVINYLETHER	10																					
BROMOFORM	5																					
2-HEXANONE	10			44																		
4-METHYL-2-PENTANONE	10																					
TETRACHLOROETHENE	5	2700		170							5 J							5 J				
TOLUENE	5	1400 J		240	*	*	*					620	1900	39 J			250	12 J	56	45		
CHLOROBENZENE	5			12								9										
ETHYLBENZENE	5			160						35		18	1200	24			62	7	21			
STYRENE	5			19						220		550	11000				150		15			
TOTAL XYLENES	5			180																		
DILUTION FACTORS:		50	1	1	1	1	1	1	1	1	1	1	50	1	1	1	1	1	1	1	1	1

BLANK SPACE-INDICATES COMPOUND WAS NOT DETECTED
J -QUANTITATION IS APPROXIMATE DUE TO QUALITY CONTROL REVIEW
* -VALUE REJECTED DUE TO BLANK CONTAMINATION IDENTIFIED IN QUALITY CONTROL REVIEW
** -VALUE REJECTED DUE TO OTHER CONTRACTUAL REQUIREMENTS IDENTIFIED IN QUALITY CONTROL REVIEW
CRDL -CONTRACT REQUIRED DETECTION LIMIT (MULTIPLY BY DILUTION FACTOR TO OBTAIN SAMPLE

TABLE 0-1
TEST PIT RESULTS-VOLATILE ORGANICS
1984 SAMPLING ROUND

SAMPLE LOCATION		NTP-20	NTP-22	NTP-24A	NTP-24B	NTP-26	NTP-27	NTP-28B	NTP-29	BKGRD	BKGRD
TRAFFIC REPORT NUMBER		AA-721	AA-729	AA-730	AA0731	AA-732	AA-733	AA-734	AB-101	AA-708	AA-722
SAMPLE NUMBER		11534	11542	11703	11704	11705	11706	11707	11708	11508	11535
VOLATILE ORGANIC COMPOUNDS	CRDL (ug/kg)										
CHLOROMETHANE	10										
BROMOMETHANE	10										
VINYL CHLORIDE	10										
CHLOROETHANE	10										
METHYLENE CHLORIDE	5		26 J	*	*	31 J	26 J	*	19 J	*	17 J
ACETONE	10	46 J	*	*	*	100 J	120 J	*	80 J	*	39 J
CARBON DISULFIDE	5			*	*					*	
1,1-DICHLOROETHENE	5										
1,1-DICHLOROETHANE	5										
TRANS-1,2-DICHLOROETHENE	5		420								
CHLOROFORM	5										
1,2-DICHLOROETHANE	5										
2-BUTANONE	10										
1,1,1-TRICHLOROETHANE	5		780								
CARBON TETRACHLORIDE	5										
VINYL ACETATE	10										
BROMODICHLOROMETHANE	5										
1,1,2,2-TETRACHLOROETHANE	5										
1,2-DICHLOROPROPANE	5										
TRANS-1,3-DICHLOROPROPENE	5										
TRICHLOROETHENE	5		1200	5 J							
DIBROMOCHLOROMETHANE	5										
1,1,2-TRICHLOROETHANE	5										
BENZENE	5										
CIS-1,3-DICHLOROPROPENE	5										
2-CHLOROETHYLVINYLETHER	10										
BROMOFORM	5										
2-HEXANONE	10										
4-METHYL-2-PENTANONE	10										
TETRACHLOROETHENE	5		5900	9		5 J					
TOLUENE	5			*	*						
CHLOROBENZENE	5										
ETHYLBENZENE	5										
STYRENE	5										
TOTAL XYLENES	5			*	*						
DILUTION FACTORS:		1	1	1	1	1	1	1	1	1	1

BLANK SPACE-INDICATES COMPOUND WAS NOT DETECTED
J -QUANTITATION IS APPROXIMATE DUE TO QUALITY CONTROL REVIEW
* -VALUE REJECTED DUE TO BLANK CONTAMINATION IDENTIFIED IN QUALITY CONTROL REVIEW
** -VALUE REJECTED DUE TO OTHER CONTRACTUAL REQUIREMENTS IDENTIFIED IN QUALITY CONTROL REVIEW
CRDL -CONTRACT REQUIRED DETECTION LIMIT (MULTIPLY BY DILUTION FACTOR TO OBTAIN SAMPLE DETECTION LIMIT).

TABLE D-2
TEST PIT RESULTS-SEMIVOLATILE ORGANICS
NOVEMBER 1984 SAMPLING ROUND

SAMPLE LOCATION		NTP-1B	NTP-8	NTP-9	NTP-10A	NTP-11A	NTP-11B	NTP-12B	NTP-13A	NTP-14	NTP-15B	NTP-16	NTP-17	NTP-18A	NTP-18B	NTP-18C	NTP-18C(D)	NTP-20	NTP-22	NTP-24A	NTP-24B	NTP-26
TRAFFIC REPORT NUMBER		AB-102	AA-712	AA-713	AA-714	AA-715	AA-716	AA-717	AA-718	AA-719	AA-720	AA-723	AA-724	AA-725	AA-726	AA-727	AA-728	AA-721	AA-729	AA-730	AA-731	AA-732
SAMPLE NUMBER		11709	11525	11526	11527	11528	11529	11530	11531	11531	11533	11536	11537	11538	11539	11540	11541	11536	11542	11707	11704	11705
SEMI-VOLATILE ORGANIC COMPOUNDS	CRDL (ug/kg)																					
PHENOL	330		330 K				12000												20000 K			
ANILINE	330						890															
1,2-DICHLOROBENZENE	330		330 K																			
2-METHYLPHENOL	330						660 K															
4-METHYLPHENOL	330		330 K				1900															
ISOPHORONE	330						660 K															
BENZOIC ACID	1600													1600 K								
1,2,4-TRICHLOROBENZENE	330																					
NAPHTHALENE	330		360				670	20000 K									330 K		20000 K			
4-CHLORO-3-METHYLPHENOL	330						660 K															
2-METHYLNAPHTHALENE	330		330 K				1200	83000														
2-CHLORONAPHTHALENE	330						660 K															
2-NITROANILINE	1600																					
DIMETHYL PHTHALATE	330																					
ACENAPHTHYLENE	330		330 K														330 K					
ACENAPHTHENE	330		330 K				660 K	20000 K									330 K					
DIBENZOFURAN	330		330 K														330 K					
DIETHYLPHTHALATE	330	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	330 K	*	*	*	*	*
FLUORENE	330		330 K				660 K	20000 K														
N-NITROSODIPHENYLAMINE	330	1650 K	330 K				860										330 K		20000 K			
PHENANTHRENE	330		330 K				1800	40000						330 K			710		20000 K			
ANTHRACENE	330		330 K				660 K										330 K					
DI-n-BUTYLPHTHALATE	330	1650 K							330 K			330 K			330 K	330 K						
FLUORANTHENE	1700		1700 K				3400 K							1700 K			1700 K		460000	330 K	450	
PYRENE	1500		1500 K				3000 K	91000 K						1500 K			1500 K		100000 K	1700 K	1700 K	
BUTYLBENZYLPHTHALATE	330						3000												91000 K	1500 K	1500 K	
BENZO(A)ANTHRACENE	330						980												20000 K			
BIS(2-ETHYLHEXYL)PHTHALATE	330	*	2300	*	*	*	79000	*	*	*	*	*	*	*	*	*	330 K	*	*	330 K	*	690
CHRYSENE	330		330 K				770										330 K		15000000 J			
DI-n-OCTYL PHTHALATE	330		330 K				2100													330 K		
BENZO(b)FLUORANTHENE	3400						6800 K										3400 K		27000	330 K		
BENZO(k)FLUORANTHENE	1200																1200 K					
BENZO(a)PYRENE	1400																1400 K					
DILUTION FACTORS:		5	1	1	1	1	2	60	1	60	1	1	60	1	1	1	1	1	60	1	1	1

BLANK SPACE-INDICATES COMPOUND WAS NOT DETECTED
J -QUANTITATION IS APPROXIMATE DUE TO QUALITY CONTROL REVIEW (DATA VALIDATION)
K -INDICATES THE MASS SPECTRA DATA MEETS IDENTIFICATION FOR THE COMPOUND DETECTED BUT THE QUANTITATIVE RESULT IS LESS THAN THE SPECIFIED DETECTION LIMIT BUT GREATER THAN ZERO
* -VALUE REJECTED DUE TO BLANK CONTAMINATION IDENTIFIED IN QUALITY CONTROL REVIEW
** -VALUE REJECTED DUE TO OTHER CONTRACTUAL REQUIREMENTS IDENTIFIED IN QUALITY CONTROL REVIEW
CRDL -CONTRACT REQUIRED DETECTION LIMIT (MULTIPLY BY DILUTION FACTOR TO OBTAIN SAMPLE DETECTION LIMIT).
APPENDIX Q LISTS ALL COMPOUNDS ANALYZED IN THESE SAMPLES

TABLE D-2
TEST PIT RESULTS-SEMIVOLATILE ORGANICSS
NOVEMBER 1984 SAMPLING ROUND

SAMPLE LOCATION	NTP-27	NTP-28B	NTP-29	BKGRD	BKGRD
TRAFFIC REPORT NUMBER	AA-733	AA-734	AB-101	AA-722	AB-103
SAMPLE NUMBER	11706	11707	11708	11535	11710
SEMI-VOLATILE ORGANIC COMPOUNDS					
PHENOL					
ANILINE					
1,2-DICHLOROBENZENE					
2-METHYLPHENOL					
4-METHYLPHENOL					
ISOPHORONE					
BENZOIC ACID					
1,2,4-TRICHLOROBENZENE					
NAPHTHALENE					
4-CHLORO-3-METHYLPHENOL					
2-METHYLNAPHTHALENE					
2-CHLORONAPHTHALENE					
2-NITROANILINE					
DIMETHYL PHTHALATE					
ACENAPHTHYLENE					
ACENAPHTHENE					
DIBENZOFURAN					
DIETHYLPHTHALATE					
FLUORENE					
N-NITROSODIPHENYLAMINE					
PHENANTHRENE					
ANTHRACENE					
DI-n-BUTYLPHTHALATE		330 K	330 K		
FLUORANTHENE					
PYRENE					
BUTYLBENZYLPHTHALATE					
BENZO(A)ANTHRACENE					
BIS(2-ETHYLHEXYL)PHTHALATE		390	*		
CHRYSENE					
DI-n-OCTYL PHTHALATE					
BENZO(b)FLUORANTHENE					
BENZO(k)FLUORANTHENE					
BENZO(a)PYRENE					
DILUTION FACTORS:	1	1	1	1	1

BLANK SPACE-INDICATES COMPOUND WAS NOT DETECTED
J -QUANTITATION IS APPROXIMATE DUE TO QUALITY CONTROL REVIEW (DATA VALIDATION)
K -INDICATES THE MASS SPECTRA DATA MEETS IDENTIFICATION FOR THE COMPOUND DETECTED BUT THE QUANTITATIVE RESULT IS LESS THAN THE SPECIFIED DETECTION LIMIT BUT GREATER THAN ZERO
* -VALUE REJECTED DUE TO BLANK CONTAMINATION AS IDENTIFIED IN QUALITY CONTROL REVIEW
** -VALUE REJECTED DUE TO OTHER CONTRACTUAL REQUIREMENTS IDENTIFIED IN QUALITY CONTROL REVIEW
CRDL -CONTRACT REQUIRED DETECTION LIMIT (MULTIPLY BY DILUTION FACTOR TO OBTAIN SAMPLE DETECTION LIMIT)
APPENDIX Q LISTS ALL COMPOUNDS ANALYZED IN THESE SAMPLES

TABLE 0-3
TEST PIT RESULTS-PESTICIDES/PCB'S
1984 SAMPLING ROUND

NO COMPOUND DETECTED
IN SOIL SAMPLES BELOW

	CRDL (ug/Kg)	SAMPLE LOCATION	TRAFFIC REPORT NUMBER	SAMPLE NUMBER
ALPHA-BHC	0.05			
BETA-BHC	0.05	NTP-8	AA-712	11525
DELTA-BHC	0.05	NTP-9	AA-713	11526
GAMMA-BHC(LINDANE)	0.05	NTP-10	AA-714	11527
HEPTACHLOR	0.05	NTP-11B	AA-716	11529
ALDRIN	0.05	NTP-11C	AA-715	11528
HEPTACHLOR EPOXIDE	0.05	NTP-12B	AA-717	11530
ENDOSULFAN 1	0.05	NTP-13	AA-718	11531
DIELDRIN	0.10	NTP-14	AA-719	11532
4,4-DDE	0.10	NTP-15	AA-720	11533
ENDRIN	0.10	NTP-20	AA-721	11534
ENDOSULFAN 2	0.10	BKGRD	AA-722	11535
4,4-DDD	0.10			
ENDRIN ALDEHYDE	0.10			
ENDOSULFAN SULFATE	0.10			
4,4-DDT	0.10			
METHOXYCHLOR	0.5			
ENDRIN KETONE	0.10			
CHLORDANE	0.5			
TOXAPHENE	1.0			
AROCLOR-1016	0.5			
AROCLOR-1221	0.5			
AROCLOR-1232	0.5			
AROCLOR-1242	0.5			
AROCLOR-1248	0.5			
AROCLOR-1254	1.0			
AROCLOR-1260	1.0			

CRDL - CONTRACT REQUIRED DETECTION LIMIT

TABLE D-4
TEST PIT RESULTS-INORGANICS
NOVEMBER 1984 SAMPLING ROUNDS

SAMPLE LOCATION		NTP-1B	NTP-3A	NTP-8	NTP-9	NTP-10	NTP-11A	NTP-11B	NTP12B	NTP-13	NTP-14	NTP-15	NTP-16	NTP-17	NTP-18A	NTP18B	NTP-18C	NTJ-18C(D)	NTP-20	NTP-22	NTP-24A	NTP-24B	NTP-26
TRAFFIC REPORT NUMBER		MA-0161	MA-0146	MA-0135	MA-0136	MA-0137	MA-0138	MA-0139	MA-0140	MA-0141	MA-0142	MA-0143	MA-0148	MA-0149	MA-0150	MA-0151	MA-0152	MA-0153	MA-0144	MA-0154	MA-0155	MA-0156	MA-0157
SAMPLE NUMBER		11709	11504	11525	11526	11527	11528	11529	11530	11531	11532	11533	11536	11537	11539	11539	11540	11541	11534	11542	11703	11704	11705
INORGANIC ELEMENTS	IDL (mg/kg)																						
ALUMINUM	5	5800	4900	9200	2080	5400	4800	1600	5900	2400	1400	2100	2560	3100	3500	8400	5100	3300	1700	3300	6100	3200	4300
ANTIMONY	4.5																						
ARSENIC	0.5	21	8.8 J	18 J	4.2 J	30 J	12 J	8 J	10 J	10 J	6.1 J	63 J	3.6	3.1	2.8	1.6	4.4	3.7	15 J	3.4	10	4.8	4.8
BARIUM	5												20				27			36	280	47	26
BERYLLIUM	0.5																						
CADMIUM	0.5							7.3						0.6						21	11	2.2	
CALCIUM	16	700 J	600	290	740	3600	470	133000	560	460	600	670	5800	860 J	910 J	11000 J	12000 J	3200 J	720	5000 J	14000 J	3000 J	1700 J
CHROMIUM	1.0	5.2	7.8	11	200	29	10	31	6.3				3.3	4.5	6.8	1.9	6.3	3.3		14	83	11	8.4
COBALT	2.0		26												6.0						47	7.7	
COPPER	1.0	2.9			206	27			9.7	12			3.9	7.5	7.9		7.4	4.9		6.2	660	54	
IRON	2.0	5300	4300	5400	2400	10300	3600	3400	5600	1800	2400	19100	3600	4600	4300	2300	8700	3900	3900	8200	1700	20000	7100
LEAD	0.5	730						64				14	20	13	4.9	3.2	8.7	19	4.5	360	1700	120	24
MAGNESIUM	15	42	920	500	330	1100	590	990	1100	760	480	50	700	670	900	3600	1100	680	460	890	1600	700	900
MANGANESE	1		42	30	21	361	35	43	63	45	60	200	41	50	49	42	98	48	70	110	760	130	120
MERCURY	0.02																			0.13			
NICKEL	2	6				35		18					4.9	5.9	6.4		9.4	5.5		7.8	140	30	8.9
POTASSIUM	100	430											440	580	490	190	960	600		670	1000	500	690
SELENIUM	0.5																						
SILVER	0.8																						
SODIUM	105	110						920	1100												6.7		
THALLIUM	1.0												90	110	120	160	180	150		150	610	300	180
TIN	3.0	6.1	22	26	30	48	25	31	26	29	21	35	3.7	5.2	5.1		14		31	14	630	70	15
VANADIUM	2	9.7							20				6.4	7.3	7.8		11	7.1		9.1	70	12	9.9
ZINC	1	23 J	23 J	51 J	81 J	205 J	12 J	762 J	50 J	17 J	12 J	20 J	110 J	120 J	66 J	110 J	170 J	53 J	14 J	110 J	1200 J	430 J	81 J

BLANK SPACE-INDICATES COMPOUND WAS NOT DETECTED
J -QUANTITATION APPROXIMATE DUE TO QUALITY CONTROL REVIEW (DATA VALIDATION)
* -VALUE REJECTED DUE TO BLANK CONTAMINATION IDENTIFIE IN QUAL TY CONTROL REVIEW
** -VALUE REJECTED DUE TO OTHER CONTRACTUAL REQUIREMENTS INDENTIFIED IN QUALITY CONTROL REVIEW
IDL -INSTRUMENT DETECTION LIMIT

TABLE 0-4
TEST PIT RESULTS-INORGANICS
NOVEMBER 1984 SAMPLING ROUNDS

SAMPLE LOCATION		NTP-27	NTP-28B	NTP-29	BKGRD	BKGRD	BKGRD
TRAFFIC REPORT NUMBER		MA-0158	MA-0159	MA-0160	MA-0147	MA-0145	MA-0162
SAMPLE NUMBER		11706	11707	11708	11508	11535	11710
INORGANIC ELEMENTS	IDL (mg/kg)						
ALUMINUM	5	4300	2600	2300	2000	1600	1800
ANTIMONY	4.5						
ARSENIC	0.5	5.7	27	41	3.6 J	6.5 J	21
BARIUM	5	33	23				
BERYLLIUM	0.5						
CADMIUM	0.5						
CALCIUM	16	1000 J	1300 J	1600 J	680	580	380 J
CHROMIUM	1.0	4.9	4.4	3.0			2.5
COBALT	2.0						
COPPER	1.0	5.9	6.0	3.0			3.7
IRON	2.0	5500	6300	3300	3300	2400	3800
LEAD	0.5	4.2	25	1.0			1.8
MAGNESIUM	15	920	700	620	800	440	
MANGANESE	1	86	64	61	55	45	630
MERCURY	0.02		0.21				48
NICKEL	2	15	6.6	6.5			
POTASSIUM	100	970	540	600			4.4
SELENIUM	0.5						550
SILVER	0.8						
SODIUM	105	180	210	100			180
THALLIUM	1.0						
TIN	3.0	5.8	6.2	5.0	31	24	5.1
VANADIUM	2	9.2	6.9	6.4			6.7
ZINC	1	30 J	120 J	19 J	11 J	13 J	22 J

BLANK SPACE-INDICATED COMPOUND WAS NOT DETECTED
J -QUANTITATION IS APPROXIMATE DUE TO QUALITY CONTROL REVIEW (DATA VALIDATION)
* -VALUE REJECTED DUE TO BLANK CONTAMINATION IDENTIFIED IN QUALITY CONTROL REVIEW
** -VALUE REJECTED DUE TO OTHER CONTRACTUAL REQUIREMENTS IDENTIFIED IN QUALITY CONTROL
IDL -INSTRUMENT DETECTION LIMIT

TABLE D-5
SOIL RESULTS-VOLATILE ORGANICS
OCTOBER 1985 SAMPLING ROUNDS

SAMPLE LOCATION		SS-01	SS-01(DUP)	SS-02	SS-03	SS-04	SS-05	SS-05(DUP)	SS-06	SS-07	SS-08	SS-09	SS-10	SS-12	BKGRD	BLANK	BLANK
TRAFFIC REPORT NUMBER		AD811	AD812	AD813	AD814	AD803	AD804	AD805	AD806	AD807	AD808	AD809	AD810	AD802	AD801	AD799	AD800
SAMPLE NUMBER		13746	13747	13749	13749	13738	13739	13740	13741	13742	13743	13744	13745	13737	13736	13712	13713
VOLATILE ORGANIC COMPOUNDS	CRDL (ug/kg)																
CHLOROMETHANE	10																
BROMOMETHANE	10																
VINYL CHLORIDE	10																
CHLOROETHANE	10																
METHYLENE CHLORIDE	5																
ACETONE	11	*		*	*	*			*			*		*	*	13	15
CARBON DISULFIDE	5		*		*	*				*	*	*			*	210	220
1,1-DICHLOROETHENE	5					*				*	*	*		*	*	22	15
1,1-DICHLOROETHANE	5																
TRANS-1,2-DICHLOROETHENE	5					13											
CHLOROFORM	5																
1,2-DICHLOROETHANE	5																
2-BUTANONE	10																
1,1,1-TRICHLOROETHANE	5	*			*	*				*	*	*			*	180	64
CARBON TETRACHLORIDE	5					*	*	*						*	*	5 J	7
VINYL ACETATE	10																
BROMODICHLOROMETHANE	5																
1,1,2,2-TETRACHLOROETHANE	5																
1,2-DICHLOROPROPANE	5																
TRANS-1,3-DICHLOROPROPENE	5																
TRICHLOROETHENE	5																
DIBROMOCHLOROMETHANE	5																
1,1,2-TRICHLOROETHANE	5																
BENZENE	5																
CIS-1,3-DICHLOROPROPENE	5																
2-CHLOROETHYLVINYLETHER	10																
BROMOFORM	5																
2-HEXANONE	10																
4-METHYL-2-PENTANONE	10																
TETRACHLOROETHENE	5	*		*	*												
TOLUENE	5						35	78									
CHLOROBENZENE	5																
ETHYLBENZENE	5																
STYRENE	6																
TOTAL XYLENES	5						*	28									
DILUTION FACTORS:		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1

BLANK SPACE-INDICATES COMPOUND WAS NOT DETECTED
J -QUANTITATION IS APPROXIMATE DUE TO QUALITY CONTROL REVIEW (DATA VALIDATION)
* -VALUE REJECTED DUE TO BLANK CONTAMINATION AS IDENTIFIED IN QUALITY CONTROL REVIEW
** -VALUE REJECTED DUE TO OTHER CONTRACTUAL REQUIREMENTS IDENTIFIED IN QUALITY CONTROL REVIEW
CRDL -CONTRACT REQUIRED DETECTION LIMIT (MULTIPLY BY DILUTION FACTOR TO OBTAIN SAMPLE DETECTION LIMIT)
NOTE -DATA HAS UNDERGONE A QUALITY CONTROL REVIEW; EPA APPROVAL IS PENDING

TABLE 0-6
SOIL RESULTS-SEMI-VOLATILE ORGANICS
OCTOBER 1985 SAMPLING ROUNDS

SAMPLE LOCATION		SS-01	SS-01(D)	SS-02	SS-03	SS-04	SS-05	SS-05(D)	SS-06	SS-07	SS-08	SS-09	SS-10	SS-12	BKGRD	BLANK	BLANK
TRAFFIC REPORT NUMBER		AD-811	AD-812	AD-813	AD-814	AD-803	AD-804	AD-805	AD-806	AD-807	AD-808	AD-809	AD-810	AD-802	AD-801	AD-799	AD-800
SAMPLE NUMBER		13746	13747	13749	13750	13708	13739	13740	13741	13743	13743	13744	13745	13737	13736	13712	13713
SEMI-VOLATILE ORGANIC COMPOUNDS	CRDL (ug/kg)																
PHENOL	330																
ANILINE	330																
1,2-DICHLOROBENZENE	330																
2-METHYLPHENOL	330																
4-METHYLPHENOL	330																
ISOPHORONE	330																
BENZOIC ACID	1600																
1,2,4-TRICHLOROBENZENE	330																
NAPHTHALENE	330																
4-CHLORO-3-METHYLPHENOL	330																
2-METHYLNAPHTHALENE	330																
HEXACHLOROCYCLOPENTADIENE	330																
2-CHLORONAPHTHALENE	330																
2-NITROANILINE	1600																
DIMETHYL PHTHALATE	330																
ACENAPHTHYLENE	330																
ACENARHTHENE	330																
DIBENZOFURAN	330																
DIETHYLPHTHALATE	330																
FLUORENE	330																
N-NITROSODIPHENYLAMINE	330																
PHENANTHRENE	330																
ANTHRACENE	330																
DI-n-BUTYLPHTHALATE	330													80			
FLUORANTHENE	330												120				
PYRENE	330													120			
BUTYLBENZYLPHTHALATE	330													160 J			
BENZO(A)ANTHRACENE	330																
bis(2-ETHYLHEXYL)PHTHALATE	330	32000 J	46000 J	*		*	*		*	*	*	*	*	*		390	1100
CHRYSENE	330																
DI-n-OCTYL PHTHALATE	330																
BENZO(b)FLUORANTHENE	330																
BENZO(k)FLUORANTHENE	330																
BENZO(a)PYRENE	330																
DILUTION FACTORS:		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1

BLANK SPACE-INDICATES COMPOUND WAS NOT DETECTED
J -QUANTITATION IS APPROXIMATE DUE TO QUALITY CONTROL REVIEW (DATA VALIDATION)
* -VALUE REJECTED DUE TO BLANK CONTAMINATION AS IDENTIFIED IN QUALITY CONTROL REVIEW
** -VALUE REJECTED DUE TO OTHER CONTRACTUAL REQUIREMENTS IDENTIFIED IN QUALITY CONTROL REVIEW
CRDL -CONTRACT REQUIRED DETECTION LIMIT (MULTIPLY BY DILUTION FACTOR TO OBTAIN SAMPLE DETECTION LIMIT).
NOTE -DATA HAS UNDERGONE A QUALITY CONTROL REVIEW; EPA APPROVAL IS PENDING

TABLE D-7
SOIL RESULTS-PESTICIDES/PCBS
OCTOBER 1985 SAMPLING ROUNDS

SAMPLE LOCATION		SS-01	SS-01(D)	SS-02	SS-03	SS-04	SS-05	SS-05(D)	SS-06	SS-07	SS-08	SS-09	SS-10	SS-12	BKGRD	BLANK	BLANK
TRAFFIC REPORT NUMBER		AD-811	AD-812	AD-813	AD-814	AD-803	AD-804	AD-805	AD-806	AD-807	AD-808	AD-809	AD-810	AD-802	AD-801	AD-799	AD-800
SAMPLE NUMBER		13746	13747	13749	13750	13708	13739	13740	13741	13743	13743	13744	13745	13737	13736	13712	13713
	CRDL (ug/Kg)																
ALPHA-BHC	0.05																
BETA-BHC	0.05																
DELTA-BHC	0.05																
GAMMA-BHC(LINDANE)	0.05																
HEPTACHLOR	0.05																
ALDRIN	0.05																
HEPTACHLOR EPOXIDE	0.05																
ENDOSULFAN 1	0.05																
DIELDRIN	0.10																
4,4-DDE	0.10																
ENDRIN	0.10																
ENDOSULFAN 2	0.10																
4,4-DDD	0.10																
ENDRIN ALDEHYDE	0.10																
ENDOSULFAN SULFATE	0.10																
4,4-DDT	0.10																
METHOXYCHLOR	0.5																
ENDRIN KETONE	0.10																
CHLORDANE	0.5																
TOXAPHENE	1.0																
AROCLOR-1016	0.5																
AROCLOR-1221	0.5																
AROCLOR-1232	0.5																
AROCLOR-1242	0.5																
AROCLOR-1248	0.5																
AROCLOR-1254	1.0	**	**		460							2500					
AROCLOR-1260	1.0											430					
DILUTION FACTORS:		20	20	1	4	1	1	1	1	1	1	1	1	1	1	1	1

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BLANK SPACE-INDICATES COMPOUND WAS NOT DETECTED
J -QUANTITATION IS APPROXIMATE DUE TO QUALITY CONTROL REVIEW(DATA VALIDATION)
* -VALUE REJECTED DUE TO BLANK CONTAMINATION AS IDENTIFIED IN QUALITY REVIEW
** -VALUE REJECTED DUE TO OTHER CONTRACTUAL REQUIREMENTS IDENTIFIED IN QUALITY CONTROL REVIEW
CRDL -CONTRACT REQUIRED DETECTION LIMIT (MULTIPLY BY DILUTION FACTOR TO OBTAIN SAMPLE DETECTION LIMIT).
NOTE -DATA HAS UNDERGONE A QUALITY CONTROL REVIEW; EPA APPROVAL IS PENDING.

TABLE D-8
SOIL RESULTS-INORGANICS
1985 SAMPLING ROUND

SAMPLE LOCATION		SS-01	SS-01(D)	SS-02	SS-03	SS-04	SS-05	SS-05(D)	SS-06	SS-07	SS-08	SS-09	SS-10	SS-12	BKGRD	BLANK	BLANK
TRAFFIC REPORT NUMBER		AD-811	AD-812	AD-813	AD-814	AD-803	AD-804	AD-805	AD-806	AD-807	AD-808	AD-809	AD-810	AD-802	AD-801	AD-800	AD-795
SAMPLE NUMBER		13746	13747	13749	13750	13708	13739	13740	13741	13743	13743	13744	13745	13737	13736	13712	13712
INORGANIC ELEMENTS	CRDL (mg/kg)																
ALUMINUM	20	5700	4500	4800	2900	3400	3600	3700	2300	11200	5900	2700	5400	2700	5200	9100	10600
ANTIMONY	6																
ARSENIC	1		5.1		14		4.9		3.3	7.4		3.8	3.4	9.4			
BARIUM	20											94				83	86
BERYLLIUM	0.5																
CADMIUM	0.5				3		3			5			2				
CALCIUM	500			900 J	810 J		910	850		1300	4300	2300		970	900	29800	23000
CHROMIUM	1	7		7	10						9				13	14	18
COBALT	5														5		
COPPER	2.5				37							145					
IRON	10	6100	4800	8200	15400	4100	4800	4500	3000	12200	13300	4200	8000	4100	11000	21000	22000
LEAD	0.5	6.2	17	15	14	14	1.7	2.1	6.8	12	21	18	3			33	28
MAGNESIUM	500			870			900										
MANGANESE	1.5	133	83	75	91	47	55	64	26	290	140	50	82	69	184	592	735
MERCURY	0.02			0.10								0.18			0.01	0.16	0.09
NICKEL	4														19	20	23
POTASSIUM	500		1300				896	1100	2000	1900	1000	1700	1800	920	1800	2600	2100
SELENIUM	0.5																
SILVER	1				4.2					9		5					
SODIUM	500				2300											2400	2100
THALLIUM	1																
TIN	4			26		35						47					
VANADIUM	5									32			17		18		
ZINC	2	56	62	40	173		56				37	203	12		15	56	68

BLANK SPACE-INDICATES COMPOUND WAS NOT DETECTED
J -QUANTITATION IS APPROXIMATE DUE TO QUALITY CONTROL REVIEW (DATA VALIDATION)
* -VALUE REJECTED DUE TO BLANK CONTAMINATION AS IDENTIFIED IN QUALITY CONTROL REVIEW
** -VALUE REJECTED DUE TO OTHER CONTRACTUAL REQUIREMENTS IDENTIFIED IN QUALITY CONTROL REVIEW
CRDL -CONTRACT REQUIRED DETECTION LIMIT
NOTE -DATA HAS UNDERGONE A QUALITY CONTROL REVIEW; EPA APPROVAL IS PENDING

SOIL RESULTS (GZA)

REVIEW OF TEST PIT DATA FROM GOLDBERG, ZOINO AND ASSOCIATES, INC. (GZA)

All samples for volatile organic analysis were collected as duplicates in eight-ounce glass containers, sealed with aluminum foil liners, and secured with silicone rubber-lined screw caps (GZA, 1983). In a letter from the state of New Hampshire (NH, 1983), GZA was notified that improper sample containers were utilized. Samples were refrigerated immediately after collection and later frozen prior to shipment to Normandeau Associates, Inc. (NAI), the laboratory contracted to conduct the analyses. Information was not presented for field blanks, duplicates, or chain of custody.

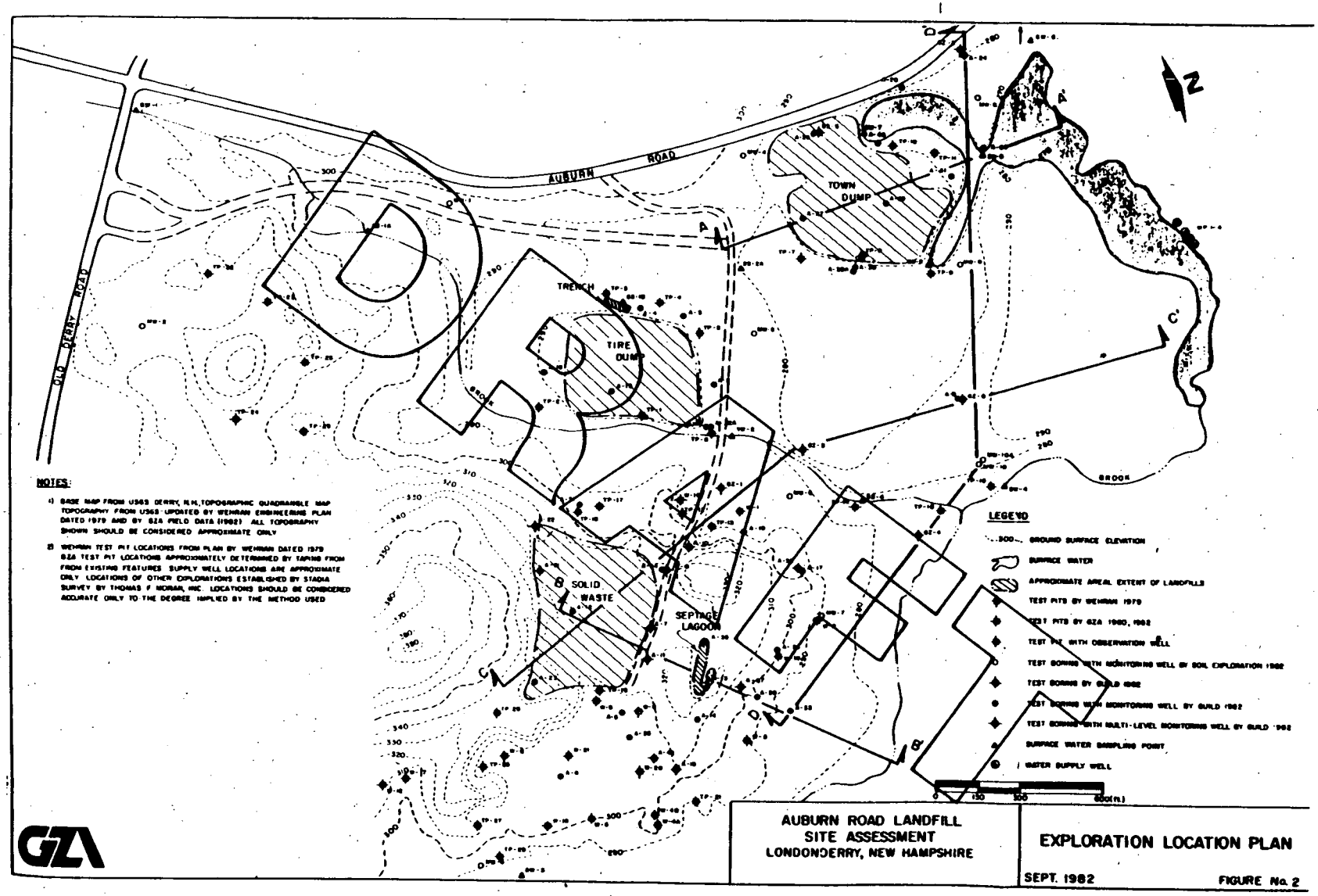
AUBURN ROAD
OLD DERRY ROAD
TOWN DUMP
TRENCH
TIRE DUMP
SOLID WASTE
SEPTAGE LAGOON
BROOK
A
A'
B
B'
C
C'
D
D'
NOTES:
1) BASE MAP FROM USGS DERRY, N.H., TOPOGRAPHIC QUADRANGLE MAP TOPOGRAPHY FROM USGS UPDATED BY WEHRAN ENGINEERING PLAN DATED 1979 AND BY GZA FIELD DATA (1982) ALL TOPOGRAPHY SHOWN SHOULD BE CONSIDERED APPROXIMATE ONLY
2) WEHRAN TEST PIT LOCATIONS FROM PLAN BY WEHRAN DATED 1979 GZA TEST PIT LOCATIONS APPROXIMATELY DETERMINED BY TAPING FROM FROM EXISTING FEATURES SUPPLY WELL LOCATIONS ARE APPROXIMATE ONLY LOCATIONS OF OTHER EXPLORATIONS ESTABLISHED BY STADIA SURVEY BY THOMAS F NORMAN, INC LOCATIONS SHOULD BE CONSIDERED ACCURATE ONLY TO THE DEGREE IMPLIED BY THE METHOD USED
LEGEND
GROUND SURFACE ELEVATION
SURFACE WATER
APPROXIMATE AREAL EXTENT OF LANDFILLS
TEST PITS BY WEHRAN 1979
TEST PITS BY GZA 1980, 1982
TEST PIT WITH OBSERVATION WELL
TEST BORING WITH MONITORING WELL BY SOIL EXPLORATION 1982
TEST BORING BY GUILD 1982
TEST BORING WITH MONITORING WELL BY GUILD 1982
TEST BORING WITH MULTI-LEVEL MONITORING WELL BY GUILD 1982
SURFACE WATER SAMPLING POINT
WATER SUPPLY WELL
0
150
300
600(ft.)
GZA
AUBURN ROAD LANDFILL
SITE ASSESSMENT
LONDONDERRY, NEW HAMPSHIRE
EXPLORATION LOCATION PLAN
SEPT. 1982
FIGURE No. 2

TABLE D-2

TEST PIT SOIL SAMPLES
PURGEABLE ORGANIC ANALYSIS RESULTS

	TP-37	TP-44	TP-50	TP-53	TP-53
Sample No.	7'	5'	7'	2'	6'
Laboratory	NAI	NAI	NAI	NAI	NAI
Analysis by	GC/MS	GC/MS	GC/MS	GC/MS	GC/MS
COMPOUNDS — Sampling Date	1/18/83	1/18/83	1/18/83	1/18/83	1/18/83
1. Chloromethane					
2. Bromomethane					
3. Dichlorodifluoromethane					
4. Vinyl chloride					
5. Chloroethane					
6. Methylene chloride	34	110	230	42	60
7. Acrylonitrile					
8. Trichlorofluoromethane		28	6		
9. 1,1-dichloroethylene					
10. 1,1-dichloroethane		57			
11. Trans-1,2-dichloroethylene		40	6	34	300
12. Chloroform					
13. 1,2-dichloroethane					
14. 1,1,1-trichloroethane		120		6	4
15. Carbon tetrachloride					
16. Bromodichloromethane					
17. 1,2-dichloropropane					
18. Trans-1,3-dichloropropylene					
19. Trichloroethylene		24	14	12	110
20. Benzene		68	32	3	14
21. Dibromochloromethane					
22. Cis-1,3-dichloropropylene					
23. 1,1,2-trichloroethane					
24. Bromoform					
25. 1,1,2,2-tetrachloroethane					
26. Tetrachloroethylene	1	50	220	110	1300
27. Toluene	2	19	590	6	140
28. Chlorobenzene					
29. Ethyl benzene			1200		87
30. Bis-chloromethyl ether					
31. 2-chloroethyl vinyl ether					
32. Acrolein					
ADDITIONAL					
Xylenes			200		70
Methyl ethyl ketone					

NOTES: 1) All results in parts per billion (ppb).

GZA

TABLE D-2

TEST PIT SOIL SAMPLES

PURGEABLE ORGANIC ANALYSIS RESULTS

COMPOUNDS	TP-57	TP-58	TP-59	TP-62	TP-70
Sample No.	5.5'	7'	4'	7'	8'
Laboratory	NAI	NAI	NAI	NAI	NAI
Analysis by	GC/MS	GC/MS	GC/MS	GC/MS	GC/MS
Sampling Date	1/28/83	1/18/83	1/18/83	1/18/83	1/18/83
1. Chloromethane					
2. Bromomethane					
3. Dichlorodifluoromethane					
4. Vinyl chloride					83
5. Chloroethane		15		360	
6. Methylene chloride	61	43	74	31	60
7. Acrylonitrile					
8. Trichlorofluoromethane	7	6			
9. 1,1-dichloroethylene					
10. 1,1-dichloroethane	220	240	320	440	63
11. Trans-1,2-dichloroethylene	610	330	3400	310	550
12. Chloroform					
13. 1,2-dichloroethane		3	6	5	
14. 1,1,1-trichloroethane	420	390	560	970	15
15. Carbon tetrachloride					
16. Bromodichloromethane					
17. 1,2-dichloropropane					
18. Trans-1,3-dichloropropylene					
19. Trichloroethylene	260	130	870	110	30
20. Benzene	10	2			43
21. Dibromochloromethane					
22. Cis-1,3-dichloropropylene					
23. 1,1,2-trichloroethane					
24. Bromoform					
25. 1,1,2,2-tetrachloroethane					
26. Tetrachloroethylene	480	270	2700	78	190
27. Toluene	8	1	340	160	2400
28. Chlorobenzene			9		
29. Ethyl benzene		1	28	17	650
30. Bis-chloromethyl ether					
31. 2-chloroethyl vinyl ether					
32. Acrolein					
ADDITIONAL					
Xylenes		140	120	120	2600
Methyl Ethyl Ketone					11,000

NOTES: 1) All results in parts per billion (ppb).

GZA

TABLE D-4

WATER QUALITY DATA

INORGANIC ANALYSES

PRIORITY POLLUTANT METALS	Station No.	TP-38	TP-54	TP-58	TP-60	TP-72	TP-43	TP-44	TP-47
	Laboratory	NAI	NAI	NAI	NAI	NAI	NAI	NAI	NAI
	Analysis by	AA	AA	AA	AA	AA	AA	AA	AA
	Sampling on	1/18/83	1/18/83	1/18/83	1/18/83	1/18/83	1/18/83	1/18/83	1/18/83
Antimony		<2	<2	<2	<2	<2	<2	<2	<2
Arsenic		<5	<5	<5	<5	<5	30	<5	15
Beryllium		<1	<1	<1	<1	<1	<1	<1	<1
Cadmium		1.8	0.7	2.9	<0.5	4.3	<0.5	<0.5	1.8
Chromium		11	13	<5	17	30	<5	6	15
Copper		<5	<5	<5	<5	6	<5	<5	<5
Lead		13	<5	<5	<5	<5	<5	<5	<5
Mercury *		0.7	<0.2	<0.2	220	1.1	0.3	0.3	330
Nickel		13	73	43	<5	29	9	13	52
Selenium		<5	<5	<5	<5	<5	<5	<5	<5
Silver		<1	<1	<1	<1	<1	<1	<1	<1
Thallium		<2	<2	<2	<2	<2	<2	<2	<2
Zinc		210	280	2100	110	2000	17	39	270
Additional Metals									
Aluminum									
Barium									
Boron									
Calcium									
Cobalt									
Iron									
Manganese									
Magnesium									
Sodium									
Tin									
Vanadium									
Additional Parameters									
Conductivity		933	—	1414	707	650	725	419	1438
pH		5.92	—	6.16	6.70	5.16	6.73	6.53	6.08

* Report analyses for mercury conducted on samples from TP-47 and TP-60 on 2/14/83. Results indicated mercury levels <0.2 ppb.

GZA

GROUNDWATER SAMPLING

SECTIONS IN APPENDIX P

- GROUNDWATER SAMPLING METHODOLOGY
- GROUNDWATER RESULTS (NUS)
- RESIDENTIAL/SUPPLY WELL RESULTS (NUS)
- HISTORICAL DATA - SELECTED WELLS
- GROUNDWATER DATA (STATE OF NEW HAMPSHIRE)
- GROUNDWATER DATA (E & E)
- GROUNDWATER DATA (EPA)
- GROUNDWATER DATA (GZA-GCA ANALYSES)
- GROUNDWATER DATA (GZA-RAI ANALYSES)
- GROUNDWATER DATA (GZA-PEL ANALYSES)

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P-1 GROUNDWATER RESULTS - VOLATILE ORGANICS (1984)
P-2 GROUNDWATER RESULTS - SEMIVOLATILE ORGANICS (1984)
P-3 GROUNDWATER RESULTS - PESTICIDES/PCBS (1984)
P-4 GROUNDWATER RESULTS - INORGANICS (1984)
P-5 GROUNDWATER RESULTS - VOLATILE ORGANICS (1985)
P-6 GROUNDWATER RESULTS - SEMIVOLATILE ORGANICS (1985)
P-7 GROUNDWATER RESULTS - PESTICIDES/PCBS (1985)
P-8 GROUNDWATER RESULTS - INORGANICS (1985)
P-9 AUBURN ROAD - RESIDENTIAL SAMPLE SUMMARY (3-19-85)
P-10 AUBURN ROAD - RESIDENTIAL WELL SAMPLING (3-19-85)
P-11 AUBURN ROAD - RESIDENTIAL SAMPLE SUMMARY (7-9-85)
P-12 AUBURN ROAD - RESIDENTIAL WELL SAMPLING (7-9-85)
P-13 AUBURN ROAD - RESIDENTIAL SAMPLE SUMMARY (10-85)
P-14 AUBURN ROAD - RESIDENTIAL WELL SAMPLING (10-85)
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P-16 WHISPERING PINES TRAILER PARK - SUPPLY WELL SAMPLE SUMMARY
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P-19 WHISPERING PINES TRAILER PARK - SUPPLY WELL SAMPLING (6-20-85)
P-20 WHISPERING PINES TRAILER PARK - SUPPLY WELL SAMPLING (7-9-85)
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P-22 WHISPERING PINES TRAILER PARK - SUPPLY WELL SAMPLING (10-9-85)
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P-24 HISTORICAL DATA - VOLATILE ORGANIC ANALYSIS
P-25 HISTORICAL DATA (GZA) - PHYSICAL CHARACTERISTICS

GROUNDWATER SAMPLING METHODOLOGY

Groundwater Sampling

The primary consideration to conducting groundwater sampling at the Auburn Road Landfill Site was to obtain representative samples of groundwater. It was important that the groundwater sample was guarded against mixing the sample with stagnant (standing) water in the well casing. In a nonpumping well, there would be little vertical mixing of water and stratification would occur. The well water in the screened section would mix with the groundwater due to normal flow patterns, but the well water above the screened section would remain isolated and become stagnant. Sampling stagnant water would thus introduce contaminated material inadvertently or deliberately introduced to the well from the surface. This would lead to nonrepresentative data and allow misleading interpretation of the results. NUS/FIT's sampling methodology for obtaining groundwater quality data from the Auburn Road Landfill Site shall be discussed below.

The groundwater monitoring wells were inspected to ensure that the cap to the wells were locked and the wells were secure. Unsecured or vandalized wells were noted and recorded in the project logbook. The monitoring wells were opened and ventilated for two to three minutes. A Foxboro Century Systems Organic Vapor Analyzer (OVA) Model 128 was utilized to monitor the well hole for volatile organic compounds above background levels. In cases where readings were obtained on the OVA above background levels, the field sampling team upgraded their respiratory protection.

The interior diameters of the wells were measured with a tape measure and recorded in the project logbook. The total well depths were determined and recorded by dropping a plopper attached to a measuring tape and recording the depth at which the lines became slack. Static water levels were determined using an electronic water level indicator. The height of the water column in the well was determined and recorded in the project logbook by subtracting the static water level from the total well depth. The chalk steel tape method consisted of a steel measuring tape with an attached bell-shaped hollow weight plopper on the bottom.

The measuring tape was chalked (from a desired length) to the bottom of the tape. The chalk tape was then lowered into the well and measured from the top of the PVC casing (hold). The tape was withdrawn quickly and the wetted chalk area (cut) was subtracted from the hold to determine the static water level in the well. The value to evacuate (purge) one well volume of water was determined and recorded using the following equation:

$$V = R^2h\ (0.163)$$

V = Volume of water in the well (gallons)
R = Interior radius of the well (inches)
h = Height of standing water (feet)
0.163 = a conversion factor constant which compensates for the conversion of the casing radius from inches to feet, the conversion of cubic feet to gallons and pi

The groundwater monitoring well was then purged by pumping or hand bailing with a stainless steel check valve bailer, which was dependent on the availability of equipment and the depth of the static water level. Whenever possible, the well was purged with either a centrifugal, gasoline or submersible pump by placing the pump's hose at the bottom of the well and slowly moving it towards the top so as to ensure complete evacuation of the standing water. One well volume was removed from the bottom of the well, one from the middle, and approximately three well volumes were removed from the top (near the static water level). In some cases, five (5) well volumes could not be removed from the monitoring well, therefore, the well was pumped to dryness, then allowed to recharge to 75% of its initial static water level before sampling. The intent of pumping an excess of five well volumes from each well was to ensure that the standing water had been evacuated from the well and the water being sample was representative of the aquifer. PH and conductivity was measured prior to sampling with a Myron-L pH and conductivity meter until measurements had stabilized. The sampling equipment

was decontaminated prior to use and between wells with a deionized water, methanol, and deionized water rinse to prevent cross contamination. Sample collection occurred after the well had recharged to a minimum of 75% of its initial static water level. Blank and duplicate samples were collected to assess field sampling and laboratory analytical quality control. Some samples were also split (duplicates) with the owner of the Whispering Pines Mobile Home Park. The groundwater samples were obtained from each well with a stainless steel check valve bailer placed at the center of the well screen and poured into the appropriate sample container depending on the analysis.

Groundwater samples collected for volatile organic analysis were collected in two 44 milliliter (ml) glass septumed VOA vials and preserved with 100 microliters (ul) of a 7,000 ppm mercuric chloride ($HgCl_2$) solution resulting in a final concentration in the sample of 16 ppm. Samples collected for inorganic (metal) analysis were collected in a one liter polyethylene bottle and preserved with a concentrated nitric acid (HNO_3) to a final pH of less than two. Groundwater samples were collected for extractable organic and pesticide analysis in two 80 ounce amber glass bottles. All samples were decontaminated with a deionized water, alconox, and a final deionize water rinse. The samples were stored on ice in coolers at 4°C. Proper chain of custody was maintained throughout the sampling process until relinquished to the appropriate EPA contract laboratory or through delivery by Federal Express.

Residential Tap Water Sampling

Site access for the purpose of collecting residential tapwater samples was obtained by NUS/FIT via site access agreements with private landowners. Residential tap water sampling was conducted at the Auburn Road Landfill Site to assess the threat to the human health and extent of contamination migration in the overburden and bedrock aquifers which serves as a drinking water supply for the residents along Auburn Road, Old Derry Road, and Bypass 28. The Whispering Pines Supply Wells 1 and 2 serves over 250 residents in the Whispering Pines Mobile Home Park as a drinking water supply. Well depth, casing size and holding tank volume information were obtained from the private resident, if known. The system was evacuated three to five well volumes or if the well depth, casing size or holding tank were not known, then the tap was opened and allowed to run for 15 to 30 minutes. Samples were collected prior to any filtering process (water softeners or filters), aerator, or holding tank. All relevant sample information was recorded on a sequentially numbered well record form and referenced in the project logbook.

All samples were collected in a "grab" fashion. The samples were collected in two 44 milliliter (ml) glass septumed VOA vials for volatile organic analysis. All containers were preserved with a 100 microliters of 7,000 ppm mercuric chloride ($HgCl_2$) solution to a final concentration of 16 ppm after sample collection. Samples were decontaminated after collection with a deionized water rinse. All field results were recorded on sample cards and tags, and then recorded in the project logbook. The sample tags were attached to the VOA vials and stored on ice in a sample cooler. Proper chain of custody was maintained throughout the sampling process. Samples were analyzed for volatile organic compounds on the Hazardous Substance List by Gas Chromatograph/Mass Spectrometry at the EPA's New England Regional Laboratory in Lexington, Massachusetts. Samples designated for NUS/FIT's in-house analytical screening for volatile organic compound analysis on a Photovac 10A10 gas chromatograph were relinquished to NUS/FIT personnel at the EPA's Lexington Laboratory.

GROUNDWATER RESULTS (NUS)

TABLE P-1
GROUNDWATER RESULTS-VOLATILE ORGANICS
1984 SAMPLING ROUND(VALUES IN ug/L)

SAMPLE LOCATION	A-41	A-45	A-46	A-48	A-48-D	NUS-1-1	NUS-1-2	NUS-1-3	NUS-2-1	NUS-2-2	NUS-2-3	NUS-3	NUS-4	GZ-1-1	GZ-1-2	GZ-1-2	GZ-2-1	GZ-2-2	GZ-3-1	GZ-3-2	GZ-5-1
TRAFFIC REPORT NUMBER	AA-397	AA-084	AA-085	AA-067	AA-068	AA-375	AA-621	AA-374	AA-373	AA-372	AA-385	AA-371	AA-622	AA-337	AA-338	AA-387	AA-363	AA-363	AA-340	AA-341	AA-342
SAMPLE NUMBER	11985	12045	12046	12053	12054	11949	11989	11948	11947	11945	11946	11916	11650	12077	12078	11938	12084	12090	12108	12107	12079
REFERENCE	F	E	E	D	D	C	F	C	C	C	F	C	F	A	A	F	A	B	A	A	A
VOLATILE ORGANIC COMPOUNDS																					
CHLOROMETHANE																					
BROMOMETHANE																					
VINYL CHLORIDE																					
CHLOROETHANE								10 J	10 J	10 J	13 J					82 J					
METHYLENE CHLORIDE																					120
ACETONE	41 J		*		*		*	*	*	*	*	*	*	*	*	26 J	*	*	*	*	*
CARBON DISULFIDE			20 J					*	190	320	160 J	*		*	*		*		*	*	*
1,1-DICHLOROETHENE								6	5 J	5 J											
1,1-DICHLOROETHANE	8 J						25 J	40	37	43	48 J	32	16 J			71 J					34
TRANS-1,2-DICHLOROETHENE	44 J						520 J	970	590	810	760 J	18	290 J	420	420	450 J			9	5 J	73
CHLOROFORM								12	5	7											71
1,2-DICHLOROETHANE								48	32	41	51 J		28 J								
2-BUTANONE									310	520	1100	27 J		*	*	72 J	*		*	*	*
1,1,1-TRICHLOROETHANE							34 J	50	24	38	24 J		12 J			2800 J					280
CARBON TETRACHLORIDE																6 J					
VINYL ACETATE																					
BROMODICHLOROMETHANE																					
1,1,2,2-TETRACHLOROETHANE																					
1,2-DICHLOROPROPANE								5 J	5 J	5 J						8 J					
TRANS-1,3-DICHLOROPROPENE																					
TRICHLOROETHENE							36 J	55	20	23	27 J	11	12 J			10 J					66
DIBROMOCHLOROMETHANE																					
1,1,2-TRICHLOROETHANE																					
BENZENE								6	7	7	10 J					12 J					
CIS-1,3-DICHLOROPROPENE																					
2-CHLOROETHYLVINYLETHER																					
BROMOFORM																					
2-HEXANONE									10 J	16											
4-METHYL-2-PENTANONE									37	58	69 J										
TETRACHLOROETHENE			60 J				15 J	14	10	12	14 J	5 J		500 J	500 J	240 J			10 J		
TOLUENE	12 J					5 J	11 J	5 J	240	350	410 J		61 J	5200	4600	6500 J			77	10	42
CHLOROBENZENE									9	15	17 J					8 J					
ETHYLBENZENE																74 J					
STYRENE								5 J	24	43	48 J		7 J	250 J	250 J	160 J			5 J		
TOTAL XYLENES																					
DILUTION FACTOR:	1	1	1	1	1	1	1	1	1	1	1	1	1	50	50	1	1	1	1	1	1

BLANK SPACE-INDICATES COMPOUND WAS NOT DETECTED
J -QUANTITATION IS APPROXIMATE DUE TO QUALITY CONTROL REVIEW (DATA VALIDATION))
* -VALUE REJECTED DUE TO BLANK CONTAMINATION IDENTIFIED IN QUALITY CONTROL REVIEW
** -VALUE REJECTED DUE TO OTHER CONTRACTUAL REQUIREMENTS IDENTIFIED IN QUALITY CONTROL REVIEW
REFERENCE INDICATES THE SPECIFIC DETECTION LIMIT AND BLANKS (AT END OF TABLE) ASSOCIATED WITH A SAMPLE

TABLE P-1
GROUNDWATER RESULTS-VOLATILE ORGANICS
1984 SAMPLING ROUND(VALUES IN ug/L)

SAMPLE LOCATION	GZ-5-2	GZ-8-1	GZ-8-2	GZ-9-2	GZ-9-3	GZ-9-4	GZ-10-1	GZ-10-2	GZ-10-3	GZ-11-1	GZ-11-2	GZ-11-2(D)	MW-2	MW-3	MW-4	MW-4(D)	MW-6	MW6(D)	MW-7	MW-8	MW-9
TRAFFIC REPORT NUMBER	AA-370	AA-343	AA-383	AA-344	AA-367	AA-368	AA-345	AA-346	AA-369	AA-347	AA-364	AA-365	AA-398	AA-389	AA-349	AA-350	AA-386	AA-399	AA-360	AA-388	AA-351
SAMPLE NUMBER	11917	12097	11914	12102	11911	11913	12100	12101	12912	12083	12091	12092	11984	11944	12080		11986	11987	12087	12098	12104
REFERENCE	C	A	F	A	C	C	A	A	C	A	B	B	F	F	A	A	F	F	B	F	A
VOLATILE ORGANIC COMPOUNDS																					
CHLOROMETHANE																					
BROMOMETHANE																					
VINYL CHLORIDE						10 J			10 J									14 J			
CHLOROETHANE																					
METHYLENE CHLORIDE	*	*	*	*	*	85 J	*	*		*	*	*	*	*	*	*	*	*	*	*	*
ACETONE	*	*			*		*	*	130	*	*	*			*				*		*
CARBON DISULFIDE																					
1,1-DICHLOROETHENE			14 J								5 J	5 J									
1,1-DICHLOROETHANE						43		5 J	13		12	14 J						16 J		100 J	
TRANS-1,2-DICHLOROETHENE		39	320 J			1000	42	55	150		300	360 J					110 J	130 J		77 J	7
CHLOROFORM																					
1,2-DICHLOROETHANE			34 J			51			9		19	22 J						20 J			
2-BUTANONE			410 J			190	140 J	110 J	220						*		420 J	630 J	*	120 J	*
1,1,1-TRICHLOROETHANE			14 J			42		5 J	5		35	41 J								170 J	
CARBON TETRACHLORIDE																					
VINYL ACETATE																					
BROMODICHLOROMETHANE																					
1,1,2,2-TETRACHLOROETHANE																					
1,2-DICHLOROPROPANE						5 J															
TRANS-1,3-DICHLOROPROPENE																					
TRICHLOROETHENE			9 J				5 J	5 J	6		22	32 J								9 J	
DIBROMOCHLOROMETHANE																					
1,1,2-TRICHLOROETHANE						44															
BENZENE						8															
CIS-1,3-DICHLOROPROPENE																					
2-CHLOROETHYLVINYLETHER																					
BROMOFORM																					
2-HEXANONE						10 J		10 J	10 J												
4-METHYL-2-PENTANONE						11	10 J	10 J	15								52 J	51 J			10 J
TETRACHLOROETHENE		5 J				14		5 J	5 J		5	6 J									
TOLUENE	5 J		96 J		5 J	80	28	41	56					11 J			850 J	870 J		31 J	*
CHLOROBENZENE																					
ETHYLBENZENE						5 J		5 J	5 J								13 J	14 J			
STYRENE																					
TOTAL XYLENES			14 J			13	5 J	5 J	5								33 J				
DILUTION FACTOR:	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1

BLANK SPACE-INDICATES COMPOUND WAS NOT DETECTED
J -QUANTITATION IS APPROXIMATE DUE TO QUALITY CONTROL REVIEW (DATA VALIDATION)
* -VALUE REJECTED DUE TO BLANK CONTAMINATION AS IDENTIFIED IN QUALITY CONTROL REVIEW
** -VALUE REJECTED DUE TO OTHER CONTRACTUAL REQUIREMENTS INDENTIFIED IN QUALITY CONTROL REVIEW
REFERENCE -INDICATES THE SPECIFIC DETECTION LIMIT AND BLANKS (AT END OF TABLE) ASSOCIATED WITH A SAMPLE

TABLE P-1
GROUNDWATER RESULTS-VOLATILE ORGANICS
1984 SAMPLING ROUND(VALUES IN ug/L)

SAMPLE LOCATION	MW-9(D)	MW-10	MW-10A	W-1	W-2	W-3	W-3(D)	W-4	W-5-1	W-5-2	W-5-3
TRAFFIC REPORT NUMBER	AA-352	AA-353	AA-354	AA-390	AA-381	AA-382	AA-366	AA-400	AA-391	AA-361	AA-362
SAMPLE NUMBER	12105	12099	12103	11939	12095	12110	11910	11988	11942	12093	12094
REFERENCE	A	A	A	F	C	C	C	C	F	B	B
VOLATILE ORGANIC COMPOUNDS											
CHLOROMETHANE											
BROMOMETHANE											
VINYL CHLORIDE											
CHLOROETHANE										24	
METHYLENE CHLORIDE	*	*	*	*	*	*	*	*	*	10 J	
ACETONE	*	*	*		*	*	*			*	
CARBON DISULFIDE										*	
1,1-DICHLOROETHENE			55								
1,1-DICHLOROETHANE										540	32 J
TRANS-1,2-DICHLOROETHENE	6					5 J	5 J		170 J	1800	70 J
CHLOROFORM									45 J	190	460 J
1,2-DICHLOROETHANE											
2-BUTANONE	*	*	*		**					7	
1,1,1-TRICHLOROETHANE			5 J			6	6		690 J	** 240	** 730 J
CARBON TETRACHLORIDE											
VINYL ACETATE											
BROMODICHLOROMETHANE											
1,1,2,2-TETRACHLOROETHANE											
1,2-DICHLOROPROPANE											
TRANS-1,3-DICHLOROPROPENE											
TRICHLOROETHENE											
DIBROMOCHLOROMETHANE									370 J	440	470 J
1,1,2-TRICHLOROETHANE											
BENZENE											
CIS-1,3-DICHLOROPROPENE											
2-CHLOROETHYLVINYLETHER											
BROMOFORM											
2-HEXANONE											
4-METHYL-2-PENTANONE	10 J										
TETRACHLOROETHENE			5 J						630 J	170	14 J
TOLUENE	*		*	7	5 J		5 J	11 J	22	7	110 J
CHLOROBENZENE											
ETHYLBENZENE											
STYRENE											
TOTAL XYLENES											
DILUTION FACTOR:	1	1	1	1	1	1	1	1	1	1	1

BLANK SPACE-INDICATES COMPOUND WAS NOT DETECTED
J -QUANTITATION IS APPROXIMATE DUE TO QUALITY CONTROL REVIEW (DATA VALIDATION)
* -VALUE REJECTED DUE TO BLANK CONTAMINATION AS IDENTIFIED IN QUALITY CONTROL REVIEW
** -VALUE REJECTED DUE TO OTHER CONTRACTUAL REQUIREMENTS INDENTIFIED IN QUALITY CONTROL REVIEW
REFERENCE -INDICATES THE SPECIFIC DETECTION LIMIT AND BLANKS (AT END OF TABLE) ASSAOCIATED WITH A SAMPLE

TABLE P-1

GROUNDWATER RESULTS-DETECTION LIMITS FOR VOLATILE ORGANICS

1984 SAMPLING ROUND (VALUES IN ug/L)

DETECTION LIMIT REFERENCE	A	B	C	D	E	F
TRAFFIC REPORT NUMBERS	AA337-356	AA-357-365	AA086, AA381-382	AA366-376	AA056-075	AA076-085	AA383-400, AA621-622
VOLATILE ORGANIC COMPOUNDS						
CHLOROMETHANE	10	10	10	57	10	10
BROMOMETHANE	10	10	10	10	10	10
VINYL CHLORIDE	10	10	10	68	10	10
CHLOROETHANE	10	10	10	10	10	10
METHYLENE CHLORIDE	10	10	10	5	10	10
ACETONE	5	5	5	5	5	5
CARBON DISULFIDE	10	10	10	3	10	10
1,1-DICHLOROETHENE	5	5	5	8	5	5
1,1-DICHLOROETHANE	5	5	5	5	5	5
TRANS-1,2-DICHLOROETHANE	5	5	5	5	5	5
CHLOROFORM	5	5	5	6	5	5
1,2-DICHLOROETHANE	5	5	5	3	5	5
2-BUTANONE	10	10	28	5	10	10
1,1,1-TRICHLOROETHANE	5	5	5	5	5	5
CARBON TETRACHLORIDE	5	5	5	9	5	5
VINYL ACETATE	10	10	10	13	10	10
CHLORODIBROMOMETHANE	5	5	5	5	5	5
1,1,2,2-TETRACHLOROETHANE	5	5	5	11	5	5
1,2-DICHLOROPROPANE	5	5	5	10	5	5
TRANS-1,3-DICHLOROPROPENE	5	5	5	7	5	5
TRICHLOROETHENE	5	5	5	5	5	5
DIBROMOCHLOROMETHANE	5	5	5	8	5	5
1,1,2-TRICHLOROETHANE	5	5	5	5	5	5
BENZENE	5	5	5	5	5	5
CIS-1,3-DICHLOROPROPENE	5	5	5	5	5	5
2-CHLOROETHYLVINYLETHER	10	10	10	10	10	10
BROMOFORM	5	5	5	15	5	5
2-HEXANONE	10	10	10	23	10	10
4-METHYL-2-PENTANONE	10	10	10	33	10	10
TETRACHLOROETHENE	5	5	5	15	5	5
TOLUENE	5	5	5	15	5	5
CHLOROBENZENE	5	5	5	14	5	5
ETHYLBENZENE	5	5	5	10	5	5
STYRENE	5	5	5	15	5	5
TOTAL XYLENES	5	5	5	18	5	5

TABLE P-1

GROUNDWATER RESULTS-VOLATILE ORGANICS (LAB AND FIELD BLANKS)

1984 SAMPLING ROUND (VALUES IN ug/L)

BLANK REFERENCE	A	A	A	A	A	A	B	B	B	C	C	C	D	D	D	E	E	E	F	F	F	F
SAMPLE LOCATION	FIELD BLK	FIELD BLK	LAB BLK	LAB BLK	LAB BLK	LAB BLK	FIELD BLK	LAB BLK	LAB BLK	FIELD BLK	LAB BLK	LAB BLK	FIELD BLK	LAB BLK	LAB BLK	FIELD BLK	LAB BLK	LAB BLK	FIELD BLK	FIELD BLK	LAB BLK	LAB BLK
TRAFFIC REPORT NUMBER	AA-348	AA-356	6	506-1	506-2	506-3	AA-357	BLK506G4	BLK5065	AA-086	5066	5067	AA-074	9/26/84	10/8/84	AA-081	9/26/84	10/8/84	AA-394	AA-395	1	2
SAMPLE NUMBER	12085	12086	---	---	---	---	12106	---	---	11957	---	---	12073	---	---	12041	---	---	11956	12109	---	---
VOLATILE ORGANIC COMPOUNDS																						
CHLOROMETHANE																						
BROMOMETHANE																						
VINYL CHLORIDE																						
CHLOROETHANE																						
METHYLENE CHLORIDE	5	5	5	5	5	5	5	8		5	5	7		1	9		1	9	7	7	8	6
ACETONE	10	10	36	15	37	21	10	22	37	10	15	10										
CARBON DISULFIDE																						
1,1-DICHLOROETHENE																						
1,1-DICHLOROETHANE																						
TRANS-1,2-DICHLOROETHENE																						
CHLOROFORM																						
1,2-DICHLOROETHANE																						
2-BUTANONE		10	10	10	10	10	10	10	10													10
1,1,1-TRICHLOROETHANE																						
CARBON TETRACHLORIDE																						
VINYL ACETATE																						
BROMODICHLOROMETHANE																						
1,1,2,2-TETRACHLOROETHANE																						
1,2-DICHLOROPROPANE																						
TRANS-1,3-DICHLOROPROPENE																						
TRICHLOROETHENE																						
DIBROMOCHLOROMETHANE																						
1,1,2-TRICHLOROETHANE																						
BENZENE																						
CIS-1,3-DICHLOROPROPENE																						
2-CHLOROETHYLVINYLETHER																						
BROMOFORM																						
2-HEXANONE																						
4-METHYL-2-PENTANONE								10														
TETRACHLOROETHENE																						
TOLUENE					5																	
CHLOROBENZENE																						
ETHYLBENZENE																						
STYRENE																						
TOTAL XYLENES												4										
DILUTION FACTORS:	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1

BLANK SPACE-INDICATES COMPOUND WAS NOT DETECTED

TABLE P-2
GROUNDWATER RESULTS-SEMIVOLATILE ORGANICS
1984 SAMPLING ROUND

SAMPLE LOCATION		A-9	A-15	A-15(D)	A-41	GZI-2	MW-2	MW-8	NUS1-2	NUS4	W-1	W-4	WS-1	BLANK
TRAFFIC REPORT NUMBER		AA-384	AA-392	AA-393	AA-397	AA-387	AA-398	AA-388	AA-621	AA-622	AA-390	AA-400	AA-391	AA-394
SAMPLE NUMBER		11915	11941	11941	11985	11938	11984	12098	11989	11950	11939	11988	11942	11956
SEMI VOLATILE ORGANIC COMPOUNDS	CRDL (ug/L)													
PHENOL	10													
ANILINE	10													
1,2-DICHLOROBENZENE	10													
2-METHYLPHENOL	10													
4-METHYLPHENOL	10													
ISOPHORONE	10													
BENZOIC ACID	50													
1,2,4-TRICHLOROBENZENE	10													
NAPHTHALENE	10													
4-CHLORO-3-METHYLPHENOL	10													
2-METHYLNAPHTHALENE	10													
2-CHLORONAPHTHALENE	10													
2-NITROANILINE	50													
DIMETHYL PHTHALATE	10													
ACENAPHTHYLENE	10													
ACENAPHTHENE	10													
DIBENZOFURAN	10													
DIETHYLPHTHALATE	10													
FLUORENE	10													
N-NITROSODIPHENYLAMINE	10													
PHENANTHRENE	10													
ANTHRACENE	10													
DI-n-BUTYLPHTHALATE	10		4.5 J											
FLUORANTHENE	10													
PYRENE	10													
BUTYLBENZYLPHTHALATE	10													
BENZO(A)ANTHRACENE	10													
BIS(2-ETHYLHEXYL)PHTHALATE	10		202											
CHRYSENE	10													
DI-n-OCTYL PHTHALATE	10													
BENZO(b)FLUORANTHENE	10													
BENZO(k)FLUORANTHENE	10													
BENZO(a)PYRENE	10													
DILUTION FACTORS:		1	1	1	1	1	1	1	1	1	1	1	1	1

BLANK SPACE-INDICATES COMPOUND WAS NOT DETECTED
J -QUANTITATION IS APPROXIMATE DUE TO QUALITY CONTROL REVIEW(DATA VALIDATION)
* -VALUE REJECTED DUE TO BLANK CONTAMINATION AS IDENTIFIED IN QUALITY CONTROL REVIEW
CRDL -CONTRACT REQUIRED DETECTION LIMIT(CRDL X DILUTION FACTOR=SAMPLE DETECTION LIMIT)
APPENDIX B LISTS ALL COMPOUNDS ANALYZED IN THESE SAMPLES

TABLE P-3
GROUNDWATER RESULTS-PESTICIDES/PCBS
1984 SAMPLING ROUND

SAMPLE LOCATION	CRDL (ug/L)	A-9	A-15	A-15(D)	A-41	GZ-1-2	GZ-B-2	MW-2	MW-3	MW-6	MW-6(D)	MW-8	NUS-1-2	NUS-2-3	NUS-4	W-1	W-4	W5-1	BLANK	BLANK
TRAFFIC REPORT NUMBER		AA-384	AA-392	AA-393	AA-397	AA-387	AA-383	AA-398	AA-389	AA-396	AA-399	AA-388	AA-621	AA385	AA-622	AA-390	AA-400	AA-391	AA-394	AA-395
SAMPLE NUMBER		11915	11940	11941	11985	11938	11914	11984	11944	11986	11987	12098	11989	11946	11950	11939	11988	11942	11956	12109
ALPHA-BHC	0.05																			
BETA-BHC	0.05																			
DELTA-BHC	0.05																			
GAMMA-BHC(LINDANE)	0.05																			
HEPTACHLOR	0.05																			
ALDRIN	0.05																			
HEPTACHLOR EPOXIDE	0.05																			
ENDOSULFAN 1	0.05																			
DIELORIN	0.10																			
4,4-DDE	0.10																			
ENDRIN	0.10																			
ENDOSULFAN 2	0.10																			
4,4-DDD	0.10																			
ENDRIN ALDEHYDE	0.10																			
ENDOSULFAN SULFATE	0.10																			
4,4-DDT	0.10																			
METHOXYCHLOR	0.5																			
ENDRIN KETONE	0.10																			
CHLORDANE	0.5																			
TOXAPHENE	1.0																			
AROCLOR-1016	0.5																			
AROCLOR-1221	0.5																			
AROCLOR-1232	0.5																			
AROCLOR-1242	0.5		0.86	0.57																
AROCLOR-1248	0.5																			
AROCLOR-1254	1.0																			
AROCLOR-1260	1.0																			
DILUTION FACTORS:		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1

BLANK SPACE-INDICATES COMPOUND WAS NOT DETECTED
J -QUANTITATION IS APPROXIMATE DUE TO QUALITY CONTROL REVIEW(DATA VALIDATION)
* -VALUE REJECTED DUE TO BLANK CONTAMINATION IDENTIFIED IN QUALITY CONTROL REVIEW
** -VALUE REJECTED DUE TO OTHER CONTRACTUAL REQUIREMENTS IDENTIFIED IN QUALITY CONTROL REVIEW
CRDL -CONTRACT REQUIRED DETECTION LIMIT (MULTIPLY BY DILUTION FACTOR TO OBTAIN SAMPLE DETECTION LIMIT).

TABLE P-4
GROUNDWATER INORGANICS RESULTS
1984 SAMPLING ROUND

SAMPLE LOCATION		A-9	A-15	A-15(D)	A-41	GZ-1-2	GZ-B-2	MW-2	MW-3	MW-6	MW-6(D)	MW-8	NUS-1-2	NUS-2-3	NUS-4	W-1	W-4	W-5-1	BLANK	BLANK
TRAFFIC REPORT NUMBER		MA-0396	MA-0398	MA-0397	MA-0109	MA-0400	MA-0399	MA-0114	MA-0102	MA-0108	MA-0110	MA-0101	MA-0112	MA-0105	MA-0113	MA-0103	MA-0111	MA-0106	MA-0341	MA-0104
SAMPLE NUMBER		11915	11940	11941	11985	11938	11914	11984	11944	11986	11987	12098	11989	11946	11950	11939	11988	11942	11956	12109
INORGANIC ELEMENTS	IDL (ug/L)																			
ALUMINUM	161	30000 J	80000 J	130000 J	25000 J	18000 J	*	130000 J	91000 J	34000 J	19000 J	23000 J	38000 J	120000 J	*					
ANTIMONY	14		14		18			20											300	
ARSENIC	4.6	72 J	130 J	70 J	*	64 J	*	62 J	*	45 J	73 J	19 J	88 J	34 J	*			33 J		
BARIUM	18	171 J	450 J	650 J	240 J	550 J		670 J	820 J	183	122 J	280 J	250 J	1000 J	80 J	105 J	74 J	18 J		
BERYLLIUM	0.6	18	8.7	13	5.5	2.4		9.8	11	2.4	1.7	7.9	5.4	12						
CADMIUM	4.0																			
CALCIUM	427	11000 J	21000 J	34000 J	24000 J		172000 J	25000	22000 J	62000 J	63000 J	24000 J	170000 J	214000 J	81000 J	27000 J	27000 J	18000 J	1400	1000
CHROMIUM	2.1	32 J	160 J	240 J	51 J	92 J	*	515 J	145 J	136 J	87 J	126 J	105 J	182 J	*	*	*	*	4.3	
COBALT	6.9	21	38	60	19	106	33	110	61	91	81	54 J	85	127						
COPPER	1.3	23	110	190	57	28		141	206	38	9.5	96	183	197						
IRON	7.8	23000 J	84000 J	*	48000 J	260000 J	75000 J	180000 J	83000 J	12000 J	11000 J	47000 J	91000 J	160000 J	8900 J	*	6700 J	1800 J	270	75
LEAD	16	34 J	87 J	112 J	44 J	62 J		81 J	102 J	36 J	*	231 J	47 J	93 J	*	*			4.7	
MAGNESIUM	386	3900 J	17000	27000	9300	34000	25000	65000	23000	22000	17000	14000	34000	58000	14000	17000	9100	4500	400	
MANGANESE	1.2	3400	1400	2000	1600	24000	20000	2700	2900	21000	23000	6100	28000	25000	9000	230	48 J	670	7.3	
MERCURY	0.2	0.2								0.37 J	0.37 J									
NICKEL	34		103	153	66	170		273	118	57	42	112	90	175						
POTASSIUM	503	2800 J	8200	12400	4190 J	19000	2700 J	9100	11000	5900	4400 J	5500	6200	14000	*	*	*	*	530	
SELENIUM	4.2		**											**						
SILVER	2.6			**	**	**	**	**	**	**	**	**	**	**			**	**		
SODIUM	585	*	14800 J	16000 J	10000 J	79000 J	23000 J	10600 J	*	29000 J	31000 J	30000 J	15000 J	29000 J	23000 J	*	*	150000 J		6.1
THALLIUM	4.1	*	*	**	*		*	*	*	*	*	*	*	*	*	*	*	*	2000	1300
TIN	36																			6
VANADIUM	3.5	18 J	96 J	159 J	32 J	10 J		314 J	117 J	55 J	26 J	87 J	84 J	164 J						
ZINC	3.3	220 J	440 J	640 J	250 J	250 J	28 J	500 J	520 J	130 J	90 J	320 J	400 J	630 J	*	*	*	*	8.4	6.3

BLANK SPACE-INDICATES COMPOUND WAS NOT DETECTED
J -QUANTITATION IS APPROXIMATE DUE TO QUALITY CONTROL REVIEW
* -VALUE REJECTED DUE TO BLANK CONTAMINATION IDENTIFIED IN QUALITY CONTROL REVIEW
** -VALUE REJECTED DUE TO OTHER CONTRACTUAL REQUIREMENTS INDENTIFIED IN QUALITY CONTROL REVIEW
IDL -INSTRUMENT DETECTION LIMIT

TABLE P-5
GROUNDWATER RESULTS-VOLATILE ORGANICS
1985 SAMPLING ROUNDS

SAMPLE LOCATION		A-3	A-9	A-12	A-15	A-26	A-27	A-27(D)	A-28	A-29	A-31	A-31(D)	A-32A	A-33	A-38	A-39	A-41	GZ1-1	GZ1-2	GZ1-2(D)	MW-2	MW-8
TRAFFIC REPORT NUMBER		AD978	AD997	AD977	AD970	AD998	AD967	AD969	AD991	AD968	AE204	AE205	AD965	AD976	AD971	AE206	AD990	AD995	AD993	AD994	AE201	AD960
SAMPLE NUMBER		13963	13965	13962	13939	13966	13936	13938	13952	13937	13970	13974	13947	13961	13940	13955	13951	13958	13956	13957	13950	13942
REFERENCE		A	B	A	A	B	A	A	B	A	C	C	A	A	A	C	B	B	B	B	C	A
VOLATILE ORGANIC COMPOUNDS	CRDL (ug/L)																					
CHLOROMETHANE	10																					
BROMOMETHANE	10																					
VINYL CHLORIDE	10																					
CHLOROETHANE	10																					
METHYLENE CHLORIDE	5	*	*			83			4 J													
ACETONE	10	90		45		*		20000 J	100000 J	*			*	*	*		*	*	*	*	*	
CARBON DISULFIDE	5		0.9 J							39				240	1900			*	*	*	*	
1,1-DICHLOROETHENE	5																					
1,1-DICHLOROETHANE	5								14													
TRANS-1,2-DICHLOROETHENE	5					19			86					38			4 J	29 J				8
CHLOROFORM	5			29	6			210000 J	100000 J	52				33	400			78 J	170 J	180 J		
1,2-DICHLOROETHANE	5																3 J	56 J	130 J	140 J		
2-BUTANONE	10									2 J								27 J				
1,1,1-TRICHLOROETHANE	5																	1100 J	1800 J	1900 J		
CARBON TETRACHLORIDE	5					6				100												
VINYL ACETATE	10																3 J					3
BROMODICHLOROMETHANE	5																					
1,1,2,2-TETRACHLOROETHANE	5																					
1,2-DICHLOROPROPANE	5																					
TRANS-1,3-DICHLOROPROPENE	5																					
TRICHLOROETHENE	5																					
DIBROMOCHLOROMETHANE	5								11													
1,1,2-TRICHLOROETHANE	5		*														2 J					
BENZENE	5																					
CIS-1,3-DICHLOROPROPENE	5								*													
2-CHLOROETHYLVINYLETHER	10																0.8 J			*		
BROMOFORM	5																					
2-HEXANONE	10																					
4-METHYL-2-PENTANONE	10																					
TETRACHLOROETHENE	5																	85 J	130 J	140 J		
TOLUENE	5								8								3 J					
CHLOROBENZENE	5													69	530	2100		1800	2600	2800		
ETHYLBENZENE	5		1 J																			
STYRENE	5								0.4 J								1 J	32 J	60 J	80 J		
TOTAL XYLENES	5																	40 J	69 J	100 J		
DILUTION FACTORS:		1	1	1	1	1	5000	5000	1	1	1	1	1	2.5	33	1	1	20	50	50	1	1

BLANK SPACE-INDICATES COMPOUND WAS NOT DETECTED
J -QUANTITATION IS APPROXIMATE DUE TO QUALITY CONTROL REVIEW (DATA VALIDATION)
* -VALUE REJECTED DUE TO BLANK CONTAMINATION AS IDENTIFIED IN QUALITY CONTROL REVIEW
** -VALUE REJECTED DUE TO OTHER CONTRACTUAL REQUIREMENTS IDENTIFIED IN QUALITY CONTROL REVIEW
CRDL -CONTRACT REQUIRED DETECTION LIMIT (MULTIPLY BY DILUTION FACTOR TO OBTAIN SAMPLE DETECTION LIMIT)
NOTE -DATA HAS UNDERGONE A QUALITY CONTROL REVIEW; EPA APPROVAL IS PENDING
REFERENCE -INDICATES THE SPECIFIC DETECTION LIMIT AND BLANKS (AT END OF TABLE) ASSOCIATED WITH A SAMPLE

TABLE P-5
GROUNDWATER RESULTS-VOLATILE ORGANICS
1985 SAMPLING ROUNDS

SAMPLE LOCATION	NUS-1-1	NUS-1-2	NUS-1-3	NUS-2-1	NUS-2-2	NUS-2-3	NUS-3	NUS-5	NUS-6	NUS-7	NUS-7	NUS-8	NUS-8	NUS-9-1	NUS-9-2	NUS-10-1	NUS-11	NUS-12	NUS-12(D)	NUS-13	W-2
TRAFFIC REPORT NUMBER	AE202	AE203	AD963	AD964	AD962	AD961	AD999	AD974	AD972	AE207	AE584	AD973	AE583	AE208	AE209	AD975	AD979	AE586	AE587	AE585	AB599
SAMPLE NUMBER	13953	13954	13945	13946	13944	13943	13967	13972	13941	13959	14046	13971	14045	13960	13964	13973	13948	14048	14049	14047	13999
REFERENCE	C	C	A	A	A	A	B	A	A	C	D	A	D	C	C	A	A	D	D	D	B
VOLATILE ORGANIC COMPOUNDS	CRDL (ug/L)																				
CHLOROMETHANE	10			13																	
BROMOMETHANE	10																				
VINYL CHLORIDE	10			10																	
CHLOROETHANE	10																				
METHYLENE CHLORIDE	5	*	*	300			*	*	*	*	*	*	*	*	*	*		*	*	*	*
ACETONE	10	*	220	250	29	110	300	96 J	78		*				*	44					
CARBON DISULFIDE	5																				
1,1-DICHLOROETHENE	5											39									
1,1-DICHLOROETHANE	5							21				31	32								
TRANS-1,2-DICHLOROETHENE	5		370				70	68					1 J								
CHLOROFORM	5							7													
1,2-DICHLOROETHANE	5												1 J								
2-BUTANONE	10		490					200 J													
1,1,1-TRICHLOROETHANE	5											23									
CARBON TETRACHLORIDE	5																				
VINYL ACETATE	10																				
BROMODICHLOROMETHANE	5																				
1,1,2,2-TETRACHLOROETHANE	5																				
1,2-DICHLOROPROPANE	5																				
TRANS-1,3-DICHLOROPROPENE	5																				
TRICHLOROETHENE	5							4 J				5									
DIBROMOCHLOROMETHANE	5																				
1,1,2-TRICHLOROETHANE	5																				
BENZENE	5							*				1 J									
CIS-1,3-DICHLOROPROPENE	5																				
2-CHLOROETHYLVINYLETHER	10																				
BROMOFORM	5																				
2-HEXANONE	10							6 J													
4-METHYL-2-PENTANONE	10		38 J					17 J													
TETRACHLOROETHENE	5			20				2 J													
TOLUENE	5		410	140	410	630	580	180				3 J	52								
CHLOROBENZENE	5																				
ETHYLBENZENE	5							4 J													
STYRENE	5																				
TOTAL XYLENES	5							5													
DILUTION FACTORS:		1	5	1	1	10	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1

BLANK SPACE-INDICATES COMPOUND WAS NOT DETECTED
J -QUANTITATION IS APPROXIMATE DUE TO QUALITY CONTROL REVIEW(DATA VALIDATION)
* -VALUE REJECTED DUE TO BLANK CONTAMINATION AS IDENTIFIED IN QUALITY CONTROL REVIEW
** -VALUE REJECTED DUE TO OTHER CONTRACTUAL REQUIREMENTS IDENTIFIED IN QUALITY CONTROL REVIEW
CRDL -CONTRACT REQUIRED DETECTION LIMIT (MULTIPLY BY DILUTION FACTOR TO OBTAIN SAMPLE DETECTION LIMIT)
NOTE -DATA HAS UNDERGONE A QUALITY CONTROL REVIEW; EPA APPROVAL IS PENDING
REFERENCE -INDICATES THE SPECIFIC DETECTION LIMIT AND BLANKS (AT END OF TABLE) ASSOCIATED WITH A SAMPLE

TABLE P-5
GROUNDWATER RESULTS-VOLATILE ORGANICS (FIELD BLANKS)
1985 SAMPLING ROUND (VALUES IN ug/L)

BLANK REFERENCE	A	A	C	D
SAMPLE LOCATION	FIELD BLK	FIELD BLK	FIELD BLK	FIELD BLK
TRAFFIC REPORT NUMBER	AD966	AD996	AE210	AE582
SAMPLE NUMBER	13949	13895	13894	14050
VOLATILE ORGANIC COMPOUNDS				
CHLOROMETHANE				
BROMOMETHANE				
VINYL CHLORIDE				
CHLOROETHANE				
METHYLENE CHLORIDE	1	3	3	4
ACETONE			2	
CARBON DISULFIDE				
1,1-DICHLOROETHENE				
1,1-DICHLOROETHANE				
TRANS-1,2-DICHLOROETHENE				
CHLOROFORM				
1,2-DICHLOROETHANE				
2-BUTANONE				
1,1,1-TRICHLOROETHANE				
CARBON TETRACHLORIDE				
VINYL ACETATE				
BROMODICHLOROMETHANE				
1,1,2,2-TETRACHLOROETHANE				
1,2-DICHLOROPROPANE				
TRANS-1,3-DICHLOROPROPENE				
TRICHLOROETHENE				
DIBROMOCHLOROMETHANE				
1,1,2-TRICHLOROETHANE		1		
BENZENE				
CIS-1,3-DICHLOROPROPENE				
2-CHLOROETHYLVINYLETHER				
BROMOFORM				
2-HEXANONE				
4-METHYL-2-PENTANONE				
TETRACHLOROETHENE				
TOLUENE				
CHLOROBENZENE				
ETHYLBENZENE				
STYRENE				
TOTAL XYLENES				
DILUTION FACTORS:	1	1	1	1

BLANK SPACE-INDICATES COMPOUND WAS NOT DETECTED
NOTE -DATA HAS UNDERGONE A QUALITY CONTROL REVIEW; EPA APPROVAL IS PENDING

TABLE P-6
GROUNDWATER RESULTS-SEMIVOLATILE ORGANICS
1985 SAMPLING ROUNDS

SAMPLE LOCATION		A-3	A-9	A-12	A-15	A-26	A-27	A-27(D)	A-28	A-29	A-32A	A-33	A-38	A-41	GZ1-1	GZ1-2	GZ1-2(D)	MW-8	NUS-1-3	NUS-2-1	NUS-2-2	NUS-2-3
TRAFFIC REPORT NUMBER		AD978	AD997	AD977	AD970	AD998	AD967	AD969	AD991	AD968	AD965	AD976	AD971	AD990	AD995	AD993	AD994	AD960	AD963	AD964	AD962	AD961
SAMPLE NUMBER		13963	13965	13962	13939	13966	13936	13938	13952	13937	13947	13961	13940	13951	13958	13856	13957	13958	13945	13946	13944	13943
SEMI-VOLATILE ORGANIC COMPOUNDS	CRDL (ug/L)																					
PHENOL	10																					
ANILINE	10															12 J						
2-CHLOROPHENOL	10																					
1,4-DICHLOROBENZENE	10																					
1,2-DICHLOROBENZENE	10																2 J					
2-METHYLPHENOL	10																					
4-METHYLPHENOL	10																					
ISOPHORONE	10														61	120 J			74			
2,4-DIMETHYLPHENOL	10																					
BENZOIC ACID	50															2 J						
1,2,4-TRICHLOROBENZENE	10														795	600	500					
NAPHTHALENE	10																					
4-CHLORO-3-METHYLPHENOL	10																3 J					
2-METHYLNAPHTHALENE	10							2 J														
HEXACHLOROCYCLOPENTADIENE	10																1 J					
2-CHLORONAPHTHALENE	10																					
2-NITROANILINE	50																					
DIMETHYL PHTHALATE	10																					
ACENAPHTHYLENE	10																					
ACENARHTHENE	10																					
DIBENZOFURAN	10																					
DIETHYLPHTHALATE	10																					
FLUORENE	10														21 J	34 J	34 J					
N-NITROSODIPHENYLAMINE	10																					
PENTACHLOROPHENOL	10																					
PHENANTHRENE	10															3 J						
ANTHRACENE	10																					
DI-n-BUTYLPHTHALATE	10																					
FLUORANTHENE	10														11 J							
PYRENE	10		1 J																			
BUTYLBENZYLPHTHALATE	10																					
BENZO(A)ANTHRACENE	10																					
bis(2-ETHYLHEXYL)PHTHALATE	10	*	*	*	*		*	*	*	*	*	*	*					*	*	*	*	*
CHRYSENE	10														32 J	25 J	27 J					
DI-n-OCTYL PHTHALATE	10																					
BENZO(b)FLUORANTHENE	10		1 J																			
BENZO(k)FLUORANTHENE	10																					
BENZO(a)PYRENE	10																					
DILUTION FACTORS:		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1

BLANK SPACE-INDICATES COMPOUND WAS NOT DETECTED
J -QUANTITATION IS APPROXIMATE DUE TO QUALITY CONTROL REVIEW (DATA VALIDATION)
* -VALUE REJECTED DUE TO BLANK CONTAMINATION AS IDENTIFIED IN QUALITY CONTROL REVIEW
** -VALUE REJECTED DUE TO OTHER CONTRACTUAL REQUIREMENTS IDENTIFIED IN QUALITY CONTROL REVIEW
CRDL -CONTRACT REQUIRED DETECTION LIMIT (MULTIPLY BY DILUTION FACTOR TO OBTAIN SAMPLE DETECTION LIMIT).
NOTE -DATA HAS UNDERGONE A QUALITY CONTROL REVIEW; EPA APPROVAL IS PENDING
APPENDIX D LISTS ALL COMPOUNDS ANALYZED FOR IN THESE SAMPLES

TABLE P-6
GROUNDWATER RESULTS-SEMIVOLATILE ORGANICS
1985 SAMPLING ROUND

SAMPLE LOCATION		NUS-3	NUS-5	NUS-6	NUS-8	NUS-10-1	NUS-11	W-2
TRAFFIC REPORT NUMBER		AD999	AD974	AD972	AD973	AD975	AD979	AB599
SAMPLE NUMBER		13967	13972	13941	13971	13973	13948	13999
SEMI-VOLATILE ORGANIC COMPOUNDS	CRDL (ug/L)							
PHENOL	10							
ANILINE	10							
2-CHLOROPHENOL	10							
1,4-DICHLOROBENZENE	10							
1,2-DICHLOROBENZENE	10							
2-METHYLPHENOL	10							
4-METHYLPHENOL	10	15						
ISOPHORONE	10							
2,4-DIMETHYLPHENOL	10							
BENZOIC ACID	50							
1,2,4-TRICHLOROBENZENE	10							
NAPHTHALENE	10							
4-CHLORO-3-METHYLPHENOL	10							
2-METHYLNAPHTHALENE	10							
HEXACHLOROCYCLOPENTADIENE	10							
2-CHLORONAPHTHALENE	10							
2-NITROANILINE	50							
DIMETHYL PHTHALATE	10							
ACENAPHTHYLENE	10							
ACENARHTHENE	10							
DIBENZOFURAN	10							
DIETHYLPHTHALATE	10	5 J						
FLUORENE	10							
N-NITROSODIPHENYLAMINE	10							
PENTACHLOROPHENOL	10							
PHENANTHRENE	10							
ANTHRACENE	10							
DI-n-BUTYLPHTHALATE	10							
FLUORANTHENE	10							
PYRENE	10							
BUTYLBENZYLPHTHALATE	10							
BENZO(A)ANTHRACENE	10							
bis(2-ETHYLHEXYL)PHTHALATE	10	*	*	*	*	*	*	
CHRYSENE	10							
DI-n-OCTYL PHTHALATE	10							
BENZO(b)FLUORANTHENE	10							
BENZO(k)FLUORANTHENE	10							
BENZO(a)PYRENE	10							
DILUTION FACTORS:		1	1	1	1	1	1	

BLANK SPACE-INDICATES COMPOUND WAS NOT DETECTED
J -QUANTITATION IS APPROXIMATE DUE TO QUALITY CONTROL REVIEW
* -VALUE REJECTED DUE TO BLANK CONTAMINATION IDENTIFIED IN QUALITY CONTROL REVIEW
** -VALUE REJECTED DUE TO OTHER CONTRACTUAL REQUIREMENTS IDENTIFIED IN QUALITY CONTROL REVIEW
CRDL -CONTRACT REQUIRED DETECTION LIMIT (CRDL X DILUTION FACTOR=SAMPLE DETECTION LIMIT
NOTE -DATA HAS UNDERGONE A QUALITY CONTROL REVIEW; EPA APPROVAL IS PENDING
APPENDIX C LISTS ALL COMPOUNDS

TABLE P-7
GROUNDWATER RESULTS-PESTICIDES/PCBS
1985 SAMPLING ROUNDS

SAMPLE LOCATION		A-3	A-9	A-12	A-15	A-26	A-27	A-27(D)	A-28	A-29	A-32A	A-33	A-38	A-41	GZ1-1	GZ1-2	GZ1-2(D)	MW-8	NUS-1-3	NUS-2-1	NUS-2-2	NUS-2-3	NUS-3
TRAFFIC REPORT NUMBER		AD978	AD997	AD977	AD970	AD998	AD967	AD969	AD991	AD968	AD965	AD976	AD971	AD990	AD995	AD993	AD994	AD960	AD963	AD964	AD962	AD961	AD999
SAMPLE NUMBER		13963	13965	13962	13939	13966	13936	13968	13952	13937	13947	13961	13940	13951	13958	13956	13957	13942	13945	13946	13944	13943	13967
BLANK REFERENCE		A	B	A	A	B	A	A	B	A	A	A	A	B	B	B	B	A	A	A	A	A	B
	CRDL (ug/L)																						
ALPHA-BHC	0.05																						
BETA-BHC	0.05																						
DELTA-BHC	0.05																						
GAMMA-BHC(LINDANE)	0.05																						
HEPTACHLOR	0.05																						
ALDRIN	0.05																						
HEPTACHLOR EPOXIDE	0.05																						
ENDOSULFAN 1	0.05																						
DIELDRIN	0.10																						
4,4-DDE	0.10																						
ENDRIN	0.10																						
ENDOSULFAN 2	0.10																						
4,4-DDD	0.10																						
ENDRIN ALDEHYDE	0.10																						
ENDOSULFAN SULFATE	0.10																						
4,4-DDT	0.10																						
METHOXYCHLOR	0.5																						
ENDRIN KETONE	0.10																						
CHLORDANE	0.5																						
TOXAPHENE	1.0																						
AROCLOR-1016	0.5																						
AROCLOR-1221	0.5																						
AROCLOR-1232	0.5																						
AROCLOR-1242	0.5																						
AROCLOR-1248	0.5																						
AROCLOR-1254	1.0																						
AROCLOR-1260	1.0																						
DILUTION FACTORS:		1	1	20	1	1	200	200	1	1	1	20	1	1	1	1	1	1	1	1	1	1	1

BLANK SPACE-INDICATES COMPOUND WAS NOT DETECTED
J -QUANTITATION IS APPROXIMATE DUE TO QUALITY CONTROL REVIEW(DATA VALIDATION)
* -VALUE REJECTED DUE TO BLANK CONTAMINATION IDENTIFIED IN QUALITY CONTROL REVIEW
** -VALUE REJECTED DUE TO OTHER CONTRACTUAL REQUIREMENTS IDENTIFIED IN QUALITY CONTROL REVIEW
CRDL -CONTRACT REQUIRED DETECTION LIMIT (CRDL X DILUTION=SAMPLE DETECTION LIMIT)
NOTE: -DATA HAS UNDERGONE A QUALITY CONTROL REVIEW; EPA APPROVAL IS PENDING

TABLE P-7
GROUNDWATER RESULTS-PESTICIDES/PCBS
1985 SAMPLING ROUNDS

SAMPLE LOCATION		NUS-5	NUS-6	NUS-8	NUS-10-1	NUS-11	M-2	BLANK	BLANK
TRAFFIC REPORT NUMBER		AD974	AD972	AD973	AD975	AD979	AB599	AD966	AD996
SAMPLE NUMBER		13972	13941	13971	13973	13948	13999	13949	13895
BLANK REFERENCE		A	A	A	A	A	B	A	B
	CRDL (ug/L)								
ALPHA-BHC	0.05								
BETA-BHC	0.05								
DELTA-BHC	0.05								
GAMMA-BHC(LINDANE)	0.05								
HEPTACHLOR	0.05								
ALDRIN	0.05								
HEPTACHLOR EPOXIDE	0.05								
ENDOSULFAN I	0.05								
DIELDRIN	0.10								
4,4-DDE	0.10								
ENDRIN	0.10								
ENDOSULFAN 2	0.10								
4,4-DDD	0.10						0.004 J		
ENDRIN ALDEHYDE	0.10								
ENDOSULFAN SULFATE	0.10								
4,4-DDT	0.10								
METHOXYCHLOR	0.5								
ENDRIN KETONE	0.10								
CHLORDANE	0.5								
TOXAPHENE	1.0								
AROCLOR-1016	0.5								
AROCLOR-1221	0.5								
AROCLOR-1232	0.5								
AROCLOR-1242	0.5								
AROCLOR-1248	0.5								
AROCLOR-1254	1.0								
AROCLOR-1260	1.0								
DILUTION FACTORS:		1	1	1	1	1	1	1	1

BLANK SPACE-INDICATES COMPOUND WAS NOT DETECTED
J -QUANTITATION IS APPROXIMATE DUE TO QUALITY CONTROL REVIEW(DATA VALIDATION)
* -VALUE REJECTED DUE TO BLANK CONTAMINATION IDENTIFIED IN QUALITY CONTROL REVIEW
** -VALUE REJECTED DUE TO OTHER CONTRACTUAL REQUIREMENTS IDENTIFIED IN QUALITY CONTROL REVIEW
CRDL -CONTRACT REQUIRED DETECTION LIMIT (CRDL * DILUTION=SAMPLE DETECTION LIMIT)
NOTE: -DATA HAS UNDERGONE A QUALITY CONTROL REVIEW; EPA APPROVAL IS PENDING

TABLE P-8
GROUNDWATER RESULTS-INORGANICS
1985 SAMPLING ROUND

SAMPLE LOCATION		A-3	A-9	A-12	A-15	A-26	A-27	A-27(D)	A-28	A-29	A-32A	A-33	A-38	A-41	GZ1-1	GZ1-2	GZ1-2(D)	MW-8	NUS-1-3	NUS-2-1	NUS-2-2	NUS-2-3	NUS-3
TRAFFIC REPORT NUMBER		MAB961	MAB996	MAB960	MAB953	MAB997	MAB950	MAB952	MAC002	MAB951	MAB968	MAB959	MAB954	MAC001	MAA282	MAC004	MAC005	MAB963	MAB966	MAB967	MAB965	MAB964	MAB998
SAMPLE NUMBER		13963	13965	13962	13939	13966	13936	13938	13952	13937	13947	13961	13940	13951	13958	13956	13957	13942	13945	13946	13944	13943	13967
REFERENCE		A	B	A	A	B	A	A	B	A	A	A	A	B	B	B	B	A	A	A	A	A	B
INORGANIC ELEMENTS	IDL (ug/L)																						
ALUMINUM	120			482	135	1100	1300	783	400		223		167	240	80	50	50			258			
ANTIMONY	56								60						60	60							
ARSENIC	2.3		10				4.9	4.0		108	6.8	10.3	3.1		10	9	12		32.5	11.9	9	7.8	
BARIUM	76		110			320	166	140		212			209		210	370	470						310
BERYLLIUM	3.0																						
CADMIUM	4.0	17				4	7.1	7.0	13					4	25	36	35						12
CALCIUM	1500	16800 J	2400	42200 J	10700 J	23100	128000 J	123000 J	20900	144000 J	9200 J	31000 J		8700	117000	187000	196000	26300 J	215000 J	120000 J	201000 J	147000 J	95000
CHROMIUM	10		11			26	12.9							19	45	39	53				16		15
COBALT	30					16			11			38			88	128	129		54.5	48		32	16
COPPER	7.8		5	23 J		6	46	13 J	7				8 J			7	4		11.8 J				3
IRON	35	56	1800	35600	549	21000	243000	248000	720	9400	4300	60900	132000	410	144000	227000	266000	366	1200	8100	15200	6400	7700
LEAD	1.4	1.5		23	1.5		13.4	9.6			1.8	1.8			6			1.4		1.9	1.8	2.1	
MAGNESIUM	360	1400	500	2700	1100	5000	6500	6500	5800	18800	1300	7900		1900	15000	23000	24000	5800	30900	18200	28800	23700	22000
MANGANESE	8.2	446	1800	709	116	1700	1730	1770	487	2000	565	14700	14800	165	8400	12500	11900	216	16100	13500	22600	14400	5200
MERCURY	0.12					0.05	2.54 J		0.08					0.06	0.11	0.08	0.10						0.05
NICKEL	40		43	61		167			181					145	238	593	378		103				257
POTASSIUM	3500		400	6200		3600	6500	6500	3600	26400				1300	15400	26400	23800	3500					2100
SELENIUM	1.7					6																	
SILVER	9.2																						
SODIUM	630	13300	300	32500	49000	43000	239000	239000	40000	28200	6500	16800		4600	18	84	48						
THALLIUM	4.2														56000	33000	8900	48600	19600	24900	36100	30700	13900
TIN	37	85 J			67 J																		
VANADIUM	22																		106 J		94 J	88 J	
ZINC	18	1100 J	30	1300 J	637 J	166	2600 J	1700 J	41	189 J	24 J	97 J		44	199	161	253	28 J	20 J	37 J	772 J	35 J	37

DRAFT

BLANK SPACE-INDICATES COMPOUND WAS NOT DETECTED
J -QUANTITATION IS APPROXIMATE DUE TO QUALITY CONTROL REVIEW (DATA VALIDATION)
* -VALUE REJECTED DUE TO BLANK CONTAMINATION AS IDENTIFIED IN QUALITY CONTROL REVIEW
** -VALUE REJECTED DUE TO OTHER CONTRACTUAL REQUIREMENTS IDENTIFIED IN QUALITY CONTROL REVIEW
IDL -INSTRUMENT DETECTION LIMIT
NOTE -DATA HAS UNDERGONE A QUALITY CONTROL REVIEW; EPA APPROVAL IS PENDING
REFERENCE -INDICATES THE SPECIFIC DETECTION LIMIT AND BLANKS (AT END OF TABLE) ASSOCIATED WITH A SAMPLE

TABLE P-8
GROUNDWATER RESULTS-INORGANICS
1985 SAMPLING ROUND

SAMPLE LOCATION		NUS-5	NUS-6	NUS-8	NUS-10-1	NUS-11	W-2	BLANK	BLANK
TRAFFIC REPORT NUMBER		MAB957	MAB955	MAB956	MAB958	MAB962	MAB999	MAB969	MAB995
SAMPLE NUMBER		13972	13941	13971	13973	13948	13999	13949	13895
REFERENCE		A	A	A	A	A	B	A	B
INORGANIC ELEMENTS	IDL (ug/L)								
ALUMINUM	120				8900	2230			
ANTIMONY	56								80
ARSENIC	2.3			6.1	2.3				
BARIUM	76						290		
BERYLLIUM	3.0								
CADMIUM	4.0		4.6				4		9
CALCIUM	1500	8900 J	5600 J	34600 J	9700 J	6000 J	52900		
CHROMIUM	10						21		28
COBALT	30						16		
COPPER	7.8				16.7 J				
IRON	35	167	236	638	4400	2100	940		240
LEAD	1.4			2.4	30.9	5.8		1.4	
MAGNESIUM	360	684	1800	4100	1700	1800	23000		100
MANGANESE	8.2	109	50	1770	857	313	553	8.2	138
MERCURY	0.12						0.05		
NICKEL	40						308		116
POTASSIUM	3500						1500		
SELENIUM	1.7								5
SILVER	9.2								
SODIUM	630	7200	2500	22200	8000	5000	57000		200
THALLIUM	4.2								
TIN	37	41 J							
VANADIUM	22								
ZINC	18	600 J	152 J	54 J	453 J	37 J	20		16

BLANK SPACE-INDICATES COMPOUND WAS NOT DETECTED
J -QUANTITATION IS APPROXIMATE DUE TO QUALITY CONTROL REVIEW (DATA VALIDATION)
* -VALUE REJECTED DUE TO BLANK CONTAMINATION AS IDENTIFIED IN QUALITY CONTROL REVIEW
** -VALUE REJECTED DUE TO OTHER CONTRACTUAL REQUIREMENTS IDENTIFIED IN QUALITY CONTROL REVIEW
IDL -INSTRUMENT DETECTION LIMIT
NOTE -DATA HAS UNDERGONE A QUALITY CONTROL REVIEW; EPA APPROVAL IS PENDING
REFERENCE -INDICATES THE SPECIFIC DETECTION LIMIT AND BLANKS (AT END OF TABLE) ASSOCIATED WITH A SAMPLE

RESIDENTIAL/SUPPLY WELL RESULTS (NUS)

TABLE P-9
Auburn Road Landfill
Residential Sample Summary (3-19-85)

Address	Name	Property Lot #	Sample Number	Collection Time	Analysis (1)
105 Auburn Road Londonderry, NH	Alexander*	18-21-23	12121	9:46	1
			12122	9:46	
101 Auburn Road Londonderry, NH	Daigneault	18-21-21	12120	11:20	1
Lexington EPA Laboratory	Blank		11906	12:31	1
Lexington EPA Laboratory	Blank		12119	12:31	1

* = replicate sample taken
(1) EPA Lexington Laboratory GC/MS

TABLE P-10
AUBURN ROAD - RESIDENTIAL WELL SAMPLING (3-19-85)
EPA Regional Laboratory - Lexington[a]
Volatile Organic Analysis

Sample Location/Address		105AR	105AR	101AR	Blank	Blank
Sample Number		12121	12122 (Dup)	12120	11906	12119
Volatile Compounds	Detection Limit (ug/L)					
Chloromethane	6	-	-	-	-	-
Bromomethane	2	-	-	-	-	-
Vinyl Chloride	4	-	-	-	-	-
Chloroethane	4	-	-	-	-	-
Methylene Chloride	1	-	-	-	-	-
Trichlorofluoromethane	5	-	-	-	-	-
1,1-Dichloroethene	1	-	-	-	-	-
1,1-Dichloroethane	1	-	-	-	-	-
1,2-Dichloroethene Isomers	1	-	-	-	-	-
Chloroform	1	-	-	-	-	-
1,2-Dichloroethane	5	-	-	-	-	-
1,1,1-Trichloroethane	1	-	-	-	-	-
Carbon Tetrachloride	1	-	-	-	-	-
Bromodichloromethane	1	-	-	-	-	-
1,2-Dichloropropane	1	-	-	-	-	-
trans- 1,3-Dichloropropene	1	-	-	-	-	-
Trichloroethylene	1	-	-	-	-	-
Dibromochloromethane	1	-	-	-	-	-
Cis- 1,3-Dichloropropene	4	-	-	-	-	-
1,1,2-Trichloroethane	1	-	-	-	-	-
Benzene	2	-	-	-	-	-
2-Chloroethylvinyl Ether	2	-	-	-	-	-
Bromoform	1	-	-	-	-	-
Tetrachloroethene	1	-	-	-	-	-
1,1,2,2-Tetrachloroethane	1	-	-	-	-	-
Toluene	1	-	-	-	-	-
Chlorobenzene	1	-	-	-	-	-
Ethylbenzene	1	-	-	-	-	-
Acrolein	30	-	-	-	-	-
Acrylonitrile	30	-	-	-	-	-
Acetone	15	-	-	-	-	-
Carbon Disulfide	1	-	-	-	-	-
2-Butanone	15	-	-	-	-	-
Vinyl Acetate	3	-	-	-	-	-
2-Hexanone	3	-	-	-	-	-
4-Methyl-2-Pentanone	1	-	-	-	-	-
Styrene	2	-	-	-	-	-
Xylenes	2	-	-	-	-	-

- = not detected

a analyses conducted on GC/MS

Sample Location Code: # = street number, AR = Auburn Road

TABLE P-11

Auburn Road Landfill (7-9-85)
Residential Sample Summary

Address	Name	Property Lot #	Sample Number	Collection Time	Analysis (1,2)
105 Auburn Road Londonderry, NH	Alexander *	18-21-23	13382 13383	10:05 10:10	1
101 Auburn Road Londonderry, NH	Daigneault	18-21-21	13380	10:31	1
87 Auburn Road Londonderry, NH	Bowen	18-21-14	13374	10:55	1
95 Auburn Road Londonderry, NH	Stathas	18-21-18	13378	11:00	1
5 Hillcrest Avenue Londonderry, NH	Bouley *	18-21-53	13366 13367	11:37 11:37	1
56 Old Derry Road Londonderry, NH	Roux	16-24	13363	12:55	1
160 ByPass 28 Derry, NH	Finn *	11-31-3	13410 13411	16:10 16:15	1 2
13 Prosperity Drive Derry, NH	Dunker *	11-29-9	13387 13388	9:24 9:27	1 2
Whispering Pines Trailer Park Supply Well	*	Well #1	13404 13405	13:56 14:02	1 2
Whispering Pines Trailer Park Supply Well		Well 3,4	13406	14:10	1

* = replicate sample taken
(1) EPA Lexington Laboratory GC/MS
(2) NUS/FIT In-House screening Photovac 10A10

TABLE P-11
AUBURN ROAD LANDFILL
RESIDENTIAL SAMPLE SUMMARY
PAGE TWO

Address	Name	Property Lot #	Sample Number	Collection Time	Analysis (1,2)
Lexington EPA Lab	Blank	-	13399	8:30	1
97 Auburn Road Londonderry, NH	Sullivan	18-21-19	13379	10:45	2
89 Auburn Road Londonderry, NH	Butler	18-21-15	13375	11:10	2
93 Auburn Road Londonderry, NH	Moore	18-21-17	13377	11:15	2
103 Auburn Road Londonderry, NH	Fusco	18-21-22	13381	10:23	2
91 Auburn Road Londonderry, NH	Saab	18-21-16	13378	11:31	2
81 Auburn Road Londonderry, NH	Lewis	18-21-12	13372	10:45	2
77 Auburn Road Londonderry, NH	Wogan	18-21-10	13371	10:30	2
73 Auburn Road Londonderry, NH	Lindquist	18-21-8	13369	10:07	2

(1) EPA Lexington Laboratory GC/MS
(2) NUS/FIT In-House Screening

TABLE P-11
AUBURN ROAD LANDFILL
RESIDENTIAL SAMPLE SUMMARY
PAGE THREE

Address	Name	Property Lot #	Sample Number	Collection Time	Analysis (1,2)
75 Auburn Road Londonderry, NH	Illg	18-21-9	13370	10:22	2
74 Old Derry Road Londonderry, NH	Mondville	18-21-3	13364	12:05	2
64 Old Derry Road Londonderry, NH	Thomopoulas	16-23-1	13362	12:31	2
8 Old Derry Road Londonderry, NH	Picco	16-30	13385	12:16	2
3 Shady Lane Londonderry, NH	Tunberg	18-21-46	13365	11:50	2
7 Shady Lane Londonderry, NH	Kinney	16-21-44	13384	11:50	2
7 Prosperity Drive Derry, NH	MacIver	11-29-6	13391	10:20	2
4 Prosperity Drive Derry, NH	Bourassa	11-29-11	13386	10:24	2
11 Prosperity Drive Derry, NH	Kelly	11-29-8	13389	10:03	2

* = replicate sample taken
(1) EPA Lexington Laboratory GC/MS
(2) NUS/FIT In-House screening Photovac 10A10

TABLE P-11
AUBURN ROAD LANDFILL
RESIDENTIAL SAMPLE SUMMARY
PAGE FOUR

Address	Name	Property Lot #	Sample Number	Collection Time	Analysis (1,2)
5 Prosperity Drive Derry, NH	Novia	11-29-85	13390	10:40	2
2 Prosperity Drive Derry, NH	Hatem	11-29-18	13395	15:00	2
3 Mirra Avenue Derry, NH	Vacca	11-29-2	13396	15:10	2
12 Gloria Terrace Derry, NH	Ammidown	11-29-12	13392	14:55	2
6 Gloria Terrace Derry, NH	Wiedemann	11-29-15	13393	11:10	2
4 Gloria Terrace Derry, NH	Monahan	11-29-16	13414	11:23	2
11 Hemlock Spring Road Derry, NH	Chickering	11-11-53	13407	15:55	2
38 Emerald Drive Derry, NH	Goddard	11-15-13	13415	15:30	2
162 ByPass 28 Derry, NH	Misite	11-31-4	13412	16:10	2

* = replicate sample taken
(1) EPA Lexington Laboratory GC/MS
(2) NUS/FIT In-House screening Photovac 10A10

TABLE P-11
AUBURN ROAD LANDFILL
RESIDENTIAL SAMPLE SUMMARY
PAGE FIVE

Address	Name	Property Lot #	Sample Number	Collection Time	Analysis (1,2)
3 Al Street Derry, NH	BiLotta	11-11-51	13408	15:04	2
247 ByPass 28 Auburn, NH	Day *		13417 13418	16:31 16:45	2 2
2 Gloria Terrace Derry, NH	Jones	11-29-17	13394	10:47	2
7 Mirra Avenue Derry, NH	Bilodeau	11-29-20	13397	11:47	2
Lexington EPA Laboratory	Blank	-	13400	8:30	2
Lexington EPA Laboratory	Blank	-	13401	8:30	2
Lexington EPA Laboratory	Blank	-	13402	8:30	2
Lexington EPA Laboratory	Blank	-	13403	8:30	2

* = replicate sample taken
(1) EPA Lexington Laboratory GC/MS
(2) NUS/FIT In-House screening Photovac 10A10

TABLE P-12
AUBURN ROAD - RESIDENTIAL WELL SAMPLING (7-9-85)
NUS/FIT In-House Screening[a]
Volatile Organic Analysis

Sample Location/Address Sample Number Tentatively Identified Compounds	Detection Limit (ug/L)	73AR 13369	75R 13370	77AR 13371	81AR 13372	89AR 13375	91AR 13376	93AR 13377	97AR 13379	103AR 13381	3AS 13408	160BP 13411	162BP 13412	247BP 13417	247BP 13418 (Dup)
Trichloroethene	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Benzene	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Toluene	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Tetrachloroethene	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Chlorobenzene	5	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ethylbenzene	5	-	-	-	-	-	-	-	-	-	-	-	-	-	-
m-Xylene	5	-	-	-	-	-	-	-	-	-	-	-	-	-	-
o-Xylene	10	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Coeluters[b]	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

- = not detected
BDL = below detection limit

a The above results are from NUS/FIT in-house screening using a Photovac 10A10 Gas Chromatograph. All results must be interpreted with the understanding that they represent the end product of a screening technique and that the reported values are only approximate. This technique is not meant to replace analysis using greater sophistication and analytical control.

b Coeluters represent the following group of compounds which generally can not be distinguished in screening: 1,1-dichloroethylene, trans-1,2-dichloroethylene, 1,1-dichloroethane, methylene chloride, chlorform, 1,2-dichloroethane, and 1,1,1-trichloroethane. The presence of one or more of these may be indicated.

Sample Location Code: # = street number, AR = Auburn Road, AS = Al Street, BP = Bypass 28, ED = Emerald Drive, GT = Gloria Terrace, HA = Hillcrest Avenue, HSR = Hemlock Spring Road, MA = Mirra Avenue, ODR = Old Derry Road, PR = Prosperity Drive, SL = Shady Lane, Well #1 = Whispering Pines Supply Well #1.

TABLE P-12
AUBURN ROAD - RESIDENTIAL WELL SAMPLING (7-9-85)
NUS/FIT In-House Screening[a]
Volatile Organic Analysis
PAGE TWO

Sample Location/Address Sample Number Tentatively Identified Compounds	Detection Limit (ug/L)	38ED 13415	2GT 13394	4GT 13414	6GT 13393	12GT 13392	5HA 13367	11HSR 13407	3MA 13396	7MA 13397	8ODR 13385	64ODR 13362	74ODR 13364	2PD 13395	4PD 13386
Trichlorethene	1	-	-	-	-	-	-	-	BDL	-	-	-	-	-	-
Benzene	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Toluene	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Tetrachloroethene	3	-	-	-	-	-	-	-	BDL	-	-	-	-	-	-
Chlorobenzene	5	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ethylbenzene	5	-	-	-	-	-	-	-	-	-	-	-	-	-	-
m-Xylene	5	-	-	-	-	-	-	-	-	-	-	-	-	-	-
o-Xylene	10	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Coeluters[b]		-	-	-	-	-	-	-	-	-	-	-	-	-	-

- = not detected
BDL = below detection limit

a The above results are from NUS/FIT in-house screening using a Photovac 10A10 Gas Chromatograph. All results must be interpreted with the understanding that they represent the end product of a screening technique and that the reported values are only approximate. This technique is not meant to replace analysis using greater sophistication and analytical control.

b Coeluters represent the following group of compounds which generally can not be distinguished in screening: 1,1-dichloroethylene, trans-1,2-dichloroethylene, 1,1-dichloroethane, methylene chloride, chlorform, 1,2-dichloroethane, and 1,1,1-trichloroethane. The presence of one or more of these may be indicated.

Sample Location Code: # = street number, AR = Auburn Road, AS = Al Street, BP = Bypass 28, ED = Emerald Drive, GT = Gloria Terrace, HA = Hillcrest Avenue, HSR = Hemlock Spring Road, MA = Mirra Avenue, ODR = Old Derry Road, PR = Prosperity Drive, SL = Shady Lane, Well #1 = Whispering Pines Supply Well #1.

TABLE P-12
AUBURN ROAD - RESIDENTIAL WELL SAMPLING (7-9-85)
NUS/FIT In-House Screening[a]
Volatile Organic Analysis
PAGE THREE

Sample Location/Address Sample Number Tentatively Identified Compounds	Detection Limit (ug/L)	5PD 13390	7PD 13391	11PD 13389	13PD 13388	3SL 13365	7SL 13384	Well #1 13405	Blank 13400	Blank 13401	Blank 13402	Blank 13403
Trichloroethene	1	-	-	-	-	-	-	-	-	-	-	-
Benzene	1	-	-	-	-	-	-	-	-	-	-	-
Toluene	3	-	-	-	-	-	-	-	-	-	-	-
Tetrachloroethene	3	-	-	-	-	-	-	-	-	-	-	-
Chlorobenzene	5	-	-	-	-	-	-	-	-	-	-	-
Ethylbenzene	5	-	-	-	-	-	-	-	-	-	-	-
m-Xylene	5	-	-	-	-	-	-	-	-	-	-	-
o-Xylene	10	-	-	-	-	-	-	-	-	-	-	-
Coeluters[b]		-	-	-	-	-	-	-	-	-	-	-

- = not detected
BDL = below detection limit

a The above results are from NUS/FIT in-house screening using a Photovac 10A10 Gas Chromatograph. All results must be interpreted with the understanding that they represent the end product of a screening technique and that the reported values are only approximate. This technique is not meant to replace analysis using greater sophistication and analytical control.

b Instrument Detection Limit

c Coeluters represent the following group of compounds which generally can not be distinguished in screening: 1,1-dichloroethylene, trans-1,2-dichloroethylene, 1,1-dichloroethane, methylene chloride, chlorform, 1,2-dichloroethane, and 1,1,1-trichloroethane. The presence of one or more of these may be indicated.

Sample Location Code: # = street number, AR = Auburn Road, AS = Al Street, BP = Bypass 128, ED = Emerald Drive, GT = Gloria Terrace, HA = Hillcrest Avenue, HSR = Hemlock Spring Road, MA = Mirra Avenue, ODR = Old Derry Road, PR = Prosperity Drive, SL = Shady Lane, Well #1 = Whispering Pines Supply Well #1.

TABLE P-13
Auburn Road Landfill
Residential Sample Summary (10-85)

Address	Name	Property Lot #	Sample Number	Collection Date	Collection Time	Analysis*
87 Auburn Road Londonderry, NH	Bowen	18-21-14	12088	10/01/85	11:15	CLP
93 Auburn Road Londonderry, NH	Moore	18-21-17	12089	10/01/85	11:20	CLP
Lexington EPA Lab	Blank	-	12106	10/02/85	10:45	CLP
105 Auburn Road Londonderry, NH	Windham	19-21-23	12096	10/08/85	10:05	CLP
Lexington EPA Lab	Blank	-	12109	10/10/85	8:30	CLP

* Analyzed as part of Contract Laboratory Program.

TABLE P-14
AUBURN ROAD - RESIDENTIAL WELL SAMPLING (10-85)
Contract Laboratory Samples

Sample Location/Address		87AR	93AR	Blank	105AR	Blank	Blank
Traffic Report Number		AA358	AA359	AA357	AA386	AA395	AA394
Sample Number		12088	12089	12106	12096	12109	11956
Voltile Compounds	CRDL (in ug/L)						
Chloromethane	10	-	-	-	-	-	-
Bromomethane	10	-	-	-	-	-	-
Vinyl Chloride	10	-	-	-	-	-	-
Chloroethane	10	-	-	-	-	-	-
Methylene Chloride	5	*	*	5	*	7	7
Acetone	10	*	*	10	-	-	-
Carbon Disulfide	5	-	-	-	-	-	-
1,1-Dichloroethene	5	-	-	-	-	-	-
1,1-Dichloroethane	5	-	-	-	-	-	-
Trans-1,2-Dichloroethene	5	-	-	-	-	-	-
Chloroform	5	-	-	-	-	-	-
1,2-Dichloroethane	5	-	-	-	-	-	-
2-Butanone	10	*	*	10	57	-	-
1,1,1-Trichloroethane	5	-	-	-	-	-	-
Carbon Tetrachloride	5	-	-	-	-	-	-
Vinyl Acetate	5	-	-	-	-	-	-
Bromodichloromethane	5	-	-	-	-	-	-
1,1,2,2-Tetrachloroethane	5	-	-	-	-	-	-
1,2-Dichloropropane	5	-	-	-	-	-	-
Trans- 1,3-Dichloropropene	5	-	-	-	-	-	-
Trichloroethene	5	-	-	-	-	-	-
Dibromochloromethane	5	-	-	-	-	-	-
1,1,2-Trichloroethane	5	-	-	-	-	-	-
Benzene	5	-	-	-	-	-	-
Cis- 1,3-Dichloropropene	5	-	-	-	-	-	-
2-Chloroethylvinyl Ether	10	-	-	-	-	-	-
Bromoform	5	-	-	-	-	-	-
2-Hexanone	10	-	-	-	-	-	-
4-Methyl-2-Pentanone	10	-	-	-	-	-	-
Tetrachloroethene	5	-	-	-	-	-	-
Toluene	5	-	-	-	-	-	-
Chlorobenzene	5	-	-	-	-	-	-
Ethylbenzene	5	-	-	-	-	-	-
Styrene	5	-	-	-	-	-	-
Total Xylenes	5	-	-	-	-	-	-
Dilution Factor:		1	1	1	1	1	1

- - not detected
* = Value is rejected due to blank contamination identified in quality control review. The detection limit for blank contaminants is determined by the amount detected in blank.

CRDL - Contract required detection limit (multiply by dilution factor to obtain sample detection limit).

Note: Sample No. 12096 was also analyzed for the semi-volatile and pesticide/PCB compounds included in the Hazardous Substance List (HSL). No other compounds were detected.

TABLE P-15
GROUNDWATER RESULTS - QC CHECK OF CLP DATA
NUS/FIT In-House Screening[a]
Volatile Organic Analysis

Sample Location/Address		Monitoring Wells				Residential		
Sample Number		A-33	MW-8	NUS-7	NUS-9-2	3MA	3MA	Blank
		13961	13942	13959	13964	13975	14000	14001
Tentatively Identified Compounds	Detection Limit (ug/L)							
Trichloroethene	1	*	*	-	-	-	-	-
Benzene	1	*	*	-	-	-	-	-
Toluene	3	******	*	*	*	-	-	-
Tetrachloroethene	3	*	-	-	-	*	*	-
Chlorobenzene	5	-	-	-	-	-	-	-
Ethylbenzene	5	-	-	-	-	-	-	-
m-Xylene	5	-	-	-	-	-	-	-
o-Xylene	10	-	-	-	-	-	-	-
Coeluters[b]		-	-	-	-	-	-	-

- = not detected
* - <10
** - 10-70
*** - 70-200
**** - 200-350
***** - 350-1000
****** - 1000-5000

a The above results are from NUS/FIT in-house screening using a Photovac 10A10 Gas Chromatograph. All results must be interpreted with the understanding that they represent the end product of a screening technique and that the reported values are only approximate. This technique is not meant to replace analysis using greater sophistication and analytical control.

b Coeluters represent the following group of compounds which generally can not be distinguished in screening: 1,1-dichloroethylene, trans-1,2-dichloroethylene, 1,1-dichloroethane, methylene chloride, chloroform, 1,2-dichloroethane, and 1,1,1-trichloroethane. The presence of one or more of these may be indicated.

Notes: The residential samples were obtained from 3 Mirra Avenue.
CLP refers to the Contract Laboratory Program.

TABLE P-16
WHISPERING PINES TRAILER PARK
SUPPLY WELL SAMPLE SUMMARY

Sampling Date	Location	Sample #	Collection Time	Analysis
11-15-84	Well #1	11503	06:25	2
	Well #3	11501	06:25	2
	Well #4	11498	06:25	2
	Well #1	11500	11:50	2
	Well #1	11499	13:54	2
	Well #1	11502	15:41	2
4-11-85	Well #1*	12507	12:30	2
		12509		
	Well #3/#4	12506	12:30	2
	Blank	12508	11:00	2
6-20-85	Well #1	13137	10:45	2
	Well #3/#4	13139	11:00	2
	Blank	13136	9:00	2
8-23-85	Well #4**	13105	11:15	1
		13106	11:53	
	Well #3**	13107	12:05	1
		13108	12:05	
	Well #1	13109	12:20	1
	Blank	13103	10:45	1
	Blank***	13102	10:45	-
10-9-85	Well #4*	13607	10:17	1
		13608	10:20	
	Well #3	13609	10:30	1
	Well #1	13610	10:40	1
	Blank	13611	9:00	1
11-20-85	Well #1	14006	10:36	1
	Well #3	14005	10:45	1
	Well #4*	14003	10:53	1
		14004	10:55	
	Blank	14002	9:15	1

Analysis: (1) EPA Lexington Laboratory - GCMS
(2) NUS/FIT Screening - Photovac 10A10 GC

* - replicates taken
** - replicates and splits taken
*** - blanks given with splits

TABLE P-17
AUBURN ROAD - PUMP TEST SAMPLING (11-15-84)
NUS/FIT In-House Screening[a]
Volatile Organic Analysis

Sample Location		Pre-Pump			Mid-Pump		Post Pump
Sample Number		Well #1 11503	Well #3 11501	Well #4 11498	Well #1 11499	Well #1 11500	Well #1 11502
Tentatively Identified Compounds	Detection Limit (ug/L)						
Trichloroethene	1	BDL	BDL	BDL	-	-	BDL
Benzene	1	-	-	-	-	-	-
Toluene	3	-	-	-	-	-	-
Tetrachloroethene	2	-	-	-	-	-	-
Chlorobenzene	7	-	-	-	-	-	-
Ethylbenzene	8	-	-	-	-	-	-
m-Xylene	9	-	-	-	-	-	-
o-Xylene	12	-	-	-	-	-	-
Coeluters[b]		-	-	X	-	X	-

- = not detected
X = detected
BDL = below detection limit

a The above results are from NUS/FIT in-house screening using a Photovac 10A10 Gas Chromatograph. All results must be interpreted with the understanding that they represent the end product of a screening technique and that the reported values are only approximate. This technique is not meant to replace analysis using greater sophistication and analytical control.

b Coeluters represent the following group of compounds which generally can not be distinguished in screening: 1,1-dichloroethylene, trans-1,2-dichloroethylene, 1,1-dichloroethane, methylene chloride, chloroform, 1,2-dichloroethane, and 1,1,1-trichloroethane. The presence of one or more of these may be indicated.

TABLE P-18
WHISPERING PINES TRAILER PARK - SUPPLY WELL SAMPLING (4-11-85)
NUS/FIT In-House Screening[a]
Volatile Organic Analysis

Sample Location Sample Number Tentatively Identified Compounds	Detection Limit (ug/L)	Well #1 12507	Well #1 (Dup.) 12509	Well #3 & 4 12506	Blank 12508
Trichloroethene	2	BDL	-	BDL	-
Benzene	2	-	-	-	-
Toluene	5	-	-	-	-
Tetrachloroethene	2	-	-	-	-
Chlorobenzene	6	-	-	-	-
Ethylbenzene	5	-	-	-	-
m-Xylene	5	-	-	-	-
o-Xylene	11	-	-	-	-
Coeluters[b]		-	-	-	-

- = not detected
X = detected
BDL = below detection limit

a The above results are from NUS/FIT in-house screening using a Photovac 10A10 Gas Chromatograph. All results must be interpreted with the understanding that they represent the end product of a screening technique and that the reported values are only approximate. This technique is not meant to replace analysis using greater sophistication and analytical control.

b Coeluters represent the following group of compounds which generally can not be distinguished in screening: 1,1-dichloroethylene, trans-1,2-dichloroethylene, 1,1-dichloroethane, methylene chloride, chloroform, 1,2-dichloroethane, and 1,1,1-trichloroethane. The presence of one or more of these may be indicated.

TABLE P-19
WHISPERING PINES TRAILER PARK - SUPPLY WELL SAMPLING (6-20-85)
NUS/FIT In-House Screening[a]
Volatile Organic Analysis

Sample Location		Well #1	Well #3 & 4	Blank
Sample Number		13137	13139	13136
Tentatively Identified Compounds	Detection Limit (ug/L)			
Trichloroethene	1	-	*	-
Benzene	1	-	-	-
Toluene	1	-	-	-
Tetrachloroethene	1	-	-	-
Chlorobenzene	2	-	-	-
Ethylbenzene	2	-	-	-
m-Xylene	2	-	-	-
o-Xylene	-	-	-	-
Coeluters[b]		X	X	X

- = not detected
X = detected
BDL = below detection limit
* = <10

a The above results are from NUS/FIT in-house screening using a Photovac 10A10 Gas Chromatograph. All results must be interpreted with the understanding that they represent the end product of a screening technique and that the reported values are only approximate. This technique is not meant to replace analysis using greater sophistication and analytical control.

b Coeluters represent the following group of compounds which generally can not be distinguished in screening: 1,1-dichloroethylene, trans-1,2-dichloroethylene, 1,1-dichloroethane, methylene chloride, chloroform, 1,2-dichloroethane, and 1,1,1-trichloroethane. The presence of one or more of these may be indicated.

TABLE P-20
WHISPERING PINES TRAILER PARK - SUPPLY WELL SAMPLING (7-9-85)
EPA Regional Laboratory - Lexington[a]
Volatile Organic Analysis

Sample Location		Well #1	Well #3 & 4	Blank
Sample Number		13404	13406	13399
Volatile Compounds	Detection Limit (ug/L)			
Chloromethane	6	-	-	-
Bromomethane	2	-	-	-
Vinyl Chloride	4	-	-	-
Chloroethane	4	-	-	-
Methylene Chloride	1	-	-	-
Trichlorofluoromethane	5	-	-	-
1,1-Dichloroethene	1	-	-	-
1,1-Dichloroethane	1	-	-	-
1,2-Dichloroethene Isomers	1	-	5	-
Chloroform	1	-	-	-
1,2-Dichloroethane	5	-	-	-
1,1,1-Trichloroethane	1	-	-	-
Carbon Tetrachloride	1	-	-	-
Bromodichloromethane	1	-	-	-
1,2-Dichloropropane	1	-	-	-
trans- 1,3-Dichloropropene	1	-	-	-
Trichloroethene	1	-	BDL	-
Dibromochloromethane	1	-	-	-
Cis- 1,3-Dichloropropene	4	-	-	-
1,1,2-Trichloroethane	1	-	-	-
Benzene	2	-	-	-
2-Chloroethylvinyl Ether	2	-	-	-
Bromoform	1	-	-	-
Tetrachloroethene	1	-	-	-
1,1,2,2-Tetrachloroethane	1	-	-	-
Toluene	1	-	-	-
Chlorobenzene	1	-	-	-
Ethylbenzene	1	-	-	-
Acrolein	30	-	-	-
Acrylonitrile	30	-	-	-
Acetone	15	-	-	-
Carbon Disulfide	1	-	-	-
2-Butanone	15	-	-	-
Vinyl Acetate	3	-	-	-
2-Hexanone	3	-	-	-
4-Methyl-2-Pentanone	1	-	-	-
Styrene	2	-	-	-
Xylenes	2	-	-	-

- = not detected
BDL = below detection limit
a analyses conducted on GC/MS

Note: Samples collected during residential well sampling round (7-9-85).

TABLE P-21
WHISPERING PINES TRAILER PARK - SUPPLY WELL SAMPLING (8-23-85)
EPA Regional Laboratory - Lexington[a]

Sample Location		Well #4	Well #4	Well #3	Well #3	Well #1	Blank
Sample Number		13105	13106	13107	13108	13109	13103
Volatile Compounds	Detection Limit						
Chloromethane	6	-	-	-	-	-	-
Bromomethane	2	-	-	-	-	-	-
Vinyl Chloride	4	-	-	-	-	-	-
Chloroethane	4	-	-	-	-	-	-
Methylene Chloride	1	-	-	-	-	-	-
Trichlorofluoromethane	5	-	-	-	-	-	-
1,1-Dichloroethene	1	-	-	-	-	-	-
1,1-Dichloroethane	1	-	-	-	-	-	-
1,2-Dichloroethene Isomers	1	3	2	2	2	-	-
Chloroform	1	-	-	-	-	-	-
1,2-Dichloroethane	5	-	-	-	-	-	-
1,1,1-Trichloroethane	1	3	4	BDL	BDL	-	-
Carbon Tetrachloride	1	-	-	-	-	-	-
Bromodichloromethane	1	-	-	-	-	-	-
1,2-Dichloropropane	1	-	-	-	-	-	-
trans- 1,3-Dichloropropene	1	-	-	-	-	-	-
Trichloroethene	1	-	-	-	-	-	-
Dibromochloromethane	1	-	-	-	-	-	-
cis- 1,3-Dichloropropene	4	-	-	-	-	-	-
1,1,2-Trichloroethane	1	-	-	-	-	-	-
Benzene	2	-	-	-	-	-	-
2-Chloroethylvinyl Ether	2	-	-	-	-	-	-
Bromoform	1	-	-	-	-	-	-
Tetrachloroethene	1	-	-	-	-	-	-
1,1,2,2-Tetrachloroethane	1	-	-	-	-	-	-
Toluene	1	-	-	-	-	-	-
Chlorobenzene	1	-	-	-	-	-	-
Ethylbenzene	1	-	-	-	-	-	-
Acrolein	30	-	-	-	-	-	-
Acrylonitrile	30	-	-	-	-	-	-
Acetone	15	-	-	-	-	-	-
Carbon Disulfide	1	-	-	-	-	-	-
2-Butanone	15	-	-	-	-	-	-
Vinyl Acetate	3	-	-	-	-	-	-
2-Hexanone	3	-	-	-	-	-	-
4-Methyl-2-Pentanone	1	-	-	-	-	-	-
Styrene	2	-	-	-	-	-	-
Xylenes	2	-	-	-	-	-	-

- = not detected
BDL = below detection limit

a analyses conducted on GC/MS

TABLE P-22
WHISPERING PINES TRAILER PARK - SUPPLY WELL SAMPLING (10-9-85)
EPA Regional Laboratory - Lexington[a]
Volatile Organic Analysis

Sample Location		Well #4	Well #4	Well #3	Well #1	Blank
Sample Number		13607	13608 (Dup)	13609	13610	13611
Volatile Compounds	Detection Limit					
Chloromethane	6	-	-	-	-	-
Bromomethane	2	-	-	-	-	-
Vinyl Chloride	4	-	-	-	-	-
Chloroethane	4	-	-	-	-	-
Methylene Chloride	1	-	-	-	-	-
Trichlorofluoromethane	5	-	-	-	-	-
1,1-Dichloroethene	1	-	-	-	-	-
1,1-Dichloroethane	1	-	-	-	-	-
1,2-Dichloroethene Isomers	1	BDL	BDL	2	-	-
Chloroform	1	-	-	-	-	-
1,2-Dichloroethane	5	-	-	-	-	-
1,1,1-Trichloroethane	1	-	-	BDL	-	-
Carbon Tetrachloride	1	-	-	-	-	-
Bromodichloromethane	1	-	-	-	-	-
1,2-Dichloropropane	1	-	-	-	-	-
trans- 1,3-Dichloropropene	1	-	-	-	-	-
Trichloroethylene	1	-	-	-	-	-
Dibromochloromethane	1	-	-	-	-	-
Cis- 1,3-Dichloropropene	4	-	-	-	-	-
1,1,2-Trichloroethane	1	-	-	-	-	-
Benzene	2	-	-	-	-	-
2-Chloroethylvinyl Ether	2	-	-	-	-	-
Bromoform	1	-	-	-	-	-
Tetrachloroethene	1	-	-	-	-	-
1,1,2,2-Tetrachloroethane	1	-	-	-	-	-
Toluene	1	-	-	-	-	-
Chlorobenzene	1	-	-	-	-	-
Ethylbenzene	1	-	-	-	-	-
Acrolein	30	-	-	-	-	-
Acrylonitrile	30	-	-	-	-	-
Acetone	15	-	-	-	-	-
Carbon Disulfide	1	-	-	-	-	-
2-Butanone	15	-	-	-	-	-
Vinyl Acetate	3	-	-	-	-	-
2-Hexanone	3	-	-	-	-	-
4-Methyl-2-Pentanone	1	-	-	-	-	-
Styrene	2	-	-	-	-	-
Xylenes	2	-	-	-	-	-

- = not detected
BDL = below detection limit
a analyses conducted on GC/MS

TABLE P-23
WHISPERING PINES TRAILER PARK - SUPPLY WELL SAMPLING (11-20-85)
EPA Regional Laboratory - Lexington[a]
Volatile Organic Analysis

Sample Location Sample Number Volatile Compounds	Detection Limit	Well #1 14006	Well #3 14005	Well #4 14003	Well #4 14004 (Dup)	Blank 1400
Chloromethane	6	-	-	-	-	-
Bromomethane	2	-	-	-	-	-
Vinyl Chloride	4	-	-	-	-	-
Chloroethane	4	-	-	-	-	-
Methylene Chloride	1	-	-	-	-	-
Trichlorofluoromethane	5	-	-	-	-	-
1,1-Dichloroethene	1	-	-	-	-	-
1,1-Dichloroethane	1	-	-	-	-	-
1,2-Dichloroethene Isomers	1	-	2	1	2	-
Chloroform	1	-	-	-	-	-
1,2-Dichloroethane	5	-	-	-	-	-
1,1,1-Trichloroethane	1	-	1	-	-	-
Carbon Tetrachloride	1	-	-	-	-	-
Bromodichloromethane	1	-	-	-	-	-
1,2-Dichloropropane	1	-	-	-	-	-
trans- 1,3-Dichloropropene	1	-	-	-	-	-
Trichloroethene	1	-	-	-	-	-
Dibromochloromethane	1	-	-	-	-	-
Cis- 1,3-Dichloropropene	4	-	-	-	-	-
1,1,2-Trichloroethane	1	-	-	-	-	-
Benzene	2	-	-	-	-	-
2-Chloroethylvinyl Ether	2	-	-	-	-	-
Bromoform	1	-	-	-	-	-
Tetrachloroethene	1	-	-	-	-	-
1,1,2,2-Tetrachloroethane	1	-	-	-	-	-
Toluene	1	-	-	-	-	-
Chlorobenzene	1	-	-	-	-	-
Ethylbenzene	1	-	-	-	-	-
Acrolein	30	-	-	-	-	-
Acrylonitrile	30	-	-	-	-	-
Acetone	15	-	-	-	-	-
Carbon Disulfide	1	-	-	-	-	-
2-Butanone	15	-	-	-	-	-
Vinyl Acetate	3	-	-	-	-	-
2-Hexanone	3	-	-	-	-	-
4-Methyl-2-Pentanone	1	-	-	-	-	-
Styrene	2	-	-	-	-	-
Xylenes	2	-	-	-	-	-

- = not detected
BDL = below detection limit
a analyses conducted on GC/MS

HISTORICAL DATA - SELECTED WELLS

TABLE P-24
GROUNDWATER HISTORICAL DATA
VOLATILE ORGANICS ANALYSIS (VALUES IN ug/L)

SAMPLE LOCATION	A-9		A-12		A-27			A-28							A-38		
DATA SOURCE	NUS	NUS	NUS	NUS	GZA	NUS	NUS	GZA	GZA	GZA	GZA	GZA	NUS	NUS	GZA	NUS	NUS
SAMPLING DATE	10/84	10/85	10/84	10/85	8/82	10/84	10/85 (D)	8/3/82	4/28/83	7/20/83	10/17/83	1/31/84	10/84	10/85	8/82	10/84 (D)	10/85
VOLATILE ORGANIC COMPOUNDS																	
CHLOROMETHANE																	
BROMOMETHANE																	
VINYL CHLORIDE			26														
CHLOROETHANE			96														
METHYLENE CHLORIDE	*	*	*						10	36	8	<5		4 J			
ACETONE		0.9 J	210	45	410		15000 J		N/A	<5				*			
CARBON DISULFIDE					N/A				N/A	N/A							
1,1-DICHLOROETHENE										N/A					N/A	70	1900
1,1-DICHLOROETHANE			7		62										N/A		
TRANS-1,2-DICHLOROETHENE			42	29				16	7	13	5	<5		14			
CHLOROFORM					53000	330000	155000	290	260	200	140	120	153	86	40		
1,2-DICHLOROETHANE								69	47	48	37	25	99	52	92	165	400
2-BUTANONE															14		
1,1,1-TRICHLOROETHANE					58	12000								2 J	11		
CARBON TETRACHLORIDE					23				N/A						N/A	365	
VINYL ACETATE								490	310	190	100	170	132	100	13		
BROMODICHLOROMETHANE					N/A				N/A	N/A							
1,1,2,2-TETRACHLOROETHANE															N/A		
1,2-DICHLOROPROPANE																	
TRANS-1,3-DICHLOROPROPENE																	
TRICHLOROETHENE			5 J						N/A	N/A							
DIBROMOCHLOROMETHANE					550	1600		21	10	<5	6	10	20	11			
1,1,2-TRICHLOROETHANE		*													<10		
BENZENE			5 J		19												
CIS-1,3-DICHLOROPROPENE														*			
2-CHLOROETHYLVINYLETHER									N/A						<10		
BROMOFORM																	
2-HEXANONE			10 J											*			
4-METHYL-2-PENTANONE			10 J						N/A						N/A		
TETRACHLOROETHENE					39				N/A	N/A					N/A		
TOLUENE					8700	8500		25	12	15	8	10	16	8	10		
CHLOROBENZENE			210		1600										2000	2090	2100
ETHYLBENZENE		1 J	77														
STYRENE					650									0.4 J			
TOTAL XYLENES			320					N/A	N/A	N/A	N/A	N/A			N/A		
TRICHLOROFLUOROMETHANE	N/A	N/A	N/A	N/A	42	N/A	N/A					<5	N/A	N/A	<10	N/A	N/A
DICHLORODIFLUOROMETHANE	N/A	N/A	N/A	N/A	57	N/A	N/A						N/A	N/A		N/A	N/A
ACROLEIN	N/A	N/A	N/A	N/A		N/A	N/A						N/A	N/A		N/A	N/A
ACRYLONITRILE	N/A	N/A	N/A	N/A		N/A	N/A					N/A	N/A	N/A		N/A	N/A

BLANK SPACE-INDICATES NO COMPOUND WAS DETECTED
J -VALUE APPROXIMATE DUE TO QUALITY CONTROL REVIEW(DATA VALIDATION)
* -VALUE REJECTED DUE TO BLANK CONTAMINATION IDENTIFIED IN QUALITY CONTROL REVIEW
** -VALUE REJECTED DUE TO OTHER CONTRACTUAL REQUIREMENTS IDENTIFIED IN QUALITY CONTROL REVIEW
N/A -COMPOUND NOT ANALYZED
(D) -VALUES REPRESENT THE MEAN OF DUPLICATE SAMPLES
NOTE -1985 DATA HAS UNDERGONE A QUALITY CONTROL REVIEW; EPA APPROVAL IS PENDING

TABLE P-24
GROUNDWATER HISTORICAL DATA
VOLATILE ORGANICS ANALYSIS (VALUES ug/L)

SAMPLE LOCATION	GZ-1-1			GZ-1-2				GZ-9-2		GZ-9-4		MW-2	
DATA SOURCE	GZA	NUS	NUS	GZA	NUS	NUS	NUS	GZA	NUS	GZA	NUS	E&E	NUS
SAMPLING DATE	8/82	10/84	10/85	8/82	10/84	11/84	10/85 (D)	12/82	10/84	12/82	10/84	2/24/82	10/84
VOLATILE ORGANIC COMPOUNDS													
CHLOROMETHANE													
BROMOMETHANE													
VINYL CHLORIDE													
CHLOROETHANE						82 J				4	10 J		
METHYLENE CHLORIDE	720	*	*	1200	*	26 J	420			<1			*
ACETONE	N/A	*	*	N/A	*		1000	N/A		N/A	85 J	N/A	
CARBON DISULFIDE	N/A			N/A				N/A		N/A		N/A	
1,1-DICHLOROETHENE											7		
1,1-DICHLOROETHANE	39		28 J	81		71 J				21	43		
TRANS-1,2-DICHLOROETHENE	590	420	78 J	1100	420	450	175 J			260	1000		
CHLOROFORM			56 J	<10			135 J			3			
1,2-DICHLOROETHANE	62		27 J	100		72 J				<1	51		
2-BUTANONE		*	1100 J	230	*	2800 J	1850	N/A		N/A	190	N/A	
1,1,1-TRICHLOROETHANE	20			34		6 J				67	42		
CARBON TETRACHLORIDE										2			
VINYL ACETATE								N/A		N/A		N/A	
BROMODICHLOROMETHANE													
1,1,2,2-TETRACHLOROETHANE													
1,2-DICHLOROPROPANE						8 J					5 J		
TRANS-1,3-DICHLOROPROPENE													
TRICHLOROETHENE	28			46		10 J				240			
DIBROMOCHLOROMETHANE													
1,1,2-TRICHLOROETHANE											44		
BENZENE	<10			13		12 J	24 J			<1	8		
CIS-1,3-DICHLOROPROPENE													
2-CHLOROETHYLVINYLETHER													
BROMOFORM													
2-HEXANONE													
4-METHYL-2-PENTANONE		500 J	85 J	30	500 J	240 J	135 J	N/A		N/A	10 J	N/A	
TETRACHLOROETHENE	19			37				N/A		N/A	11	N/A	
TOLUENE	2100	5200	1800	3400	4600	6500 J	2700 J			9	14		
CHLOROBENZENE				<10		8 J					80		
ETHYLBENZENE			32 J			74 J	70 J			2			
STYRENE											5 J		
TOTAL XYLENES		250 J	40 J		250 J	160 J	85 J	N/A				N/A	
TRICHLOROFLUOROMETHANE	88	N/A	N/A	200	N/A	N/A	N/A	N/A	N/A	N/A	13	N/A	
DICHLORODIFLUOROMETHANE		N/A	N/A	180	N/A	N/A	N/A		N/A	N/A	N/A		N/A
ACROLEIN		N/A	N/A		N/A	N/A	N/A		N/A		N/A		N/A
ACRYLONITRILE		N/A	N/A		N/A	N/A	N/A		N/A		N/A		N/A

BLANK SPACE-INDICATES NO COMPOUND WAS DETECTED
J -VALUE APPROXIMATE DUE TO QUALITY CONTROL REVIEW(DATA VALIDATION)
* -VALUE REJECTED DUE TO BLANK CONTAMINATION IDENTIFIED IN QUALITY CONTROL REVIEW
** -VALUE REJECTED DUE TO OTHER CONTRACTUAL REQUIREMENTS IDENTIFIED IN QUALITY CONTROL REVIEW
N/A -COMPOUND NOT ANALYZED FOR
(D) -VALUES REPRESENT THE MEAN OF DUPLICATE SAMPLES
NOTE -1985 DATA HAS UNDERGONE A QUALITY CONTROL REVIEW; EPA APPROVAL IS PENDING

TABLE P-24
GROUNDWATER HISTORICAL DATA
VOLATILE ORGANICS ANALYSIS (VALUES IN ug/L)

SAMPLE LOCATION	MW-6		MW-9			MW-10A		W-5-1					W-5-2				
DATA SOURCE	E&E	NUS	E&E	GZA	NUS	E&E	NUS	GZA	GZA	GZA	GZA	NUS	GZA	GZA	GZA	GZA	NUS
SAMPLING DATE	2/24/82	10/84	2/24/82	8/82	10/84	2/24/82	10/84	4/27/83	7/20/83	10/21/83	1/31/84	10/84	4/27/83	7/20/83	10/21/83	1/31/84	10/84
VOLATILE ORGANIC COMPOUNDS																	
CHLOROMETHANE																	
BROMOMETHANE																	
VINYL CHLORIDE		7 J							11						22	<5	24
CHLOROETHANE								<5	50	<5	<5		10		13	<5	10 J
METHYLENE CHLORIDE	200				*		*		180	7		*		63	5		*
ACETONE	N/A	*	N/A	N/A	*	N/A	*	N/A	N/A	N/A	N/A		N/A	N/A	N/A	N/A	*
CARBON DISULFIDE	N/A		N/A	N/A				N/A	N/A	N/A	N/A		N/A	N/A	N/A	N/A	
1,1-DICHLOROETHENE							55	6	75	17	20		10	130	630	250	540
1,1-DICHLOROETHANE	28	8 J		<10		10		30	165	92	80	170 J	110	280	2500	740	1800
TRANS-1,2-DICHLOROETHENE	600	120 J			7	7		95	165	260	200	45 J	130	230	77	120	190
CHLOROFORM																	
1,2-DICHLOROETHANE		10 J				9			26						12		7
2-BUTANONE	N/A	525 J	N/A		*	N/A	*		270								**
1,1,1-TRICHLOROETHANE	24					25	5 J	660	730	340	380	690 J	1330	950	80	110	240
CARBON TETRACHLORIDE																	
VINYL ACETATE	N/A		N/A	N/A		N/A											
BROMODICHLOROMETHANE																	
1,1,2,2-TETRACHLOROETHANE																	
1,2-DICHLOROPROPANE																	
TRANS-1,3-DICHLOROPROPENE																	
TRICHLOROETHENE	41							380	845	310	300	370 J	690	2200	340	450	440
DIBROMOCHLOROMETHANE																	
1,1,2-TRICHLOROETHANE																	
BENZENE											<5						
CIS-1,3-DICHLOROPROPENE																	
2-CHLOROETHYLVINYLETHER																	
BROMOFORM																	
2-HEXANONE	N/A		N/A	N/A		N/A											
4-METHYL-2-PENTANONE	N/A	52 J	N/A	N/A	10 J	N/A											
TETRACHLOROETHENE	18						5 J	375	155	30	70	630 J	810	80	59	40	170
TOLUENE	200	860 J			*		*	<5		100	15	22	15		5	<5	7
CHLOROBENZENE																<5	
ETHYLBENZENE	21	14 J									<5					<5	
STYRENE	N/A		N/A	N/A		N/A		N/A	N/A	N/A	N/A		N/A	N/A	N/A	N/A	
TOTAL XYLENES	N/A	17 J	N/A	N/A		N/A											
TRICHLOROFLUOROMETHANE	84	N/A	5	<10	N/A	6	N/A					N/A					N/A
DICHLORODIFLUOROMETHANE		N/A			N/A		N/A					N/A					N/A
ACROLEIN		N/A			N/A		N/A					N/A					N/A
ACRYLONITRILE		N/A			N/A		N/A					N/A					N/A

BLANK SPACE-INDICATES NO COMPOUND WAS DETECTED
J -VALUE APPROXIMATE DUE TO QUALITY CONTROL REVIEW(DATA VALIDATION)
* -VALUE REJECTED DUE TO BLANK CONTAMINATION IDENTIFIED IN QUALITY CONTROL REVIEW
** -VALUE REJECTED DUE TO OTHER CONTRACTUAL REQUIREMENTS IDENTIFIED IN QUALITY CONTROL REVIEW
N/A -COMPOUND NOT ANALYZED
(D) -VALUES REPRESENT THE MEAN OF DUPLICATE SAMPLES
NOTE -1985 DATA HAS UNDERGONE A QUALITY CONTROL REVIEW; EPA APPROVAL IS PENDING

TABLE P-24
GROUNDWATER HISTORICAL DATA
VOLATILE ORGANICS ANALYSIS (VALUES IN ug/L)

SAMPLE LOCATION	W-5-3				
DATA SOURCE	GZA	GZA	GZA	GZA	NUS
SAMPLING DATE	4/27/83	7/20/83	10/21/83	1/31/84	10/84
VOLATILE ORGANIC COMPOUNDS					
CHLOROMETHANE					
BROMOMETHANE					
VINYL CHLORIDE					
CHLOROETHANE	10				
METHYLENE CHLORIDE	20	80	20		
ACETONE	N/A	N/A	N/A	N/A	
CARBON DISULFIDE	N/A	N/A	N/A	N/A	
1,1-DICHLOROETHENE	10	<5	12	5	32J
1,1-DICHLOROETHANE	120	51	110	90	70J
TRANS-1,2-DICHLOROETHENE	150	87	290	340	460J
CHLOROFORM					
1,2-DICHLOROETHANE					
2-BUTANONE					**
1,1,1-TRICHLOROETHANE	1400	270	720	500	730 J
CARBON TETRACHLORIDE					
VINYL ACETATE					
BROMODICHLOROMETHANE					
1,1,2,2-TETRACHLOROETHANE					
1,2-DICHLOROPROPANE					
TRANS-1,3-DICHLOROPROPENE					
TRICHLOROETHENE	700	570	870	260	470 J
DIBROMOCHLOROMETHANE					
1,1,2-TRICHLOROETHANE					
BENZENE					
CIS-1,3-DICHLOROPROPENE					
2-CHLOROETHYLVINYLETHER					
BROMOFORM					
2-HEXANONE					
4-METHYL-2-PENTANONE					
TETRACHLOROETHENE	890	60	19	<5	14 J
TOLUENE	<5	15			110 J
CHLOROBENZENE					
ETHYLBENZENE					
STYRENE	N/A	N/A	N/A	N/A	
TOTAL XYLENES					
TRICHLOROFLUOROMETHANE					N/A
DICHLORODIFLUOROMETHANE					N/A
ACROLEIN					N/A
ACRYLONITRILE					N/A

BLANK SPACE - INDICATES NO COMPOUND WAS DETECTED
J - VALUE APPROXIMATE DUE TO QUALITY CONTROL REVIEW(DATA VALIDATION)
* - VALUE REJECTED DUE TO BLANK CONTAMINATION IDENTIFIED IN QUALITY CONTROL REVIEW
** - VALUE REJECTED DUE TO OTHER CONTRACTUAL REQUIREMENTS IDENTIFIED IN QUALITY CONTROL REVIEW
N/A - COMPOUND NOT ANALYZED
(D) - VALUE REPRESENT THE MEAN OF DUPLICATE SAMPLES
NOTE - 1985 DATA HAS UNDERGONE A QUALITY CONTROL REVIEW; EPA APPROVAL IS PENDING

TABLE P-25
HISTORICAL DATA (GZA)
PHYSICAL CHARACTERISTICS

Sample Number	collection date	temp (°C)	pH	Specific conductance (umhos/cm)	depth	screened interval	notes
A-1					31.7	20.0-30.0	
A-2	8/3/82	16.4	6.27	289	14.1	3.2-13.2	
A-3	8/8/82	15.3	6.17	186	19.0	7.8-17.8	
A-4	8/3/82	18.5	6.22	268	10.5	.5-8.6	
A-5	8/3/82	15.7	6.41	595	10.5	.3-9.7	(bottom of screen very close to W.T.)
A-6	8/3/82	13.6	6.56	74.5	21.0	7.5-17.5	
A-7						10.0	
A-8						20.5	
A-9					30.0	14.4-24.4	
A-10	-----	-----	-----	----	15.5		
A-11					7.5		
A-12					15.0	9.7-14.7	(bottom of screen very close to water table)
A-13					22.0		
A-14	8/3/82	15.3	6.19	64.1	14.5	8.5-13.5	
A-15	8/12/82	16.3	6.24	124	31.6	17.6-27.6	
A-16					10.0		
A-17	8/4/82	14.9	5.77	49.5	19.0	0.5-8.6	
A-18	8/3/82	17.8	6.91	252	12.0	7.3-11.3	
A-19	8/12/82	18.0	6.18	51	9.0	0.5-8.6	
A-20	8/26/82	21.4	6.66	448	15.1	10.1-15.1	
A-21					8.0		
A-22					8.5		
A-23	8/5/82	19.7	6.02	260	16.5	6-16	
A-24					15.0		
A-25	8/3/82	14.7	5.61	49.5	26.5	14-24	
A-26	8/3/82	15.0	6.46	670	20.0	8.5-18.5	
A-27	8/3/82	15.2	5.39	2920	15.0	5.0-15.0	
A-28	8/3/82	20.0	5.97	425	15.0	3.9-13.9	
A-29	8/3/82	16.2	6.46	1440	16.5	5.8-15.8	
A-30	8/3/82	16.8	6.13	290	10.0	3.2-9.2	
A-30A	8/12/82	12.5	5.83	246	18.3	8.3-18.3	

TABLE P-25
HISTORICAL DATA (GZA)
PHYSICAL CHARACTERISTICS
PAGE TWO

Station Number	collection date	temp (^{O}C)	pH	Specific conductance (umhos/cm)	depth	screened interval	notes
A-31	8/12/82	21.5	5.95	69.5	17.0	3.1-8.1	
A-32	8/5/82	10.0	6.62	2110	29.0	19.0-29.0	
A-32A	8/5/82	18.3	6.64	572		.6-10.6	
A-33	8/4/82	20.7	6.30	857	15.0	1.0-9.2	
A-34	8/12/82	12.7	6.20	320	30.0	26.3-29.8	Bedrock
A-35	8/26/82	DRY			19.5	9.5-19.5	
A-36					19.5		
A-37					18.5		
A-38	8/5/82	14.8	6.11	1145	18.0	7.9-17.9	
A-39	8/4/82	14.0	6.36	1030	24.0	6.6-16.6	
A-40	8/26/82	DRY			5.5	0-5.0	
A-41	8/26/82	17.4	6.22	198	11.5	6.3-11.3	
A-42					8.0		
A-45					29.5	6.7-26.7	
A-46	-----	-----	-----	-----	21.5	1.4-16.4	
A-47					6.0		
A-48					35.1	21.1-35	
GZ-1(-1)	8/5/82	19.8	6.29	2120		2.5-7.5	
GZ-1(-2)	8/5/82	15.8	6.24	2380		7.5-17.5	
GZ-1(-3)	8/5/82	15.0	6.80	301	30.2	23.6 Barcad	
GZ-2(-1)	8/11/82	14.0	6.04	315		14-19	
GZ-2(-2)	8/11/82	12.6	6.42	448	35.0	34.0 Barcad	
GZ-3(-1)	8/11/82	19.0	6.31	1200		2.8-7.8	
GZ-3(-2)	8/11/82	14.6	6.64	1050	30.0	18.3-28.3	
GZ-4(-1)	8/11/82	18.2	5.93	86.2		1.5-6.5	
GZ-4(-2)	8/11/82	12.6	6.15	450	25.0	14.2-24.2	
GZ-5(-1)	8/11/82	14.2	6.05	450		19.0-24.0	
GZ-5(-2)	8/11/82	14.8	6.87	253	37.5	37.0 Barcad	
GZ-6(-1)	8/12/82	14.1	6.66	62		8-18	
GZ-6(-2)	8/12/82	12.6	6.81	167		34.0 Barcad	
GZ-6(-3)	8/12/82	15.0	6.57	1340	52.5	50.0 Barcad	
GZ-7(-1)						14.8-24.8	
GZ-7(-2)	-----	-----	-----	-----	46.4	45.9 Barcad	
GZ-8(-1)						27.4-37.4	
GZ-8(-2)					61.0	54.4 Barcad	

TABLE P-25
HISTORICAL DATA (GZA)
PHYSICAL CHARACTERISTICS
PAGE THREE

Station Number	collection date	temp (^{o}C)	pH	Specific conductance (umhos/cm)	depth	screened interval	notes
GZ-9(-1)						0-2.2	
GZ-9(-2)						7.5-17.5	
GZ-9(-3)	-----	-----	-----	-----		27.2 Barcad	
GZ-9(-4)					51.5	42.8 Barcad	
GZ-10(-1)						0-3.5	
GZ-10(-2)	-----	-----	---	-----		5.3-15.3	
GZ-10(-3)					35.8	27.4 Barcad	(seal between Barcad & refusal)
GZ-11(-1)						2.2-22.2	
GZ-11(-2)					46.4	43.0 Barcad	
TP-3	8/27/82	19.8	6.05	308			
TP-12	8/12/82	17.3	6.29	362			
TP-19	8/3/82	14.1	6.06	540			
#10							
#18							
#20	8/26/82	17.6	6.18	34.0			
MW-1							
MW-2							
MW-3	8/26/82	14.6	6.35	50.4			
MW-4	8/26/82	14.9	6.32	210			
MW-5	8/26/82	13.1	6.05	413			
MW-6	8/26/82	13.2	6.52	1500			
MW-7	8/26/82	15.7	6.10	69.7			
MW-8	8/26/82	15.7	6.44	264			
MW-9	8/12/82	13.3	5.99	185			
MW-10	8/26/82	17.3	6.42	54			
MW-10A	8/26/82	11.6	5.98	107			

GROUNDWATER DATA (STATE OF NEW HAMPSHIRE)

	1,1,1 Analysis	Trichloroethane	Carbon Tetrachloride	Trichloroethylene	Tetrachloroethylene	Chloroform	Unidentified Compound	Temperature °C	C.O.D. mg/l	NO_2+NO_3 mg/l	Chloride mg/l	Sulfate mg/l	pH units	Sp. Cond. uMHO	Color units	Arsenic mg/l	Barium mg/l	Cadmium mg/l	Chromium mg/l	Iron mg/l	Lead mg/l	Manganese mg/l	Selenium mg/l	Copper mg/l	Mercury mg/l	Nickel mg/l	Potassium mg/l	Sodium mg/l	Zinc mg/l	Magnesium mg/l	
SAMPLES TAKEN 8 NOVEMBER 1979 BY WALTER C. CARLSON (NHWS&PCC-P&S)																															
Well TP 18	N.D.	0.7	0.3	N.D.	0.2	N.D.	N.D.		24	-	8	T.I.	6.2	174	-	0.03	-	<0.005	0.02	20	<0.05	7.2	-	<0.1	-	-		4.9	0.01	2.6	
4-inch Well	N.D.	N.D.	4.6	24	N.D.	N.D.	N.D.		732	-	Fe.I	T.I.	6.2	1146	-	0.02	-	<0.005	0.01	150	<0.05	45.4	-	<0.1	-	-	8	32	0.04	13.4	02567
Stream	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.		8	-	37	8	6.1	193	-	0.01	-	<0.005	0.01	1.0	<0.05	0.27	-	<0.1	-	-	1.9	19.5	0.03	2.4	02569
																															02568
SAMPLES TAKEN 8 NOVEMBER 1979 BY BERNARD LOCEY AND STEPHEN DEODEO (NHWS&PCC-W.S.)																															
Untspering Pines Road	N.D.	1.3	N.D.	N.D.	N.D.	N.D.	N.D.		-	1.73	19.5	-	7.1	-	0	<0.01	<0.1	<0.005	0.01	0.5	<0.05	0.15	<0.01	<0.1	<0.001	-	-	16	0.04	-	02656
Wheeler Auburn Street	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	2.0		-	<0.05	<10	-	8.2	-	0	<0.01	0.3	<0.005	0.01	<0.1	<0.05	0.01	<0.01	<0.1	<0.001	-	-	5.2	0.02	-	02564
Wagner Auburn Street	N.D.	<1.0	N.D.	N.D.	N.D.	N.D.	N.D.		-	0.06	<10	-	7.9	-	0	<0.01	0.1	<0.005	<0.01	<0.1	<0.05	0.01	<0.01	<0.1	<0.001	-	-	3.4	0.03	-	02562
Brooks Auburn Street	N.D.	N.D.	8.1	29	N.D.	106	N.D.		-	0.29	20	-	7.2	-	0	<0.01	0.2	<0.005	<0.01	0.1	<0.05	0.03	<0.01	<0.1	<0.001	-	-	16.4	0.02	-	02566
Deaton Old Derry Road	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.		-	<0.05	10		7.4	-	0	<0.01	0.1	<0.005	<0.01	0.1	<0.05	0.01	<0.01	<0.1	<0.001	-	-	5.3	0.02	-	02563

Symbols
T.I. = Turbidity Interference
Fe.I = Iron Interference
N.D. = Not Detected
Results in ug/l (=ppb) unless noted otherwise

In and Vicinity of
Londonderry Landfill
Auburn Street
Londonderry, N.H.

Walter F. Carlson

02009620

[redacted] Mun[redacted] Lan[redacted] And[redacted] [redacted]

[redacted] Wic (WSB[redacted] Dat[redacted] nuar[redacted] 1980

*Organics Analyses results in ug/l (=ppb) Results in mg/l (=ppm) unless otherwise stated.

Well Number	Hydrocarbons mg/l	IR Analysis	Trichloroethane*	Carbon Tetrachloride*	Trichloroethylene*	Methylene Chloride*	Tetrachloroethylene*	Chlorobenzene*	Chloroform*	Unidentified Compound*	Temperature °C	B.O.D.	T.O.C.	TKN-N	NO_2+NO_3	Phosphorus (Total)	pH Units	Sp. Cond. µMHOs	Chloride	Sulfate	Solids (Total)	Solids (Suspended)	Solids (Volatile Total)	Solids (Volatile Suspended)	
#4" well	ND	ND	7	ND	157	ND	7	3	ND	20		490			0.29		6.2	591	--	2.5					
Brooks Well	ND	ND	ND	ND	2	ND	ND	5	ND	ND		12.2			0.43		7.6	638	90	15					
King Well	ND	ND	ND	ND	9	ND	ND	2	ND	ND		4.1			<.05		7.7	338	4	7.5					
Lindquist Well	ND	ND	ND	ND	11	ND	ND	2.5	ND	ND		4.1			0.72		6.9	377	31	7.5					
Whitesell Well	ND	ND	ND	ND	23	ND	ND	4	ND	ND		<4.1			<.05		7.9	313	6	7.5					

Results in mg/l (=ppm)

Well Number	Arsenic	Barium	Cadmium	Calcium	Chromium	Copper	Iron	Lead	Magnesium	Manganese	Mercury	Nickel	Potassium	Selenium	Sodium	Tin	Zinc	Fecal Coliform per 100 ml	Static Level feet	Laboratory Number
#4" well							68		10.2									--		04447
Brooks Well							0.1		54									<2		04448
King Well							<0.1		40									<2		04444
Lindquist Well							0.2		0.49									<2		04445
Whitesell Well							0.1		0.04									<2		04446

Comments:

N.D.=Nothing Detected
S.T.=Slight Trace
N.S.=Not Sampled
A.H.=Aliphatic Hydrocarbons

Site: Residences Adjacent to Londonderry Municipal Landfill

Sampled By: Ralph Wickson (NHWS&PCC) Date: February 27, 1980

Organics Analyses results in ug/l (=ppb) Results in mg/l (=ppm) unless otherwise stated.

Well Number	Hydrocarbons mg/l	IR Analysis	Trichloromethane	Carbon Tetrachloride	Trichloroethylene	Methylene Chloride	Tetrachloroethylene	Unidentified Compound	Chloroform		Temperature °C	C.O.D.	Alkalinity $CaCO_3$	TKN-N	NO_2+NO_3	Phosphorus Total	pH units	Sp. Cond. µMOs	Chloride	Sulfate	Solids (Total)	Solids (Suspended)	Solids (Volatile Total)	Solids (Volatile Suspended)	
Brooks #1												11.8	173.5		0.27		7.3	602	73	19.5					
Lindquist #2												7.88	143.5		0.20		6.9	402.8	31	12.5					
Whitesel #3												7.88	158.0		<.05		7.7	318.9	3	6.0					
King #4												4.0	169.0		<.05		7.6	341.7	2	10.0					

Results in mg/l (=ppm)

Well Number	Arsenic	Barium	Cadmium	Calcium	Chromium	Copper	Iron	Lead	Magnesium	Manganese	Mercury	Nickel	Potassium	Selenium	Sodium	Thg	Zinc	Fecal Coliform per 100 ml	Static Level feet	Laboratory Number
Brooks #1	<0.005						0.3		40	0.03					36	0.05		<1		06678
Lindquist #2	<0.005						0.2		2.4	0.02					150	0.10		<1		06679
Whitesel #3	<0.005						<0.1		0.03	<0.01					132	0.08		<1		06680
King #4	<0.005						<0.1		20	0.02					38	0.18		<1		06681

Comments:

N.D.=Nothing Detected
S.T.=Slight Trace
N.S.=Not Sampled
A.H.=Aliphatic Hydrocarbons

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Sampled By: Ralph Wickson (NHWSAPCC) Date: April 14, 1980

Organics Analyses results in ug/l (=ppb) Results in mg/l (=ppm) unless otherwise stated.

Well Number	Hydrocarbons mg/l	IR Analysis	Trichloroethane	Carbon Tetrachloride	Trichloroethylene	Methylene Chloride	Tetrachloroethylene	Unidentified Compound	Chloroform		Temperature °C	C.O.D.	T.O.C.	TKN-N	NO_2+NO_3	Phosphorus Total	pH units	Sp. Cond. µMHOs	Chloride	Sulfate	Solids (Total)	Solids (Suspended)	Solids (Volatile Total)	Solids (Volatile Suspended)	
Windham Well												7.5			<0.05		7.5	390	4						
Cohas Brook												15.8			0.06		6.6	286	39						
(1)												75.8			0.18		5.5	218	47						
(2)												99.0			<0.05		6.5	664	55						

(1) Standing surface water across from 105 Auburn Road

(2) Standing surface water at Londonderry Landfill

Results in mg/l (=ppm)

Well Number	Arsenic	Barium	Cadmium	Calcium	Chromium	Copper	Iron	Lead	Magnesium	Manganese	Mercury	Nickel	Potassium	Selenium	Sodium	TKN	Zinc	Fecal Coliform per 100 ml	Static Level feet	Laboratory Number
Windham Well	<0.005						0.1	<0.01	35.5	0.02					4.9			<1		08673
Cohas Brook	<0.005						2.5	<0.01	5.0	0.53					20.0			<1		08674
(1)	<0.005						0.3	<0.01	4.4	0.41					24.0					08675
(2)	0.012						40.0	0.010	4.4	1.95					34.0					08676

Comments:

N.D.=Nothing Detected
S.T.=Slight Trace
N.S.=Not Sampled
A.H.=Aliphatic Hydrocarbons

Site: Residences*, Vicinity of Londonderry Landfill, Londonderry, New Hampshire

Sampled By: Ralph Wickson Date: May 7, 1980

Organics Analyses results in ug/l (=ppb) Results in mg/l (=ppm) unless otherwise stated.

Well Number	Hydrocarbons mg/l	IR Analysis	Trichloroethane	Carbon Tetrachloride	Trichloroethylene	Methylene Chloride	Tetrachloroethylene	Unidentified Compound	Chloroform		Temperature °C	C.O.D.	T.O.C.	TKN-N	NO_2+NO_3	Phosphorus Total	pH units	Sp. Cond. µMHOs	Chloride	Sulfate	Solids (Total)	Solids (Suspended)	Solids (Volatile Total)	Solids (Volatile Suspended)	Alkalinity
King												<4			<0.05		7.9	354	4	15					152
Brooks												47.4			0.14		7.7	572	57	30					176
Lindquis												<4			0.55		7.2	439	46	20					119
Hogan												<4			0.77		6.7	196	21	14					42--
Whitesel												11.8			<0.05		8.1	316	5	9					144
Provenca												<4			0.07		7.9	364	3	25					165
Windham												19.7			<0.05		7.8	400	2	12.5					191
4" Well												198			0.15		6.5	67	24	<5					254

Results in mg/l (=ppm)

Well Number	Arsenic	Barium	Cadmium	Calcium	Chromium	Copper	Iron	Lead	Magnesium	Manganese	Mercury	Nickel	Potassium	Selenium	Sodium	Tin	Zinc	Fecal Coliform per 100 ml	Static Level feet	Laboratory Number
King							0.2	<0.01	16.5	0.02										09760
Brooks							0.1	<0.01	28.0	0.02										09761
Lindquis							0.2	<0.01	15.5	0.09										09762
Hogan							<0.1	<0.01	5.5	0.01										09763
Whitesel							0.1	<0.01	14.0	0.01										09764
Provenca							<0.1	<0.02	23.0	0.01										09765
Windham							0.1	<0.01	26.0	0.02										09766
4" Well							78	<0.01	7.5	23.6										09767

Comments:

N.D.=Nothing Detected
S.T.=Slight Trace
N.S.=Not Sampled
A.H.=Aliphatic Hydrocarbons

*Auburn Road

0309966

Site: Londonderry Sanitary Landfill/Whispering Pines Trailer Park

Sampled By: Warren B. Snow (NHWS&PCC) Date: September 18, 1980

Organics Analyses results in µg/l (=ppb) Results in mg/l (=ppm) unless otherwise stated.

Sample Station	Hydrocarbons mg/l	IR Analysis	Trichloroethane	Carbon Tetrachloride	Trichloroethylene	Methylene Chloride	Tetrachloroethylene	Unidentified Compound	Chloroform		Temperature °C	C.O.D.	B.O.D.	TKN-N	NO_2+NO_3	Phosphorus Total	pH units	Sp. Cond. µMHOs	Chloride	Sulfate	Solids (Total)	Solids (Suspended)	Solids (Volatile Total)	Solids (Volatile Suspended)	
Whispering Pines Surface x-2												94.4	>5.9				6.8	456		40					
x-1a												189	>9.0				6.7	153		9					
x-1												39.4	1.7				6.7	219		1					

Results in mg/l (=ppm)

Sample Station	Aluminum	Barium	Cadmium	Calcium	Chromium	Copper	Iron	Lead	Magnesium	Manganese	Mercury	Nickel	Potassium	Selenium	Sodium	Tin	Zinc	Total Coliforms per 100 ml	Static Level feet	Laboratory Number
Whispering Pines Surface x-2	0.10		<0.005		0.11	<0.1	0.6			0.20		<0.1					0.10			19897
x-1a	1.45		<0.005		0.01	<0.1	7.3			7.4		<0.1					0.03	2,100		19896
x-1	0.90		<0.005		<0.01	<0.1	12			1.37		<0.1					0.07	9,300		19895
	0.10		<0.005		<0.01	<0.1	0.5			0.07		<0.1					0.05	4,300		19894

It is noted that sample #19897 was collected in a bacteria bottle containing Sodium Thiosulfate. Therefore subject sample is invalid.

Comments:

N.D.=Nothing Detected
S.T.=Slight Trace
N.S.=Not Sampled
A.H.=Aliphatic Hydrocarbons

Sample #19897 taken from office tap. Groundwater Whispering Pines Trailer Park.

Samples #19896, #19895 and #19894 taken from standing surface water - Cohas Brook, eastern perimeter of landfill.

(For sample locations see attached map.)

Evidence of iron bacteria noted at surface water locations.

Site: Residential Wells in the Vicinity of the Londonderry Landfill, Auburn Road, Londonderry

Sampled By: Ralph L. Wickson (NHWS&PCC) Date: March 11, 1981

Organics Analyses results in µg/l (=ppb) Results in mg/l (=ppm) unless otherwise stated.

Well Number	Hydrocarbons mg/l	IR Analysis	Trichloroethane	Carbon Tetrachloride	Trichloroethylene	Methylene Chloride	Tetrachloroethylene	Unidentified Compound	Chloroform		Temperature °C	C.O.D.	T.O.C.	NH_3	NO_2+NO_3	Phosphorus Total	pH units	Sp. Cond. µMHOs	Chloride	Sulfate	Solids (Total)	Solids (Suspended)	Solids (Volatile Total)	Solids (Volatile Suspended)	
W.P. #1												<25		<0.10	<0.05		6.2	153	20	4.9					
W.P. #2												<25		0.17	<0.05		6.5	164	25	-					
W.P. #3												25		<0.10	1.52		6.3	157	20	4.3					
W.P. #4												<25		0.13	0.63		6.3	110	14	5.8					
Brooks												<25		<0.10	0.30		7.5	566	63	20					
Whitesell												<25		<0.10	<0.05		7.9	307	5.0	6.1					
Provencal												<25		<0.10	0.14		7.7	394	7.0	16					
Mogan												<25		<0.10	0.85		6.7	184	17.0	11					
Bowen												<25		<0.10	1.74		6.6	198	28.3	4.4					
Windham												<25		<0.10	-		7.8	356	3.5	13.5					

Results in mg/l (=ppm)

Well Number	Arsenic	Barium	Cadmium	Calcium	Chromium	Copper	Iron	Lead	Magnesium	Manganese	Mercury	Nickel	Potassium	Selenium	Sodium	Tin	Zinc	Fecal Coliform per 100 ml	Static Level feet	Laboratory Number
W.P. #1	<.005				0.01		2.5			0.20					11					27141
W.P. #2	<.005				<0.01		9			0.91					13					27139
W.P. #3	<.005				<0.01		-			0.17					8					27138
W.P. #4	<.005				<0.01		1.1			0.38					8					27140
Brooks	<.005				0.01		0.1			0.02					17					27142
Whitesell	<.005				<0.01		0.1			0.01					26					27143
Provencal	<.005				<0.01		<0.1			0.01					5					27144
Mogan	<.005				0.01		<0.1			0.01					11					27145
Bowen	<.005				0.01		<0.1			0.01					15					27146
Windham	<.005				<0.01		0.1			0.04					5					27147

Comments:

N.D.=Nothing Detected
S.T.=Slight Trace
N.S.=Not Sampled
A.H.=Aliphatic Hydrocarbons

W.P. = Whispering Pines Trailer Park

Metals samples preserved in the field.

W.P. samples obtained prior to in-line treatment.

TABLE 3-2

RESULTS OF METALS ANALYSIS

METAL	LEVEL ug/l	Bowen	Brooks					Deaton	King			Lindquist		
		3/11/81	11/8/79	1/3/80	2/27/80	5/7/80	3/11/81	11/8/79	1/3/80	2/27/80	5/7/80	1/3/80	2/27/80	5/7/80
Primary Standards[1]														
Arsenic	50	ND	ND		ND		ND	ND		ND			ND	
Barium	1000		200					ND						
Cadium	10		ND					ND						
Chromium	50	10	10				10	ND						
Lead	50		ND			ND		ND			ND			ND
Mercury	2.0		ND					ND						
Selenium	10		ND					ND						
Silver	50		ND					ND						
Secondary Standards[2]														
Copper	1000		ND					ND						
Iron	300	ND	100	100	300	100	100	100	ND	ND	200	200	200	200
Manganese	50	10	30		30	20	20	10		20	20		20	90
Zinc	5000		200					ND						
Arsenic	50	ND	ND		ND		ND	ND		ND			ND	
Selenium	10		ND					ND						
Sodium	2000-25,000	15000	16400		36000		17000	5300		38000			150000	

[1]State of New Hampshire primary drinking water standards.

[2]State of New Hampshire secondary drinking water standards.

RESULTS OF METALS ANALYSIS

METAL	LEVEL ug/l	Provencal			Wagner	Wheat-ley	WPMHP Composite			WPMHP #1		WPMHP #1 Duplicate		
Primary Standards[1]		5/7/80	3/11/81	10/14/81	11/8/79	11/8/79	1/12/77	11/8/79	9/10/80	8/11/81	10/14/81	3/11/81	10/14/81	
Arsenic	50		ND	ND	ND	ND	ND	ND	100	ND	ND	ND	ND	
Barium	1000			160	ND	300	ND	ND			ND		ND	
Cadium	10			ND	ND	ND	ND	ND	ND		ND		ND	
Chromium	50		ND	ND	ND	10	ND	10	ND	10	ND	10	ND	
Lead	50	20		ND	ND	ND	ND	ND			ND		ND	
Mercury	2.0			2	ND	ND	ND	ND			ND		ND	
Selenium	10			ND	ND	ND	ND	ND			ND		ND	
Silver	50			ND	ND	ND	ND	ND			ND		ND	
Secondary Standards[2]														
Copper	1000			20	ND	ND	ND	ND	ND	100	ND		ND	
Iron	300	ND	ND	40	ND	ND	700	500	600	30	1120	100	1010	
Manganese	50	10	10	30	ND	10	230	150	200		170	10	170	
Zinc	5000			ND	ND	20		40			ND		ND	
Arsenic	50		ND	ND	ND	ND		ND		ND	ND	ND	ND	
Selenium	10			ND	ND	ND	ND	ND			ND		ND	
Sodium	2000-25,000	5000		6100	3400	5200		16000			11500	11000	12800	

[1]State of New Hampshire primary drinking water standards.

[2]State of New Hampshire secondary drinking water standards.

TABLE 3-2

RESULTS OF METALS ANALYSIS

METAL	LEVEL ug/l	WPMHP #2		WPMHP #3		WPMHP #4		Whitesell							
Primary Standards[1]		3/1/81	10/14/81	3/11/81	10/14/81	3/1/81	10/14/81	1/3/80	2/27/80	5/1/80	3/1/81				
Arsenic	50	ND	ND	ND	ND	ND	ND		ND		ND				
Barium	1000		ND		ND		ND								
Cadium	10		ND		ND		ND								
Chromium	50	ND	ND	ND	ND	ND	ND				ND				
Lead	50		ND		ND		ND			ND					
Mercury	2.0		ND		ND		ND								
Selenium	10		ND		ND		ND								
Silver	50		ND		ND		ND								
Secondary Standards[2]															
Copper	1000		ND		ND		ND	100							
Iron	300	9000	820		4310	1100	700		ND	100	100				
Manganese	50	910	230	170	480	380	470		ND	10	10				
Zinc	5000		ND		10		ND								
Arsenic	50		ND		ND		ND		ND						
Selenium	10		ND		ND		ND								
Sodium	2000-25,000	13000	10500	8000	20500	8000	12500		132000						

[1]State of New Hampshire primary drinking water standards.

[2]State of New Hampshire secondary drinking water standards.

RESULTS OF METALS ANALYSIS

METAL	LEVEL ug/l	Windham					Wogan	
		3/21/80	4/14/80	5/7/80	3/11/81	10/14/81	5/7/80	3/11/81
Primary Standards[1]								
Arsenic	50		ND		ND			ND
Barium	1000							
Cadium	10							
Chromium	50				ND			10
Lead	50		ND	ND			ND	
Mercury	2.0							
Selenium	10							
Silver	50							
Secondary Standards[2]								
Copper	1000							
Iron	300	100	100	100	100		ND	ND
Manganese	50		20	20	40		100	10
Zinc	5000							
Arsenic	50		ND		ND			
Selenium	10							
Sodium	2000-25,000		20000		5000			

[1]State of New Hampshire primary drinking water standards.

[2]State of New Hampshire secondary drinking water standards.

GROUNDWATER DATA (E & E)

APPENDIX E.3

E & E TESTING

PURGEABLE ORGANIC ANALYSIS RESULTS

COMPOUNDS	Sample No.	MW-1	MW-2	MW-3	MW-4	MW-5
	Laboratory	Versar	Versar	Versar	Versar	Versar
	Analysis by	GC/MS	GC/MS	GC/MS	GC/MS	GC/MS
	Sampling Date					
1. Chloromethane						
2. Bromomethane						
3. Dichlorodifluoromethane						
4. Vinyl chloride						
5. Chloroethane						
6. Methylene chloride						
7. Acrylonitrile						
8. Trichlorofluoromethane						
9. 1,1-dichloroethylene						49
10. 1,1-dichloroethane						
11. Trans-1,2-dichloroethylene						5
12. Chloroform						
13. 1,2-dichloroethane						
14. 1,1,1-trichloroethane						
15. Carbon tetrachloride		ND	ND	ND	ND	
16. Bromodichloromethane						
17. 1,2-dichloropropane						
18. Trans-1,3-dichloropropylene						
19. Trichloroethylene						
20. Benzene						
21. Dibromochloromethane						
22. Cis-1,3-dichloropropylene						
23. 1,1,2-trichloroethane						
24. Bromoform						
25. 1,1,2,2-tetrachloroethane						
26. Tetrachloroethylene						
27. Toluene						
28. Chlorobenzene						
29. Ethyl benzene						
30. Bis-chloromethyl ether						
31. 2-chloroethyl vinyl ether						
32. Acrolein						
ADDITIONAL						

NOTES: 1) All results in parts per billion (ppb).
2) ND = not detected. Blank spaces indicate N.D.'s.

E & E TESTING

PURGEABLE ORGANIC ANALYSIS RESULTS

COMPOUNDS	Sample No.	MW-6	MW-7	MW-8	MW-9	MW-10	MW-10A	BSWM-1
	Laboratory	Versar	Versar	Versar	Versar	Versar	Versar	Versar
	Analysis by	GC/MS	GC/MS	GC/MS	GC/MS	GC/MS	GC/MS	GC/MS
	Sampling Date							
1. Chloromethane								
2. Bromomethane								
3. Dichlorodifluoromethane								
4. Vinyl chloride								
5. Chloroethane								
6. Methylene chloride		200						91
7. Acrylonitrile								
8. Trichlorofluoromethane		84			5		6	129
9. 1,1-dichloroethylene								
10. 1,1-dichloroethane		28					10	35
11. Trans-1,2-dichloroethylene		600					7	80
12. Chloroform								
13. 1,2-dichloroethane							9	
14. 1,1,1-trichloroethane		24					25	29
15. Carbon tetrachloride			ND	ND		ND		
16. Bromodichloromethane								
17. 1,2-dichloropropane								
18. Trans-1,3-dichloropropylene								
19. Trichloroethylene		41						
20. Benzene								49
21. Dibromochloromethane								3
22. Cis-1,3-dichloropropylene								
23. 1,1,2-trichloroethane								
24. Bromoform								
25. 1,1,2,2-tetrachloroethane								
26. Tetrachloroethylene		18						
27. Toluene		200						18
28. Chlorobenzene								585
29. Ethyl benzene		21						
30. Bis-chloromethyl ether								20
31. 2-chloroethyl vinyl ether								
32. Acrolein								
ADDITIONAL								

NOTES: 1) All results in parts per billion (ppb).
2) ND = not detected. Blank spaces indicate N.D.'s.

E & E TESTING

WATER QUALITY DATA

INORGANIC ANALYSES

PRIORITY POLLUTANT METALS	Station No.	MW-1	MW-2	MW-3	MW-4	MW-5	MW-6	MW-7	MW-8
	Laboratory	LRE	LRE	LRE	LRE	LRE	LRE	LRE	LRE
	Analysis by								
	Sampling on								
Antimony		8	5	4	5	ND	ND	ND	ND
Arsenic		10	ND	8	ND	ND	ND	ND	ND
Beryllium		ND	36	ND	ND	36	36	ND	ND
Cadmium		1.0	0.25	0.15	0.55	0.15	0.2	0.25	0.45
Chromium		ND	ND	ND	ND	ND	ND	ND	ND
Copper		ND	ND	ND	ND	ND	ND	ND	ND
Lead		10.0	8.5	4.0	4.5	2.0	2.0	2.5	5.0
Mercury		ND	ND	2.0	ND	ND	ND	ND	20
Nickel		1.7	18.4	4.4	18.9	5.6	21.2	25.3	5.60
Selenium		20	15	ND	ND	ND	ND	ND	ND
Silver		8	ND	ND	ND	ND	19.2	ND	ND
Thallium		4	ND	ND	ND	ND	ND	ND	ND
Zinc		8.2	123	5.2	24.0	26.2	30	40.8	ND
Additional Metals									
Aluminum		21.8	153	10.5	9.8	90.8	58.8	148	531
Barium		20.9	20.9	2.3	49.4	20.0	23.3	7.8	19.5
Boron		332	425	135	103	374	515	226	565
Calcium		30,400	6,640	4,330	14,800	66,000	72,000	6,920	23,800
Cobalt		ND	ND	ND	12.8	73	82.7	5.7	ND
Iron		27	125	24.5	230	54,000	59,200	85.7	17.4
Manganese		224	99.6	19.1	1,080	28,600	31,700	974	3,120
Magnesium		2,890	2,490	803	3,950	14,000	13,700	1,280	4,670
Sodium		32,600	6,340	2,430	21,000	29,200	28,100	32,700	29,200
Tin		10	ND	ND	ND	ND	ND	ND	ND
Vanadium		10.7	7.2	ND	ND	ND	23.4	ND	ND
Additional Parameters									

NOTES: 1) ND - below detection limit
2) LRE - Lab of Radiation Ecology, University of Washington

E & E TESTING

WATER QUALITY DATA

INORGANIC ANALYSES

PRIORITY POLLUTANT METALS	Station No.	MW-9	MW-10	MW-10A	BSMW-1
	Laboratory	LRE	LRE	LRE	LRE
	Analysis by				
	Sampling on				
Antimony		ND	ND	ND	ND
Arsenic		ND	ND	ND	8
Beryllium		ND	ND	ND	128
Cadmium		0.95	0.1	0.85	ND
Chromium		ND	ND	ND	65.2
Copper		ND	ND	ND	ND
Lead		2.5	2.5	8.0	3.0
Mercury		ND	ND	ND	ND
Nickel		ND	ND	ND	44.3
Selenium		ND	20	25	15
Silver		ND	ND	ND	28.8
Thallium		ND	ND	ND	ND
Zinc		7.5	42.7	18.2	58.1

Additional Metals

Aluminum	36.7	108	86.0	125
Barium	13.4	12.5	9.3	206
Boron	244	200	ND	232
Calcium	11,400	5,540	12,400	113,000
Cobalt	ND	9.0	ND	70.8
Iron	15.8	73.4	908	172,000
Manganese	263	402	393	38,500
Magnesium	1,580	1,010	2,450	22,200
Sodium	1,860	10,700	4,200	75,900
Tin	ND	ND	ND	ND
Vanadium	ND	ND	ND	39.9

Additional Parameters

NOTES: 1) ND - Below detected limit
2) LRE - Lab of Radiation Ecology, University of Washington

GROUNDWATER DATA (EPA)

EPA ANALYSES

PURGEABLE ORGANIC ANALYSIS RESULTS

	Sample No.	WP-1	WP-2	WP-3	WP-4	Brooks	Wogan
	Laboratory	EPA	EPA	EPA	EPA	EPA	EPA
	Analysis by	GC/MS	GC/MS	GC/MS	GC/MS	GC/MS	GC/MS
COMPOUNDS	Sampling Date	3/25/81	3/25/81	3/25/81	3/25/81	3/25/81	3/25/81
1. Chloromethane							
2. Bromomethane							
3. Dichlorodifluoromethane							
4. Vinyl chloride							
5. Chloroethane							
6. Methylene chloride							
7. Acrylonitrile							
8. Trichlorofluoromethane							
9. 1,1-dichloroethylene							
10. 1,1-dichloroethane							
11. Trans-1,2-dichloroethylene							
12. Chloroform					2.2		
13. 1,2-dichloroethane							
14. 1,1,1-trichloroethane							
15. Carbon tetrachloride		ND	ND	ND	1.6	1.3	
16. Bromodichloromethane							ND
17. 1,2-dichloropropane							
18. Trans-1,3-dichloropropylene							
19. Trichloroethylene					3.0		
20. Benzene							
21. Dibromochloromethane							
22. Cis-1,3-dichloropropylene							
23. 1,1,2-trichloroethane							
24. Bromoform							
25. 1,1,2,2-tetrachloroethane							
26. Tetrachloroethylene							
27. Toluene							
28. Chlorobenzene							
29. Ethyl benzene							
30. Bis-chloromethyl ether							
31. 2-chloroethyl vinyl ether							
32. Acrolein							
ADDITIONAL							

NOTES: 1) All results in parts per billion (ppb).
2. ND = not detected. Blank spaces indicate N.D.'s.

EPA ANALYSES

PURGEABLE ORGANIC ANALYSIS RESULTS

	Sample No.	Whitesell	Bower	Provencal	Windham
	Laboratory	EPA	EPA	EPA	EPA
	Analysis by	GC/MS	GC/MS	GC/MS	GC/MS
COMPOUNDS	Sampling Date	3/25/81	3/25/81	3/25/81	3/25/81
1. Chloromethane					
2. Bromomethane					
3. Dichlorodifluoromethane					
4. Vinyl chloride					
5. Chloroethane					
6. Methylene chloride					
7. Acrylonitrile					
8. Trichlorofluoromethane					
9. 1,1-dichloroethylene					
10. 1,1-dichloroethane					
11. Trans-1,2-dichloroethylene					
12. Chloroform					
13. 1,2-dichloroethane					
14. 1,1,1-trichloroethane		ND	ND	ND	ND
15. Carbon tetrachloride					
16. Bromodichloromethane					
17. 1,2-dichloropropane					
18. Trans-1,3-dichloropropylene					
19. Trichloroethylene					
20. Benzene					
21. Dibromochloromethane					
22. Cis-1,3-dichloropropylene					
23. 1,1,2-trichloroethane					
24. Bromoform					
25. 1,1,2,2-tetrachloroethane					
26. Tetrachloroethylene					
27. Toluene					
28. Chlorobenzene					
29. Ethyl benzene					
30. Bis-chloromethyl ether					
31. 2-chloroethyl vinyl ether					
32. Acrolein					
ADDITIONAL					

NOTES: 1) All results in parts per billion (ppb).
2) ND = not detected. Blank spaces indicate N.D.'s.

EPA ANALYSES

PURGEABLE ORGANIC ANALYSIS RESULTS

COMPOUNDS	Sample No.	WP #1	WP #2	WP #3	WP #4	Windham	Provencal
	Laboratory	EPA	EPA	EPA	EPA	EPA	EPA
	Analysis by	GC/MS	GC/MS	GC/MS	GC/MS	GC/MS	GC/MS
	Sampling Date	10/14/81	10/14/81	10/14/81	10/14/81	10/14/81	10/14/81
1. Chloromethane							
2. Bromomethane							
3. Dichlorodifluoromethane							
4. Vinyl chloride							
5. Chloroethane							
6. Methylene chloride							
7. Acrylonitrile							
8. Trichlorofluoromethane							
9. 1,1-dichloroethylene							
10. 1,1-dichloroethane							
11. Trans-1,2-dichloroethylene							
12. Chloroform							
13. 1,2-dichloroethane							
14. 1,1,1-trichloroethane		0.5*		0.3*		ND	ND
15. Carbon tetrachloride							
16. Bromodichloromethane			ND		ND		
17. 1,2-dichloropropane							
18. Trans-1,3-dichloropropylene							
19. Trichloroethylene				0.4*			
20. Benzene							
21. Dibromochloromethane							
22. Cis-1,3-dichloropropylene							
23. 1,1,2-trichloroethane							
24. Bromoform							
25. 1,1,2,2-tetrachloroethane							
26. Tetrachloroethylene							
27. Toluene							
28. Chlorobenzene							
29. Ethyl benzene							
30. Bis-chloromethyl ether							
31. 2-chloroethyl vinyl ether							
32. Acrolein							
ADDITIONAL							

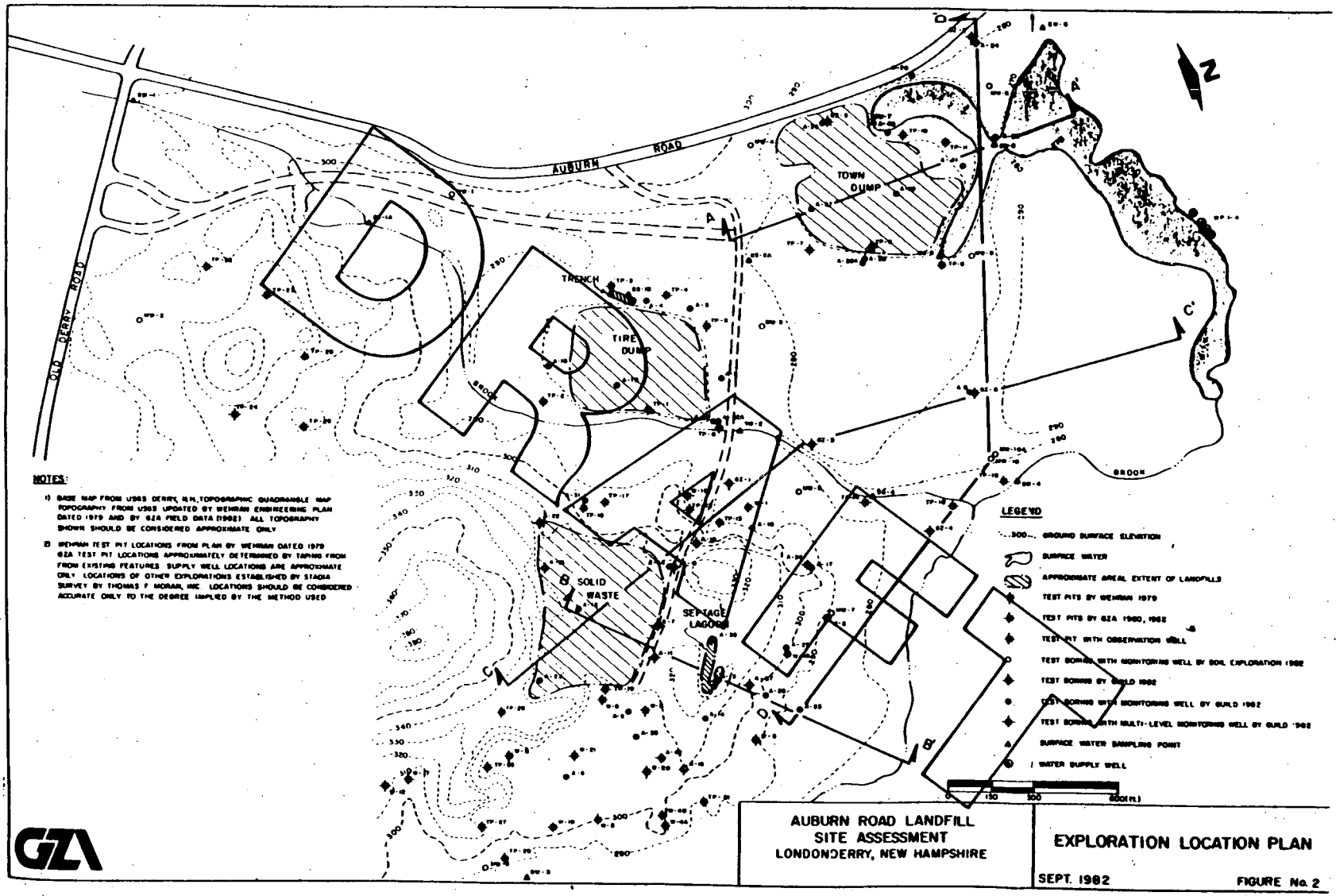
NOTES:
1) All results in parts per billion (ppb).
2) ND = not detected. Blank spaces indicate N.D.'s.
3) * Indicates compound quantified via extracted ion chromatographic profile (EICP). EICP is an experimental technique with greater sensitivity GC/MS procedures.

WATER QUALITY DATA

INORGANIC ANALYSES

PRIORITY POLLUTANT METALS	Station No.	WP#1	WP#2	WP#3	WP#4	Windham	Provencal
	Laboratory	Versar	Versar	Versar	Versar	Versar	Versar
	Analysis by						
	Sampling on	10/14/81	10/14/81	10/14/81	10/14/81	10/14/81	10/14/81
Antimony		<20	<20	<20	<20	<20	<20
Arsenic		<10	<10	<10	<10	<10	<10
Beryllium		< 2	< 2	< 2	< 2	< 2	< 2
Cadmium		< 5	< 5	< 5	< 5	< 5	< 5
Chromium		<10	<10	<10	<10	<10	<10
Copper		<20	<20	<20	<20	<20	20
Lead		<40	<40	<40	<40	<40	<40
Mercury		< 1	< 1	< 1	< 1	< 1	2
Nickel		<20	<20	<20	<20	<20	<20
Selenium		<10	<10	<10	<10	<10	<10
Silver		<20	<20	<20	<20	<20	<20
Thallium		<10	<10	<10	<10	<10	<10
Zinc		<10	10	<10	<10	<10	<10
Additional Metals							
Aluminum		<50	<50	<50	<50	<50	<50
Barium		<10	<10	<10	<10	110	160
Boron		10	<10	30	10	<10	<10
Calcium		13,200	10,500	8,500	7,400	29,500	29,900
Cobalt		<10	<10	<10	<10	<10	<10
Iron		1,120	4,310	820	700	80	40
Manganese		170	480	230	470	30	30
Magnesium		2,000	1,900	1,600	1,400	24,900	20,400
Sodium		11,500	20,500	10,500	12,500	4,500	6,100
Tin		<20	<20	<20	<20	<20	<20
Vanadium		<10	<10	<10	<10	<10	<10
Additional Parameters							

GROUNDWATER DATA (GZA-GCA ANALYSES)


AUBURN ROAD
OLD DERRY ROAD
TOWN DUMP
TRENCH
TIRE DUMP
SOLID WASTE
SEPTAGE LAGOON
BROOK
A
A'
B
B'
C
C'
D
D'
N
NOTES:
1) BASE MAP FROM USGS DERRY, NH, TOPOGRAPHIC QUADRANGLE MAP TOPOGRAPHY FROM USGS UPDATED BY WEHRAN ENGINEERING PLAN DATED 1979 AND BY GZA FIELD DATA (1982). ALL TOPOGRAPHY SHOWN SHOULD BE CONSIDERED APPROXIMATE ONLY
2) WEHRAN TEST PIT LOCATIONS FROM PLAN BY WEHRAN DATED 1979 GZA TEST PIT LOCATIONS APPROXIMATELY DETERMINED BY TAPING FROM FROM EXISTING FEATURES SUPPLY WELL LOCATIONS ARE APPROXIMATE ONLY LOCATIONS OF OTHER EXPLORATIONS ESTABLISHED BY STADIA SURVEY BY THOMAS F MORAN, INC LOCATIONS SHOULD BE CONSIDERED ACCURATE ONLY TO THE DEGREE IMPLIED BY THE METHOD USED
LEGEND
300 GROUND SURFACE ELEVATION
SURFACE WATER
APPROXIMATE AREAL EXTENT OF LANDFILLS
TEST PITS BY WEHRAN 1979
TEST PITS BY GZA 1980, 1982
TEST PIT WITH OBSERVATION WELL
TEST BORING WITH MONITORING WELL BY SOIL EXPLORATION 1982
TEST BORING BY GUILD 1982
TEST BORING WITH MONITORING WELL BY GUILD 1982
TEST BORING WITH MULTI-LEVEL MONITORING WELL BY GUILD 1982
SURFACE WATER SAMPLING POINT
WATER SUPPLY WELL
0 150 300 600(ft.)
GZA
AUBURN ROAD LANDFILL
SITE ASSESSMENT
LONDONDERRY, NEW HAMPSHIRE
EXPLORATION LOCATION PLAN
SEPT. 1982
FIGURE No. 2

REVIEW OF GROUNDWATER DATA FROM GOLDBERG, ZOINO, AND ASSOCIATES, INC. (GZA) - GCA ANALYSES

GCA, the laboratory conducting analyses on samples collected by NAI (subcontractor of GZA) noted the use of proper sample containers and field blanks (both supplied by GCA) for groundwater sampling (GZA, 1982). Samples were stored at 4°C and a chain of custody was maintained. No problems were noted after a data review by GCA quality control personnel.

Examination of the volatile data sheets presented no evidence of field blank contamination. Data for laboratory blanks and duplicates were not available. All samples submitted for volatile organic analysis exceeded the EPA Contract Laboratory holding time period (analysis within seven days after receipt by the laboratory). Several analyses were also beyond the 14 day holding time specified by the Federal Register (40 CFR 136).

Extractable data included quality control information on instrument performance. However, no blank or duplicate data were presented. Extraction dates were unavailable and no assessment could be made on holding times.

APPENDIX E.5

DATA SUMMARY

PURGEABLE ORGANIC ANALYSIS RESULTS

	Sample No.	A-2	A-4	A-5	A-6	A-14	A-15	A-17	A-18	A-26
	Laboratory	NAI	NAI	NAI	NAI	NAI	NAI	NAI	NAI	NAI
	Analysis by	GC/MS	GC/MS	GC/MS	GC/MS	GC/MS	GC/MS	GC/MS	GC/MS	GC/MS
COMPOUNDS	Sampling Date	8/82	8/82	8/82	8/82	8/28	8/82	8/82	8/82	8/82
1. Chloromethane										
2. Bromomethane										
3. Dichlorodifluoromethane										
4. Vinyl chloride										
5. Chloroethane										Tr.
6. Methylene chloride										
7. Acrylonitrile		ND								
8. Trichlorofluoromethane				53						
9. 1,1-dichloroethylene				Tr.						
10. 1,1-dichloroethane			Tr.	26	Tr.				59	72
11. Trans-1,2-dichloroethylene				43						18
12. Chloroform				10						
13. 1,2-dichloroethane										
14. 1,1,1-trichloroethane				26	14	Tr.	Tr.	ND	11	100
15. Carbon tetrachloride										
16. Bromodichloromethane										
17. 1,2-dichloropropane										
18. Trans-1,3-dichloropropylene										
19. Trichloroethylene				Tr.						Tr.
20. Benzene				Tr.						
21. Dibromochloromethane										
22. Cis-1,3-dichloropropylene										
23. 1,1,2-trichloroethane										
24. Bromoform										
25. 1,1,2,2-tetrachloroethane										
26. Tetrachloroethylene				12						12
27. Toluene				370						
28. Chlorobenzene										
29. Ethyl benzene				Tr.						
30. Bis-chloromethyl ether										
31. 2-chloroethyl vinyl ether										
32. Acrolein										
ADDITIONAL										

NOTES: 1) All results in parts per billion (ppb).
2) Tr. - trace (3 - 10 ppb); ND = <3 ppb; blank space indicates ND.
3) NAI - Normandeau Associates Inc. (samples subcontracted to GCA Corp.)

DATA SUMMARY

PURGEABLE ORGANIC ANALYSIS RESULTS

COMPOUNDS	Sample No.	A-27	A-28	A-29	A-30	A-31	A-32	A-33	A-38	A-39	TP-19
	Laboratory	NAI	NAI	NAI	NAI	NAI	NAI	NAI	NAI	NAI	NAI
	Analysis by	GC/MS	GC/MS	GC/MS	GC/MS	GC/MS	GC/MS	GC/MS	GC/MS	GC/MS	GC/MS
	Sampling Date	8/82	8/82	8/82	8/82	8/82	8/82	8/82	8/82	8/82	8/82
1.	Chloromethane										
2.	Bromomethane										
3.	Dichlorodifluoromethane										
4.	Vinyl chloride										
5.	Chloroethane			140							
6.	Methylene chloride	410					810				
7.	Acrylonitrile										
8.	Trichlorofluoromethane	42					360	27	Tr.	19	18
9.	1,1-dichloroethylene	62	16								
10.	1,1-dichloroethane		290	14			61	58	40	110	12
11.	Trans-1,2-dichloroethylene	53000	69	Tr.			320	76	92	120	42
12.	Chloroform							Tr.	14	Tr.	
13.	1,2-dichloroethane						120	26	11	36	
14.	1,1,1-trichloroethane	25	490	Tr.	Tr.	49	63	110	13	140	Tr.
15.	Carbon tetrachloride										
16.	Bromodichloromethane										
17.	1,2-dichloropropane										
18.	Trans-1,3-dichloropropylene										
19.	Trichloroethylene	5500	21					10	Tr.	Tr.	
20.	Benzene	19					11		Tr.	Tr.	Tr.
21.	Dibromochloromethane										
22.	Cis-1,3-dichloropropylene										
23.	1,1,2-trichloroethane										
24.	Bromoform										
25.	1,1,2,2-tetrachloroethane										
26.	Tetrachloroethylene	8700	25			Tr.	48	Tr.	10	Tr.	Tr.
27.	Toluene	1600		25			440	1200	2000	1900	1300
28.	Chlorobenzene							Tr.			
29.	Ethyl benzene	650									
30.	Bis-chloromethyl ether										
31.	2-chloroethyl vinyl ether										
32.	Acrolein										
	ADDITIONAL										
	dichlorofluoromethane	37									
	2-propanone	23									
	dimethyl sulfide	47									
	2-butanone	58									
	2-pentanone 4-methyl	39									
	benzene, dimethyl isomers	170									

NOTES: 1) All results in parts per billion (ppb).
2) Tr - trace (3 ÷ 10 ppb); ND = <3 ppb; blank space indicates ND.
3) NAI - Normandeau Assoicates Inc. (samples subcontracted to GCA Corp.)

DATA SUMMARY

PURGEABLE ORGANIC ANALYSIS RESULTS

COMPOUNDS	Sample No.	GZ-1-1	GZ-1-2	GZ-1-3	GZ-2-2	GZ-3-2	GZ-4-2	GZ-6-3	GZ-5-2	MW-9
	Laboratory	NAI	NAI	NAI	NAI	NAI	NAI	NAI	NAI	NAI
	Analysis by	GC/MS	GC/MS	GC/MS	GC/MS	GC/MS	GC/MS	GC/MS	GC/MS	GC/MS
	Sampling Date	8/82	8/82	8/82	8/82	8/82	8/82	8/82	8/82	8/82
1. Chloromethane										
2. Bromomethane										
3. Dichlorodifluoromethane										
4. Vinyl chloride										
5. Chloroethane										
6. Methylene chloride	720	1200	10			71				
7. Acrylonitrile										
8. Trichlorofluoromethane	88	200	Tr.			300	30	820		Tr.
9. 1,1-dichloroethylene										
10. 1,1-dichloroethane	39	81	Tr.			34	31	34		Tr.
11. Trans-1,2-dichloroethylene	590	1100	51			690	38	700		
12. Chloroform		Tr.					Tr.	Tr.	ND	
13. 1,2-dichloroethane	62	100				49	51	72		
14. 1,1,1-trichloroethane	20	34	Tr.	ND		43	120	46		
15. Carbon tetrachloride										
16. Bromodichloromethane										
17. 1,2-dichloropropane										
18. Trans-1,3-dichloropropylene										
19. Trichloroethylene	28	46	Tr.			56	11	42		
20. Benzene	Tr.	13				Tr.	Tr.	Tr.		
21. Dibromochloromethane										
22. Cis-1,3-dichloropropylene										
23. 1,1,2-trichloroethane										
24. Bromoform										
25. 1,1,2,2-tetrachloroethane										
26. Tetrachloroethylene	19	37				32	Tr.	Tr.		
27. Toluene	2100	3400	49			450	Tr.	49		
28. Chlorobenzene		Tr.								
29. Ethyl benzene						24				
30. Bis-chloromethyl ether										
31. 2-chloroethyl vinyl ether										
32. Acrolein										
ADDITIONAL										
dichlorofluoromethane		180								
2-propanone		110								
dimethyl sulfide		86								
2 butanone		230								
2-pentanone, 4-methyl		30								

NOTES: 1) All results in parts per billion (ppb).
2) Tr. - trace (3 - 10 ppb); ND = <3 ppb; blank space indicates ND.
3) NAI - Normandeau Associates Inc. (samples subcontracted to GCA Corp.)

APPENDIX E.6

NAI METALS ANALYSES

WATER QUALITY DATA SUMMARY

INORGANIC ANALYSES

PRIORITY POLLUTANT METALS	Station No.	A-2	A-6	A-15	A-18	A-27	A-28	A-29	A-30
	Laboratory	NAI	NAI	NAI	NAI	NAI	NAI	NAI	NAI
	Analysis by	AA	AA	AA	AA	AA	AA	AA	AA
	Sampling on	8/82	8/82	8/82	8/82	8/82	8/82	8/82	8/82
Antimony		<1	<1	<1	<1	<1	<1	<1	<1
Arsenic		<1	<1	<1	<1	1	<1	6	<1
Beryllium		<3	<3	<3	<3	<3	<3	<3	<3
Cadmium		2	<1	<1	<1	<1	<1	<1	1
Chromium		1	<1	<1	<1	5	1	<1	1
Copper		<1	<1	<1	<1	1	<1	<1	2
Lead		<1	<1	<1	<1	<1	<1	<1	<1
Mercury		<1	<1	<1	<1	<1	<1	<1	<1
Nickel		21	8	5	4	12	7	6	10
Selenium		3	2	6	1	<200	<1	<200	4
Silver		<1	<1	<1	<1	<1	<1	<1	<1
Thallium		<3	<3	<3	<3	<3	<3	<3	<3
Zinc		29	23	5	23	57	18	240	87

Additional Metals

Aluminum								
Barium								
Boron								
Calcium								
Cobalt								
Iron	420	120	600	40	230,000	1,120	23,500	80
Manganese								
Magnesium								
Sodium	9,400	6,100	14,000	28,300	141,000	39,400	44,400	34,800
Tin								
Vanadium								

Additional Parameters

1. All concentrations in parts per billion (ppb).
2. Blank spaces indicate metals not analyzed for.
3. NAI - Normandeau Associates, Inc. AA - Atomic Absorption.

WATER QUALITY DATA SUMMARY

INORGANIC ANALYSES

PRIORITY POLLUTANT METALS	Station No.	A-32	A-33	A-38	GZ-1-2	GZ-1-3	GZ-3-2	GZ-4-2	GZ-6-3
	Laboratory	NAI	NAI	NAI	NAI	NAI	NAI	NAI	NAI
	Analysis by	AA	AA	AA	AA	AA	AA	AA	AA
	Sampling on	8/82	8/82	8/82	8/82	8/82	8/82	8/82	8/82
Antimony		<1	<1	<1	<1	<1	<1	<1	<1
Arsenic		59	<1	<1	14	<1	23	20	25
Beryllium		<3	<3	<3	<3	<3	<3	<3	<3
Cadmium		<1	<1	<1	<1	<1	<1	<1	<1
Chromium		<1	2	4	5	2	<1	3	1
Copper		<1	5	2	<1	5	<1	<1	3
Lead		<1	33	1	<1	<1	<1	<1	1
Mercury		<1	<1	<1	<1	<1	<1	<1	<1
Nickel		51	35	13	141	5	31	17	18
Selenium		<200	2	<200	<200	2	<200	<1	4
Silver		<1	<1	<1	<1	<1	<1	<1	<1
Thallium		<3	<3	<3	<3	<3	<3	<3	<3
Zinc		25	66	48	66	40	38	29	46

Additional Metals

Aluminum								
Barium								
Boron								
Calcium								
Cobalt								
Iron	251,000	94,500	33,500	265,000	520	113,000	2,370	860
Manganese								
Magnesium								
Sodium	74,000	18,100	30,400	113,000	22,200	41,400	10,300	20,400
Tin								
Vanadium								

Additional Parameters

1. All concentrations in parts per billion (ppb).
2. Blank spaces indicate metals not analyzed for.
3. NAI - Normandeau Associates Inc. AA - Atomic Absorption.

WATER QUALITY DATA SUMMARY

INORGANIC ANALYSES

PRIORITY POLLUTANT METALS	Station No.	GZ-2-2	GZ-5-1	
	Laboratory	NAI	NAI	
	Analysis by	AA	AA	
	Sampling on	8/82	8/82	
Antimony		<1	<1	
Arsenic		<1	<1	
Beryllium		<3	<3	
Cadmium		<1	<1	
Chromium		<1	1	
Copper		6	4	
Lead		<1	<1	
Mercury		<1	<1	
Nickel		5	74	
Selenium		4	7	
Silver		<1	<1	
Thallium		<3	<3	
Zinc		57	255	

Additional Metals

Aluminum			
Barium			
Boron			
Calcium			
Cobalt			
Iron		<10	20
Manganese			
Magnesium			
Sodium		42,000	63,300
Tin			
Vanadium			

Additional Parameters

1. All concentrations in parts per billion (ppb).
2. Blank spaces indicate metals not analyzed for.
3. NAI - Normandeau Associates Inc. AA - Atomic Absorption.

APPENDIX E.7

EXTRACTABLE ORGANIC ANALYSES
DATA SUMMARY

COMPOUND	CONCENTRATION (ppb) A-27	A-32	GZ-1-2
Sample #/			
1) Acid Extractables	ND	ND	
2,4,6 Trichlorophenol			32
2) Base Neutral Extractables	ND		
Dimethyl phthalate		5	--
Diethyl phthalate		67	50
Dibutyl phthalate		18	--
Isophorone		42	13
3) Pesticides/PCB's	ND	ND	ND

NOTES: 1) ND - Not detected
2) Analyses by GCA Corporation
3) Nonpriority acid and base neutral extractable compounds noted in all three samples.

Project 5-177-075

GCA Control No. 23814

DATA REPORT SHEET
Base/Neutral Extractables

Sample I.D. 53152 (GZ-1-2)

Analysis Date 9/12/82

Sample Matrix Water

Instrument HP 5985 GC/MS

Parameter	Ion Used to Quantitate	Concentration (µg/l	Remarks
acenaphthene		ND	
acenaphthylene		ND	
anthracene		ND	
phenanthrene		ND	
benzo(a)anthracene		ND	
chrysene		ND	
benzo(a)pyrene		ND	
benzo(b)fluoranthene		ND	
benzo(k)fluoranthene		ND	
benzo(g,h,i)perylene		ND	
indeno(1,2,3-cd)pyrene		ND*	
dibenzo(a,h)anthracene		ND*	
fluoranthene		ND*	
pyrene		ND	
fluorene		ND	
naphthalene		ND	
2-chloronaphthalene		ND	
1,2-dichlorobenzene		ND	
1,3-dichlorobenzene		ND	
1,4-dichlorobenzene		ND	
1,2,4-trichlorobenzene		ND	
hexachlorobenzene		ND	
nitrobenzene		ND	
2,4-dinitrotoluene		ND	
2,6-dinitrotoluene		ND	
dimethyl phthalate		ND	
diethyl phthalate		ND	
di-n-butyl phthalate	149	50	
dioctyl phthalate		ND	
butyl benzyl phthalate		ND	
bis(2-ethylhexyl) phthalate		ND	
bis(chloromethyl) ether		ND	
bis(2-chloroethyl) ether		ND	
bis(2-chloroisopropyl) ether		ND	
4-bromophenyl phenyl ether		ND	
4-chlorophenyl phenyl ether		ND	
N-nitrosodimethyl amine		ND	
N-nitrosodiphenyl amine		ND	
N-nitrosodi-n-propyl amine		ND	
hexachloroethane		ND	
bis(2-chloroethoxy) methane		ND	
isophorone		ND	
hexachlorobutadiene	82	13	
3,3'-dichlorobenzidine		ND	
benzidine		ND*	
1,2-diphenylhydrazine		ND	
hexachlorocyclopentadiene		ND	
2,3,7,8-tetrachlorodibenzo-p-dioxin		ND	

ND = < 6 µg/l
ND* = < 20 µg/l

Project 5-177-075

GCA Control No. 23814

DATA REPORT SHEET

Acid Extractables

Sample I.D. 53152 (GZ-1-2)

Analysis Date 9/11/82

Sample Matrix Water

Instrument HP 5985 GC/MS

Parameter	Ion Used To Quantitate	Concentration (µg/l)	Remarks
2-chlorophenol		ND*	
2-nitrophenol		ND*	
phenol		ND*	
2,4-dimethylphenol		ND*	
2,4-dichlorophenol		ND	
2,4,6-trichlorophenol	198	32	
p-chloro-m-cresol		ND	
2,4-dinitrophenol		ND	
4,6-dinitro-o-cresol		ND	
pentachlorophenol		ND	
4-nitrophenol		ND	

ND = < 10 µg/l

ND* = Mass Spectrometer was saturated by non-priority pollutant compounds during the expected time of elution for this phenol. Detection limits, therefore, cannot be established for this compound.

Project 5-177-075 GCA Control No. 23814

DATA REPORT SHEET

Pesticides/PCBs

Sample I.D. 53152 (GZ-1-2) Analysis Date 9/12/82

Sample Matrix Water Instrument HP 5985 GC/MS

Parameter	Ion Used To Quantitate	Concentration (µg/l)	Remarks
aldrin		ND	
α-BHC		ND	
β-BHC		ND	
δ-BHC		ND	
γ-BHC		ND	
chlordane		ND	
4,4'-DDD		ND	
4,4'-DDE		ND	
4,4'-DDT		ND	
dieldrin		ND	
endosulfan I		ND	
endosulfan II		ND	
endosulfan sulfate		ND	
endrin		ND	
endrin aldehyde		ND	
heptachlor		ND	
heptachlor epoxide		ND	
toxaphene		ND	
PCB-1016		ND*	
PCB-1221		ND*	
PCB-1232		ND*	
PCB-1242		ND*	
PCB-1248		ND*	
PCB-1254		ND*	
PCB-1260		ND*	

ND = <20 µg/l
ND* = <50 µg/l

Project 5-177-075 GCA Control No. 23815

DATA REPORT SHEET
Base/Neutral Extractables

Sample I.D. 53159 (A - 32) Analysis Date 9/11/82

Sample Matrix Water Instrument HP 5985 GC/MS

Parameter	Ion Used to Quantitate	Concentration (µg/l)	Remarks
acenaphthene		ND	
acenaphthylene		ND	
anthracene		ND	
phenanthrene		ND	
benzo(a)anthracene		ND	
chrysene		ND	
benzo(a)pyrene		ND	
benzo(b)fluoranthene		ND	
benzo(k)fluoranthene		ND	
benzo(g,h,i)perylene		ND*	
indeno(1,2,3-cd)pyrene		ND*	
dibenzo(a,h)anthracene		ND*	
fluoranthene		ND	
pyrene		ND	
fluorene		ND	
naphthalene		ND	
2-chloronaphthalene		ND	
1,2-dichlorobenzene		ND	
1,3-dichlorobenzene		ND	
1,4-dichlorobenzene		ND	
1,2,4-trichlorobenzene		ND	
hexachlorobenzene		ND	
nitrobenzene		ND	
2,4-dinitrotoluene		ND	
2,6-dinitrotoluene		ND	
dimethyl phthalate	163	5.0	
diethyl phthalate	149	67	
di-n-butyl phthalate	149	18	
dioctyl phthalate		ND	
butyl benzyl phthalate		ND	
bis(2-ethylhexyl) phthalate		ND	
bis(chloromethyl) ether		ND	
bis(2-chloroethyl) ether		ND	
bis(2-chloroisopropyl) ether		ND	
4-bromophenyl phenyl ether		ND	
4-chlorophenyl phenyl ether		ND	
N-nitrosodimethyl amine		ND	
N-nitrosodiphenyl amine		ND	
N-nitrosodi-n-propyl amine		ND	
hexachloroethane		ND	
bis(2-chloroethoxy) methane		ND	
isophorone	82	42	
hexachlorobutadiene		ND	
3,3'-dichlorobenzidine		ND*	
benzidine		ND	
1,2-diphenylhydrazine		ND	
hexachlorocyclopentadiene		ND	
2,3,7,8-tetrachlorodibenzo-p-dioxin		ND	

ND = < 6 µg/l
ND* = < 20 µg/l

Project 5-177-075 GCA Control No. 23815

DATA REPORT SHEET

Acid Extractables

Sample I.D. 53159 (A-32) Analysis Date 9/11/82

Sample Matrix Water Instrument HP 5985 GC/MS

Parameter	Ion Used To Quantitate	Concentration (µg/l)	Remarks
2-chlorophenol		ND*	
2-nitrophenol		ND*	
phenol		ND*	
2,4-dimethylphenol		ND*	
2,4-dichlorophenol		ND	
2,4,6-trichlorophenol		ND	
p-chloro-m-cresol		ND	
2,4-dinitrophenol		ND	
4,6-dinitro-o-cresol		ND	
pentachlorophenol		ND	
4-nitrophenol		ND	

ND = < 10 µg/l

ND* = Mass Spectrometer was saturated by non-priority pollutant compounds during the expected time of elution for this phenol. Detection limits, therefore, cannot be established for this compound.

Project 5-177-075 GCA Control No. 23815

DATA REPORT SHEET

Pesticides/PCBs

Sample I.D. 53159 (A-32) Analysis Date 9/11/82

Sample Matrix Water Instrument HP 5935 GC/MS

Parameter	Ion Used To Quantitate	Concentration (µg/l)	% Remarks
aldrin		ND	
α-BHC		ND	
β-BHC		ND	
δ-BHC		ND	
γ-BHC		ND	
chlordane		ND	
4,4'-DDD		ND	
4,4'-DDE		ND	
4,4'-DDT		ND	
dieldrin		ND	
endosulfan I		ND	
endosulfan II		ND	
endosulfan sulfate		ND	
endrin		ND	
endrin aldehyde		ND	
heptachlor		ND	
heptachlor epoxide		ND	
toxaphene		ND	
PCB-1016		ND*	
PCB-1221		ND*	
PCB-1232		ND*	
PCB-1242		ND*	
PCB-1248		ND*	
PCB-1254		ND*	
PCB-1260		ND*	

ND = <20 µg/l
ND* = <50 µg/l

Project 5-177-075

GCA Control No. 24144

DATA REPORT SHEET
Base/Neutral Extractables

Sample I.D. 53162 (A-27)

Analysis Date 9/11/82

Sample Matrix Water

Instrument HP 5985 GC/MS

Parameter	Ion Used to Quantitate	Concentration (µg/l)	Remarks
acenaphthene		ND	
acenaphthylene		ND	
anthracene		ND	
phenanthrene		ND	
benzo(a)anthracene		ND	
chrysene		ND	
benzo(a)pyrene		ND	
benzo(b)fluoranthene		ND	
benzo(k)fluoranthene		ND	
benzo(g,h,i)perylene		ND	
indeno(1,2,3-cd)pyrene		ND*	
dibenzo(a,h)anthracene		ND*	
fluoranthene		ND*	
pyrene		ND	
fluorene		ND	
naphthalene		ND	
2-chloronaphthalene		ND	
1,2-dichlorobenzene		ND	
1,3-dichlorobenzene		ND	
1,4-dichlorobenzene		ND	
1,2,4-trichlorobenzene		ND	
hexachlorobenzene		ND	
nitrobenzene		ND	
2,4-dinitrotoluene		ND	
2,6-dinitrotoluene		ND	
dimethyl phthalate		ND	
diethyl phthalate		ND	
di-n-butyl phthalate		ND	
dioctyl phthalate		ND	
butyl benzyl phthalate		ND	
bis(2-ethylhexyl) phthalate		ND	
bis(chloromethyl) ether		ND	
bis(2-chloroethyl) ether		ND	
bis(2-chloroisopropyl) ether		ND	
4-bromophenyl phenyl ether		ND	
4-chlorophenyl phenyl ether		ND	
N-nitrosodimethyl amine		ND	
N-nitrosodiphenyl amine		ND	
N-nitrosodi-n-propyl amine		ND	
hexachloroethane		ND	
bis(2-chloroethoxy) methane		ND	
isophorone		ND	
hexachlorobutadiene		ND	
3,3'-dichlorobenzidine		ND	
benzidine		ND*	
1,2-diphenylhydrazine		ND	
hexachlorocyclopentadiene		ND	
2,3,7,8-tetrachlorodibenzo-p-dioxin		ND	

ND = < 6 µg/l
ND* = < 20 µg/l

Project 5-177-075 GCA Control No. 24144

DATA REPORT SHEET

Acid Extractables

Sample I.D. 53162 (A-27) Analysis Date 9/12/82

Sample Matrix Water Instrument HP 5985 GC/MS

Parameter	Ion Used To Quantitate	Concentration (µg/l)	Remarks
2-chlorophenol		ND*	
2-nitrophenol		ND*	
phenol		ND*	
2,4-dimethylphenol		ND*	
2,4-dichlorophenol		ND*	
2,4,6-trichlorophenol		ND	
p-chloro-m-cresol		ND	
2,4-dinitrophenol		ND	
4,6-dinitro-o-cresol		ND	
pentachlorophenol		ND	
4-nitrophenol		ND	

ND = < 10 µg/l

ND* = Mass spectrometer was saturated by non-priority pollutant compounds during the expected time of elution for this phenol. Detection limits, therefore, cannot be established for this compound.

Project 5-177-075 GCA Control No. 24144

DATA REPORT SHEET

Pesticides/PCBs

Sample I.D. 53162 (A-27) Analysis Date 9/11/82

Sample Matrix Water Instrument HP 5985 GC/MS

Parameter	Ion Used To Quantitate	Concentration (µg/l)	Remarks
aldrin		ND	
α-BHC		ND	
β-BHC		ND	
δ-BHC		ND	
γ-BHC		ND	
chlordane		ND	
4,4'-DDD		ND	
4,4'-DDE		ND	
4,4'-DDT		ND	
dieldrin		ND	
endosulfan I		ND	
endosulfan II		ND	
endosulfan sulfate		ND	
endrin		ND	
endrin aldehyde		ND	
heptachlor		ND	
heptachlor epoxide		ND	
toxaphene		ND	
PCB-1016		ND*	
PCB-1221		ND*	
PCB-1232		ND*	
PCB-1242		ND*	
PCB-1248		ND*	
PCB-1254		ND*	
PCB-1260		ND*	

ND = <20 µg/l
ND* = <50 µg/l

GROUNDWATER DATA (GZA-RAI ANALYSES)

REVIEW OF GROUNDWATER DATA FROM GOLDBERG, ZOINO AND ASSOCIATES, INC. (GZA) - RAI ANALYSES

Volatile organic analyses were conducted by Research Analysts, Inc. (RAI) as a subcontractor to Normandeau Associates, Inc. (NAI) from 1982 through early 1984 (GZA, 1984). Samples were collected in 40 milliliter glass VOA vials and stored on ice. Chain of custody documentation was also maintained. Analyses of laboratory blanks were not included in the data sheets while field blanks and duplicate samples were limited to only two sampling rounds.

Note that the following summary sheets also present some state of New Hampshire and EPA data.

TABLE 1

SAMPLING STATION INVENTORY

STATION NUMBER	DESCRIPTION	WELL DEPTH	WELL/ SAMPLER TYPE
R-1	Supply Well - Windham	171	6" rock
R-2	Supply well - Provencal	213	6" rock
R-3	Supply well - Daigneault	257	6" rock
R-4	Supply well - Wagner	149	6" rock
R-5	Supply well - Sullivan	306	6" rock
R-6	Supply well - Shepard	199	6" rock
W-1	Early warning well	205	6" rock
W-2	Early warning well	205	6" rock
W-3	Early warning well	205	6" rock
W-4	Early warning well	205	6" rock
W-5-1	Multilevel - rock	27	Gas-drive
W-5-2	Multilevel - rock	80	Gas-drive
W-5-3	Multilevel - rock	135	Gas-drive
A-28	Monitoring well	14	1-1/2" PVC
SW-5	Surface water station	--	--

Notes:

1. See Figure 1 for location of sampling stations.
2. Well depths provided by original well driller for residential wells (Mr. Phillip Brien, Manchester, New Hampshire).
3. "Gas drive" indicates original 6" rock well completed with gas-drive (Barcad brand) samplers isolated by clay seals (see log).

TABLE 2
RESIDENTIAL WELL R-1
PURGEABLE ORGANIC ANALYSIS RESULTS

	Sample No.						
	Laboratory	EPA	EPA	MEAD	N.H.	RAI	RAI
	Analysis by	GC/MS	GC/MS	GC/MS	GC/MS	GC/MS	GC/MS
COMPOUNDS	Sampling Date	3/25/81	10/14/81	10/14/81	7/15/82	4/28/83	7/20/83
1. Chloromethane							
2. Bromomethane							
3. Dichlorodifluoromethane							
4. Vinyl chloride							
5. Chloroethane							
6. Methylene chloride							
7. Acrylonitrile							
8. Trichlorofluoromethane							
9. 1,1-dichloroethylene							
10. 1,1-dichloroethane							
11. Trans-1,2-dichloroethylene							
12. Chloroform							
13. 1,2-dichloroethane							
14. 1,1,1-trichloroethane							
15. Carbon tetrachloride							
16. Bromodichloromethane		ND	ND	ND	ND	ND	ND
17. 1,2-dichloropropane							
18. Trans-1,3-dichloropropylene							
19. Trichloroethylene							
20. Benzene							
21. Dibromochloromethane							
22. Cis-1,3-dichloropropylene							
23. 1,1,2-trichloroethane							
24. Bromoform							
25. 1,1,2,2-tetrachloroethane							
26. Tetrachloroethylene							
27. Toluene							
28. Chlorobenzene							
29. Ethyl benzene							
30. Bis-chloromethyl ether							
31. 2-chloroethyl vinyl ether							
32. Acrolein							
ADDITIONAL							
MEK							
MIBK							
Xylenes							
THF							

NOTES: 1) All results in parts per billion (ppb). Tr. = <5ppb

2) ND- Not detected. Blank spaces represent ND.

3) Laboratories-Resource Analysts, Inc. (RAI); U.S. Environmental Protection Agency, Lexington, Massachusetts (EPA); Mead Compuchem, Inc. (MEAD); N.H. Water Supply and Pollution Control Commission (N.H.)

TABLE 2 (cont.)
RESIDENTIAL WELL R-1
PURGEABLE ORGANIC ANALYSIS RESULTS

COMPOUNDS	Sample No.	
	Laboratory	RAI
	Analysis by	GC/MS
	Sampling Date	10/17/83
1. Chloromethane		
2. Bromomethane		
3. Dichlorodifluoromethane		
4. Vinyl chloride		
5. Chloroethane		
6. Methylene chloride		<5
7. Acrylonitrile		
8. Trichlorofluoromethane		
9. 1,1-dichloroethylene		
10. 1,1-dichloroethane		
11. Trans-1,2-dichloroethylene		
12. Chloroform		
13. 1,2-dichloroethane		
14. 1,1,1-trichloroethane		
15. Carbon tetrachloride		
16. Bromodichloromethane		
17. 1,2-dichloropropane		
18. Trans-1,3-dichloropropylene		
19. Trichloroethylene		
20. Benzene		
21. Dibromochloromethane		
22. Cis-1,3-dichloropropylene		
23. 1,1,2-trichloroethane		
24. Bromoform		
25. 1,1,2,2-tetrachloroethane		
26. Tetrachloroethylene		
27. Toluene		
28. Chlorobenzene		
29. Ethyl benzene		
30. Bis-chloromethyl ether		
31. 2-chloroethyl vinyl ether		
32. Acrolein		
ADDITIONAL		
MEK		
MIBK		
Xylenes		
THF		

NOTES: 1) All results in parts per billion (ppb). Tr. = <5ppb.

2) ND - Not detected. Blank spaces represent ND.

3) Laboratory - Resource Analysts, Inc.

TABLE 3
RESIDENTIAL WELL R-2
PURGEABLE ORGANIC ANALYSIS RESULTS

Sample No.							
Laboratory	Peck	EPA	MEAD	Peck	EPA	MEAD	NH
Analysis by	GC/MS	GC/MS	GC/MS	GC/MS	GC/MS	GC/MS	GC/MS
COMPOUNDS / Sampling Date	3/6/81	3/25/81	3/25/81	5/26/81	10/14/81	10/14/81	7/15/82
1. Chloromethane							
2. Bromomethane							
3. Dichlorodifluoromethane							
4. Vinyl chloride							
5. Chloroethane							
6. Methylene chloride				3.1			
7. Acrylonitrile							
8. Trichlorofluoromethane							
9. 1,1-dichloroethylene							
10. 1,1-dichloroethane							
10a. Trans-1,2-dichloroethylene							
12. Chloroform	Tr.	ND	ND		ND	ND	ND
13. 1,2-dichloroethane							
14. 1,1,1-trichloroethane							
15. Carbon tetrachloride							
16. Bromodichloromethane							
17. 1,2-dichloropropane							
18. Trans-1,3-dichloropropylene							
19. Trichloroethylene				0.3			
20. Benzene							
21. Dibromochloromethane							
22. Cis-1,3-dichloropropylene							
23. 1,1,2-trichloroethane							
24. Bromoform				0.9			
25. 1,1,2,2-tetrachloroethane							
26. Tetrachloroethylene				<0.5			
27. Toluene							
28. Chlorobenzene							
29. Ethyl benzene							
30. Bis-chloromethyl ether							
31. 2-chloroethyl vinyl ether							
32. Acrolein							
ADDITIONAL							
MEK							
MIBK							
Xylenes							
THF							

NOTES: 1) All results in parts per billion (ppb). Tr. = <5 ppb

2) ND - Not detected. Blank spaces represent ND.

3) Laboratories-Resource Analysts, Inc. (RAI); U.S. Environmental Protection Agency, Lexington, Massachusetts (EPA); Mead Compuchem, Inc. (MEAD); Peck Environmental Laboratory (Peck); N.H. Water Supply and Pollution Control Commission (NH).

TABLE 3 (cont.)
RESIDENTIAL WELL R-2
PURGEABLE ORGANIC ANALYSIS RESULTS

COMPOUNDS	Sample No.				
	Laboratory	RAI	RAI	RAI	RAI
	Analysis by	GC/MS	GC/MS	GC/MS	GC/MS
	Sampling Date	4/28/83	7/20/83	10/17/83	2/7/84
1. Chloromethane					
2. Bromomethane					
3. Dichlorodifluoromethane					
4. Vinyl chloride					
5. Chloroethane					
6. Methylene chloride					
7. Acrylonitrile					
8. Trichlorofluoromethane					
9. 1,1-dichloroethylene					
10. 1,1-dichloroethane					
11. Trans-1,2-dichloroethylene					
12. Chloroform					
13. 1,2-dichloroethane					
14. 1,1,1-trichloroethane					
15. Carbon tetrachloride					
16. Bromodichloromethane					
17. 1,2-dichloropropane		ND	ND	ND	ND
18. Trans-1,3-dichloropropylene					
19. Trichloroethylene					
20. Benzene					
21. Dibromochloromethane					
22. Cis-1,3-dichloropropylene					
23. 1,1,2-trichloroethane					
24. Bromoform					
25. 1,1,2,2-tetrachloroethane					
26. Tetrachloroethylene					
27. Toluene					
28. Chlorobenzene					
29. Ethyl benzene					
30. Bis-chloromethyl ether					
31. 2-chloroethyl vinyl ether					
32. Acrolein					
ADDITIONAL					
MEK					
MIBK			Tr.		
Xylenes					
THF					

NOTES: 1) All results in parts per billion (ppb). Tr. = <5ppb.

2) ND - Not detected. Blank spaces represent ND.

3) Laboratory - Resource Analysts, Inc.

TABLE 4
RESIDENTIAL WELL R-3
PURGEABLE ORGANIC ANALYSIS RESULTS

COMPOUNDS	Sample No.						
	Laboratory	N.H.	RAI	RAI	RAI	RAI	RAI
	Analysis by	GC/MS	GC/MS	GC/MS	GC/MS	GC/MS	GC/MS
	Sampling Date	8/11/82	12/16/82	4/28/83	7/20/83	10/17/83	2/7/84
1. Chloromethane							
2. Bromomethane							
3. Dichlorodifluoromethane							
4. Vinyl chloride							
5. Chloroethane							
6. Methylene chloride							
7. Acrylonitrile							
8. Trichlorofluoromethane							
9. 1,1-dichloroethylene							
10. 1,1-dichloroethane							
11. Trans-1,2-dichloroethylene							
12. Chloroform							
13. 1,2-dichloroethane							
14. 1,1,1-trichloroethane							
15. Carbon tetrachloride							
16. Bromodichloromethane		ND	ND	ND	ND	ND	ND
17. 1,2-dichloropropane							
18. Trans-1,3-dichloropropylene							
19. Trichloroethylene							
20. Benzene							
21. Dibromochloromethane							
22. Cis-1,3-dichloropropylene							
23. 1,1,2-trichloroethane							
24. Bromoform							
25. 1,1,2,2-tetrachloroethane							
26. Tetrachloroethylene							
27. Toluene							
28. Chlorobenzene							
29. Ethyl benzene							
30. Bis-chloromethyl ether							
31. 2-chloroethyl vinyl ether							
32. Acrolein							
ADDITIONAL							
MEK							
MIBK							
Xylenes							
THF							

NOTES: 1) All results in parts per billion (ppb). Tr. = <5ppb.

2) ND - Not detected. Blank spaces represent ND.

3) Laboratory - Resource Analysts, Inc. (RAI); N.H. Water Supply and Pollution Control Commission (NH); Peck Environmental Laboratory (Peck).

TABLE 5

RESIDENTIAL WELL R-4
PURGEABLE ORGANIC ANALYSIS RESULTS

COMPOUNDS	Sample No.				
	Laboratory	NH	NH	RAI	RAI	RAI
	Analysis by	GC	GC/MS	GC/MS	GC/MS	GC/MS
	Sampling Date	11/8/79	7/15/82	4/28/83	10/17/83	2/7/84
1. Chloromethane						
2. Bromomethane						
3. Dichlorodifluoromethane						
4. Vinyl chloride						
5. Chloroethane						
6. Methylene chloride						
7. Acrylonitrile						
8. Trichlorofluoromethane						
9. 1,1-dichloroethylene						
10. 1,1-dichloroethane						
11. Trans-1,2-dichloroethylene						
12. Chloroform						
13. 1,2-dichloroethane						
14. 1,1,1-trichloroethane		<1				
15. Carbon tetrachloride						
16. Bromodichloromethane			ND	ND	ND	ND
17. 1,2-dichloropropane						
18. Trans-1,3-dichloropropylene						
19. Trichloroethylene						
20. Benzene						
21. Dibromochloromethane						
22. Cis-1,3-dichloropropylene						
23. 1,1,2-trichloroethane						
24. Bromoform						
25. 1,1,2,2-tetrachloroethane						
26. Tetrachloroethylene						
27. Toluene						
28. Chlorobenzene						
29. Ethyl benzene						
30. Bis-chloromethyl ether						
31. 2-chloroethyl vinyl ether						
32. Acrolein						
ADDITIONAL						
MEK						
MIBK						
Xylenes						
THF						

NOTES: 1) All results in parts per billion (ppb). Tr. = <5 ppb.

2) ND - Not detected. Blank spaces represent ND.

3) Laboratories - Resource Analysts, Inc. (RAI); New Hampshire Water Supply and Pollution Control Commission (NH).

TABLE 6
RESIDENTIAL WELL R-5
PURGEABLE ORGANIC ANALYSIS RESULTS

	Sample No.						
	Laboratory	NH	Peck	RAI	RAI	RAI	RAI
	Analysis by	GC/MS	GC/MS	GC/MS	GC/MS	GC/MS	GC/MS
COMPOUNDS	Sampling Date	7/15/82	12/10/82	4/28/83	7/20/83	10/17/83	2/1/84
[illegible]. Chloromethane							
[illegible]. Bromomethane							
3. Dichlorodifluoromethane							
[illegible]. Vinyl chloride							
[illegible]. Chloroethane							
[illegible]. Methylene chloride							
7. Acrylonitrile							
[illegible]. Trichlorofluoromethane							
[illegible]. 1,1-dichloroethylene							
10. 1,1-dichloroethane							
[illegible]. Trans-1,2-dichloroethylene							
[illegible]. Chloroform							
[illegible]. 1,2-dichloroethane							
14. 1,1,1-trichloroethane							
[illegible]. Carbon tetrachloride							
[illegible]. Bromodichloromethane		ND	ND	ND	ND	ND	ND
17. 1,2-dichloropropane							
[illegible]. Trans-1,3-dichloropropylene							
[illegible]. Trichloroethylene							
20. Benzene							
21. Dibromochloromethane							
[illegible]. Cis-1,3-dichloropropylene							
[illegible]. 1,1,2-trichloroethane							
24. Bromoform							
[illegible]. 1,1,2,2-tetrachloroethane							
[illegible]. Tetrachloroethylene							
27. Toluene							
28. Chlorobenzene							
[illegible]. Ethyl benzene							
[illegible]. Bis-chloromethyl ether							
31. 2-chloroethyl vinyl ether							
[illegible]. Acrolein							
ADDITIONAL							
MEK							
MIBK							
THF							
Xylenes							

NOTES: 1) All results in parts per billion (ppb). Tr. = <5ppb.

2) ND - Not detected. Bank spaces represent ND.

3) Laboratory - Resource Analysts, Inc.

TABLE 7
RESIDENTIAL WELL R-6
PURGEABLE ORGANIC ANALYSIS RESULTS

COMPOUNDS	Sample No.				
	Laboratory	NH	RAI	RAI	RAI	RAI
	Analysis by	GC/MS	GC/MS	GC/MS	GC/MS	GC/MS
	Sampling Date	7/15/82	12/17/82	4/28/83	7/20/83	2/1/84
1. Chloromethane						
2. Bromomethane						
3. Dichlorodifluoromethane						
4. Vinyl chloride						
5. Chloroethane						
6. Methylene chloride						
7. Acrylonitrile						
8. Trichlorofluoromethane						
9. 1,1-dichloroethylene						
10. 1,1-dichloroethane						
11. Trans-1,2-dichloroethylene						
12. Chloroform						
13. 1,2-dichloroethane						
14. 1,1,1-trichloroethane						
15. Carbon tetrachloride						
16. Bromodichloromethane		ND	ND	ND	ND	ND
17. 1,2-dichloropropane						
18. Trans-1,3-dichloropropylene						
19. Trichloroethylene						
20. Benzene						
21. Dibromochloromethane						
22. Cis-1,3-dichloropropylene						
23. 1,1,2-trichloroethane						
24. Bromoform						
25. 1,1,2,2-tetrachloroethane						
26. Tetrachloroethylene						
27. Toluene						
28. Chlorobenzene						
29. Ethyl benzene						
30. Bis-chloromethyl ether						
31. 2-chloroethyl vinyl ether						
32. Acrolein						
ADDITIONAL						
MEK						
MIBK						
Xylenes						
THF						

NOTES: 1) All results in parts per billion (ppb). Tr. = <5ppb.

2) ND - Not detected. Blank spaces represent ND.

3) Laboratories - Resource Analysts, Inc. (RAI); New Hampshire Water Supply and Pollution Control Commission Laboratory (NH).

TABLE 8
MONITORING WELL W-1

PURGEABLE ORGANIC ANALYSIS RESULTS

COMPOUNDS	Sample No.					
	Laboratory	RAI	RAI	RAI	RAI	RAI
	Analysis by	GC/MS	GC/MS	GC/MS	GC/MS	GC/MS
	Sampling Date	12/16/83	4/28/83	7/20/83	10/17/83	1/31/84
1. Chloromethane						
2. Bromomethane						
3. Dichlorodifluoromethane						
4. Vinyl chloride						
5. Chloroethane						
6. Methylene chloride						
7. Acrylonitrile						
8. Trichlorofluoromethane						
9. 1,1-dichloroethylene						
10. 1,1-dichloroethane						
11. Trans-1,2-dichloroethylene						
12. Chloroform						
13. 1,2-dichloroethane						
14. 1,1,1-trichloroethane						
15. Carbon tetrachloride						
16. Bromodichloromethane						
17. 1,2-dichloropropane		ND	ND	ND	ND	ND
18. Trans-1,3-dichloropropylene						
19. Trichloroethylene						
20. Benzene						
21. Dibromochloromethane						
22. Cis-1,3-dichloropropylene						
23. 1,1,2-trichloroethane						
24. Bromoform						
25. 1,1,2,2-tetrachloroethane						
26. Tetrachloroethylene						
27. Toluene						
28. Chlorobenzene						
29. Ethyl benzene						
30. Bis-chloromethyl ether						
31. 2-chloroethyl vinyl ether						
32. Acrolein						
ADDITIONAL						
Xylenes		ND	ND	ND	ND	ND
MEK						
MIBK						
THF						

NOTES: 1) All results in parts per billion (ppb). Tr = <5 ppb

2) ND - not detected. Blank spaces represent ND.

3) Laboratory - Resource Analysts, Inc. (RAI)

TABLE 9
MONITORING WELL W-2
PURGEABLE ORGANIC ANALYSIS RESULTS

COMPOUNDS	Sample No.					
	Laboratory	RAI	RAI	RAI	RAI	RAI
	Analysis by	GC/MS	GC/MS	GC/MS	GC/MS	GC/MS
	Sampling Date	12/16/82	4/28/83	7/20/83	10/17/83	2/7/84
1. Chloromethane						
2. Bromomethane						
3. Dichlorodifluoromethane						
4. Vinyl chloride						
5. Chloroethane						
6. Methylene chloride						
7. Acrylonitrile						
8. Trichlorofluoromethane						
9. 1,1-dichloroethylene						
10. 1,1-dichloroethane						
11. Trans-1,2-dichloroethylene						
12. Chloroform						
13. 1,2-dichloroethane						
14. 1,1,1-trichloroethane						
15. Carbon tetrachloride						
16. Bromodichloromethane						
17. 1,2-dichloropropane		ND		ND		ND
18. Trans-1,3-dichloropropylene						
19. Trichloroethylene						
20. Benzene						
21. Dibromochloromethane						
22. Cis-1,3-dichloropropylene						
23. 1,1,2-trichloroethane						
24. Bromoform						
25. 1,1,2,2-tetrachloroethane						
26. Tetrachloroethylene						
27. Toluene			Tr.		Tr.	
28. Chlorobenzene						
29. Ethyl benzene			Tr.		Tr.	
30. Bis-chloromethyl ether						
31. 2-chloroethyl vinyl ether						
32. Acrolein						
ADDITIONAL						
MEK		ND			ND	ND
MIBK				40		
Xylenes				Tr.		
THF						

NOTES: 1) All results in parts per billion (ppb). Tr. = <5 ppb
2) ND - not detected. Blank spaces represent ND.
3) Laboratory - Resource Analysts, Inc. (RAI).

TABLE 10
MONITORING WELL W-3

PURGEABLE ORGANIC ANALYSIS RESULTS

COMPOUNDS	Sample No.				
	Laboratory	RAI	RAI	RAI	RAI
	Analysis by	GC/MS	GC/MS	GC/MS	GC/MS
	Sampling Date	12/16/83	4/28/83	7/20/83	10/17/83
1. Chloromethane					
2. Bromomethane					
3. Dichlorodifluoromethane					
4. Vinyl chloride					
5. Chloroethane					
6. Methylene chloride					
7. Acrylonitrile					
8. Trichlorofluoromethane					
9. 1,1-dichloroethylene					
10. 1,1-dichloroethane				Tr.	
11. Trans-1,2-dichloroethylene					
12. Chloroform					
13. 1,2-dichloroethane					
14. 1,1,1-trichloroethane			Tr.	Tr.	
15. Carbon tetrachloride					
16. Bromodichloromethane					
17. 1,2-dichloropropane		ND			ND
18. Trans-1,3-dichloropropylene					
19. Trichloroethylene					
20. Benzene					
21. Dibromochloromethane					
22. Cis-1,3-dichloropropylene					
23. 1,1,2-trichloroethane					
24. Bromoform					
25. 1,1,2,2-tetrachloroethane					
26. Tetrachloroethylene					
27. Toluene					
28. Chlorobenzene					
29. Ethyl benzene					
30. Bis-chloromethyl ether					
31. 2-chloroethyl vinyl ether					
32. Acrolein					
ADDITIONAL					
Xylenes		ND			ND
MEK					
MIBK					
THF					

NOTES: 1) All results in parts per billion (ppb). Tr. = <5ppb

2) ND - not detected. Blank spaces represent ND.

3) Laboratory - Resource Analysts, Inc. (RAI).

TABLE 11
MONITORING WELL W-4

PURGEABLE ORGANIC ANALYSIS RESULTS

COMPOUNDS	Sample No.				
	Laboratory	RAI	RAI	RAI	RAI
	Analysis by	GC/MS	GC/MS	GC/MS	GC/MS
	Sampling Date	12/16/83	4/28/83	7/20/83	10/17/83
1. Chloromethane					
2. Bromomethane					
3. Dichlorodifluoromethane					
4. Vinyl chloride					
5. Chloroethane					
6. Methylene chloride					
7. Acrylonitrile					
8. Trichlorofluoromethane					
9. 1,1-dichloroethylene					
10. 1,1-dichloroethane					
11. Trans-1,2-dichloroethylene					
12. Chloroform					
13. 1,2-dichloroethane					
14. 1,1,1-trichloroethane					
15. Carbon tetrachloride					
16. Bromodichloromethane					
17. 1,2-dichloropropane		ND	ND	ND	ND
18. Trans-1,3-dichloropropylene					
19. Trichloroethylene					
20. Benzene					
21. Dibromochloromethane					
22. Cis-1,3-dichloropropylene					
23. 1,1,2-trichloroethane					
24. Bromoform					
25. 1,1,2,2-tetrachloroethane					
26. Tetrachloroethylene					
27. Toluene					
28. Chlorobenzene					
29. Ethyl benzene					
30. Bis-chloromethyl ether					
31. 2-chloroethyl vinyl ether					
32. Acrolein					
ADDITIONAL					
MEK		ND	ND	ND	ND
MIBK					
Xylenes					
THF					

NOTES: 1) All results in parts per billion (ppb). Tr. = <5ppb

2) ND - not detected. Blank spaces represent ND.

3) Laboratory - Resource Analysts, Inc. (RAI).

TABLE 12
MONITORING WELL W-5

PURGEABLE ORGANIC ANALYSIS RESULTS

	Sample No.	W-5
	Laboratory	RAI
	Analysis by	GC/MS
COMPOUNDS	Sampling Date	12/16/83
1. Chloromethane		
2. Bromomethane		
3. Dichlorodifluoromethane		
4. Vinyl chloride		
5. Chloroethane		
6. Methylene chloride		13
7. Acrylonitrile		
8. Trichlorofluoromethane		
9. 1,1-dichloroethylene		40
10. 1,1-dichloroethane		52
11. Trans-1,2-dichloroethylene		5
12. Chloroform		
13. 1,2-dichloroethane		
14. 1,1,1-trichloroethane		1900
15. Carbon tetrachloride		
16. Bromodichloromethane		
17. 1,2-dichloropropane		
18. Trans-1,3-dichloropropylene		
19. Trichloroethylene		250
20. Benzene		
21. Dibromochloromethane		
22. Cis-1,3-dichloropropylene		
23. 1,1,2-trichloroethane		
24. Bromoform		
25. 1,1,2,2-tetrachloroethane		
26. Tetrachloroethylene		520
27. Toluene		
28. Chlorobenzene		
29. Ethyl benzene		
30. Bis-chloromethyl ether		
31. 2-chloroethyl vinyl ether		
32. Acrolein		
ADDITIONAL		
MEK		
MIBK		
Xylenes		
THF		

NOTES: 1) All results in parts per billion (ppb). Tr. = <5ppb.

2) ND - not detected. BLank spaces represent ND.

3) Laboratory - Resource Analysts, Inc. (RAI).

TABLE 13
MONITORING STATION W-5-1

PURGEABLE ORGANIC ANALYSIS RESULTS

COMPOUNDS	Sample No.				
	Laboratory	RAI	RAI	RAI	RAI
	Analysis by	GC/MS	GC/MS	GC/MS	GC/MS
	Sampling Date	4/28/83	7/20/83	10/17/83	1/31/84
1. Chloromethane					
2. Bromomethane					
3. Dichlorodifluoromethane					
4. Vinyl chloride			11		
5. Chloroethane		Tr.	50	Tr.	Tr.
6. Methylene chloride			170	7	
7. Acrylonitrile					
8. Trichlorofluoromethane					
9. 1,1-dichloroethylene		6	60	17	20
10. 1,1-dichloroethane		30	160	98	80
11. Trans-1,2-dichloroethylene		95	160	260	200
12. Chloroform					
13. 1,2-dichloroethane			21		
14. 1,1,1-trichloroethane		660	710	340	380
15. Carbon tetrachloride					
16. Bromodichloromethane					
17. 1,2-dichloropropane					
18. Trans-1,3-dichloropropylene					
19. Trichloroethylene		380	830	310	300
20. Benzene					Tr.
21. Dibromochloromethane					
22. Cis-1,3-dichloropropylene					
23. 1,1,2-trichloroethane					
24. Bromoform					
25. 1,1,2,2-tetrachloroethane					
26. Tetrachloroethylene		375	120	30	70
27. Toluene		Tr.		100	15
28. Chlorobenzene					
29. Ethyl benzene					Tr.
30. Bis-chloromethyl ether					
31. 2-chloroethyl vinyl ether					
32. Acrolein					
ADDITIONAL					
MEK					
MIBK					
Xylenes					
THF					

NOTES: 1) All results in parts per billion (ppb). Tr. = <5ppb

2) ND - not detected. Blank spaces represent ND.

3) Laboratory - Resource Analysts, Inc. (RAI).

TABLE 14
MONITORING STATION W-5-2

PURGEABLE ORGANIC ANALYSIS RESULTS

COMPOUNDS	Sample No.				
	Laboratory	RAI	RAI	RAI	RAI
	Analysis by	GC/MS	GC/MS	GC/MS	GC/MS
	Sampling Date	4/28/83	7/20/83	10/17/83	1/31/84
1. Chloromethane					
2. Bromomethane					
3. Dichlorodifluoromethane					
4. Vinyl chloride				22	Tr.
5. Chloroethane		10		13	Tr.
6. Methylene chloride			63	5	
7. Acrylonitrile					
8. Trichlorofluoromethane					
9. 1,1-dichloroethylene		10	130	630	250
10. 1,1-dichloroethane		110	280		740
11. Trans-1,2-dichloroethylene		130	230	77	120
12. Chloroform					
13. 1,2-dichloroethane					
14. 1,1,1-trichloroethane		1330	950	80	110
15. Carbon tetrachloride					
16. Bromodichloromethane					
17. 1,2-dichloropropane					
18. Trans-1,3-dichloropropylene					
19. Trichloroethylene		690	2200	340	450
20. Benzene					
21. Dibromochloromethane					
22. Cis-1,3-dichloropropylene					
23. 1,1,2-trichloroethane					
24. Bromoform					
25. 1,1,2,2-tetrachloroethane					
26. Tetrachloroethylene		810	80	59	40
27. Toluene		Tr.		5	Tr.
28. Chlorobenzene					Tr.
29. Ethyl benzene					Tr.
30. Bis-chloromethyl ether					
31. 2-chloroethyl vinyl ether					
32. Acrolein					
ADDITIONAL					
MEK					
MIBK					
Xylenes					
THF					

NOTES: 1) All results in parts per billion (ppb). Tr. = <5ppb

2) ND - not detected. Blank spaces represent ND.

3) Laboratory - Resource Analysts, Inc. (RAI).

TABLE 15
MONITORING STATION W-5-3
PURGEABLE ORGANIC ANALYSIS RESULTS

COMPOUNDS	Sample No.				
	Laboratory	RAI	RAI	RAI	RAI
	Analysis by	GC/MS	GC/MS	GC/MS	GC/MS
	Sampling Date	4/28/83	7/20/83	10/17/83	1/31/84
1. Chloromethane					
2. Bromomethane					
3. Dichlorodifluoromethane					
4. Vinyl chloride					
5. Chloroethane		10			
6. Methylene chloride		20	80	20	
7. Acrylonitrile					
8. Trichlorofluoromethane					
9. 1,1-dichloroethylene		10		12	Tr.
10. 1,1-dichloroethane		120	51	110	70
11. Trans-1,2-dichloroethylene		150	87	290	340
12. Chloroform					
13. 1,2-dichloroethane					
14. 1,1,1-trichloroethane		1400	270	720	500
15. Carbon tetrachloride					
16. Bromodichloromethane					
17. 1,2-dichloropropane					
18. Trans-1,3-dichloropropylene					
19. Trichloroethylene		700	570	870	260
20. Benzene					
21. Dibromochloromethane					
22. Cis-1,3-dichloropropylene					
23. 1,1,2-trichloroethane					
24. Bromoform					
25. 1,1,2,2-tetrachloroethane					
26. Tetrachloroethylene		890	60	19	Tr.
27. Toluene		Tr.	15		
28. Chlorobenzene					
29. Ethyl benzene					
30. Bis-chloromethyl ether					
31. 2-chloroethyl vinyl ether					
32. Acrolein					
ADDITIONAL					
MEK					
MIBK					
Xylenes					
THF					

NOTES: 1) All results in parts per billion (ppb). Tr. = <5ppb

2) ND - not detected. Blank spaces represent ND.

3) Laboratory - Resource Analysts, Inc. (RAI).

TABLE 16
MONITORING WELL A-28
PURGEABLE ORGANIC ANALYSIS RESULTS

COMPOUNDS	Sample No.				
	Laboratory	RAI	RAI	RAI	RAI	RAI
	Analysis by	GC/MS	GC/MS	GC/MS	GC/MS	GC/MS
	Sampling Date	8/3/82	4/28/83	7/20/83	10/17/83	1/31/84
1. Chloromethane						
2. Bromomethane						
3. Dichlorodifluoromethane						
4. Vinyl chloride						
5. Chloroethane			10	36	8	Tr.
6. Methylene chloride				Tr.		
7. Acrylonitrile						
8. Trichlorofluoromethane						Tr.
9. 1,1-dichloroethylene	16		7	13	5	Tr.
10. 1,1-dichloroethane	290		260	200	140	120
11. Trans-1,2-dichloroethylene	69		47	48	37	25
12. Chloroform						
13. 1,2-dichloroethane						
14. 1,1,1-trichloroethane	490		310	190	100	170
15. Carbon tetrachloride						
16. Bromodichloromethane						
17. 1,2-dichloropropane						
18. Trans-1,3-dichloropropylene						
19. Trichloroethylene	21		10	Tr.	6	10
20. Benzene						
21. Dibromochloromethane						
22. Cis-1,3-dichloropropylene						
23. 1,1,2-trichloroethane						
24. Bromoform						
25. 1,1,2,2-tetrachloroethane						
26. Tetrachloroethylene	25		12	15	8	10
27. Toluene						
28. Chlorobenzene						
29. Ethyl benzene						
30. Bis-chloromethyl ether						
31. 2-chloroethyl vinyl ether						
32. Acrolein						
ADDITIONAL						
MEK						
MIBK						
Xylenes						
THF						

NOTES: 1) All results in parts per billion (ppb). Tr. = <5ppb.
2) ND - Not detected. Blank spaces represent ND.
3) Laboratory - Resource Analysts, Inc. (RAI).

GROUNDWATER DATA (GZA-PEL ANALYSES)

REVIEW OF GROUNDWATER FROM GOLDBERG, ZOINO AND ASSOCIATES, INC. (GZA) - PEL ANALYSES

Volatile organic analyses were conducted by PEL as a subcontractor to Normandeau Associates, Inc. (NAI) in December 1982 (GZA, 1983). Samples were visually inspected after receipt by the laboratory. Field blanks were provided and chain of custody was maintained.

0310024

NORMANDEAU ASSOCIATES

VOLATILE PRIORITY POLLUTANT DETERMINATION

LAB NO. 2194/2196 ANALYST R.D. Foster DATE 12/20/82

IDENTIFICATION: Groundwater samples

PARAMETER	SAMPLE DESIGNATION GZ 11-2 59001	GZ 11-1 59002	WP 3+4 59003	WP 1 59004	WQ Criter
Acrolein					
Acrylonitrile					
Benzene	TR				
Bis(chloromethyl)ether					
Bromoform					
Carbon Tetrachloride					
Chlorobenzene					
Chlorodibromomethane		TR			
Chloroethane					
2-Chloroethylvinylether					
Chloroform					
Dichlorobromomethane					
Dichlorodifluoromethane					
1,1-Dichloroethane					N.A
1,2-Dichloroethane					
1,1-Dichloroethylene					
1,2-Dichloropropane					
1,2-Dichloropropylene					
Ethylbenzene					
Methyl bromide					
Methyl chloride					
Methylene chloride		TR	TR		1.9
1,1,2,2-Tetrachloroethane					
Tetrachloroethylene	2				8
Toluene					
1,2-trans-Dichloroethylene	36				N.A
1,1,1-Trichloroethane	21				18,40
1,1,2-Trichloroethane					
Trichloroethylene	25				27
Trichlorofluoromethane					
Vinyl chloride					

NOTES:

Results expressed in parts per billion. Blank space denotes not detected.

TR= Trace (<1ppb) Detection Limit = 1ppb.

ORMANDEAU ASSOCIATES

VOLATILE PRIORITY POLLUTANT DETERMINATION

LAB NO. 2194/2196 ANALYST R.D. Foster DATE 12/20/82

IDENTIFICATION: Ground Water Samples

PARAMETER	SAMPLE DESIGNATION GZ 8-2 59009	FIELD BLANK 1 59008	W-4 59010	R-6 59011
Acrolein				
Acrylonitrile				
Benzene	1			
Bis(chloromethyl)ether				
Bromoform				
Carbon Tetrachloride	4			
Chlorobenzene	TR			
Chlorodibromomethane				
Chloroethane				
2-Chloroethylvinylether				
Chloroform	4			
Dichlorobromomethane				
Dichlorodifluoromethane				
1,1-Dichloroethane				
1,2-Dichloroethane	26			
1,1-Dichloroethylene				
1,2-Dichloropropane				
1,2-Dichloropropylene				
Ethylbenzene	6			
Methyl bromide				
Methyl chloride				
Methylene chloride				
1,1,2,2-Tetrachloroethane				
Tetrachloroethylene	9			
Toluene	51			
1,2-trans-Dichloroethylene	350			
1,1,1-Trichloroethane	58			
1,1,2-Trichloroethane				
Trichloroethylene	70			
Trichlorofluoromethane				
Vinyl chloride				

NOTES:

Results expressed in parts per billion. Blank space denotes not detected.

TR= Trace (<1ppb). Detection Limit≃1ppb.

VOLATILE PRIORITY POLLUTANT DETERMINATION

LAB NO. 2194/2196 ANALYST R.D. Foster DATE 12/20/82

IDENTIFICATION: Ground Water Samples

PARAMETER	SAMPLE DESIGNATION A 46 59005	CZ 9-4 59006	CZ 9-2 59007	CZ 10-3 59008
Acrolein				
Acrylonitrile				
Benzene		TR		3
Bis(chloromethyl)ether				
Bromoform				
Carbon Tetrachloride		2		19
Chlorobenzene		2		
Chlorodibromomethane				
Chloroethane		TR		TR
2-Chloroethylvinylether				
Chloroform		3		TR
Dichlorobromomethane				
Dichlorodifluoromethane				
1,1-Dichloroethane		21		33
1,2-Dichloroethane		TR		
1,1-Dichloroethylene				TR
1,2-Dichloropropane				TR
1,2-Dichloropropylene				
Ethylbenzene				
Methyl bromide				
Methyl chloride				
Methylene chloride				6
1,1,2,2-Tetrachloroethane				
Tetrachloroethylene		9		7
Toluene				
1,2-trans-Dichloroethylene		260		78
1,1,1-Trichloroethane		67		70
1,1,2-Trichloroethane				
Trichloroethylene		240		56
Trichlorofluoromethane				
Vinyl chloride		4		4

NOTES:

Results expressed in parts per billion. Blank space denotes not detected.

TR= Trace (<1ppb) Detection Limit=1ppb.

NORMANDEAU ASSOCIATES

VOLATILE PRIORITY POLLUTANT DETERMINATION

LAB NO. 2194/2196 ANALYST R.D. Foster DATE 12/20/82

IDENTIFICATION: Ground Water Samples

PARAMETER	SAMPLE DESIGNATION W-3 59012	R-5 59013	W-1 59014	R-3 59015
Acrolein				
Acrylonitrile				
Benzene				
Bis(chloromethyl)ether				
Bromoform				
Carbon Tetrachloride				
Chlorobenzene				
Chlorodibromomethane				
Chloroethane				
2-Chloroethylvinylether				
Chloroform				
Dichlorobromomethane				
Dichlorodifluoromethane				
1,1-Dichloroethane				
1,2-Dichloroethane				
1,1-Dichloroethylene				
1,2-Dichloropropane				
1,2-Dichloropropylene				
Ethylbenzene				
Methyl bromide				
Methyl chloride				
Methylene chloride				
1,1,2,2-Tetrachloroethane				
Tetrachloroethylene				
Toluene				
1,2-trans-Dichloroethylene				
1,1,1-Trichloroethane				
1,1,2-Trichloroethane				
Trichloroethylene				
Trichlorofluoromethane				
Vinyl chloride				

NOTES:

Results expressed in parts per billion. Blank space denotes not detected.

Detection Limit ≈1ppb.

0310028

VOLATILE PRIORITY POLLUTANT DETERMINATION

LAB NO. 2194/2196 ANALYST R.D. Foster DATE 12/20/82

PARAMETER	SAMPLE DESIGNATION W-2 59016	W-5 59021	METO BLANK 2 59023	
Acrolein				
Acrylonitrile				
Benzene				
Bis(chloromethyl)ether				
Bromoform				
Carbon Tetrachloride				
Chlorobenzene				
Chlorodibromomethane				
Chloroethane				
2-Chloroethylvinylether				
Chloroform				
Dichlorobromomethane				
Dichlorodifluoromethane				
1,1-Dichloroethane				
1,2-Dichloroethane		52		
1,1-Dichloroethylene		40		
1,2-Dichloropropane				
1,2-Dichloropropylene				
Ethylbenzene				
Methyl bromide				
Methyl chloride				
Methylene chloride		13		
1,1,2,2-Tetrachloroethane				
Tetrachloroethylene		520		
Toluene				
1,2-trans-Dichloroethylene		5		
1,1,1-Trichloroethane		1,900		
1,1,2-Trichloroethane				
Trichloroethylene		250		
Trichlorofluoromethane				
Vinyl chloride				

NOTES:

Results expressed in parts per billion. Blank space indicates not detected.

Detection Limit ≈ 1ppb.

APPENDIX Q

ANALYTICAL PROTOCOLS

SECTIONS IN APPENDIX Q

- ANALYTICAL PROTOCOLS

TABLES IN APPENDIX Q

ANALYTICAL PROTOCOLS

VOLATILE ORGANIC ANALYSIS USING THE PHOTOVAC 10A10 CHROMATOGRAPH

The Photovac 10A10 is a portable gas chromatograph used to screen soil, water, or air samples for volatile organic compounds. A 4' by 1/8" SE-30 gas chromatographic column is typically used for NUS/FIT screening. This instrument is generally used in the laboratory (as opposed to the field) to allow greater analytical control. Soil or aqueous samples are collected in 40 to 44 milliliter (ml) septum-fitted vials and are kept on ice during transporation. Soil samples are collected leaving 25% of the vial empty; this headspace will be sampled for volatile organic vapors. Vials are completely filled with aqueous samples and a headspace is then created in the laboratory by withdrawing 10 ml of liquid with a syringe. Air samples are collected by pumping a known volume of air through adsorbent charcoal or tenax tubes. These are thermally desorbed in the laboratory with a Foxboro Programmed Thermal Desorber (PTD). The process involves air-purging the adsorbent tubes of volatile contaminants and concentrating them in a 300 ml stainless steel chamber. A syringe is used to extract the air sample from the chamber.

All samples are allowed to equilibrate to room temperature before analysis. The instrument is also allowed to warm up for several minutes to stabilize analytical conditions. A multi-compound standard of known concentration is prepared daily by dilution of stock solution. Instrument response and technical reproducibility are verified by running standards two times prior to sample analysis. The standard run takes approximately 12 minutes to complete. A gas-tight 200 microliter (ul) syringe is used to make injections, unless high concentrations require the use of a smaller volume. The syringe is flushed with ambient air between samples, and an injection of "clean" ambient air is run to verify syringe cleanliness. The standard run is repeated every eight samples to confirm ongoing instrument stability.

Tentative compound identification is made by comparison of peak retention time of the sample to the retention times of standard peakss. Comparison of peak height of a sample peak to the peak height of a standard peak at a known concentration yields semi-quantitative results for aqueous samples. Soil samples are reported with qualitative results only, as no standard with a soil matrix is available. Peak identification for air samples can be obtained from qualitative or semi-quantitative standards. Compound identification is tentative unless peak retention times match standard peaks on three dissimilar columns, in which case identification is considered positive. A list of compounds analyzed for and typical detection limits are given in Table Q-1.

TABLE Q-1
COMPOUNDS ANALYZED FOR AND TYPICAL DETECTION LIMITS FOR THE PHOTOVAC 10A10 GC

Compound	typical detection limits (ppb)
benzene	1
trichloroethylene	1
toluene	3
tetrachloroethylene	3
chlorobenzene	5
ethylbenzene	5
m-xylene	5
o-xylene	10

VOLATILE ORGANIC ANALYSIS USING THE FOXBORO ORGANIC VAPOR ANALYZER (OVA-128)

The Foxboro Century Systems Organic Vapor Analyzer (OVA) is a portable unit equipped to detect organic vapors. It is fitted with a chromatographic column packed with a material which physically interacts with organic compounds. Since the packing material has a different affinity for each individual compound, the time it takes for each compound to pass through the column (retention time) will be different. The retention time is dependent on several parameters of the column: temperatures, length of column, type of packing, and flow rate or carrier gas (hydrogen). The OVA can be used in the field or laboratory to separate and tentatively identify volatile organic compounds. Water and soil samples for analysis on the OVA are collected in 40 to 44 milliliter (ml) septum-fitted vials. Vials are filled to 75% capacity, leaving a "headspace" of air, if analysis is to be conducted at the sampling location. Aqueous samples collected for analysis in the lab are completely filled and kept on ice during transport to preserve sample integrity. A headspace is created in lab by withdrawing 10 ml of liquid with a syringe. Soil samples are always placed in sample vials leaving a headspace to avoid reopening of the vial.

The OVA is operated at ambient temperature and must therefore be allowed to equilibrate to surrounding conditions. Samples are also equilibrated to ambient temperature for analysis. The instrument is set to the chromatographic mode and a strip chart recorder is plugged into the OVA to receive output from the detector.

A 500 microliter (ul) gas-tight syringe is used to inject sample vapors onto the column. The syringe is initially flushed several times and 500 ul of "clean" ambient air is injected to verify syringe cleanliness. The time of injection is noted on the strip chart and the chromatograph is allowed to run for several minutes. The backflush valve is then depressed, reversing the flow through the column, while the chart is left running to record peaks occurring from heavier compounds that may have been still on the column. When this run is through, the backflush valve is returned to the up position. Air may then be withdrawn from the headspace above a soil or water sample and analyzed in the same fashion.

Analysis can be qualitative or semi-quantitative. Standards containing individual volatile organic compounds or mixtures can be prepared. These standards can be at specific concentrations if semi-quantitative analysis is desired. Compound identification is made by comparison of sample peak retention times to the retention times of known standards. Semi-quantitation is accomplished by comparing sample peak heights to the peak heights of the appropriate standard at a known concentration. Identifications are tentative unless peak retention times match those of the standard on three columns of dissimilar polarity, in which case identification is considered positive. Detection limits for most common volatile organic compounds are in the 0.5-1 part per million range using this method.

CONTRACT LABORATORY ANALYSIS
FOR ORGANIC HAZARDOUS SUBSTANCE LIST COMPOUNDS

Full Hazardous Substance List (HSL) analysis by a contract lab includes volatile organic analysis (VOA), semivolatile (base/neutral/acid), pesticide and PCB analysis. A complete list of these compounds and their contract required detection limits is presented in Table Q-2. Samples are run according to procedures specified in the Contract Lab Program Organics Analysis Statement of Work. This document details analytical and contractual requirements and is based on EPA Methods 624 (purgeables), 625 (base/neutral/acids) and 608 (pesticides and PCBs).

Volatiles (or "purgeables") are analyzed utilizing a purge and trap method. In this method, 5 to 25 ml. of aqueous sample or soil extract is placed in a special enclosed chamber. Finely divided inert gas bubbles are blown through the sample to release volatile compounds into the vapor phase. A sorbent trap collects these vapors for analysis. When purging is completed, the trap is heated and backflushed onto a gas chromatograpic (GC) column. The various chemicals present will interact differently with the column and pass through it with varying retention times. The GC is interfaced with a mass spectroscopy (MS) system which is then used to identify the separated components.

Base/neutral and acid compounds are extracted into methylene chloride and analyzed using fused silica capillary column GC/MS. Base/neutral compounds are extracted at pH 11, acids at pH 2. As with volatiles, compound separation occurs in the column. Qualitative identification is made via GC retention time and relative abundance of three or more characteristics MS ions. Quantitative analysis is accomplished using an internal standard and one characteristic ion.

TABLE Q-2
COMPOUNDS INCLUDED IN CLP ORGANICS ANALYSIS AND CONTRACT REQUIRED DETECTION LIMITS (CRDL)

Volatile Organics		Pesticides/PCBs	
Compound	CRDL (ug/l)	Compound	CRDL (ug/l)
Chloromethane	10	Alpha-BHC	0.05
Bromomethane	10	Beta-BHC	0.05
Vinyl Chloride	10	Delta-BHC	0.05
Chloroethane	10	Gamma-BHC (Lindane)	0.05
Methylene Chloride	5	Heptachlor	0.05
Acetone	10	Aldrin	0.05
Carbon Disulfide	5	Heptachlor epoxide	0.05
1,1-Dichloroethene	5	Endosulfan I	0.05
1,1-Dichloroethane	5	Dieldrin	0.10
Trans-1,2-Dichloroethene	5	4,4'-DDE	0.10
Chloroform	5	Endrin	0.10
1,2-Dichloroethane	5	Endosulfan II	0.10
2-Butanone	10	4,4'-DDD	0.10
1,1,1-Tetrachloroethene	5	Endrin Aldehyde	0.10
Carbon Tetrachloride	5	Endosulfan Sulfate	0.10
Vinyl Acetate	10	4,4'-DDT	0.10
Bromodichloromethane	5	Methoxychlor	0.50
1,2-Dichloropropane	5	Endrin ketone	0.10
Trans-1,3-Dichloropropene	5	Chlordane	0.50
Trichloroethene	5	Toxaphene	1
Dibromochloromethane	5	Aroclor-1016	0.50
1,1,2-Trichloroethane	5	Aroclor-1221	0.50
Benzene	5	Aroclor-1242	0.50
cis-1,3-Dichloropropene	5	Aroclor-1248	0.50
2-Chloroethylvinylether	10	Aroclor-1254	1
Bromoform	5	Aroclor-1260	1
4-Methyl-2-Pentanone	10		
2-Hexanone	10		
Tetrachloroethene	5		
1,1,2,2-Tetrachloroethane	5		
Toluene	5		
Chlorobenzene	5		
Ethylbenzene	5		
Styrene	5		
Total Xylenes	5		

TABLE Q-2
COMPOUNDS INCLUDED IN CLP ORGANICS ANALYSIS
AND CONTRACT REQUIRED DETECTION LIMITS (CRDL)
PAGE TWO

Semivolatile (Base/Neutral/Acid) Organics

Compound	CRDL (ug/l)	Compound	CRDL (ug/l)
Phenol	20	Acenaphthene	20
bis(2-Chloroethyl)Ether	20	2,4-Dinitrophenol	100
2-Chlorophenol	20	4-Nitrophenol	100
1,3-Dichlorobenzene	20	Dibenzofuron	20
1,4-Dichlorobenzene	20	2,4-Dinitrotoluene	20
Benyl Alchohol	20	2,6-Dinitrotoluene	20
1,2-Dichlorobenzene	20	Diethylphthalate	20
2-Methylphenol	20	4-Chlorophenyl-phenylether	20
bis(2-chloroisopropyl)Ether	20	Fluorene	20
4-Methylphenol	20	4-Nitroaniline	100
N-Nitroso-Di-n-Propylamine	20	4,6-Dinitro-2-Methylphenol	100
Hexachloroethane	20	N-Nitrosodiphenylamine (1)	20
Nitrobenzene	20	4-Bromophenyl-phenylether	20
Isophorone	20	Hexachlorobenzene	20
2-Nitrophenol	20	Pentachlorophenol	100
2,4-Dimethylphenol	20	Phenanthrene	20
Benzoic Acid	20	Anthracene	20
bis(2-Chloroethnoxy)Methane	20	Di-n-Butylphthalate	20
2,4-Dichlorophenol	20	Fluoranthene	20
1,2,4-Trichlorobenzene	20	Pyrene	20
Naphthalene	20	Butylbenzylphthalate	20
4-Chloroaniline	20	3,3-Dichlorobenzidine	40
Hexachlorobutadiene	20	Benzo (a) Anthracene	20
4-Chloro-3-Methylphenol	20	bis(2-Ethylhexyl)Phthalate	20
2-Methylnaphthalene	20	Chrysene	20
Hexachlorocyclopentadiene	20	Di-n-Octyl Phthalate	20
2,4,6-Trichlorophenol	20	Benzo (b) Fluoranthene	20
2,4,5-Trichlorophenol	100	Benzo (k) Fluoranthene	20
2-Chloronaphthalene	20	Benzo (a) Pyrene	20
2-Nitroaniline	100	Indeno(1,2,3-cd)Pyrene	20
Dimethyl Phthalate	20	Dibenzo(a,h)Anthracene	20
Acenaphthylene	20	Benzo(g,h,i)Perylene	20
		3-Nitroaniline	100

Screening for pesticides is done using GC equipped with an electron capture detector (ECD) which is particularly sensitive to chlorinated compounds. The sample is extracted with methylene chloride, then the methylene chloride is exchanged for hexane, a GC/ECD compatible solvent. Compounds detected at high enough levels using GC/ECD are confirmed using GC/MS.

Each of the above fractions is subject to contract-required quality control measures. This involves the analysis of method blanks, duplicates, and spiked samples which are used to assess data quality. Data validation is discussed further in a following section.

CONTRACT LABORATORY ANALYSIS
FOR INORGANIC HAZRADOUS SUBSTANCE LIST COMPOUNDS

Inorganics analysis by a contract lab includes screening for the 24 metals listed in Table Q-3. Analysis is conducted according to the Contract Laboratory Program Inorganics Analysis Statement of Work.

Sample preparation involves digestion by nitric acid and hydrogen peroxide. Analysis is conducted using standard atomic absorption (AA) methods. Flame, furnace, or the inductive coupled plasma (ICP) method may be used for each metal, as long as the contract required detection limit for that element is met. These limits are listed in Table Q-3. Mercury analysis is an exception; it is done by the cold vapor method and requires a persulfate digestion.

All analysis is subject to contract-required quality control measures. This involves analysis of blanks, duplicates and spiked samples to insure valid results. Data quality review is discussed further in the following section.

TABLE Q-3

ELEMENTS INCLUDED IN CLP INORGANICS ANALYSIS AND CONTRACT REQUIRED DETECTION LIMITS (CRDL)

Element	CRDL (ppb)	Element	CRDL (ppb)
1. Aluminum	200	13. Magnesium	5000
2. Antimony	60	14. Manganese	15
3. Arsenic	10	15. Mercury	0.2
4. Barium	200	16. Nickel	40
5. Beryllium	5	17. Potassium	5000
6. Cadmium	5	18. Selenium	5
7. Calcium	5000	19. Silver	10
8. Chromium	10	20. Sodium	5000
9. Cobalt	50	21. Thallium	10
10. Copper	25	22. Tin	40
11. Iron	100	23. Vanadium	50
12. Lead	5	24. Zinc	20

VALIDATION OF
CONTRACT LABORATORY DATA

Contract Laboratory analysis is conducted according to EPA Methods 624 (Purgeables) and 625 (Base/Neutrals and Acids). Results are released to the public only after data validation has been completed by NUS/FIT and approved by EPA. This data review insures that the laboratory followed appropriate quality control procedures and met all contractual requirements. Data may be considered unuseable (rejected) or approximate as a result of the review. Parameters assessed in the NUS/FIT Level I data validation are as follows:

- Instrument tuning and calibration. The laboratory is required to verify proper and stable instrument response prior to sample analysis. Poor or fluctuating response may result in misidentification or invalid quantitation.

- Sample holding times. Samples must be analyzed within contract specified holding times to minimize sample degradation or cross contamination. Data will frequently be approximated for samples held beyond the specified limits.

- Surrogate spike recoveries. All samples are spiked with a known quantity of solution containing compounds not likely to occur in the samples. The laboratory determines their percent recoveries from analysis results. Poor recoveries, either high or low, result in entire fractions of data being approximated. Results may be rejected entirely if recoveries are so low that analysis is considered unuseable.

- Matrix spike recoveries. The laboratory spikes one in ten samples with a known concentration of several of the compounds that are being analyzed for. Percent recoveries of these compounds may be low if laboratory technique is poor or if the sample matrix prevents successful analysis. Recoveries outside of contract-required limits may result in approximating or rejecting data.

- Laboratory duplicate. The laboratory divides each matrix-spiked sample into two portions for the purpose of duplicate analysis. Comparison of the two sets of data gives an indication of the reliability of results. Values that vary greatly generally result in the approximation of data for certain compounds.

- Field ("blind") duplicates. The sample collection team collects duplicate samples that are submitted to the laboratory unidentified in order to get an unbiased duplicate comparison. Data qualifiers due to poor agreement are the same as for laboratory duplicates.

- Laboratory blanks. The laboratory is required to store, prepare, and analyze "blank" water samples with each group of samples submitted. These blanks frequently contain common laboratory solvents that have contaminated the samples as well. Data for compounds present in blanks are generally rejected.

- Field ("blind") blanks. Blank water is carried to the sampling location, stored with other samples and shipped to the laboratory unidentified. This gives unbiased blank data as well as indications of cross-contamination that may have occurred in the field. Data for compounds found in these blanks are generally rejected.

Inorganics data validation also includes assessment of the following:

- Interference Check. The laboratory is required to run a sample that has been spiked with high levels of certain elements to determine if these elevated levels interfere with analysis of unspiked elements. When recoveries of unspiked elements are poor, the corresponding data in certain samples may require approximation.

- Standard additions. Certain sample matrices may interfere with the analysis of inorganic constituents. A poor matrix spike recovery indicates such an interference, and requires the laboratory to quantitate that element using the method of standard additions. This method sets a new standard curve using the sample matrix in question. Data for a given element may be approximated or rejected if the spike recovery was poor and standard additions were not used.