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REPORT ON

GROUNDWATER MONITORING PROGRAM FOR THIRD YEAR OF OPERATION WELL SITE NO. 7 VILLAGE OF WINCHESTER WATER SUPPLY SYSTEM EXPANSION PROJECT

Submitted to:

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EXECUTIVE SUMMARY

This document has been prepared to summarize the results of the groundwater monitoring program associated with the third year of operation of Village of Winchester Well Site No. 7. The objectives of this monitoring program were to monitor groundwater level variations, flow characteristics, and groundwater quality conditions on site and in the vicinity of Well Site No. 7 during the third year of operation, and to compare these to previous trends observed during the pre-operational groundwater monitoring program and during the first two years of operation.

The groundwater levels recorded during the third year of operation at all of the monitors included in the monitoring program appear to reflect continued influence from the pumping activities on Well Site No. 7. Maximum drawdowns in the immediate vicinity of the well are about 1 metre compared to pre-operational conditions. The degree of influence from pumping on the groundwater monitors appears to be inversely proportional to the distance from the well site, as would be expected.

Based on the groundwater level data obtained during the third year of operation, the interpreted general direction of groundwater flow remains consistent with pre-operational flow directions, with slight variations in the immediate vicinity and to the north of the pumping wells.

In general, the ongoing land uses and pumping operations at the Village of Winchester Well Site No. 7 do not appear to have adversely affected groundwater quality to date in the vicinity of the well site.

A proposed monitoring program for the fourth year of operation is provided. Based on the amount of data collected during the first three years of operation and the observed consistency in trends, this proposed program includes reductions to the frequency of groundwater level monitoring and groundwater quality monitoring.

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1.0 INTRODUCTION

This document has been prepared to summarize the results of the groundwater monitoring program associated with the third year of operation of the Village of Winchester Well Site No. 7. The scope of the monitoring program was described in Section 4.0 of Golder Associates (1999). Well Site No. 7 was put into operation on March 21, 1997. This report presents the results of monitoring activities conducted between April, 1999 and March, 2000.

The objectives of the groundwater monitoring program for the third year of operation were:

- to monitor groundwater level variations and flow characteristics on-site and in the vicinity of Well Site No. 7 during the third year of operation, and to compare these to previous trends observed during the pre-operational groundwater monitoring program (Golder Associates, 1996) and during the first two years of operation (Golder Associates, 1998, 1999);

- to compare groundwater quality conditions on-site and in the vicinity of Well Site No. 7 during the third year of operation to baseline groundwater quality established in the pre-operational groundwater monitoring program (Golder Associates, 1996) and to groundwater quality data collected during the first two years of operation (Golder Associates, 1998, 1999).

The Village of Winchester Well Site No. 7 is located on Lot 15, Concession IX in the former Township of Winchester, Ontario (see Key Plan, Figure 1). A site plan and overview of the study area, including the locations of all groundwater monitors included in the groundwater monitoring program for the third year of operation and the locations of the production wells (i.e., wells 7A, 7B and 7C), are shown on Figure 2.

2.0 PROCEDURES

A summary of the groundwater monitoring program for the third year of operation is provided in Table 1 including the sampling dates and locations, and the chemical and physical parameters that were measured in the field and in the laboratory.

2.1 Groundwater Level Monitoring

Groundwater level measurements were recorded once each month from April, 1990 to March, 2000, inclusive. All groundwater level measurements were conducted by personnel from the South Nation Conservation (SNC) authority with the exception of water level measurements made on July 27, 1999, which were recorded by Golder Associates.

Groundwater level measurements included in the proposed program for the third year of operations (Table 4 of Golder Associates, 1999) that could not be obtained for various reasons are listed below along with explanations as to why the measurements could not be obtained. In addition to the proposed program, water level measurements were recorded at several of the groundwater monitors by Golder Associates on July 27, 1999, as part of a separate study. These measurements have been included in this report to augment the data collected by SNC.

Monitor	Months Not Measured	Explanation
94-8A	Apr. - Jun. 1999; Jan. - Mar. 2000	Monitor was frozen in Apr., 1999 and Jan. - Mar., 2000; Monitor was overflowing in May and June, 1999.
94-8B	Mar. 2000	Monitor was frozen.
94-9A	Apr. - May 1999; Mar. 2000	Monitor could not be located in Apr. - May, 1999; Monitor was frozen in Mar., 2000.
94-9B	Apr. - May 1999	Monitor could not be located.
94-10	Apr. 1999; Feb. 2000	Monitor was frozen in Apr., 1999; Monitor could not be located in Feb., 2000.
94-11	Feb. - Mar. 2000	Monitor could not be located in Feb., 2000; Monitor was frozen in Mar., 2000.
94-12	Jan. - Mar. 2000	Monitor was frozen in Jan., 2000; Monitor could not be located in Feb., 2000; Monitor was overflowing in Mar., 2000.
WESA-16	Apr. - May 1999; Feb. - Mar. 2000	Monitor could not be located in Apr. - May, 1999 and Feb., 2000; Monitor was overflowing in Mar., 2000.
96-19	Feb. 2000	Cap on monitor was frozen.

2.2 Groundwater Quality Monitoring

Groundwater quality monitoring sessions were conducted in June and September 1999 and March 2000, as indicated in Table 1, in accordance with the proposed program for the third year of operations (Table 4 of Golder Associates, 1999).

The groundwater monitors included in the monitoring sessions were 94-5, 94-11, 96-19, 96-20, 96-21 and 96-22. A groundwater sample could not be collected from monitor 96-21 in March 2000, due to a missing dedicated sampling device in this monitor.

The groundwater monitors were developed through the removal of at least three standing volumes of water using dedicated sampling devices consisting of a length of flexible low density polyethylene (LDPE) tubing and a Model D-25 foot valve manufactured by Waterra Pumps Ltd. of Toronto, Ontario. Groundwater samples were collected from each monitor immediately after well development.

The temperature, pH and conductivity of the groundwater samples collected during the June 1999 and March 2000 sampling sessions were measured in the field at the time of sample collection (with the exception of the pH at monitor 96-19 during the March 2000 session, which was measured by the analytical laboratory due to field equipment malfunction). The pH and conductivity meters were calibrated prior to use. The temperature of the groundwater samples collected during the September 1999 session were measured in the field during sample collection; the pH and conductivity of the September 1999 groundwater samples were recorded by the analytical laboratory. All samples were entered on a Chain of Custody Form and placed in coolers with ice packs until they were delivered in person to the private analytical laboratory.

The groundwater samples were collected, prepared and preserved in the field as follows:

- one plastic bottle, field filtered to 0.45 microns and preserved to pH<2 with nitric acid for analysis of sodium and potassium

- one plastic bottle, unfiltered and unpreserved for analysis of chloride and nitrate

- one plastic bottle, unfiltered and preserved to pH<2 with sulphuric acid for analysis of total phosphorus

- one amber glass vial with Teflon septum, unfiltered and unpreserved with no headspace for analysis of BTEX (Benzene, Toluene, Ethylbenzene, Xylenes)

- one amber glass bottle with foil lined cap, unfiltered and unpreserved for analysis of atrazine

All groundwater sampling and field analyses during the groundwater monitoring program for the third year of operation were conducted by SNC personnel. Golder Associates assisted SNC during the June 1999 sampling session.

Accutest Laboratories Ltd. in Nepean, Ontario, performed all laboratory chemical and physical analyses on the groundwater samples.

2.3 Groundwater Monitor Inspection and Repair

Following recommendations in Section 4.0 of Golder Associates (1999), riser pipe extensions were added to groundwater monitors 94-8A and 94-8B during the June 1999 sampling session on June 22, 1999. Monitors 94-9A, 94-9B and WESA-16 were also located and marked during Golder Associates' visit on June 22, 1999. The revised top of casing elevations for monitors 94-8A and 94-8B are indicated in Table 2.

3.0 DISCUSSION

3.1 Groundwater Levels

The groundwater levels measured during the groundwater monitoring program for the third year of operation are provided in Table 3. The groundwater elevations in Table 3 were calculated using the elevation data presented in Table 2. These groundwater elevations along with historical groundwater levels measured during the pre-operational monitoring program and the first two years of operation are represented graphically on Figures 3, 4, 5 and 6.

Precipitation data and pumping data have not been provided to Golder Associates. Therefore, discussion in this report regarding groundwater elevations recorded during the third year of operation in comparison to the first two years of operation and pre-operating groundwater elevations is strictly factual. Any suggestions for causes of changes in groundwater elevations over time are hypothetical and should be evaluated through a comparison to precipitation and pumping data in order to more thoroughly understand the reasons for changes over time.

Figure 3 shows groundwater level fluctuations on, and in the immediate vicinity of, the Village of Winchester well site (Well Site No. 7). The screens of these groundwater monitors are located in the core of the Morewood esker in unconfined fine sand and sand and gravel deposits. The trend depicted in Figure 3 shows continued seasonal variation with groundwater levels highest in the spring months. The lowest groundwater levels recorded during the third year of operation occurred during the late summer/early fall of 1999. This is similar to the trend observed during the first year of operation, but in contrast to the second year of operation which saw the lowest groundwater levels occurring in the late fall/early winter months. The lowest groundwater levels recorded during the third year of operation were similar to or slightly higher than the lowest groundwater levels recorded during the second year of operation. The lowest groundwater levels recorded at the monitors in the immediate vicinity of Well Site No. 7 during the third year of operation were about 1.0 to 1.2 metres lower than the low water levels recorded during the pre-operational monitoring program.

Figure 4 shows groundwater level fluctuations in other groundwater monitors located in the core of the Morewood esker to the south of Well Site No. 7 (with the exception of 94-7, which was on the road allowance directly north of the well site). The screens of these monitors are all in

unconfined sand and gravel. Groundwater monitor 94-7 was destroyed after November 1996. Monitor WESA-16 was unable to be located between July 1997 and May 1999. As discussed in Section 2.3, monitor WESA-16 was found during the June 1999 monitoring session. The trend depicted in Figure 4 is similar to that in Figure 3 with the lowest groundwater levels during the third year of operation occurring in the late summer/early fall of 1999. The lowest groundwater levels at monitors 94-6 and 94-11 were similar to the lowest groundwater levels recorded from these monitors during the first and second years of operation. The groundwater levels recorded at monitors 94-6, 94-11 and WESA-16 in the late summer/early fall of 1999 were approximately 0.7 to 0.8 metres lower than in the late summer/early fall of 1996 (pre-operation groundwater levels). It is considered that the groundwater levels in monitors 94-6, 94-11 and WESA-16 during the third year of operation continue to reflect influence from the pumping activities on Well Site No. 7 on the order of about 0.5 to 0.8 metres of drawdown.

Figure 5 depicts groundwater level variations in various other geological formations in the vicinity of the Morewood esker. Monitors 94-8A and 94-9A are located in a confined (overlain by clay) silty sand deposit to the west of the core of the esker, while 94-8B and 94-9B are in the overlying silty clay layer in the same area. Monitor 94-10 is located in a confined glacial till unit to the east of the core of the Morewood esker. Monitor 94-12 is located northwest of Well Site No. 7 in a sand and gravel portion of the Morewood esker that is overlain by a thin silty clay layer. Similar trends to Figure 3 are again seen in Figure 5, with a significantly lower piezometric surface in 94-9A, 94-9B and 94-12 than in the other groundwater monitors included in the groundwater level monitoring program. Riser pipe extensions were added to groundwater monitors 94-8A and 94-8B in June of 1999. Prior to this these monitors have been frequently artesian (level above the top of the monitoring well riser pipe). Therefore comparison of groundwater levels in monitors 94-8A and 94-8B during wetter times of the year has not been possible. The lowest groundwater levels recorded during the third year of operation at Monitor 94-10 were similar to the lowest groundwater levels recorded in this monitor during the first two years of operation, but were approximately 0.5 metres lower than in the late summer/early fall of 1996 (pre-operation). The lowest groundwater levels recorded during the third year of operation at monitors 94-8A, 94-8B and 94-12 were also similar to the low levels recorded at these monitors during the first two years of operation. The groundwater levels observed at monitor 94-12 continue to reflect about 0.3 to 0.6 metres of drawdown in comparison to 1996, pre-operational groundwater levels at this monitor. The groundwater levels in the monitors included

in Figure 5 may represent a minor degree of influence from the pumping activities on the Village of Winchester Well Site No. 7.

Figure 6 represents the groundwater levels in the 96-Series groundwater monitors. Monitors 96-20, 96-21 and 96-22 are located in the Morewood esker to the north of Well Site No. 7, in unconfined fine sand and sand and gravel. Monitor 96-19 is located within the esker to the south of the well site, in confined fine sand. The trends in Figure 6 are similar to the trends in Figure 3 with groundwater levels highest in the spring months and lowest in the late summer/early fall to late fall/early winter (1998/99). The lowest groundwater levels recorded in the 96-Series groundwater monitors during the third year of operation were similar or slightly higher than the lowest groundwater levels recorded at these monitors during the second year of operation with the exception of monitor 96-19. The lowest water level recorded at 96-19 during the third year of operation (in September 1999) was about 0.2 metres lower than the lowest water level recorded at 96-19 during the second year of operation (in January 1999).

Deviations in groundwater levels in the 96-series groundwater monitors between the late summer/early fall of 1996 (pre-operation) and the late summer/early fall of 1999 range from about 1.1 metres lower in 1999 at monitor 96-20 (closest to the well site) to about 0.7 metres lower in 1999 at monitor 96-22 (furthest from the well site). The groundwater levels during the third year of operation at the 96-Series monitors appear to suggest some influence from the pumping activities at Well No. 7. The degree of influence from pumping on the 96-Series groundwater monitors appears to be inversely proportional to the distance from the well site, as would be expected.

3.2 Flow Directions

Based on the groundwater elevation data available prior to the start of operation of Village of Winchester Well Site No. 7 on March 21, 1997, the general direction of natural (pre-operation) groundwater flow within the Morewood esker is to the north, following the long axis of the esker, as illustrated in Figure 2. As would be expected in permeable coarse grained deposits, the horizontal hydraulic gradient is quite low and was previously reported to be around 10^{-4} (Golder Associates, 1996).

A component of groundwater flow in a southerly direction was previously reported (Golder Associates, 1996) in the south portion of the esker, forming a groundwater divide approximately 500 metres north of County Road 3 (see Figure 2). It has been considered that this condition is likely a result of the topographic high spot that is present in this area (Golder Associates, 1996). Based on the limited groundwater level data available from monitor WESA-16, the presence of this groundwater divide does not appear to be altered by the pumping activities at Well Site No. 7.

In Golder Associates (1998) a decrease in the magnitude of the hydraulic gradient since the start of operation was described in the Morewood esker to the immediate north of the well site. This trend continued during the third year of operation, as evidenced by groundwater elevations recorded in monitors 96-20, 96-21 and 96-22. Periodic southerly components of groundwater flow in this area is interpreted based on groundwater elevation measurements recorded since the start of operation. To the north of monitor 96-22, groundwater flow appears to be toward the north, similar to pre-operation conditions.

Based on the groundwater level data obtained during the third year of operation, the interpreted general direction of groundwater flow remains consistent with pre-operational flow directions, with periodic slight variations in the immediate vicinity and to the north of the pumping wells. The interpreted direction of groundwater flow, based on groundwater elevation measurements obtained on October 15, 1999, is shown on Figure 2.

3.3 Groundwater Quality

The results of all field and laboratory chemical and physical analyses conducted during the groundwater monitoring program for the third year of operation, along with the relevant Ontario Drinking Water Objectives (ODWO) (Ministry of Environment and Energy, 1994) are provided in Appendix A. Historical results are also provided in Appendix A for the groundwater monitors included in the groundwater monitoring program for the third year of operation. The Report of Analyses sheets from Accutest Laboratories Ltd. for all analyses conducted as part of the groundwater monitoring program for the third year of operation are included in Appendix B.

Discussion relating to compliance with the ODWO relates specifically to non-health related objectives (i.e. aesthetic parameters) and health related parameters for which a Maximum Acceptable Concentration (MAC) or Interim Maximum Acceptable Concentration (IMAC) have been established. The following provides a summary of the apparent trends in groundwater quality over time with particular attention to any discrepancies or changes in groundwater quality between the pre-operational monitoring program and the monitoring program for the *third year* of operation:

- groundwater quality in all of the groundwater monitors included in the monitoring program for the third year of operation was generally consistent over time and met the ODWO for all parameters monitored

- atrazine and BTEX (Benzene, Toluene, Ethylbenzene, Xylenes) were never detected at any of the monitoring locations included in the monitoring program for the third year of operation

- total phosphorus levels have been variable over time at all of the groundwater monitors included in the sampling program

- nitrate was not detected in any of the groundwater samples collected from monitors 94-5 or 96-19 during the third year of operation; the nitrate detections reported in Golder Associates (1999) in the groundwater samples from 94-5 and 96-19 collected during the March 1999 monitoring session appear to be isolated, and are the only occurrence of nitrate reported to date at these monitors

- nitrate has been consistently present in groundwater samples from monitor 94-11 (at levels between 0.11 mg/L and 0.44 mg/L) since the September 1997 monitoring session with the exception of the June 1999 sample from 94-11 for which nitrate was not reported above the method detection limit of 0.10 mg/L

- nitrate has been consistently present (at slightly variable levels < 3.11 mg/L) at monitors 96-20 and 96-21 since the start of monitoring; nitrate was present at similar levels at monitor 96-22 between the start of monitoring and the March 1998 monitoring session, but was not detected at this monitor in the monitoring sessions conducted during the second year of operations; nitrate was reported in the groundwater samples collected from monitor 96-22 just at the method detection limit (0.10 mg/L) during the June and September 1999 monitoring sessions but was less than the method detection limit in March 2000

- a gradual trend to increasing chloride levels has been observed at monitor 96-20 since May 1997. The 1999 concentration was at about 25 mg/L (compared to the ODWO of 250 mg/L) compared to about 13 mg/L in early 1997.

In general, ongoing land uses and the pumping operations at the Village of Winchester Well Site No. 7 do not appear to have adversely affected groundwater quality to date in the vicinity of the well site.

4.0 PROPOSED MONITORING PROGRAM FOR FOURTH YEAR OF OPERATION

A proposed monitoring program for the fourth year of operation is summarized in Table 4.

Three complete years of monitoring data have been collected since the start of operation in March 1997, including monthly groundwater level measurements and sampling in the late spring/early summer, late summer/early fall and late winter/early spring of each year. As discussed in Section 3, very similar trends in groundwater levels have been observed during each of the three years of operation and no evidence of adverse impacts on groundwater quality has been observed since the start of operation.

On-going groundwater level monitoring is recommended, particularly during the drier months of the year, in order to document any significant changes over time. A reduced frequency of water level monitoring sessions is considered appropriate based on the observed trends and the large quantity of data collected to date. As such, the recommended program for the fourth year of operation (Table 4) has reduced the number of groundwater level monitoring sessions from twelve to seven.

Similarly, on-going groundwater quality monitoring is recommended to document and provide warning of any adverse changes over time, particularly during the wettest time of the year (late winter/early spring) and the driest time of the year (late summer/early fall). It is considered appropriate, however, to eliminate the late spring/early summer (June) groundwater quality monitoring session.

Should any changes be made to the operation of Well Site No. 7, it is recommended that the frequency of monitoring be adjusted appropriately in order to observe any effects caused as a result of such changes.

Prior to the September 2000 groundwater quality monitoring session, it is recommended that a groundwater monitor condition survey be conducted on all of the groundwater monitors included in the groundwater monitoring program for the fourth year of operation. The purpose of this condition survey would be to note any necessary repairs or supplies that are required for the continued use of the groundwater monitors. As discussed in Section 2.2 the dedicated sampling

device in monitor 96-21 was missing during the March 2000 sampling session. Damage to the dedicated sampling device in monitor 94-5 was also noted in March 2000 and the cap to groundwater monitor WESA-16 may be missing. Any required groundwater monitor maintenance should be performed before the September 2000 groundwater quality monitoring session.

5.0 LIMITATIONS AND USE OF REPORT

This report was prepared for the exclusive use of North Dundas Township. The report, which specifically includes all tables, figures and appendices, is based on data and information collected by Golder Associates and is based solely on the conditions of the property at the time of the work, supplemented by historical information and data obtained by Golder Associates as described in this report. Each of these reports must be read and understood collectively, and can only be relied upon in their totality.

Golder Associates has relied in good faith on all information provided and does not accept responsibility for any deficiency, misstatements, or inaccuracies contained in the reports as a result of omissions, misinterpretation, or fraudulent acts of the persons contacted or errors or omissions in the reviewed documentation.

The assessment of environmental conditions at this site has been made using the results of physical measurements and chemical analyses of liquids from a number of locations. The site conditions between sampling locations have been inferred based on conditions observed at the borehole locations. Subsurface conditions may vary from these sampled locations.

The services performed, as described in this report, were conducted in a manner consistent with that level of care and skill normally exercised by other members of the engineering and science professions currently practising under similar conditions, subject to the time limits and financial and physical constraints applicable to the services.

Any use which a third party makes of this report, or any reliance on, or decisions to be made based on it, are the responsibilities of such third parties. Golder Associates accepts no responsibility for damages, if any, suffered by any third party as a result of decisions made or actions based on this report.

The findings and conclusions of this report are valid only as of the date of this report. If new information is discovered in future work, including excavations, borings, or other studies, Golder Associates should be requested to re-evaluate the conclusions of this report, and to provide amendments as required. The groundwater monitors installed during the course of this investigation or previous investigations by Golder Associates have been left in place. These groundwater monitors are the property of the North Dundas Township and not Golder Associates.

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TABLE 1

**SUMMARY OF GROUNDWATER MONITORING PROGRAM
FOR ON-SITE AND OFF-SITE BOREHOLES
THIRD YEAR OF OPERATION**

1.0 WATER LEVEL MONITORING COMPONENT

1.1 Monitoring Sessions

April 1999
May 1999
June 1999
July 1999
August 1999
September 1999
October 1999
November 1999
December 1999
January 2000
February 2000
March 2000

1.2 Monitoring Locations

Groundwater Monitors 94-1, 94-3, 94-5, 94-6, 94-8A, 94-8B, 94-9A, 94-9B, 94-10, 94-11, 94-12
Monitor WESA-16
Monitors 96-19, 96-20, 96-21 and 96-22

2.0 WATER QUALITY MONITORING COMPONENT

2.1 Monitoring Sessions

June 1999
September 1999
March 2000

2.2 Monitoring Locations

Groundwater Monitors 94-5 and 94-11
Monitors 96-19, 96-20, 96-21 and 96-22

2.3 Field Measured Physical Parameters

Temperature
Conductivity
pH

2.4 Laboratory Measured Chemical Parameters

Chloride
Nitrate
Sodium
Potassium
Total Phosphorus
Benzene
Toluene
Ethylbenzene
Xylenes
Atrazine

NOTE: All laboratory analyses on groundwater samples are to be performed by a private analytical laboratory and the method detection limits (MDLs) for the specific analyses are to be commensurate with the standards established in the Ontario Drinking Water Objectives (MOEE, 1994).

TABLE 2

ELEVATION DATA

Monitor	Ground Surface Elevation (metres)	Groundwater Measurement Datum			
		Top of Casing Elevation (metres)	Stickup (metres)	Revised Top of Casing Elevaton 6/22/99 (metres)	Revised Stickup 6/22/99 (metres)
94-1	76.26	77.31	1.05		
94-2	76.19	77.18	0.99		
94-3	76.24	77.25	1.01		
94-4	77.52	78.60	1.08		
94-5	76.23	77.16	0.93		
94-6	82.79	83.55	0.76		
94-7	80.56	80.47	-0.09		
94-8A	74.65	74.63	-0.02	75.29	0.63
94-8B	74.65	74.64	-0.01	75.36	0.71
94-9A	73.08	73.08	0.00		
94-9B	73.08	73.08	0.00		
94-10	76.59	76.77	0.18		
94-11	82.62	82.52	-0.10		
94-12	79.58	79.51	-0.07		
WESA16	78.50	78.50	0.00		
96-19	76.51	77.69	1.18		
96-20	79.34	80.09	0.75		
96-21	81.61	82.56	0.95		
96-22	81.50	82.34	0.84		

Note: "-" indicates top of casing is below ground surface.

WATER LEVEL DATA

Monitor	4/9/99		5/17/99		6/15/99		6/22/99	
	Depth (BGS) (metres)	Elevation (metres)	Depth (BGS) (metres)	Elevation (metres)	Depth (BGS) (metres)	Elevation (metres)	Depth (BGS) (metres)	Elevation (metres)
94-1	1.33	74.93	1.49	74.77	1.45	74.81	nm	nm
94-2	destroyed	destroyed	destroyed	destroyed	destroyed	destroyed	nm	nm
94-3	1.13	75.11	1.25	74.99	1.29	74.95	nm	nm
94-4	n/a	n/a	n/a	n/a	n/a	n/a	nm	nm
94-5	1.00	75.23	1.17	75.06	1.21	75.02	nm	nm
94-6	7.05	75.74	7.25	75.54	7.32	75.47	nm	nm
94-7	0.00	80.56	0.00	80.56	0.00	80.56	nm	nm
94-8A	n/a	n/a	full to top	full to top	full to top	full to top	nm	nm
94-8B	0.27	74.38	0.44	74.21	0.44	74.21	nm	nm
94-9A	n/a	n/a	n/a	n/a	n/a	n/a	0.71	72.37
94-9B	n/a	n/a	n/a	n/a	n/a	n/a	0.98	72.10
94-10	n/a	n/a	0.45	76.14	0.57	76.02	nm	nm
94-11	6.81	75.81	7.03	75.59	7.14	75.48	nm	nm
94-12	7.31	72.27	7.18	72.40	7.27	72.31	nm	nm
WESA16	n/a	n/a	n/a	n/a	n/a	n/a	3.54	74.96
96-19	0.08	76.43	0.35	76.16	0.37	76.14	nm	nm
96-20	4.31	75.03	4.52	74.82	4.54	74.80	nm	nm
96-21	6.59	75.02	6.86	74.75	6.90	74.71	nm	nm
96-22	6.66	74.84	6.63	74.87	6.76	74.74	nm	nm

Notes:
All elevations are relative to Geodetic datum
BGS = "Below Ground Surface"
NC = Monitor not yet been constructed
n/a = *Monitor* was either inaccessible at time of monitoring, or could not be located.
nm = not measured
Negative depth values indicate that groundwater level was *above* ground surface

WATER LEVEL DATA

Monitor	7/15/99		7/27/99		8/11/99		8/27/99	
	Depth (BGS) (metres)	Elevation (metres)	Depth (BGS) (metres)	Elevation (metres)	Depth (BGS) (metres)	Elevation (metres)	Depth (BGS) (metres)	Elevation (metres)
94-1	1.54	74.72	1.74	74.52	1.80	74.46	nm	nm
94-2	destroyed	destroyed	destroyed	destroyed	destroyed	destroyed	nm	nm
94-3	1.43	74.81	1.48	74.76	1.60	74.64	nm	nm
94-4	n/a	n/a	damaged	damaged	damaged	damaged	nm	nm
94-5	1.39	74.84	1.42	74.81	1.54	74.69	nm	nm
94-6	7.52	75.27	nm	nm	7.68	75.11	nm	nm
94-7	destroyed	destroyed	destroyed	destroyed	destroyed	destroyed	nm	nm
94-8A	0.35	74.31	nm	nm	0.51	74.15	nm	nm
94-8B	0.53	74.12	nm	nm	0.70	73.95	nm	nm
94-9A	0.85	72.23	nm	nm	nm	nm	1.40	71.68
94-9B	1.03	72.05	nm	nm	nm	nm	1.51	71.57
94-10	0.86	75.73	nm	nm	1.27	75.32	nm	nm
94-11	7.31	75.31	nm	nm	7.48	75.14	nm	nm
94-12	7.36	72.22	7.40	72.18	7.47	72.11	nm	nm
WESA16	n/a	n/a	3.70	74.80	3.48	75.02	nm	nm
96-19	0.55	75.96	nm	nm	0.78	75.73	nm	nm
96-20	4.70	74.64	4.75	74.59	4.87	74.47	nm	nm
96-21	6.97	74.64	7.05	74.56	7.18	74.43	nm	nm
96-22	6.94	74.56	6.99	74.51	7.09	74.41	nm	nm

Notes:
All elevations are relative to Geodetic datum
BGS = "Below Ground Surface"
NC = Monitor not yet been constructed
n/a = Monitor was either inaccessible at time of monitoring, or could not be located.
nm = not measured
Negative depth values indicate that groundwater level was *above* ground surface

TABLE 3 (Continued)

WATER LEVEL DATA

Monitor	9/21/99		10/15/99		11/16/99		12/14/99	
	Depth (BGS) (metres)	Elevation (metres)	Depth (BGS) (metres)	Elevation (metres)	Depth (BGS) (metres)	Elevation (metres)	Depth (BGS) (metres)	Elevation (metres)
94-1	1.91	74.35	1.88	74.38	1.88	74.38	1.70	74.56
94-2	destroyed	destroyed	destroyed	destroyed	destroyed	destroyed	destroyed	destroyed
94-3	1.72	74.52	1.77	74.47	1.69	74.55	1.54	74.70
94-4	damaged	damaged	damaged	damaged	damaged	damaged	damaged	damaged
94-5	1.67	74.56	1.68	74.55	1.65	74.58	1.47	74.76
94-6	7.82	74.97	7.82	74.97	7.76	75.03	7.54	75.25
94-7	destroyed	destroyed	destroyed	destroyed	destroyed	destroyed	destroyed	destroyed
94-8A	0.64	74.02	0.49	74.17	0.47	74.19	0.27	74.39
94-8B	0.69	73.96	0.56	74.09	0.64	74.01	0.69	73.96
94-9A	1.61	71.47	1.02	72.06	0.83	72.25	0.50	72.58
94-9B	1.12	71.96	0.74	72.34	0.88	72.20	0.69	72.39
94-10	1.16	75.43	0.76	75.83	0.85	75.74	0.37	76.22
94-11	7.68	74.94	7.62	75.00	7.54	75.08	7.40	75.22
94-12	7.56	72.02	7.71	71.87	7.77	71.81	7.73	71.85
WESA16	4.06	74.44	3.80	74.70	3.61	74.89	3.25	75.25
96-19	1.02	75.49	0.67	75.84	0.77	75.74	0.75	75.76
96-20	5.00	74.34	5.00	74.34	4.94	74.40	4.70	74.64
96-21	7.32	74.29	7.30	74.31	7.25	74.36	7.03	74.58
96-22	7.26	74.24	7.28	74.22	7.26	74.24	7.13	74.37

Notes:
All elevations are relative to Geodetic datum
BGS = "Below Ground Surface"
NC = Monitor not yet been constructed
n/a = Monitor was either inaccessible at time of monitoring, or could not be located.
nm = not measured
Negative depth values indicate that groundwater level was *above* ground surface

WATER LEVEL DATA

Monitor	1/24/00		2/17/00		3/2/00	
	Depth (BGS) (metres)	Elevation (metres)	Depth (BGS) (metres)	Elevation (metres)	Depth (BGS) (metres)	Elevation (metres)
94-1	1.59	74.67	1.73	74.53	0.68	75.58
94-2	destroyed	destroyed	destroyed	destroyed	destroyed	destroyed
94-3	1.39	74.85	1.30	74.94	1.30	74.94
94-4	damaged	damaged	damaged	damaged	damaged	damaged
94-5	1.32	74.91	1.13	75.10	1.21	75.02
94-6	7.44	75.35	7.29	75.50	7.35	75.44
94-7	destroyed	destroyed	destroyed	destroyed	destroyed	destroyed
94-8A	frozen	frozen	frozen	frozen	frozen	frozen
94-8B	0.69	73.96	0.85	73.80	frozen	frozen
94-9A	0.42	72.66	0.86	72.22	frozen	frozen
94-9B	0.67	72.41	1.14	71.94	0.69	72.39
94-10	0.52	76.07	n/a	n/a	0.38	76.21
94-11	7.20	75.42	n/a	n/a	n/a	n/a
94-12	frozen	frozen	n/a	n/a	flowing	flowing
WESA16	3.30	75.20	n/a	n/a	flowing	flowing
96-19	0.66	75.85	n/a	n/a	0.40	76.11
96-20	4.64	74.70	4.71	74.63	4.52	74.82
96-21	6.82	74.79	6.54	75.07	6.85	74.76
96-22	7.06	74.44	6.48	75.02	6.86	74.64

Notes:
All elevations are relative to Geodetic datum
BGS = "Below Ground Surface"
NC = Monitor not yet been constructed
n/a = Monitor was either inaccessible at time of monitoring, or could not be located.
nm = not measured
Negative depth values indicate that groundwater level was *above* ground surface

TABLE 4

PROPOSED GROUNDWATER MONITORING PROGRAM FOR ON-SITE AND OFF-SITE BOREHOLES FOURTH YEAR OF OPERATION

1.0 WATER LEVEL MONITORING COMPONENT

1.1 Monitoring Sessions

April 2000	November 2000
June 2000	January 2001
August 2000	March 2001
September 2000	

1.2 Monitoring Locations

Groundwater Monitors 94-1, 94-3, 94-5, 94-6, 94-8A, 94-8B, 94-9A, 94-9B, 94-10, 94-11, 94-12
Monitor WESA-16
Monitors 96-19, 96-20, 96-21 and 96-22

2.0 WATER QUALITY MONITORING COMPONENT

2.1 Monitoring Sessions

September 2000	March 2001

2.2 Monitoring Locations

Groundwater Monitors 94-5 and 94-11
Monitors 96-19, 96-20, 96-21 and 96-22

2.3 Field Measured Physical Parameters

Temperature
Conductivity
pH

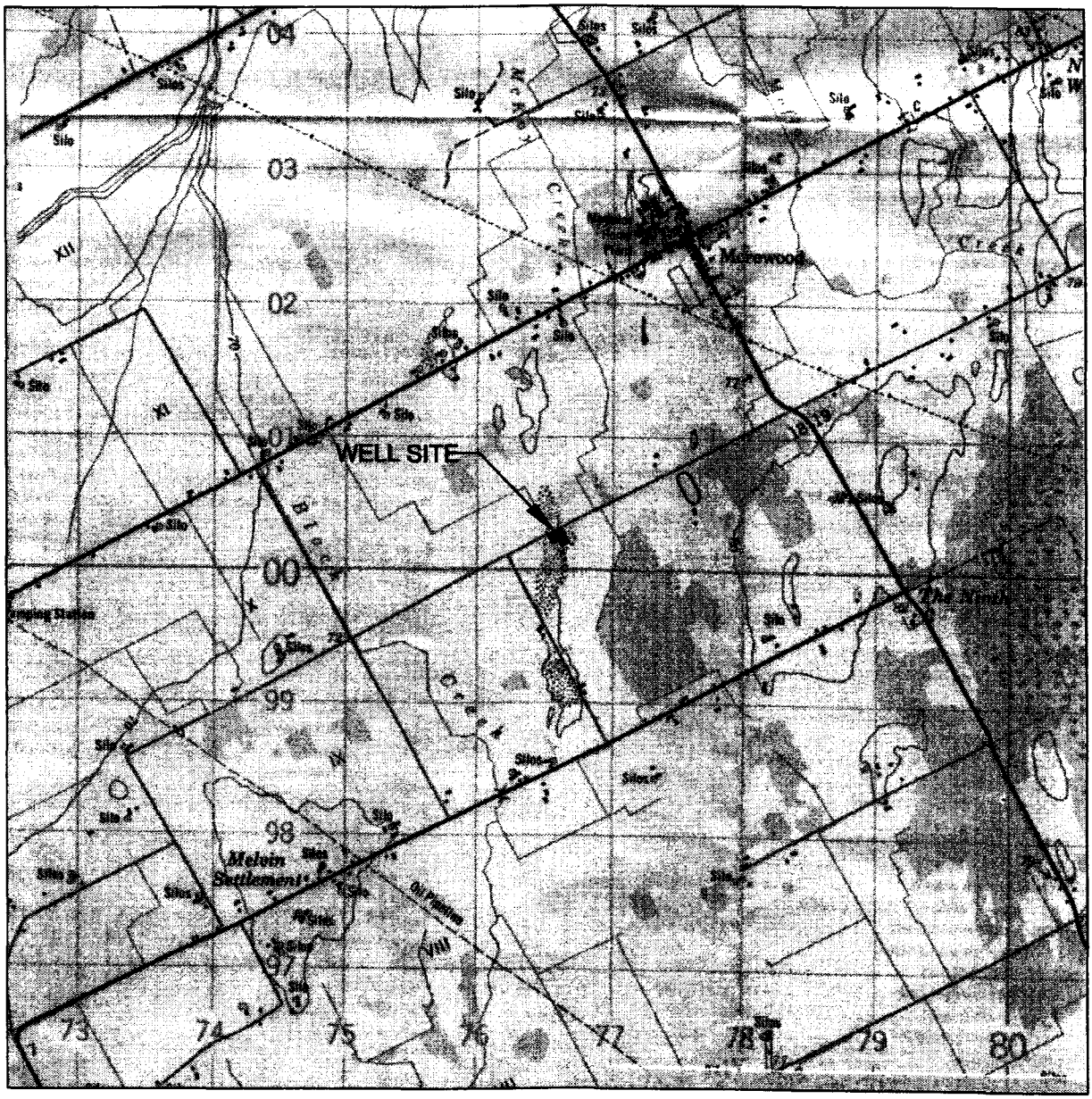
2.4 Laboratory Measured Chemical Parameters

Chloride	Benzene
Nitrate	Toluene
Sodium	Ethylbenzene
Potassium	Xylenes
Total Phosphorus	Atrazine

NOTE: All laboratory analyses on groundwater samples are to be performed by a private analytical laboratory and the method detection limits (MDLs) for the specific analyses are to be commensurate with the standards established in the Ontario Drinking Water Objectives (MOEE 1994).

KEY PLAN

FIGURE 1



N

SCALE 1 : 50,000

SPECIAL NOTE
THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ACCOMPANYING REPORT

Date: May 12, 2000

Project: 991-2857

Golder Associates

Drawn: W.M.

Chkd: A.B.

FIGURE 3

Groundwater Elevations in Vicinity of the Village of Winchester Well Site

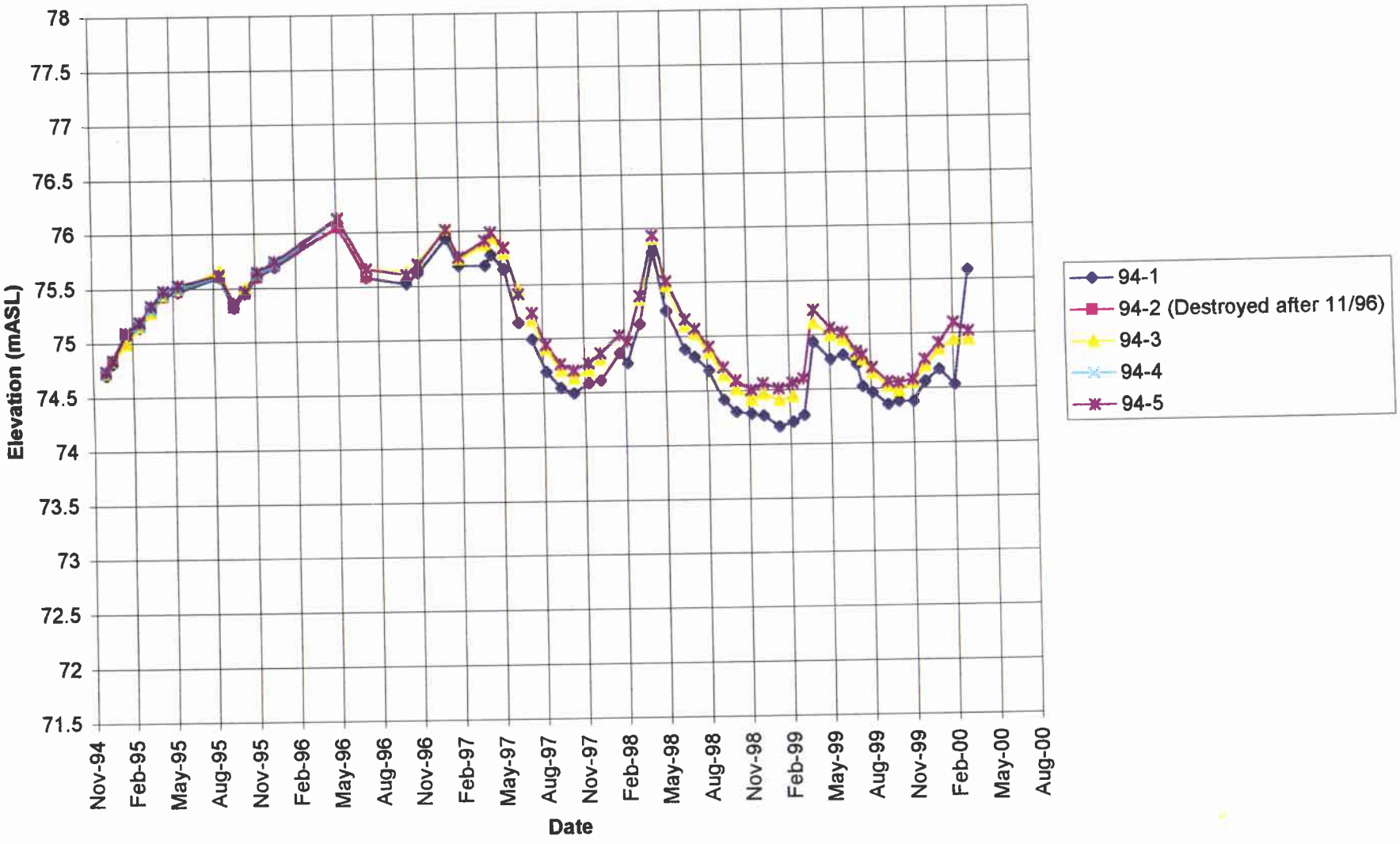


FIGURE 4

Groundwater Elevations in Morewood Esker

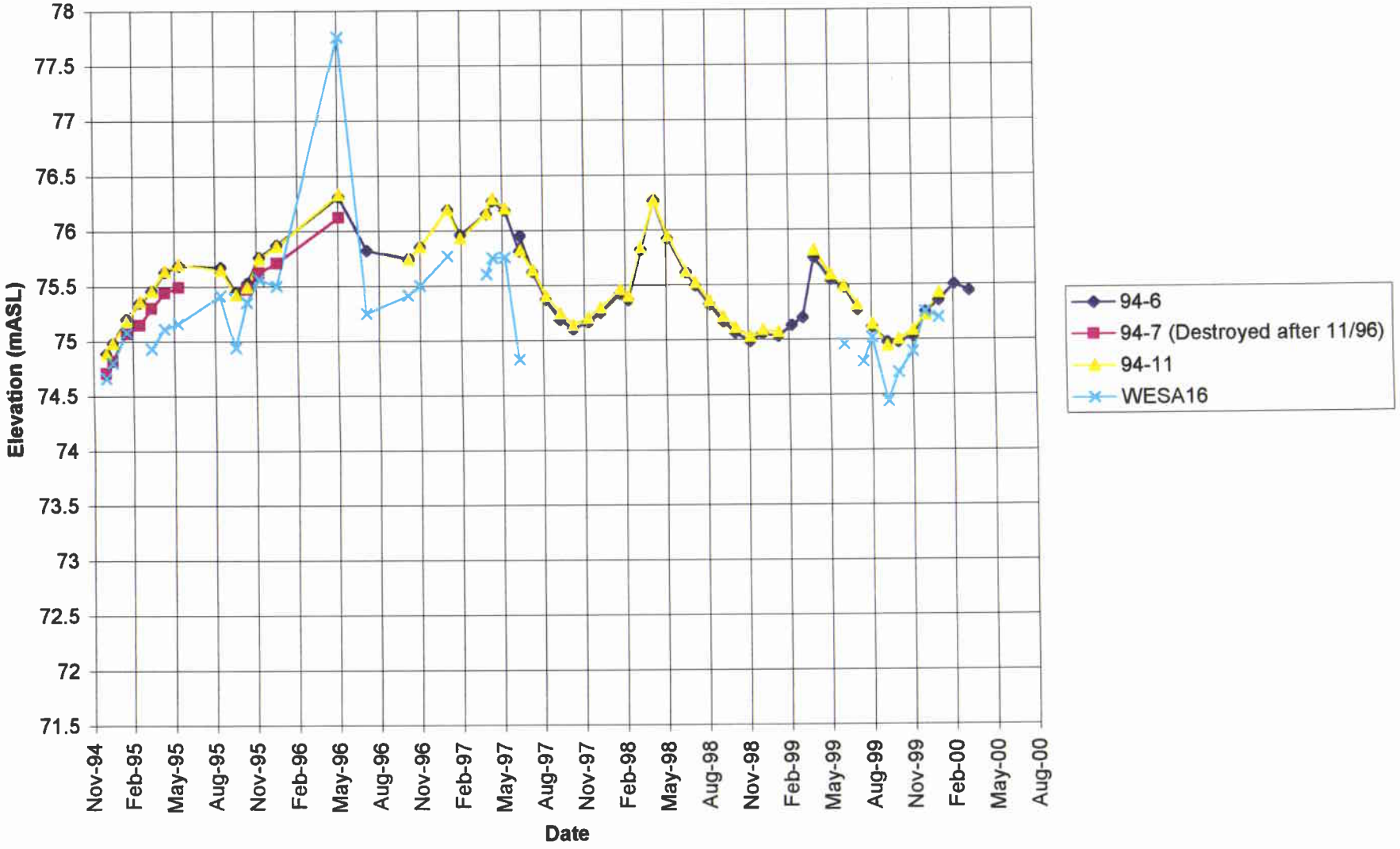


FIGURE 5

Groundwater Elevations in Various Geological Formations

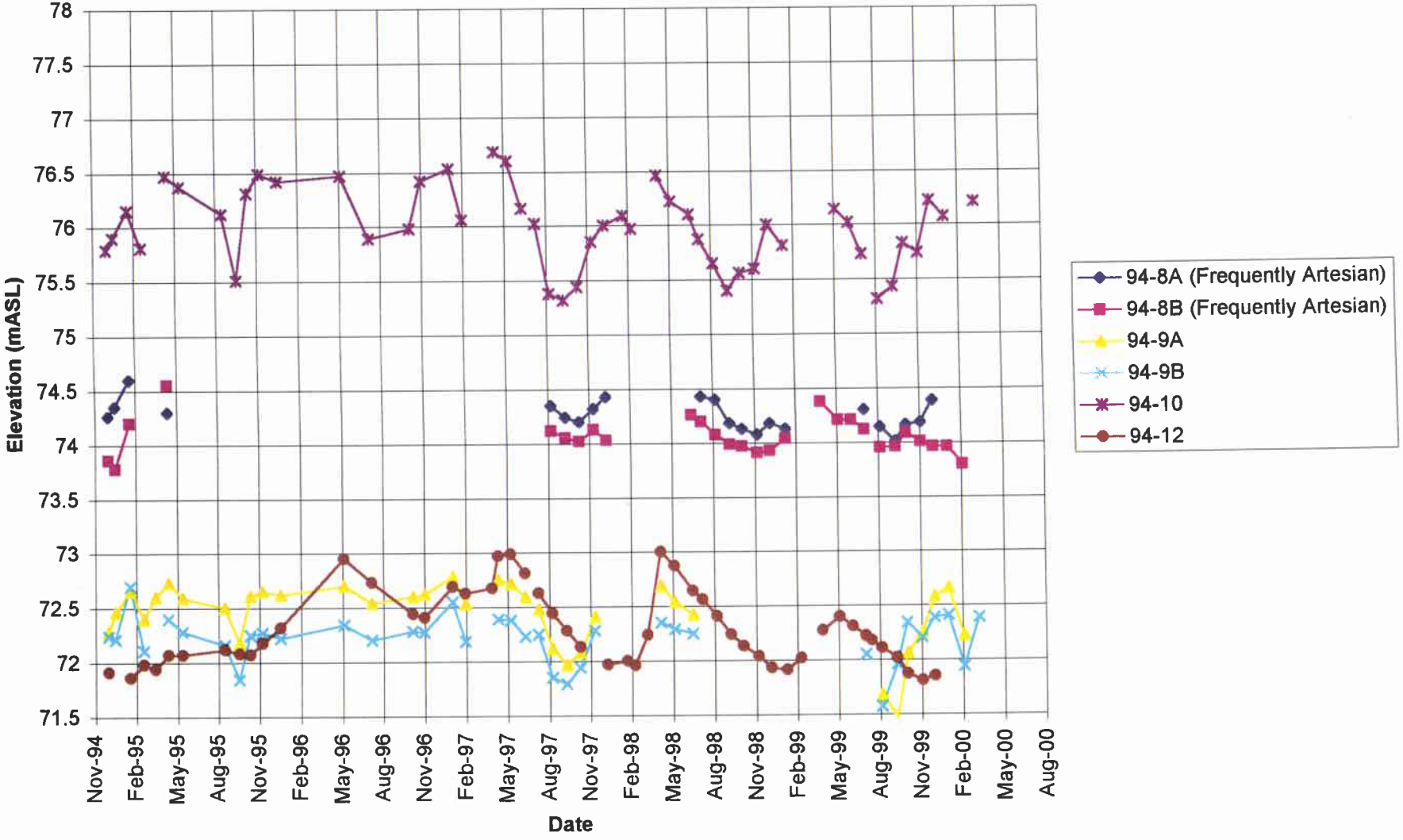
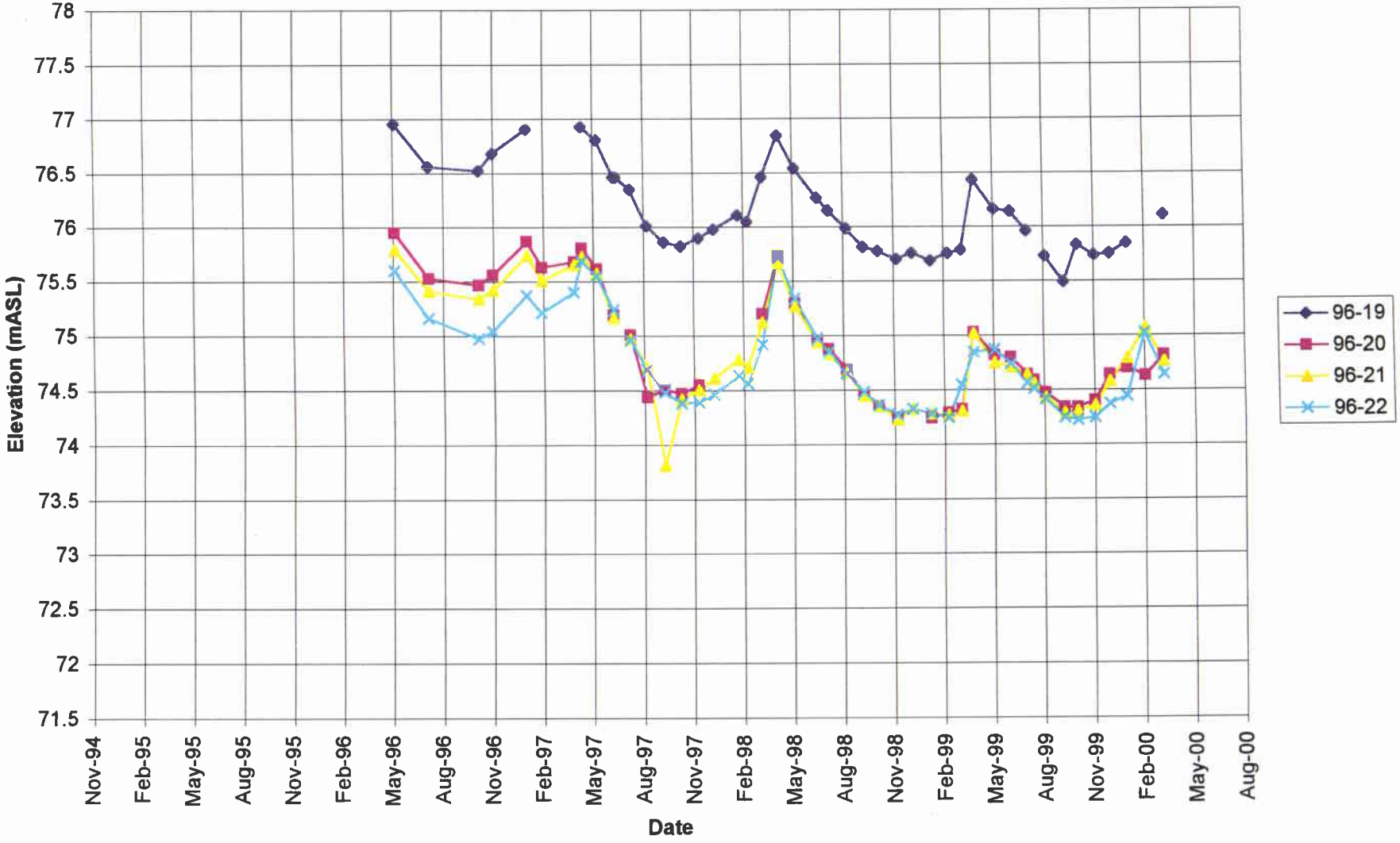


FIGURE 6

Groundwater Elevations in 96-Series Monitoring Wells



APPENDIX A

REPORT OF MONITORING RESULTS

LIST OF ABBREVIATIONS

The abbreviations commonly employed on the "Chemical and Physical Analyses Data Sheets", on the figures, in the tables and in the text of the report as related to the water quality monitoring programs are as follows:

ODWO	Ontario Drinking Water Objective (Ministry of the Environment and Energy, 1994)
<	parameter not detected in concentration at or higher than the analytical laboratory's method detection limit (MDL). Specific MDL concentrations are indicated following "<" sign.
N	nitrogen
P	phosphorus
$CaCO_3$	calcium carbonate
C	degrees Celsius
microS/cm	microsiemens per centimetre
NTU	Nephelometric Turbidity Unit
TCU	True Colour Unit
mL	millilitre
mg/L	milligrams per litre
ppm	parts per million
COND.	conductivity
DIS. OXYGEN	dissolved oxygen
TKN	total kjeldahl nitrogen
BOD	biochemical oxygen demand
COD	chemical oxygen demand
DOC	dissolved organic carbon
EC	*Escherichia coli*
TOC	total organic carbon
TS	total solids
TSS	total suspended solids
TDS	total dissolved solids
TC	total coliform
FC	faecal coliform
FS	faecal streptococcus
BKGD	background

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WINCHESTER WATER PROJECT - REPORT OF MONITORING RESULTS **Project: 991-2857**

Sample Source: **94-5** Sheet: 1-4

Date Sampled:		18-Oct-1994	26-Oct-1994	03-Nov-1994	15-May-1995	19-Sep-1995
Parameter	ODWO					
Atrazine	0.005					
Chloride	250				12.0	11.0
Conductivity (uS/cm)					350	405
Nitrate (as N)	10	<0.10	<0.10	<0.10	<0.10	<0.10
pH (pH units)	6.5-8.5				7.1	8.4
Phosphorus (total)						0.06
Potassium						2.0
Sodium	200				7.0	6.0
Temperature (C)	15				8.5	12.0
Benzene	0.005				<0.0005	<0.0005
Ethylbenzene	0.0024				<0.0005	<0.0005
Toluene	0.024				<0.0005	<0.0005
Xylenes	0.3				<0.0010	<0.0010

All values (VOC's included) reported in mg/L unless otherwise noted.

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WINCHESTER WATER PROJECT - REPORT OF MONITORING RESULTS **Project: 991-2857**

Sample Source: **94-5** Sheet: 2-4

Date Sampled:		09-May-1996	10-Oct-1996	18-Apr-1997	16-May-1997	16-Sep-1997
Parameter	ODWO					
Atrazine	0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Chloride	250	9.0	9.0	9.0	10.0	8.0
Conductivity (uS/cm)		360	445	330	300	290
Nitrate (as N)	10	<0.10	<0.10	<0.10	<0.10	<0.10
pH (pH units)	6.5-8.5	7.9	7.7	6.3	7.2	7.0
Phosphorus (total)		4.54	0.02	<0.01	0.84	0.21
Potassium		2.0	2.0	2.0	2.0	2.0
Sodium	200	7.0	13.0	8.0	9.0	7.0
Temperature (C)	15	8.5	8.0	6.5	7.0	9.0
Benzene	0.005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Ethylbenzene	0.0024	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Toluene	0.024	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Xylenes	0.3	<0.0010	<0.0010	<0.0015	<0.0015	<0.0015

All values (VOC's included) reported in mg/L unless otherwise noted.

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WINCHESTER WATER PROJECT - REPORT OF MONITORING RESULTS **Project: 991-2857**

Sample Source: **94-5** Sheet: 3-4

Date Sampled:		16-Mar-1998	25-Jun-1998	17-Sep-1998	16-Mar-1999	22-Jun-1999
Parameter	ODWO					
Atrazine	0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Chloride	250	10.0	11.0	9.0	9.0	7.0
Conductivity (uS/cm)		360	420	420	400	470
Nitrate (as N)	10	<0.10	<0.10	<0.10	0.37	<0.10
pH (pH units)	6.5-8.5	7.0	6.1	7.4	7.8	7.6
Phosphorus (total)		0.05	<0.01	<0.01	0.24	0.67
Potassium		2.0	2.0	2.0	2.0	2.0
Sodium	200	7.0	7.0	6.0	7.0	6.0
Temperature (C)	15	2.0	11.0	12.0	10.0	11.0
Benzene	0.005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Ethylbenzene	0.0024	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Toluene	0.024	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Xylenes	0.3	<0.0015	<0.0015	<0.0015	<0.0015	<0.0015

All values (VOC's included) reported in mg/L unless otherwise noted.

Golder Associates

WINCHESTER WATER PROJECT - REPORT OF MONITORING RESULTS **Project: 991-2857**

Sample Source: **94-5** Sheet: 4-4

Date Sampled:		21-Sep-1999	22-Mar-2000
Parameter	ODWO		
Atrazine	0.005	<0.005	<0.005
Chloride	250	8.0	7.0
Conductivity (uS/cm)		506	400
Nitrate (as N)	10	<0.10	<0.10
pH (pH units)	6.5-8.5	7.5	7.4
Phosphorus (total)		1.13	0.03
Potassium		2.0	2.0
Sodium	200	7.0	6.0
Temperature (C)	15	9.0	8.0
Benzene	0.005	<0.0005	<0.0005
Ethylbenzene	0.0024	<0.0005	<0.0005
Toluene	0.024	<0.0005	<0.0005
Xylenes	0.3	<0.0015	<0.0015

All values (VOC's included) reported in mg/L unless otherwise noted.

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WINCHESTER WATER PROJECT - REPORT OF MONITORING RESULTS **Project: 991-2857**

Sample Source: **94-11** Sheet: 1-3

Date Sampled:		09-May-1996	10-Oct-1996	18-Apr-1997	16-May-1997	16-Sep-1997
Parameter	ODWO					
Atrazine	0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Chloride	250	7.0	5.0	9.0	4.0	3.0
Conductivity (uS/cm)		360	447	330	320	260
Nitrate (as N)	10	<0.10	<0.10	<0.10	<0.10	0.29
pH (pH units)	6.5-8.5	8.0	7.6	7.7	7.0	7.1
Phosphorus (total)		8.59	0.02	2.28	1.08	0.56
Potassium		2.0	2.0	2.0	2.0	2.0
Sodium	200	3.0	8.0	4.0	4.0	4.0
Temperature (C)	15	9.4	7.0	6.0	7.0	10.0
Benzene	0.005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Ethylbenzene	0.0024	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Toluene	0.024	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Xylenes	0.3	<0.0010	<0.0010	<0.0015	<0.0015	<0.0015

All values (VOC's included) reported in mg/L unless otherwise noted.

Golder Associates

WINCHESTER WATER PROJECT - REPORT OF MONITORING RESULTS **Project: 991-2857**

Sample Source: **94-11** Sheet: 2-3

Date Sampled:		16-Mar-1998	25-Jun-1998	17-Sep-1998	16-Mar-1999	22-Jun-1999
Parameter	ODWO					
Atrazine	0.005	<0.005	<0.005	<0.005		<0.005
Chloride	250	7.0	7.0	5.0	Under Ice	5.0
Conductivity (uS/cm)		340	420	410		520
Nitrate (as N)	10	0.44	0.11	0.20		<0.10
pH (pH units)	6.5-8.5	7.1	6.3	7.3		7.4
Phosphorus (total)		0.02	<0.01	0.01		1.67
Potassium		3.0	<1.0	2.0		2.0
Sodium	200	4.0	4.0	3.0		5.0
Temperature (C)	15	1.0	12.0	11.0		11.0
Benzene	0.005	<0.0005	<0.0005	<0.0005		<0.0005
Ethylbenzene	0.0024	<0.0005	<0.0005	<0.0005		<0.0005
Toluene	0.024	<0.0005	<0.0005	<0.0005		<0.0005
Xylenes	0.3	<0.0015	<0.0015	<0.0015		<0.0015

All values (VOC's included) reported in mg/L unless otherwise noted.

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WINCHESTER WATER PROJECT - REPORT OF MONITORING RESULTS **Project: 991-2857**

Sample Source: **94-11** Sheet: 3-3

Date Sampled:		21-Sep-1999	22-Mar-2000
Parameter	ODWO		
Atrazine	0.005	<0.005	<0.005
Chloride	250	7.0	8.0
Conductivity (uS/cm)		551	500
Nitrate (as N)	10	0.17	0.18
pH (pH units)	6.5-8.5	7.3	7.5
Phosphorus (total)		4.45	0.11
Potassium		2.0	2.0
Sodium	200	6.0	6.0
Temperature (C)	15	8.2	8.0
Benzene	0.005	<0.0005	<0.0005
Ethylbenzene	0.0024	<0.0005	<0.0005
Toluene	0.024	<0.0005	<0.0005
Xylenes	0.3	<0.0015	<0.0015

All values (VOC's included) reported in mg/L unless otherwise noted.

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WINCHESTER WATER PROJECT - REPORT OF MONITORING RESULTS **Project: 991-2857**

Sample Source: **96-19** Sheet: 1-3

Date Sampled:		09-May-1996	10-Oct-1996	18-Apr-1997	16-May-1997	16-Sep-1997
Parameter	ODWO					
Atrazine	0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Chloride	250	8.0	8.0	7.0	7.0	6.0
Conductivity (uS/cm)		370	437	300	300	260
Nitrate (as N)	10	<0.10	<0.10	<0.10	<0.10	<0.10
pH (pH units)	6.5-8.5	7.8	7.7	6.9	7.7	7.2
Phosphorus (total)		1.47	0.02	0.19	2.42	0.23
Potassium		1.0	1.0	1.0	1.0	1.0
Sodium	200	3.0	8.0	3.0	3.0	3.0
Temperature (C)	15	8.3	9.0	6.0	7.0	9.0
Benzene	0.005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Ethylbenzene	0.0024	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Toluene	0.024	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Xylenes	0.3	<0.0010	<0.0010	<0.0015	<0.0015	<0.0015

All values (VOC's included) reported in mg/L unless otherwise noted.

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WINCHESTER WATER PROJECT - REPORT OF MONITORING RESULTS **Project: 991-2857**

Sample Source: **96-19** Sheet: 2-3

Date Sampled:		16-Mar-1998	25-Jun-1998	17-Sep-1998	16-Mar-1999	22-Jun-1999
Parameter	ODWO					
Atrazine	0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Chloride	250	7.0	8.0	8.0	11.0	11.0
Conductivity (uS/cm)		300	400	340	380	440
Nitrate (as N)	10	<0.10	<0.10	<0.10	3.16	<0.10
pH (pH units)	6.5-8.5	6.6	6.1	7.1	7.4	7.5
Phosphorus (total)		0.01	<0.01	<0.01	0.61	0.83
Potassium		2.0	2.0	<1.0	1.0	1.0
Sodium	200	3.0	3.0	2.0	10.0	3.0
Temperature (C)	15	2.0	11.0	12.0	8.0	12.0
Benzene	0.005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Ethylbenzene	0.0024	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Toluene	0.024	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Xylenes	0.3	<0.0015	<0.0015	<0.0015	<0.0015	<0.0015

All values (VOC's included) reported in mg/L unless otherwise noted.

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WINCHESTER WATER PROJECT - REPORT OF MONITORING RESULTS **Project: 991-2857**

Sample Source: **96-19** Sheet: 3-3

Date Sampled:		21-Sep-1999	22-Mar-2000
Parameter	ODWQ		
Atrazine	0.005	<0.005	<0.005
Chloride	250	10.0	10.0
Conductivity (uS/cm)		441	470
Nitrate (as N)	10	<0.10	<0.10
pH (pH units)	6.5-8.5	7.4	7.4
Phosphorus (total)		0.52	0.18
Potassium		1.0	1.0
Sodium	200	4.0	4.0
Temperature (C)	15	8.8	7.0
Benzene	0.005	<0.0005	<0.0005
Ethylbenzene	0.0024	<0.0005	<0.0005
Toluene	0.024	<0.0005	<0.0005
Xylenes	0.3	<0.0015	<0.0015

All values (VOC's included) reported in mg/L unless otherwise noted.

Golder Associates

WINCHESTER WATER PROJECT - REPORT OF MONITORING RESULTS **Project: 991-2857**

Sample Source: **96-20** Sheet: 1-3

Date Sampled:		10-May-1996	10-Oct-1996	18-Apr-1997	16-May-1997	16-Sep-1997
Parameter	ODWO					
Atrazine	0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Chloride	250	13.0	13.0	11.0	20.0	18.0
Conductivity (uS/cm)		410	465	380	380	310
Nitrate (as N)	10	1.65	0.41	2.38	3.11	2.54
pH (pH units)	6.5-8.5	7.9	7.7	6.6	6.9	7.0
Phosphorus (total)		0.86	0.01	1.45	2.00	0.35
Potassium		2.0	2.0	2.0	2.0	2.0
Sodium	200	2.0	6.0	1.0	2.0	2.0
Temperature (C)	15	8.3	6.5	6.0	7.0	9.0
Benzene	0.005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Ethylbenzene	0.0024	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Toluene	0.024	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Xylenes	0.3	<0.0010	<0.0010	<0.0015	<0.0015	<0.0015

All values (VOC's included) reported in mg/L unless otherwise noted.

Golder Associates

WINCHESTER WATER PROJECT - REPORT OF MONITORING RESULTS **Project: 991-2857**

Sample Source: **96-20** Sheet: 2-3

Date Sampled:		16-Mar-1998	25-Jun-1998	17-Sep-1998	16-Mar-1999	22-Jun-1999
Parameter	ODWO					
Atrazine	0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Chloride	250	18.0	25.0	21.0	26.0	22.0
Conductivity (uS/cm)		380	600	440	490	610
Nitrate (as N)	10	0.73	0.93	2.99	0.92	0.10
pH (pH units)	6.5-8.5	6.9	6.3	7.4	7.4	7.5
Phosphorus (total)		<0.01	<0.01	<0.01	1.49	0.71
Potassium		2.0	2.0	6.0	2.0	1.0
Sodium	200	2.0	3.0	2.0	4.0	5.0
Temperature (C)	15	2.0	10.0	12.0	9.0	10.0
Benzene	0.005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Ethylbenzene	0.0024	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Toluene	0.024	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Xylenes	0.3	<0.0015	<0.0015	<0.0015	<0.0015	<0.0015

All values (VOC's included) reported in mg/L unless otherwise noted.

Golder Associates

WINCHESTER WATER PROJECT - REPORT OF MONITORING RESULTS **Project: 991-2857**

Sample Source: **96-20**

Date Sampled:		21-Sep-1999	22-Mar-2000
Parameter	ODWO		
Atrazine	0.005	<0.005	<0.005
Chloride	250	25.0	27.0
Conductivity (uS/cm)		665	580
Nitrate (as N)	10	0.67	0.70
pH (pH units)	6.5-8.5	7.4	7.3
Phosphorus (total)		0.42	0.18
Potassium		2.0	1.0
Sodium	200	4.0	4.0
Temperature (C)	15	9.1	8.0
Benzene	0.005	<0.0005	<0.0005
Ethylbenzene	0.0024	<0.0005	<0.0005
Toluene	0.024	<0.0005	<0.0005
Xylenes	0.3	<0.0015	<0.0015

All values (VOC's included) reported in mg/L unless otherwise noted.

Golder Associates

WINCHESTER WATER PROJECT - REPORT OF MONITORING RESULTS **Project: 991-2857**

Sample Source: **96-21** Sheet: 1-3

Date Sampled:		10-May-1996	10-Oct-1996	18-Apr-1997	16-May-1997	16-Sep-1997
Parameter	ODWO					
Atrazine	0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Chloride	250	10.0	10.0	9.0	9.0	9.0
Conductivity (uS/cm)		440	667	500	400	380
Nitrate (as N)	10	0.31	1.23	1.22	1.27	1.07
pH (pH units)	6.5-8.5	7.9	7.8	6.2	7.2	7.1
Phosphorus (total)		5.34	0.01	1.00	0.53	0.56
Potassium		4.0	4.0	4.0	4.0	4.0
Sodium	200	7.0	10.0	6.0	6.0	7.0
Temperature (C)	15	9.7	7.0	6.0	7.0	10.0
Benzene	0.005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Ethylbenzene	0.0024	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Toluene	0.024	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Xylenes	0.3	<0.0010	<0.0010	<0.0015	<0.0015	<0.0015

All values (VOC's included) reported in mg/L unless otherwise noted.

Golder Associates

WINCHESTER WATER PROJECT - REPORT OF MONITORING RESULTS **Project: 991-2857**

Sample Source: **96-21** Sheet: 2-3

Date Sampled:		16-Mar-1998	25-Jun-1998	17-Sep-1998	16-Mar-1999	22-Jun-1999
Parameter	ODWO					
Atrazine	0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Chloride	250	9.0	10.0	9.0	9.0	7.0
Conductivity (uS/cm)		450	640	520	500	540
Nitrate (as N)	10	1.20	1.30	1.20	0.80	0.81
pH (pH units)	6.5-8.5	7.0	6.3	7.1	7.6	7.4
Phosphorus (total)		<0.01	0.03	<0.01	1.57	1.27
Potassium		5.0	5.0	4.0	4.0	4.0
Sodium	200	6.0	6.0	6.0	7.0	7.0
Temperature (C)	15	1.0	10.0	12.0	9.0	10.0
Benzene	0.005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Ethylbenzene	0.0024	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Toluene	0.024	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Xylenes	0.3	<0.0015	<0.0015	<0.0015	<0.0015	<0.0015

All values (VOC's included) reported in mg/L unless otherwise noted.

Golder Associates

WINCHESTER WATER PROJECT - REPORT OF MONITORING RESULTS **Project: 991-2857**

Sample Source: **96-21**

Date Sampled:		21-Sep-1999	22-Mar-2000
Parameter	ODWO		
Atrazine	0.005	<0.005	
Chloride	250	8.0	NA
Conductivity (uS/cm)		615	
Nitrate (as N)	10	0.94	
pH (pH units)	6.5-8.5	7.4	
Phosphorus (total)		0.34	
Potassium		4.0	
Sodium	200	7.0	
Temperature (C)	15	8.9	
Benzene	0.005	<0.0005	
Ethylbenzene	0.0024	<0.0005	
Toluene	0.024	<0.0005	
Xylenes	0.3	<0.0015	

All values (VOC's included) reported in mg/L unless otherwise noted.

Golder Associates

WINCHESTER WATER PROJECT - REPORT OF MONITORING RESULTS **Project: 991-2857**

Sample Source: **96-22** Sheet: 1-3

Date Sampled:		10-May-1996	10-Oct-1996	18-Apr-1997	16-May-1997	16-Sep-1997
Parameter	ODWO					
Atrazine	0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Chloride	250	6.0	5.0	3.0	3.0	2.0
Conductivity (uS/cm)		440	496	360	350	330
Nitrate (as N)	10	0.42	1.16	0.39	0.11	0.15
pH (pH units)	*6.5-8.5*	7.9	7.7	6.8	7.0	6.3
Phosphorus (total)		1.66	0.02	<0.01	0.47	0.86
Potassium		2.0	1.0	2.0	1.0	2.0
Sodium	200	4.0	7.0	3.0	3.0	4.0
Temperature (C)	15	9.4	7.5	6.0	7.0	8.0
Benzene	0.005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Ethylbenzene	0.0024	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Toluene	0.024	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Xylenes	0.3	<0.0010	<0.0010	<0.0015	<0.0015	<0.0015

All values (VOC's included) reported in mg/L unless otherwise noted.

Golder Associates

WINCHESTER WATER PROJECT - REPORT OF MONITORING RESULTS **Project: 991-2857**

Sample Source: **96-22** Sheet: 2-3

Date Sampled:		16-Mar-1998	25-Jun-1998	17-Sep-1998	16-Mar-1999	22-Jun-1999
Parameter	ODWO					
Atrazine	0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Chloride	250	2.0	2.0	3.0	2.0	2.0
Conductivity (uS/cm)		410	580	420	460	540
Nitrate (as N)	10	0.20	<0.10	<0.10	<0.10	0.10
pH (pH units)	6.5-8.5	6.5	6.1	7.1	7.4	7.5
Phosphorus (total)		<0.01	<0.01	<0.01	0.27	0.45
Potassium		2.0	1.0	3.0	1.0	1.0
Sodium	200	3.0	4.0	3.0	4.0	4.0
Temperature (C)	15	2.0	10.0	10.0	8.5	10.0
Benzene	0.005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Ethylbenzene	0.0024	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Toluene	0.024	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Xylenes	0.3	<0.0015	<0.0015	<0.0015	<0.0015	<0.0015

All values (VOC's included) reported in mg/L unless otherwise noted.

Golder Associates

WINCHESTER WATER PROJECT - REPORT OF MONITORING RESULTS **Project: 991-2857**

Sample Source: **96-22**

Date Sampled:		21-Sep-1999	22-Mar-2000
Parameter	ODWO		
Atrazine	0.005	<0.005	<0.005
Chloride	250	1.0	2.0
Conductivity (uS/cm)		566	480
Nitrate (as N)	10	0.10	<0.10
pH (pH units)	6.5-8.5	7.4	7.2
Phosphorus (total)		0.83	0.30
Potassium		1.0	1.0
Sodium	200	4.0	4.0
Temperature (C)	15	8.7	8.0
Benzene	0.005	<0.0005	<0.0005
Ethylbenzene	0.0024	<0.0005	<0.0005
Toluene	0.024	<0.0005	<0.0005
Xylenes	0.3	<0.0015	<0.0015

All values (VOC's included) reported in mg/L unless otherwise noted.

APPENDIX B

REPORT OF ANALYSIS SHEETS

APPENDIX B

REPORT OF ANALYSIS SHEETS

ACCUTEST LABORATORIES LTD.
REPORT NO. 9905044, 9908108, 2002278

Report 9905044 Legend:

S1 = 94-11
S2 = 96-19
S3 = 94-5
S4 = 96-21
S5 = 96-22
S6 = 96-20

Report 9908108 Legend:

S1 = 94-11
S2 = 96-19
S3 = 94-5
S4 = 96-20
S5 = 96-21
S6 = 96-22

Report 2002278 Legend:

S1 = 96-22
S3 = 96-20
S4 = 94-5
S5 = 96-19
S6 = 94-11

ACCUTEST LABORATORIES LTD.

REPORT OF ANALYSIS

Client: Golder Associates

Attn: Mr. Andy Benson

Report Number: 9905044
Date: Jun 30,1999
Date Submitted: Jun 23,1999
Date Collected: Jun 22,1999
Project: 991-2857

Matrix: WATER

PARAMETER	UNITS	MDL	sample S1	sample S2	sample S3	sample S4	sample S5
Cl	mg/L	1	5	11	7	7	2
N-NO3	mg/L	0.10	ND	ND	ND	0.81	0.10
Na	mg/L	1	5	3	6	7	4
K	mg/L	1	2	1	2	4	1
Total P	mg/L	0.01	1.67	0.83	0.67	1.27	0.45

MDL=Method Detection Limit ND=Not Detected

Comment:

Approval: _____

146 Colonnade Road Unit 8, Nepean, Ontario, K2E 7Y1 Tel: 1-888-271-8378 (613)727-5692 Fax:(613)727-5222

ACCUTEST LABORATORIES LTD.

REPORT OF ANALYSIS

Client: Golder Associates

Attn: Mr. Andy Benson

Report Number: 9905044
Date: Jun 30,1999
Date Submitted: Jun 23,1999
Date Collected: Jun 22,1999
Project: 991-2857

Matrix: WATER

PARAMETER	UNITS	MDL	sample	sample	sample	sample	sample
			S6				
Cl	mg/L	1	22				
N-NO3	mg/L	0.10	0.10				
Na	mg/L	1	5				
K	mg/L	1	1				
Total P	mg/L	0.01	0.71				

MDL=Method Detection Limit ND=Not Detected

Comment:

Approval: _____

146 Colonnade Road Unit 8, Nepean, Ontario, K2E 7Y1 Tel: 1-888-271-8378 (613)727-5692 Fax:(613)727-5222

ACCUTEST LABORATORIES LTD.

REPORT OF ANALYSIS

Client: Golder Associates Ltd.
Att'n : Mr. Andy Benson

Report Number: 9905044
Date: Jun 30,1999
Date Submitted: Jun 23,1999
Date Collected: Jun 22,1999
Project: 991-2857
990187

Matrix: WATER

Petroleum Hydrocarbon Analysis

Purgeable Hydrocarbons analysed by Tekmar Purge and Trap with Varian Saturn II GC/MS
Extractable Hydrocarbons (Gasoline/Diesel Range Organics) analysed by cold solvent extraction Varian Star 3400 GC/FID
TPH Heavy Oils (oil & grease) analysed by gravimetric solid phase extraction (water) or solvent extraction (soil)
All soil results are reported on a "dry weight" basis, unless otherwise noted.

PARAMETER	UNITS	MDL	Sample 1	Sample 2	Sample 3	Sample 4	Sample 5
			S1	S2	S3	S4	S5
PURGEABLE HYDROCARBONS							
Benzene	µg/L	0.5	ND	ND	ND	ND	ND
Toluene	µg/L	0.5	ND	ND	ND	ND	ND
Ethylbenzene	µg/L	0.5	ND	ND	ND	ND	ND
m/p-Xylene	µg/L	1.0	ND	ND	ND	ND	ND
o-Xylene	µg/L	0.5	ND	ND	ND	ND	ND
Toluene d-8 (surrogate)	% Rec.		102	102	102	102	102
Atrazine	mg/L	0.005	ND	ND	ND	ND	ND

MDL=Method Detection Limit ND=Not Detected

Comment:

APPROVAL: _____

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ACCUTEST LABORATORIES LTD.

REPORT OF ANALYSIS

Client: Golder Associates Ltd.
Att'n : Mr. Andy Benson

Report Number: 9905044
Date: Jun 30,1999
Date Submitted: Jun 23,1999
Date Collected: Jun 22,1999
Project: 991-2857
990187

Matrix: WATER

Petroleum Hydrocarbon Analysis

Purgeable Hydrocarbons analysed by Tekmar Purge and Trap with Varian Saturn II GC/MS
Extractable Hydrocarbons (Gasoline/Diesel Range Organics) analysed by cold solvent extraction Varian Star 3400 GC/FID
TPH Heavy Oils (oil & grease) analysed by gravimetric solid phase extraction (water) or solvent extraction (soil)
All soil results are reported on a "dry weight" basis, unless otherwise noted.

PARAMETER	UNITS	MDL	Sample 6	Lab replicate			
			S6	S1			
PURGEABLE HYDROCARBONS							
Benzene	µg/L	0.5	ND	ND			
Toluene	µg/L	0.5	ND	ND			
Ethyl Benzene	µg/L	0.5	ND	ND			
m/p-Xylene	µg/L	1.0	ND	ND			
o-Xylene	µg/L	0.5	ND	ND			
Toluene d-8 (surrogate)	% Rec.		102	102			
Atrazine	mg/L	0.005	ND				

MDL=Method Detection Limit ND=Not Detected

Comment:

APPROVAL: 

146 Colonnade Road, Unit 8, Nepean, Ontario K2E 7Y1 Tel:(613)727-5692 Fax:(613)727-5222

ACCUTEST LABORATORIES LTD.

REPORT OF ANALYSIS

Client: Golder Associates Ltd.

Att: Mr. Andrew Benson

Report Number: 9908108
Date: 1999-09-29
Date Submitted: 1999-09-21
Date Collected: 1999-09-21
Project: 991-2857

P.O. Number:
Matrix: Water

PARAMETER	UNITS	MDL	38729 S1	38730 S2	38731 S3	38732 S4	38733 S5
Cl	mg/L	1	7	10	8	25	8
Conductivity	uS/cm	3	551	441	506	665	615
N-NO3	mg/L	0.10	0.17	ND	ND	0.67	0.94
pH			7.30	7.37	7.48	7.35	7.43
K	mg/L	1	2	1	2	2	4
Na	mg/L	1	6	4	7	4	7
Total P	mg/L	0.01	4.45	0.52	1.13	0.42	0.34

MDL = Method Detection Limit INC = Incomplete
Comment:

APPROVAL:

146 Colonnade Road, Unit 8, Nepean, Ontario, K2E 7Y1 Tel:(613)727-5692 Fax:(613)727-5222

ACCUTEST LABORATORIES LTD.

REPORT OF ANALYSIS

Client: Golder Associates Ltd.

Att: Mr. Andrew Benson

Report Number: 9908108
Date: 1999-09-29
Date Submitted: 1999-09-21
Date Collected: 1999-09-21
Project: 991-2857

P.O. Number:
Matrix: Water

PARAMETER	UNITS	MDL	38734 S6				
Cl	mg/L	1	1				
Conductivity	uS/cm	3	566				
N-NO3	mg/L	0.10	0.10				
pH			7.37				
K	mg/L	1	1				
Na	mg/L	1	4				
Total P	mg/L	0.01	0.83				

MDL = Method Detection Limit INC = Incomplete
Comment:

APPROVAL:

146 Colonnade Road, Unit 8, Nepean, Ontario, K2E 7Y1 Tel:(613)727-5692 Fax:(613)727-5222

ACCUTEST LABORATORIES LTD.

REPORT OF ANALYSIS

Client: Golder Associates Ltd.
Attn: Mr. Andy Benson

Lab Report No: 9908108
Date: Sep 29.1999
Date Submitted: Sep 21.1999
Project: 991-2857
AQ#990187

Sample Matrix: WATER

PARAMETER	UNITS	MDL	RN 38729	RN 38730	RN 38731	RN 38732	RN 38733
			S 1	S 2	S 3	S 4	S 5
Atrazine	mg/L	0.005	ND	ND	ND	ND	ND

ND = Not Detected (< MDL) MDL = Method Detection Limit

Comment:

APPROVAL: _____

146 Colonnade Road, Unit 8, Nepean, Ontario K2E 7Y1 Tel:(613)727-5692 Fax:(613)727-5222

ACCUTEST LABORATORIES LTD.

REPORT OF ANALYSIS

Client: Golder Associates Ltd.
Attn: Mr. Andy Benson

Lab Report No: 9908108
Date: Sep 29.1999
Date Submitted: Sep 21.1999
Date Collected: 991-2857
Project: AQ#990187

Sample Matrix: WATER

PARAMETER	UNITS	MDL	RN 38734				
			S 6				
Atrazine	mg/L	0.005	ND				

ND = Not Detected (< MDL) MDL = Method Detection Limit

Comment:

APPROVAL: _____

146 Colonnade Road, Unit 8, Nepean, Ontario K2E 7Y1 Tel:(613)727-5692 Fax:(613)727-5222

ACCUTEST LABORATORIES LTD.

REPORT OF ANALYSIS

ient: Golder Associates Ltd.
Attn: Mr. Andy Benson

Report Number: 9908108
Date: Sep 29,1999
Date Submitted: Sep 21,1999
Date Collected: Sep 21,1999
Project: 991-2857
990187

Matrix: water

Petroleum Hydrocarbon Analysis

rgeable Hydrocarbons analysed by Tekmar Purge and Trap with Varian Saturn II GC/MS
tractable Hydrocarbons (Gasoline/Diesel Range Organics) analysed by cold solvent extraction Varian Star 3400 GC/FID
TPH Heavy Oils (oil & grease) analysed by gravimetric solid phase extraction (water) or solvent extraction (soil)

PARAMETER	UNITS	MDL	RN# 38729 S1	RN# 38730 S2	RN# 38731 S3	RN# 38732 S4	RN# 38733 S5
URGEABLE HYDROCARBONS							
enzene	µg/L	0.5	ND	ND	ND	ND	ND
oluene	µg/L	0.5	ND	ND	ND	ND	ND
Ethylbenzene	µg/L	0.5	ND	ND	ND	ND	ND
/p-Xylene	µg/L	1.0	ND	ND	ND	ND	ND
Xylene	µg/L	0.5	ND	ND	ND	ND	ND
Toluene d-8 (surrogate)	% Rec.	1	101	102	102	102	101
XTRACTABLE HYDROCARBONS							
gasoline range organics (GRO) < C10	mg/L	0.2					
esel range organics (DRO) C10-C24	mg/L	0.2					
TOTAL PETROLEUM HYDROCARBONS							
RO + DRO	mg/L	0.2					
PH (heavy oils)							
Oil & Grease (total)	mg/L	1					
il & Grease (mineral)	mg/L	1					
il & Grease (non-mineral)	mg/L	1					

DL=Method Detection Limit ND=Not Detected

omment:

APPROVAL:

146 Colonnade Road, Unit 8, Nepean, Ontario K2E 7Y1 Tel:(613)727-5692 Fax:(613)727-5222

ACCUTEST LABORATORIES LTD.

REPORT OF ANALYSIS

(ent: Golder Associates Ltd.
Attn: Mr. Andy Benson

Report Number: 9908108
Date: Sep 29,1999
Date Submitted: Sep 21,1999
Date Collected: Sep 21,1999
Project: 991-2857
990187

Matrix: water

Petroleum Hydrocarbon Analysis

l geable Hydrocarbons analysed by Tekmar Purge and Trap with Varian Saturn II GC/MS
l ractable Hydrocarbons (Gasoline/Diesel Range Organics) analysed by cold solvent extraction Varian Star 3400 GC/FID
TPH Heavy Oils (oil & grease) analysed by gravimetric solid phase extraction (water) or solvent extraction (soil)

PARAMETER	UNITS	MDL	RN# 38734	Lab duplicate			
			S6	S6			
PURGEABLE HYDROCARBONS							
nzene	µg/L	0.5	ND	ND			
luene	µg/L	0.5	ND	ND			
Ethyl Benzene	µg/L	0.5	ND	ND			
o-Xylene	µg/L	1.0	ND	ND			
ylene	µg/L	0.5	ND	ND			
Toluene d-8 (surrogate)	% Rec.	1	102	101			
TRACTABLE HYDROCARBONS							
asoline range organics (GRO) < C10	mg/L	0.2					
sel range organics (DRO) C10-C24	mg/L	0.2					
TOTAL PETROLEUM HYDROCARBONS							
RO + DRO	mg/L	0.2					
H (Heavy Oils)							
Oil & Grease (total)	mg/L	2					
& Grease (mineral)	mg/L	2					
& Grease (non-mineral)	mg/L	2					

MDL=Method Detection Limit ND=Not Detected

mment:

APPROVAL:

146 Colonnade Road, Unit 8, Nepean, Ontario K2E 7Y1 Tel:(613)727-5692 Fax:(613)727-5222

ACCUTEST LABORATORIES LTD.

REPORT OF ANALYSIS

Client: Golder Associates Ltd.

ATT: Mr. Andrew Benson

Report Number: 2002278
Date: 2000-03-29
Date Submitted: 2000-03-22
Date Collected: 2000-03-22
Project: 991-2857

P.O. Number:
Matrix: Water

PARAMETER	UNITS	MDL	60400 S1	60401 S3	60402 S4	60403 S5	60404 S6
Cl	mg/L	1	2	27	7	10	8
N-NO3	mg/L	0.10	<0.10	0.70	<0.10	<0.10	0.18
K	mg/L	1	1	1	2	1	2
Na	mg/L	1	4	4	6	4	6
Total P	mg/L	0.01	0.30	0.18	0.03	0.18	0.11
pH						7.37	

MDL = Method Detection Limit INC = Incomplete
Comment:

APPROVAL: _____

146 Colonnade Road, Unit 8, Nepean, Ontario, K2E 7Y1 Tel:(613)727-5692 Fax:(613)727-5222

ACCUTEST LABORATORIES LTD.

REPORT OF ANALYSIS

Client: Golder Associates Ltd.
Attn: Mr. Andrew Benson

Report Number: 2002278
Date: Mar 29,2000
Date Submitted: Mar 22,2000
Date Collected: Mar 22,2000
Project: 991-2857

Matrix: water

Petroleum Hydrocarbon Analysis

irgeable Hydrocarbons analysed by Tekmar Purge and Trap with Varian Saturn II GC/MS
tractable Hydrocarbons (Gasoline/Diesel Range Organics) analysed by cold solvent extraction Varian Star 3400 GC/FID
PH Heavy Oils (oil & grease) analysed by gravimetric solid phase extraction (water) or solvent extraction (soil)

PARAMETER	UNITS	MDL	RN# 60400 S1	RN# 60401 S3	RN# 60402 S4	RN# 60403 S5	RN# 60404 S6
URGEABLE HYDROCARBONS							
enzene	µg/L	0.5	ND	ND	ND	ND	ND
oluene	µg/L	0.5	ND	ND	ND	ND	ND
hylbenzene	µg/L	0.5	ND	ND	ND	ND	ND
m/p-Xylene	µg/L	1.0	ND	ND	ND	ND	ND
Xylene	µg/L	0.5	ND	ND	ND	ND	ND
oluene d-8 (surrogate)	% Rec.	1	111	112	114	112	107
CTRACTABLE HYDROCARBONS							
gasoline range organics (GRO) < C10	mg/L	0.2					
esel range organics (DRO) C10-C24	mg/L	0.2					
OTAL PETROLEUM HYDROCARBONS							
GRO + DRO	mg/L	0.2					
PH (Heavy Oils)							
il & Grease (total)	mg/L	1					
Oil & Grease (mineral)	mg/L	1					
l & Grease (non-mineral)	mg/L	1					

DL=Method Detection Limit ND=Not Detected

omment:

APPROVAL:

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Matrix: water

Petroleum Hydrocarbon Analysis

Purgeable Hydrocarbons analysed by Tekmar Purge and Trap with Varian Saturn II GC/MS
Extractable Hydrocarbons (Gasoline/Diesel Range Organics) analysed by cold solvent extraction Varian Star 3400 GC/FID
TPH Heavy Oils (oil & grease) analysed by gravimetric solid phase extraction (water) or solvent extraction (soil)

PARAMETER	UNITS	MDL	lab replicate S1				
PURGEABLE HYDROCARBONS							
Benzene	µg/L	0.5	ND				
Toluene	µg/L	0.5	ND				
Ethyl Benzene	µg/L	0.5	ND				
m/p-Xylene	µg/L	1.0	ND				
o-Xylene	µg/L	0.5	ND				
Toluene d-8 (surrogate)	% Rec.	1	107				
EXTRACTABLE HYDROCARBONS							
gasoline range organics (GRO) < C10	mg/L	0.2					
diesel range organics (DRO) C10-C24	mg/L	0.2					
TOTAL PETROLEUM HYDROCARBONS							
GRO + DRO	mg/L	0.2					
TPH (Heavy Oils)							
Oil & Grease (total)	mg/L	1					
Oil & Grease (mineral)	mg/L	1					
Oil & Grease (non-mineral)	mg/L	1					

MDL=Method Detection Limit ND=Not Detected

Comment:

APPROVAL:

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Sample Matrix: WATER

PARAMETER	UNITS	MDL	RN# 60400	RN# 60401	RN# 60402	RN# 60403	RN# 60404
			S1	S3	S4	S5	S6
Atrazine	mg/L	0.005	ND	ND	ND	ND	ND

ND = Not Detected (< MDL) MDL = Method Detection Limit

Comment:

APPROVAL: _____

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