DuPont Corporate Remediation Group
Buffalo Avenue & 26th Street
Building 35
Niagara Falls, NY 14302
(716) 278-5100

April 1, 2008

Ms. Gloria Sosa
Western New York Remediation Section
New York Remediation Branch
Emergency and Remediation Response Division
U.S. EPA – Region II
290 Broadway, 20th Floor
New York, NY 10007-1866

Dear Ms. Sosa:

NECCO PARK 2007 ANNUAL REPORT

Enclosed are four copies of the *Remedial Action Post-Construction Monitoring 2007 Annual Report* for the DuPont Necco Park Hydraulic Controls System (HCS), Groundwater Treatment Facility (GWTF), and landfill cap.

This third annual report for the Necco Park Remedy has been prepared pursuant to Administrative Order (AO) Index No. II CERCLA-98-0215 dated September 28, 1998, issued by United States Environmental Protection Agency (USEPA). This report describes hydraulic and chemistry monitoring conducted in 2007 as required by the *Long-Term Groundwater Monitoring Plan,* dated April 2005 for the DuPont Necco Park Site located in Niagara Falls, New York.

Construction and start-up of the HCS and GWTF was substantially complete on April 5, 2005. Thereafter, the systems have been operated in accordance with the draft Operations and Maintenance Plan (O&M Plan). System operation uptime for 2007 was 92.1%. Discounting scheduled maintenance shutdowns, system uptime for 2007 was 92.5%. Approximately 205 gallons of DNAPL was recovered in 2007. This Annual Report provides a detailed evaluation of system operation with respect to the Performance Standards presented in the Necco Park Statement of Work (SOW).

Please call me at (716) 278-5496 if you have any questions or comments regarding this submittal.

Sincerely,

CORPORATE REMEDIATION GROUP

Paul F. Mazierski
Project Director

PFM/mac
Enc.
T:\\ \Necco Park\7537 Long Term GW Mon\Reports\Annual Reports\2007 Annual Report\2007 cvr ltr.doc
cc: J. Kaczor/Earth Tech
M. Hinton/NYSDEC
G. Shanahan/NYSDEC

REMEDIAL ACTION POST-CONSTRUCTION MONITORING
2007 ANNUAL REPORT
DUPONT NECCO PARK
NIAGARA FALLS, NY

Date: April 1, 2008

DuPont Project No.: 507537
URS Project No.: 18985339

CORPORATE REMEDIATION GROUP
An Alliance between
DuPont and URS Diamond

Buffalo Avenue & 26th Street
Niagara Falls, New York 14302

TABLE OF CONTENTS

List of Acronyms iv

Executive Summary vi

1.0 Project Description........ 1
- 1.1 Site Background........ 1
- 1.2 Source Area Remedial Action Documentation and Reporting........ 1

2.0 HCS Operations Summary........ 2
- 2.1 Operational Summary........ 2
- 2.2 GWTF Process Sampling........ 3
- 2.3 Process Sampling Summary........ 3

3.0 HCS Performance........ 5
- 3.1 Hydraulic Head Monitoring........ 5
- 3.2 Hydraulic Control Assessment........ 5
  - 3.2.1 AT-Zone and A-Zone........ 5
  - 3.2.2 B and C Bedrock Water-Bearing Zones........ 6
  - 3.2.3 D, E and F Bedrock Water-Bearing Zones........ 7
- 3.3 Groundwater Chemistry Monitoring........ 8
  - 3.3.1 Background........ 8
  - 3.3.2 Discussion of Results........ 8
  - 3.3.3 Sample Collection and Analysis........ 11
  - 3.3.4 A-Zone........ 11
  - 3.3.5 B/C-Zone........ 12
  - 3.3.6 D/E/F-Zone........ 12
  - 3.3.7 G-Zone........ 13
- 3.4 Data Quality Control/Quality Assurance........ 14
  - 3.4.1 Sample Collection........ 14
  - 3.4.2 Independent Data Validation........ 15
- 3.5 Groundwater Chemistry Trends........ 16
- 3.6 Monitoring Natural Attenuation (MNA) Assessment........ 18
  - 3.6.1 MNA Background........ 18
  - 3.6.2 B/C Zone Results........ 19
  - 3.6.3 D/E/F-Zone Results........ 20
- 3.7 DNAPL Monitoring and Recovery........ 22

4.0 Cap Maintenance........ 23

5.0 Conclusions and Recommendations........ 24
- 5.1 Hydraulic Control Effectiveness........ 24
  - 5.1.1 Conclusions........ 24
  - 5.1.2 Recommendations........ 24

5.2 Groundwater Chemistry Monitoring....25
5.2.1 Conclusions....25
5.2.2 Recommendations....25
5.3 Monitored Natural Attenuation Assessment....25
5.3.1 Conclusions....25
5.3.2 Recommendations....26
5.4 DNAPL Monitoring and Recovery....26
5.4.1 Conclusions....26
5.4.2 Recommendations....26
5.5 Landfill Cap....27
5.5.1 Conclusions and Recommendations....27

6.0 References....28

TABLES

Table 2-1 HCS Recovery Well Performance Summary
Table 2-2 2007 GWTF Process Sampling Results
Table 3-1 Hydraulic Monitoring Locations
Table 3-2 Select AT-Zone HCS Post-Startup Drawdowns
Table 3-3 Select A-Zone HCS Post-Startup Drawdowns
Table 3-4 Typical AT-Zone to A-Zone Vertical Gradients
Table 3-5 Typical A-Zone to B-Zone Vertical Gradients
Table 3-6 Select B-Zone HCS Post-Startup Drawdowns
Table 3-7 Select C-Zone HCS Post-Startup Drawdowns
Table 3-8 Select D/E/F-Zone HCS Post-Startup Drawdowns
Table 3-9 DNAPL Components and Solubility Criteria Values
Table 3-10 Effective Solubility Exceedances for DNAPL Compounds
Table 3-11 One Percent of Pure-Phase Solubility Exceedances for DNAPL Compounds
Table 3-12 Chemical Monitoring Locations
Table 3-13 Indicator Parameter List
Table 3-14 Monitored Natural Attenuation Parameters
Table 3-15 Summary of MNA Results in B/C-Zone Wells
Table 3-16 Summary of MNA Results in D/E/F-Zone Wells
Table 3-17 2007 DNAPL Recovery Summary

FIGURES

Figure 1-1 Site Location Map
Figure 3-1 Monitoring Well and Piezometer Locations
Figure 3-2 Select AT-Zone Monitoring Wells: Groundwater Elevations 2006-2007
Figure 3-3 Select A-Zone Monitoring Wells: Groundwater Elevations 2006-2007
Figure 3-4 Select B-Zone Monitoring Wells: Groundwater Elevations 2006-2007
Figure 3-5 Select C-Zone Monitoring Wells: Groundwater Elevations 2006-2007
Figure 3-6 Select D-Zone Monitoring Wells: Groundwater Elevations 2006-2007
Figure 3-7 Select E-Zone Monitoring Wells: Groundwater Elevations 2006-2007
Figure 3-8 Select F-Zone Monitoring Wells: Groundwater Elevations 2006-2007
Figure 3-9 Potentiometric Surface Map: AT-Zone, May 2, 2007
Figure 3-10 Potentiometric Surface Map: A-Zone, May 2, 2007
Figure 3-11 Drawdown Contour Map: AT-Zone
Figure 3-12 Drawdown Contour Map: A-Zone
Figure 3-13 AT-Zone to A-Zone Vertical Gradients, May 2, 2007
Figure 3-14 A-Zone to B-Zone Vertical Gradients, May 2, 2007
Figure 3-15 Potentiometric Surface Map: B-Zone, May 2, 2007
Figure 3-16 Potentiometric Surface Map: C-Zone, May 2, 2007
Figure 3-17 Potentiometric Surface Map: D-Zone, May 2, 2007
Figure 3-18 Potentiometric Surface Map: E-Zone, May 2, 2007
Figure 3-19 Potentiometric Surface Map: F-Zone, May 2, 2007

APPENDICES

Appendix A 2007 Semi-Annual Groundwater Sampling & Recovery Well Results
Appendix B Data Validation Summary Laboratory Reports
Appendix C TVOC Trend Plots
Appendix D Chlorinated Ethenes & Ethene
Appendix E Landfill Cap Inspection Results

LIST OF ACRONYMS

ACO	Administrative Consent Order
ADQM	Analytical Data Quality Management
AO	Administrative Order
AOA	Analysis of Alternatives
CERCLA	Comprehensive Environmental Response, Compensation and Liability Act (Superfund)
CLP	Contract Laboratory Program
CMMP	Cap Maintenance and Monitoring Plan
CRG	DuPont Corporate Remediation Group
DCE	Dichloroethylene
DNAPL	dense nonaqueous-phase liquid
GWTF	Groundwater treatment facility
HCS	Hydraulic controls system
HCBD	hexachlorobutadiene
HDPE	high-density polyethylene
LGMP	Long-Term Groundwater Monitoring Plan
MDL	Method detection limit
MNA	Monitored natural attenuation
NYPA	New York Power Authority
NYSDEC	New York State Department of Environmental Conservation
O&M	operations and maintenance
PCE	tetrachloroethene
PDI	pre-design investigation
POTW	publicly-owned treatment works
PPB	parts per billion
PQL	Practical quantitation limit
PSM	Process Safety Management
QA	Quality Assurance
QAPP	Quality Assurance Project Plan
QC	Quality Control
RAR	Remedial Action Report
RAC	Remedial action contractor
ROD	Record of Decision
RW	Recovery Well
SAMP	Sampling, Analysis, and Monitoring Plan
SAR	Source Area Report
SFR	Subsurface Formation Repair
SOP	Standard operating procedure
SOW	Statement of Work
SVOC	Semi-volatile organic compounds

TCE	trichloroethylene
TOC	Total organic carbon
TVOC	Total volatile organic compounds
USEPA	United States Environmental Protection Agency
USGS	United States Geological Survey
VC	Vinyl chloride
VOC	volatile organic compound
WCC	Woodward Clyde Consultants

EXECUTIVE SUMMARY

This third Annual Report for the Necco Park Remedial Action has been prepared pursuant to Administrative Order (AO) Index No. II Comprehensive Environmental Response, Compensation and Liability Act (Superfund) (CERCLA)-98-0215 dated September 28, 1998, and issued by United States Environmental Protection Agency (USEPA). This report describes hydraulic and chemistry monitoring conducted in 2007 as required by the *Long-Term Groundwater Monitoring Plan,* dated April 2005 for the DuPont Necco Park Site located in Niagara Falls, New York.

The Necco Park Remedial Action consists of an upgraded cap over the landfill and a groundwater hydraulic control system (HCS). The HCS includes a network of five groundwater pumping wells and a groundwater treatment facility (GWTF). Construction and startup of the HCS and GWTF was substantially complete on April 5, 2005. Thereafter, the systems have been operated in accordance with the Operations and Maintenance Plan (O&M Plan). System operation uptime for 2007 was 92.1%. Discounting scheduled maintenance shutdowns, system uptime for 2007 was 92.4%. Summaries of system operations and hydraulic head data have been provided to the USEPA and the New York State Department of Environmental Conservation (NYSDEC) previously in the 2007 Quarterly Data Packages. This Annual Report provides a detailed evaluation of system effectiveness with respect to the Performance Standards presented in the Necco Park Statement of Work (SOW).

Hydraulic monitoring data from 2007 show that overall the HCS has maintained hydraulic control of the source area. Improved hydraulic control is needed for the B- and C-Zones in the western portion of the site as a result of well yield reduction at B/C-Zone recovery well RW-10. After evaluating other options to repair or replace RW-10 DuPont will install a blast-fractured bedrock trench (BFBT) and a new B/C-Zone pumping well as described in the Work Plan dated March 14, 2008.

Groundwater sampling results from 2007 show an overall decrease in concentrations of total volatile organic compounds (TVOCs) for all flow zones compared to historical results. The 2007 results indicate:

- With the exception of two source area limit wells, TVOC concentrations for the A-Zone were below 10 μg/l
- TVOCs for half of the B-Zone wells were below 100 μg/l and TVOC concentrations at source area limit well 172B continue to decline
- Similar decreasing or stable TVOC concentrations are apparent in the deeper bedrock zones and at key source area limit wells such as 146E

The 2007 results were compared to the zone-specific source area limits provided in the 100% design submittal for overburden and bedrock hydraulic controls. Compared to the first year of long term monitoring in 2005, the 2007 results for the respective groundwater flow zones indicate a general reduction in the number of wells where solubility criteria are met.

Results of the 2007 monitored natural attenuation (MNA) evaluation are consistent with the long term monitoring and previous findings indicating natural attenuation of site constituents is occurring under anaerobic degradation processes. Concentrations of site constituents have decreased in the majority of downgradient wells monitoring the B- through F-Zones. The presence of biochemical reaction products and microbial populations capable of degrading site constituents confirms MNA is providing beneficial groundwater remediation. Sampling for natural attenuation parameters (groundwater geochemistry and COC's) will be continued at the frequency described in the LGMP. The 2008 sampling results will be reviewed to identify potential modifications to the MNA sampling program. Pending 2008 results it is may be appropriate to drop the far-field and side gradient wells with extremely low concentrations of chlorinated ethenes from the sampling program.

Approximately 205 gallons of dense nonaqueous-phase liquid (DNAPL) was recovered in 2007. All of the DNAPL was recovered from B/C-Zone Recovery Well RW-5. A total of 7,841 gallons of DNAPL has been removed since initiation of the recovery program in 1989.

In addition to the BFBT installation other recommendations included in the 2006 Annual Report, replacement of monitoring well 112C, installation of a A-Zone piezometer at well location 168, and closure of former recovery wells R-1 and R-2, will be completed during the mobilization for installation of the BFBT.

1.0 PROJECT DESCRIPTION

1.1 Site Background

The DuPont Necco Park site is located approximately 1.5 miles north of the Niagara River in a predominantly industrial area of Niagara Falls, New York (see Figure 1-1). Necco Park is a 24-acre inactive industrial waste disposal site. Detailed site background including operational history, regulatory background, and site geology and hydrogeology are provided in numerous site documents including the previous Annual Reports.

1.2 Source Area Remedial Action Documentation and Reporting

The approved remedy includes construction of the Bedrock and Overburden Source Area Hydraulic Controls and the Landfill Cap Upgrade. Completion of the remedy and compliance with the Performance Standards described in the SOW are documented in the Remedial Action Report (RAR). This 2007 Annual Report presents hydraulic and chemical monitoring results from the third year of operation of the hydraulic controls. In addition, the Annual Report includes historical groundwater chemistry results for assessment of trends in groundwater quality.

The following documents are applicable to the Necco Park long-term monitoring program and this report:

- Long Term Groundwater Monitoring Plan (LGMP)
- Cap Maintenance and Monitoring Plan (CMMP)
- Sampling, Analysis, and Monitoring Plan (SAMP)
- Quality Assurance Project Plan (QAPP)
- DNAPL Monitoring and Recovery Plan
- Necco Park Source Area Report

With the exception of the Necco Park Source Area Report, these documents are included in the Necco Park Operations & Maintenance (O&M) Plan [DuPont Corporate Remediation Group (CRG), 2005]. The draft O&M Plan was submitted to USEPA in April 2005. A revised plan, which addresses Agency comments on the April 2005 submittal, was sent to USEPA and NYSDEC in November 2005. DuPont responded to additional EPA comments on the O&M Plan in September 2006. USEPA approved the O&M Plan on September 19, 2007. The Necco Park Source Area Report was submitted to the USEPA and NYSDEC in April 2001.

2.0 HCS OPERATIONS SUMMARY

The O&M Manual for the hydraulic control system (HCS) is provided as Appendix C in the O&M Plan. The O&M Manual has been prepared in accordance with DuPont Process Safety Management (PSM) guidelines and includes a technology description and standard operating procedures for the groundwater recovery and treatment system. The groundwater O&M Manual, in conjunction with vendor O&M Manuals, describes normal operation and shutdown procedures, emergency shutdown procedures, alarm conditions, and trouble-shooting and preventative maintenance procedures for the treatment system and hydraulic controls.

2.1 Operational Summary

Operational information for the HCS is provided in the 2007 Quarterly Data Packages (DuPont CRG 2008, 2007, 2007a, 2007b). A summary of system uptime, system uptime excluding scheduled maintenance downtime, quantity of groundwater treated, and dense nonaqueous-phase liquid (DNAPL) recovery quantities are as follows:

	HCS Uptime (%)	HCS Uptime [excluding scheduled maintenance downtime] (%)	Groundwater Treated (Gallons)	DNAPL Removed (Gallons)
1Q07	91.2	91.2	2,638,005	67
2Q07	93.8	94.2	2,932,064	52
3Q07	92.3	92.5	2,959,918	51
4QQ7	91.2	92.0	2,697,915	35
2007 Total	**92.1**	92.4	11,227,902	**205**

A summary of monthly groundwater quantities and uptime for each recovery well is provided in Table 2-1.

The HCS has remained fully operational throughout 2007, averaging 92.1% total system uptime through December 31, 2007. The groundwater treatment facility (GWTF) downtime has been minimized by continuously monitoring operating conditions and implementing mechanical and procedural changes to the process equipment and the Honeywell Experion™ PKS operating system. Excluding downtime incurred due to planned maintenance, total system uptime for 2007 was 92.4%.

HCS downtime was a result of unexpected mechanical and process-related malfunctions, scheduled maintenance, and power failures. The following table summarizes HCS downtime in 2007:

Reason	Contributing Downtime %	Comments
Process Component Malfunction	5.5%	Unexpected process-related downtime as a result of mechanical component failure.
Scheduled Maintenance shutdowns and system upgrades/inspections	0.3%	Routine inspections, interlock verification, preventative maintenance, and mechanical upgrades to process-related infrastructure.
Power service disruption	1.9%	Primarily due to inclement weather

Scheduled maintenance shutdowns are based on operating conditions and the necessity to take corrective or preventative action to mitigate the need for future, larger scale maintenance. These shutdowns occur routinely to inspect, repair, and/or upgrade process-related components to ensure long-term operational success. Efforts to minimize downtime during planned maintenance shutdowns are employed. Influent tank capacity is utilized while maintenance occurs to minimize recovery well downtime. System enhancements and inspections to the GWTF contributing to operational downtime were primarily associated with the scheduled annual maintenance shutdown. The shutdown, completed between October 31st and November 1st, included cleaning of effluent lines, process-related lines, air strippers, and tanks. In addition to these measures, all pumps and process-related infrastructure were inspected and maintained as necessary.

2.2 GWTF Process Sampling

In accordance with the SAMP, quarterly process sampling is conducted to assess the effectiveness of the treatment system in removing volatile organic compounds (VOCs) from groundwater. Two influent samples (one from the B/C-Zone influent tank and one from the D/E/F-Zone influent tank) are collected. One effluent sample is collected from the combined effluent tank. The samples are analyzed for VOCs, semi-volatile organic compounds (SVOCs), total barium, dissolved barium, and sulfate. A summary of results for the process sampling conducted in 2007 is provided in Table 2-2

In addition to the quarterly process sampling, groundwater samples were collected from the five recovery wells on May 2007. The results were originally submitted in the 2Q07 Quarterly Data Package and are also included in Appendix A of this report.

2.3 Process Sampling Summary

A Significant Industrial User (SIU) permit with the Niagara Falls publicly-owned treatment works (POTW) regulates the treated groundwater effluent discharged from the site. Quarterly sampling conducted at the permitted discharge point (MS#1) demonstrates that the GWTF is operating as designed.

Throughout 2007, the GWTF remained in compliance and is in good standing with the Niagara Falls POTW regarding the Wastewater Discharge Permit (SIU #64), with the exception of an annual average exceedence of methylene chloride in 2Q07. Calculated loading for methylene chloride exceeded the Annual Average limit for the 2Q07 sample collected on March 28, 2007. In accordance with our discharge permit, two additional samples were collected (May 3 and May 16, 2007) and confirmed that the increased concentrations were consistent and warranted a permit level increase from 0.15 lbs/day to 0.25 lbs/day. The Niagara Falls POTW granted a permit level increase on June 6, 2007.

3.0 HCS PERFORMANCE

3.1 Hydraulic Head Monitoring

Groundwater hydraulic head measurements are the basis for determining control of groundwater flow in the overburden and bedrock groundwater flow zones by the HCS at Necco Park. Depth-to-water measurements and measuring point elevation data are used to calculate the elevation of groundwater and to generate hydrographs which show groundwater elevation trends in individual monitoring wells. These measurements are also used to generate potentiometric surface-contour maps, which depict groundwater elevation distribution for assessing flow directions and hydraulic gradients. Together, these data presentations are used to determine the extent and effectiveness of hydraulic control effect by the HCS at Necco Park. Potentiometric surface contour maps for the A-Zone through F-Zone include the zone-specific source area limits.

Quarterly groundwater level measurements collected during 2007 were presented in the Quarterly Data Packages (DuPont CRG 2008, 2007, 2007a, 2007b). Potentiometric surface-contour maps for the AT-Zone (top-of-clay), A-Zone (overburden), and bedrock zones B, C, D, E and F were also presented in the 2007 Quarterly Data Packages and are used in this report to assess effectiveness of hydraulic control of the HCS. Monitoring and recovery well locations are shown in Figure 3-1. A list of groundwater monitoring locations is provided in Table 3-1.

Long-term hydrographs for select wells and piezometers within each water-bearing zone are presented in Figures 3-2 through Figure 3-8. The hydrographs depict long-term groundwater hydraulic responses to startup and operation of the HCS.

Potentiometric surface-contour maps included in this report were selected from maps prepared and presented in the 2007 Quarterly Data Packages. Golden Software's SURFER™ program was used to interpolate water level data, develop potentiometric surface contours, and plot groundwater flow directions. A Kriging algorithm with a linear semi-variogram model and a slope of 1 was used as the standard method to interpolate groundwater elevations between wells, unless otherwise noted.

3.2 Hydraulic Control Assessment

3.2.1 AT-Zone and A-Zone

The overburden materials comprising the A-Zone are generally characterized by high clay content and low hydraulic conductivity. Groundwater flow in the A-Zone is primarily downward to the more transmissive fractured bedrock. The AT-Zone (also known as the top-of-clay zone) is a thin presumably perched zone of saturation above the A-Zone. It is not a continuous zone and is absent in the western portion of the site where the overburden thickness diminishes and within portions of the Necco property footprint where excavation/landfilling activities have eliminated any AT/A-Zone distinction.

Figures 3-9 and 3-10 present typical AT-Zone and A-Zone potentiometric surface contours (May 2, 2007) resulting from continuous operation of the HCS.

Long-Term Response to HCS Operation

Long-term AT and A-Zone baseline (non-pumping) hydraulic conditions were established on April 5, 2005, after the shutdown of the former pumping well network and Interim Treatment System on April 1, 2005 and prior to the startup of the HCS. Calculated AT-Zone and A-Zone long-term drawdowns (expressed as positive numbers) are presented in Tables 3-2 and 3-3, respectively. The tables indicate that the HCS has maintained drawdowns in 2007 in both the AT-Zone and A-Zone.

AT-Zone long-term 2007 drawdowns for selected piezometers ranged between 0.80 and 7.31 feet (see Table 3-2). As can be seen in Table 3-2, all of the calculated responses are consistently positive (i.e. true drawdown). This indicates substantial dewatering of the AT-Zone has been maintained by the continued operation of the HCS. All selected AT-Zone piezometers remained below their pre-startup elevations in 2007. A plot of May 2, 2007, AT-Zone drawdowns is presented in Figure 3-11.

A-Zone long term 2007 drawdowns for selected wells ranged between 0.38 and 11.56 feet (see Table 3-3). Once again, as can be seen in Table 3-3, all drawdowns are consistently positive. This indicates substantial dewatering of the A-Zone has been maintained by the continued operation of the HCS. Drawdowns for the selected A-Zone piezometers remained below their pre-startup elevations in 2005. A plot of May 2, 2007, A-Zone drawdowns is presented in Figure 3-12.

AT and A-Zone Hydraulic Control

In both the AT-Zone and A-Zone, rapid responses to the short-term changes in groundwater levels in the HCS recovery wells were observed and presented in the 2005 Annual Report. The magnitude of observed drawdowns and the rapidity of responses provide additional evidence that the AT and A-Zones are vertically dominated flow regimes.

Vertical gradients are generally downward (negative) between both the AT/A-Zones and A/B-Zones as presented in Tables 3-4 and 3-5 and shown in Figures 3-13 and 3-14. The upward gradients at the 184AT/A and 185AT/A well pairs are likely the result of slightly overlapping well screens or a result of the absence of any appreciable A-Zone thickness below the clay layer. The respective upward and flat gradients at the 119AT/A and 129AT/A well pairs are likely due to structural effects within the landfill.

3.2.2 B and C Bedrock Water-Bearing Zones

Groundwater flow directions in the B-Zone were generally consistent throughout the 2007 period of HCS operation (see Table 3-6 and Figures 3-15 and 3-16).

Hydraulic heads in the C-Zone were generally consistent throughout the 2007 period of HCS operation with the exception of the May 2, 2007, event, which exhibited a response to significant precipitation events from the previous week (see Table 3-7). Typical 2007 C-Zone potentiometric contours are presented in Figure 3-16.

B-Zone

Groundwater elevation hydrographs along with potentiometric surface-contour maps illustrate the hydraulic effects of the HCS in the B-Zone. RW-4 and RW-5 have induced inward (toward the recovery wells) hydraulic gradients over a large area (see Figures 3-4 and 3-15). In 2007, RW-10 continued to exhibit reduced influence even after 2Q06 rehabilitation efforts. B-Zone influence attributed to RW-4, RW-5, and RW-10 extends north to 102B, 120B, and 159B; west to 116B and 136B; and south to 160B, 168B, and 169B.

The hydraulic depression between RW-5 and RW-10 was not as extensive in 2007 as in 3Q06 (collected only three weeks after RW-10 rehabilitation efforts). This is due to the rapid recurrence of efficiency and yield losses at RW-10. Measures to improve B-Zone control in the vicinity of RW-10 will be taken in 2008 with the installation of a BFBT and new recovery well RW-11 that will replace RW-10 (DuPont CRG 2008b).

B-Zone net drawdowns from static are presented in Table 3-6 and are calculated from May 4, 2004 static conditions. Drawdowns indicate that monitoring well 163B exhibited the only reversals from static but is outside the designated source area.

Improvements in the southward geographic extents of B-Zone drawdown in response to pumping from RW-5 reported in 2006 are expected to be enhanced by pumping from the BFBT. Well maintenance to remove sediments from well RW-5 in March 2008 is also expected to improve well efficiency and in turn enhance B/C-Zone hydraulic control.

C-Zone

Groundwater elevation hydrographs along with potentiometric surface-contour maps illustrate the hydraulic effects of the HCS in the C-Zone. The C-Zone influence attributed to RW-4, RW-5, and RW-10 extends north to 115C, 123C, and 159C, west to 136C. The southern extents are obscured by the CECOS landfill and are between the recovery wells and monitoring wells 150C, 160C and 168C (see Table 3-7 and Figures 3-5 and 3-16). The hydraulic control in the C-Zone is expected to improve with the operation of replacement well RW-11. Well RW-11 will be screened within a B-Zone BFBT and as a bedrock open-hole in C-Zone.

Similar to the B-Zone, baseline hydraulic heads for comparison are from May 4, 2004. Generally, water levels remained below their baseline for the entire reporting period, with the following exceptions: off site wells 146C and 150C, a well with a presumed compromised casing (112C) and wells 130C and 138C during the May 2, 2007 water-level round (see Table 3-7).

3.2.3 D, E and F Bedrock Water-Bearing Zones

Groundwater elevation hydrographs along with potentiometric surface-contour maps illustrate the effectiveness of the HCS in maintaining hydraulic control in the D, E and F-Zones (see Table 3-8, Figures 3-6 through 3-8 and 3-17 through 3-19).

In general, all D/E/F-Zone groundwater hydraulic heads remained below the May 4, 2004 baseline for the entire reporting period with the exception of offsite well 148D during the

August 23, 2007, water level round. Hydraulic gradients were toward the recovery wells throughout 2007 indicating the HCS is performing as designed.

3.3 Groundwater Chemistry Monitoring

3.3.1 Background

Extensive monitoring has been conducted at Necco Park dating back to the early 1980s when groundwater investigations pursuant to the 1986 Consent Decree and the 1989 Administrative Consent Order (ACO) were completed. Pre-Design investigations in the early 2000s enhanced our knowledge of conductivity variations within the flow zones and assisted in the initial estimation of source area extents as introduced in the AOA and negotiated Statement of Work (SOW). Groundwater monitoring will continue per the LGMP to meet the following objectives as defined in the SOW:

- ❑ Monitor the effectiveness of the recovery wells in reducing chemical concentrations in the zone-specific source areas.
- ❑ Monitor the far-field groundwater chemistry to determine if the recovery system is controlling off-site migration of chemical constituents associated with the Necco Park site.
- ❑ Monitor the presence of DNAPL.
- ❑ Monitor natural attenuation and intrinsic bioremediation in the source area and far-field.
- ❑ Continue to evaluate the effectiveness of the remedial action.

The 2005 Annual Report, the first annual status report following completion of hydraulic control elements of the Necco Park remedy, included an extensive discussion of the first monitoring results and how these results compared to source area criteria introduced in the Analysis of Alternatives (AOA) report. This 2007 report provides an update of groundwater chemistry trends, MNA evaluation, and, as appropriate, an update of source area limits.

The list of wells used for long-term monitoring was prepared and is included in the LGMP. In accordance with the LGMP, chemical monitoring is conducted on a semi-annual basis during the first three years of system operation. Sampling frequency thereafter will be annual. Monitoring completed in 2007 represents the third and last year of semi-annual sampling. In accordance with the LGMP, groundwater sampling will be conducted annually starting in 2008. Locations of monitoring wells to be used for long-term monitoring are shown in Figure 3-1. Implementation of the long-term chemistry monitoring is discussed in Section 3.3.3.

3.3.2 Discussion of Results

Original source area limits were provided contained in the AOA report. As described in the Final (100%) Design Report for Bedrock and Overburden Source Area Hydraulic Controls, source area limits for the A-Zone, B/C-Zones, and D/E/F-Zones were reassessed using results from 2000 baseline groundwater sampling event. Sample results from the baseline event, in conjunction with historical DNAPL observations, were used to estimate source area limits as provided in the Source Area Report (SAR) (CRG, 2001). Source area limits presented in the report were used to determine Pre-Design Investigation (PDI) groundwater pumping well locations.

For the purposes of remedial design, the 2000 baseline and Phase 2 PDI groundwater sampling results were used to interpolate source area limits. One of the objectives of the Phase 2 PDI was to refine the southeast limits of the B/C-Zone source area based on Phase 1 PDI observations. Because refinement of the B/C-Zone source area required additional groundwater sampling and analysis, DuPont elected to include sampling of the lower bedrock to also refine the D/E/F-Zone source area limits. Pumping tests conducted during the PDIs and subsequent full-scale operation have shown that the HCS will achieve and maintain hydraulic control of flow-zone specific source areas defined in the 100% design submittal.

Results from the 2007 groundwater sampling have been compared to the same historically employed criterion to evaluate source area limits. Consistent with the AOA, any location where DNAPL was observed at least once was included in the source area. Groundwater chemistry data for the 2007 sampling events was also compared to solubility criteria to evaluate source area extent. Consistent with previous assessments, these included effective solubility for a given compound and one percent of a given compound's pure-phase solubility.

Effective solubility is defined as the theoretical upper-level aqueous concentration of a constituent in groundwater in equilibrium with a mixed DNAPL. Effective solubility is equal to pure-phase solubility of a given constituent multiplied by the mole fraction of that component in DNAPL. Use of effective solubility criteria is believed to be more representative of sites with DNAPL that consist of relatively complex mixtures of organic compounds (Feenstra et al., 1991), such as those are found at Necco Park site. Calculated solubility criteria for DNAPL compounds evaluated during this study are presented in Table 3-9. A comparison of 2005 through 2007 data to the effective solubility and one percent of pure-phase solubility criteria are provided in Tables 3-10 and 3-11, respectively. A discussion of the results by flow zone is provided below.

A-Zone

The A-Zone source area has been defined as the Necco Park property and a limited area south of the property line. The A-Zone source limits have not changed from those provided with the 100% design submittal. The 2007 sample results indicate no exceedances of the solubility criteria. There has been only one exceedance of the solubility criteria since long term monitoring began. The 2005 first round results for well D-11 reported hexachlorobutadiene above the one percent of solubility criteria.

Monthly DNAPL observations conducted at A-Zone well locations in 2007 indicated no DNAPL present at the monitoring locations. The most recent DNAPL observation at an A-Zone well was at well 131A in May 2006. This well is located on the landfill.

Groundwater flow in the A-Zone is predominantly downward. Therefore, hydraulic control of the upper bedrock groundwater flow will capture flow from the A-Zone. Based on the results of the 2007 HCS monitoring, the system is effective in controlling the A-Zone source area.

B/C-Zone

The B-Zone source limits have not changed from those provided with the 100% design submittal. Results for the B-Zone wells indicated one exceedance of the effective solubility criteria for source area well 171B. Hexachlorobenzene was reported at a concentration of 1.4 μg/l above the effective solubility criteria of 0.22 μg/l for this compound. The 2007 sample results from wells 145C and 168C support the 2005 Annual Report conclusion of a less extensive C-Zone source area.

Exceedances of the more conservative one percent solubility criteria at well location 172B for hexachlorobutadiene (HCBD) represent the limit of the B-Zone source area. As discussed in Section 3.5, TVOC concentrations continue to decrease at this location. Hydraulic control extends to this location. B/C-Zone wells that exceeded the one percent criteria include 139B, 172B, 105C, 136C, and 137C.

DNAPL observations at B and C-Zone well locations in 2007 indicate DNAPL in the upper bedrock is, for the most part, limited to the southeast portion of the site. These wells include recovery well RW-5, 129C, and 161C. DNAPL was observed once in 2007 at RW-2 compared to every month in 2005. Well 171B, located south of the CECOS Secure Cells, had trace quantities of DNAPL in 1Q07.

Well 105C, located on the landfill near known disposal areas, reported exceedances of the effective solubility and one percent pure phase solubility for a number of compounds. This well is used to monitor MNA in the source area.

Operation of recovery wells RW-4, RW-5, and RW-10 have achieved and maintained hydraulic control of the B/C-Zone source area. Diminished efficiency continues to be observed in RW-10. The planned installation of the BFBT to replace well RW-10 in 2008 will improve B/C-Zone hydraulic control in the western portion of the site. Cleaning of recovery well RW-5 in March 2008 is expected to improve yield that will enhance the overall effectiveness of the B/C-Zone HCS.

D/E/F-Zone

Analytical results from well 146E indicate no exceedances for either solubility criteria since long term chemistry monitored began in April 2005. The 2002 sample results for this location reported TCE above the more conservative one percent solubility criterion. As such, previously reported constituent concentrations at this location appear to be more indicative of aqueous constituents than the presence of DNAPL.

Based upon on an exceedance of the more conservative one percent of pure phase solubility criteria for HCBD at well location 165E, the southwest limit of the D/E/F-Zone source area limit lies between well locations 165 and 137, which is consistent with the 2005 and 2006 results.

Well 105D, located on the landfill near known disposal areas, reported exceedances of the effective solubility and one percent pure phase solubility for a number of compounds. This well is used to monitor MNA in the source area.

Monitoring conducted during 2007 confirms that the operation of recovery wells RW-8 and RW-9 has achieved and maintained hydraulic control of the D/E/F-Zone.

3.3.3 Sample Collection and Analysis

In accordance with the LGMP, two groundwater sampling events were conducted in 2007. The first semi-annual sampling event was completed between April 23 and May 8, 2007. The second event was completed between September 24 and October 12, 2007. Sampling was completed by TestAmerica (formerly Severn Trent Laboratories, Inc.) of Amherst, New York completed sampling with oversight by URS Diamond for DuPont CRG. Samples and associated quality assurance/quality control (QA/QC) samples were analyzed by TestAmerica located in North Canton, Ohio.

As described in the Necco Park SAMP, groundwater sampling was conducted using USEPA low-flow sampling methodology. Air-driven bladder pumps equipped with disposable Teflon bladders were used for sample collection. The pumps were fitted with dedicated Teflon-line high-density polyethylene (HDPE) tubing. All monitoring wells were purged and sampled at flow rates between 100 and 600 milliliters per minute to reduce potential sample volatilization. Geochemical parameters (pH, temperature, dissolved oxygen, oxidation/reduction potential, specific conductivity, and turbidity) were recorded at 5-minute intervals throughout the entire purging period to determine when stabilization was achieved. Geochemical parameters were considered stable when all parameter values were within 10 percent of the previously recorded value with the exception of plus or minus 0.2 units for pH.

Samples were collected at 46 monitoring well locations during the first semi-annual event and 56 locations during the second semi-annual event. The second round event included wells used for the MNA evaluation. The well locations are listed in Table 3-12. Analytical indicator parameters and MNA parameters are listed in Tables 3-13 and 3-14, respectively. Analytical results for the two sampling events conducted in 2007 are provided as Appendix A. For reporting purposes, the results are discussed as TVOCs. This is consistent with historic reporting where TVOCs are indicator compounds used to assess groundwater contamination and trends over time. Results for the respective flow zones are discussed below.

3.3.4 A-Zone

Results from the seven LGMP A-Zone wells indicate TVOC concentrations all below 500 μg/l. The second round result for well D-11 (444 μg/l) represents the location of the highest reported A-Zone TVOCs. With the exception of well D-11 and another near source well 137A, TVOC concentrations were below 10 μg/l. The overall low TVOC concentrations are consistent with the negligible horizontal gradient and the predominant downward gradient from the A-Zone to the B-Zone that has been enhanced by the HCS. A-Zone TVOC concentrations are 1 to 2 orders of magnitude less than nearby B-Zone monitoring locations. The 2007 results are consistent with historical results in that they show no significant off-site horizontal chemical migration in the overburden.

Compared to historical sample results, TVOC results at source area well D-9 and D-13 have decreased by an order of magnitude. Further discussion of groundwater chemistry trends for all flow zones is provided in Section 3.5.

3.3.5 B/C-Zone

B-Zone

Results from the fourteen LGMP B-Zone wells indicate TVOC concentrations generally below 10,000 μg/l. TVOC concentrations at seven of the locations were below 100 μg/l. TVOC concentrations for wells near the B/C-Zone source area limits ranged from 4,000 to 45,500 μg/l. The highest TVOC concentration (89,410 μg/l) was reported for the sample collected at well 139B. This well is used for the MNA program. This well is located very close to the landfill and is well within the area of hydraulic control.

Key source area limit wells 171B and 172B show a continued TVOC decline in 2007. Biogenic daughter compounds including cis-1,2-dichloroethene and vinyl chloride dominate TVOC results at these well locations. The trend towards increased daughter compounds coupled with a near absence of source area constituents is evident at well location 171B based on the 2006 and 2007 VOC results. The 2007 TVOC increase at source area limit well 168B is attributed to either the diminished efficiency of recovery well RW-5 discussed in Section 3.2.2 or a increasing concentrations of cis-1,2-dichloroethene and vinyl chloride. Measures to improve efficiency of well RW-5 completed in March 2008 indicate a return to a higher well yield.

Compared to historical sample results, TVOC results at source area well 111B have decreased by two orders of magnitude. Far-field well 150B has decreased by an order of magnitude.

C-Zone

Results from the ten LGMP C-Zone wells indicate TVOC concentrations generally below 10,000 μg/l. This includes wells within the source area such as 136C. Consistent with previous long term monitoring results, TVOC concentrations at well locations outside the source area limits were less than 100 μg/l and ranged from 5 μg/l to 58 μg/l.

Compared to historical results, source area well 145C continues to show a significant decrease in TVOC concentrations. The 2007 results indicate a short-term TVOC increase at 145C based on the second round results. As discussed in Section 3.6.2, in spite of the TVOC increase natural anaerobic biodegradation of chlorinated solvent compounds in groundwater continues.

3.3.6 D/E/F-Zone

D-Zone

Results from the eleven LGMP D-Zone wells indicate TVOC concentrations generally below 3,000 μg/l. This includes wells within the source area such as 139D and 165D. Consistent with previous long-term monitoring results, biogenic daughter compounds including cis-1,2-dichloroethene and vinyl chloride dominate TVOC results for wells 136D, 145D, 147D, and 165D. With the exception of wells 136D and 145D, TVOC concentrations at well locations outside the source area limits were less than 200 μg/l and ranged from 1.1 μg/l to 165 μg/l. TVOC concentrations at well 136D have decreased by an order of magnitude since the 2000 baseline sampling and have steadily declined over the from 2006 to the end of 2007. Monitoring has shown hydraulic control from the HCS extends beyond the D/E/F-Zone source area limits.

Compared to historical sample results, TVOC results at source area well 139D have decreased by an order of magnitude. The decreased TVOC at well 139D is significant considering DNAPL was observed in the well in the past.

TVOC results for well 145D, located outside the source area limits, are stable discounting the low TVOC concentration for the 2005 second round event. TVOC concentrations at near source area well 165D indicate a return to historically lower TVOC levels.

E-Zone

Results from the six LGMP E-Zone wells indicate TVOC concentrations generally below 15,000 µg/l. TVOC results for well 136E, the closest E-Zone well to the landfill, were under 100 µg/l. Biogenic daughter compounds including cis-1,2-dichloroethene and vinyl chloride dominate TVOC results for all the E-Zone wells. With the exception of wells 145E, 146E, and 150E, TVOC concentrations at well locations outside the source area limits were less than 100 µg/l and ranged from 21 to 77 µg/l.

TVOC results for wells 146E and 150E located outside the source area limits, have returned to relatively lower concentrations following increases in 2005 and 2006. Biogenic daughter compounds including cis-1,2-dichloroethene and vinyl chloride dominate TVOC results at these well locations. As discussed in Section 3.6, the presence of these biogenic daughter compounds is a clear indication that natural attenuation processes are occurring in the far-field.

F-Zone

Results from the five LGMP F-Zone wells indicate TVOC concentrations generally below 25,000 µg/l, which is consistent with the 2006 results. Similar to the results from the E-Zone wells TVOC results for all the F-Zone wells are dominated by biogenic daughter compounds cis-1,2-dichloroethene and vinyl chloride. TVOC concentrations at well locations outside the source area limits (147F and 156F) were less than 100 µg/l and ranged from 2 µg/l to 68 µg/l. TVOC concentrations at near source well 136F have steadily declined since HCS startup from 8,458 µg/l in 2005 to 150 µg/l. A similar decline in TVOC is apparent at well 136E.

Compared to historical sample results, TVOC results at far-field well 156F have decreased by two orders of magnitude. TVOC results at far-field well 147F have decreased by an order of magnitude.

3.3.7 G-Zone

Though not included in the SOW as a groundwater flow zone requiring hydraulic control, far-field wells 147G1, 147G2, and 147G3 are included in the long-term chemical monitoring program. TVOC concentrations from these well locations range from 70µg/l to less than 8,000 µg/l. TVOC results continue to be dominated by biogenic daughter compounds including cis-1,2-dichloroethene and at greater concentrations, vinyl chloride.

3.4 Data Quality Control/Quality Assurance

The 2007 biannual groundwater samples were submitted to TestAmerica Laboratories in North Canton, Ohio (formerly STL) for all chemical analyses except gas phase hydrocarbons, which were analyzed at the TestAmerica Austin, Texas facility.

3.4.1 Sample Collection

Samples were collected in accordance with the scope and technical requirements defined in the Necco Park LGMP and QAPP.

April/May 2007 Groundwater Sampling

The samples were collected in accordance with the scope and technical requirements defined in the Work Plan and Quality Assurance Project Plan (QAPP). Samples were submitted in10 delivery groups received at the laboratories between April 24, 2007 and May 9, 2007. Based on laboratory receipt records, all samples were received in satisfactory condition, and within EPA holding time and temperature requirements (<6 degrees C). Field QC samples collected during the April 2007 sampling round included 3 field duplicate pairs, 10 equipment blank samples, and 10 trip blanks (volatile organics only).

September/October 2007 Groundwater Sampling

The samples were submitted in 10 delivery groups received at the laboratories between September 25, 2007 and October 13, 2007. Based on laboratory receipt records, all samples were received in satisfactory condition, and within EPA holding time and temperature requirements (<6 degrees C). Field QC samples collected during this sampling round included 3 field duplicate pairs, 10 equipment blank samples, and 10 trip blanks (volatile organics only). In addition to the routine monitoring program analyses, the September-October, 2007 sampling round included the collection of samples for gas phase hydrocarbons and the natural attenuation/ water quality parameters.

In-House Data Evaluation

The quality of the data was evaluated by the DuPont/ URS Diamond ADQM Group, using the analytical results provided in hard-copy CLP-type data packages in conjunction with an automated data evaluation of the electronic data deliverables. The laboratory data packages presented a review of the QA/QC procedures conducted by the laboratory and included case narratives identifying any significant issues associated with sample receipt, preparation, and analysis.

The data packages provided by the laboratories were reviewed and verified by the ADQM Group for usability in accordance with the QAPP requirements and general guidance from USEPA Region II Data Validation SOPs and the EPA CLP National Functional Guidelines. Quality control checks included in the in-house evaluation include blank and matrix spike recoveries, surrogate recoveries, laboratory control spike recoveries, and the field and laboratory duplicate precision requirements identified in the QAPP. Sample holding times were compared to method-specific criteria. Equipment blank, trip bank, and laboratory method blank results were compared to sample results.

The precision between the six sets of field duplicate pairs was very good. The QAPP-specified goal of < 30% relative percent difference (RPD) was met for all field duplicate pairs with detections above the method detection limit except for pentachlorophenol in the field duplicates collected at VH-136D on 4/25/07, and chloride in the field duplicate pair collected at the same location on 9/26/07 (41.5%) The RPD for this pair was 32.3%.

A number of the semi-volatile analyses for both sampling rounds were repeated due to non-compliant QC spike recoveries in the initial analysis. In most cases, the samples were re-extracted and re-analyzed beyond the 7-day holding time for aqueous samples. For those samples where the out-of–hold analysis was reported, the data was qualified with a J flag (detection) or UJ (non-detect) to indicate a possible low bias in the analyte concentration due to the holding time exceedence. No samples were re-extracted for semi-volatiles > 2 times beyond the holding time or determined to be unusable. Dilutions required as a result of matrix interference and/or high levels of target compounds also affected a number of other volatile and semi-volatile matrix spike and surrogate recoveries for both rounds of groundwater samples. In all cases, except as noted above, the results were qualified J or UJ, but determined to be usable.

Elevated reporting limits were noted for a number of organic and inorganic target analytes for both sampling rounds. Based on the laboratory case narratives, matrix interferences were a significant factor in the analysis of these samples.

A number of the inorganic / wet chemistry target analytes, including chloride, sulfate, alkalinity, nitrate-nitrite, and total organic carbon, and the metals iron, manganese, and barium, were detected in the equipment blanks. The results for the associated well samples that were reported in the same concentration range as the blanks were qualified with a B flag. No target analytes were detected in the laboratory method blanks above the analyte reporting limits.

All analytes reported between the laboratory method detection limit (MDL) and quantitation limit (PQL) were J qualified as estimated concentrations. The site-specific non-target semi-volatile reported as TIC 01 was also J-qualified during the review process as an estimated concentration.

3.4.2 Independent Data Validation

In addition to the in-house evaluation, approximately 10% of the sample locations, plus the associated field and laboratory QC samples, for both groundwater sampling rounds were submitted for independent data validation by Environmental Standards, Inc., Valley Forge, PA. The wells were selected for validation based on importance to the program (key perimeter wells), and include well locations VH-136D (plus its field duplicate), VH-145C, VH-146E, VH-172B, and VH-D-11. The Quality Assurance reports are included in Appendix B.

There were a number of validation qualifiers applied to the samples due to non-compliant QC checks or spike recoveries, however no results in either of the sample sets submitted for validation were determined to be unusable.

It was noted that the validator applied stricter precision and sample representativeness criteria to the data set than specified in the project QAPP (both results were >5x the PQL, and the RPD was <20%, or at least one result was <5x the PQL and the difference between the results was less than +/- the PQL). As a result, several analytes were J qualified as estimated concentrations.

3.5 Groundwater Chemistry Trends

An analysis of short-term and long-term groundwater chemistry trends has been completed to assess the effectiveness of the HCS and the former extraction system in reducing organic compound concentrations in groundwater. This analysis utilized TVOC concentration data from monitoring wells to identify chemistry trends in the flow zones units. The evaluation also serves to identify locations where TVOC concentrations exhibit significant changes (generally, changes greater than an order of magnitude). Where applicable, historical TVOC data have been used to assess long-term chemistry trends. TVOC concentration versus time plots for A-Zone overburden and bedrock B- through F-Zone monitoring wells are presented in Appendix C.

In general, operation of the HCS and the former groundwater recovery system, combined with the presence of the Subsurface Formation Repair (SFR), has contributed to an overall trend of declining TVOC concentrations in the A-Zone overburden and bedrock fractures zones. More recently, TVOC concentration decreases at several near source area and far-field wells are significant and coincide strongly with the onset of HCS operations in April 2005. Natural attenuation processes, as discussed in Section 3.6, are also contributing to the reduction in chemical mass in the bedrock fracture zones.

A-Zone Overburden

Three of the seven wells used to monitor A-Zone chemistry, D-9, D-13, and 137A exhibit a decreasing TVOC trend. These wells are located directly south of the landfill. The greatest TVOC decline is at well 137A where concentrations have decreased by an order of magnitude since 2005. TVOC results for the remaining A-Zone wells show no discernable trends. TVOC concentrations at these four wells: D-11, 145A, 146AR, and 150A have been less than 1,000 μg/l since the 2000 baseline sampling event.

The 2007 results are consistent with historical results in that they show that there is not a significant downgradient plume in the overburden.

B/C-Zone

B-Zone monitoring wells 111B, 150B, 171B, and 172B show a trend of decreasing TVOC concentrations. At source area well location 111B, TVOC concentrations have decreased by an order of magnitude since 1996. A long-term trend of decreasing TVOC is also observed at far-field well 150B, where TVOC concentrations have decreased by two orders of magnitude since 1998.

Continuing TVOC decreases have occurred at key wells used to define source area limits including 171B and 172B. TVOC concentrations at these monitoring locations have decreased by an order of magnitude between the 2005 and 2007 sampling events. These TVOC decreases coincident with the HCS startup demonstrate the effectiveness of the B/C-Zone extraction wells in hydraulically controlling the source area. Continued monitoring is necessary to determine if these declines persist, but TVOC concentration decreases of this magnitude at locations south of the site illustrate the continued effectiveness of the HCS.

Similarly, historical C-Zone chemical results indicate a decrease in TVOC at source area well 145C. This well has been historically used to define the C-Zone source area limit. The long-term decreasing TVOC trend may be associated with the long term reduction in off-site migration resulting from hydraulic gradient reversal across the source area limits (as described above for the B-Zone). In spite of a few anonymously high TVOC concentrations, an overall trend of decreasing TVOC since HCS startup is evident.

A marked decrease in TVOC concentration at well locations 145C and 146C was observed shortly after completion of the Subsurface Formation Repair (SFR) in 1989. The SFR increased the capture zones of the former groundwater recovery wells and reduced off-site chemical migration. Based on the widespread drawdown observed since it began operation, it is expected that the HCS will further enhance the C-Zone capture zone.

Another notable C-Zone trend is the decline in TVOC concentrations for far-field well 151C by an order of magnitude since 2000. From a historical perspective, TVOC concentrations have decreased three orders of magnitude. From a short-term perspective, TVOC concentrations are stable at source area well 168C following a declining TVOC trend in 2006. The TVOC decline is significant considering the observation of DNAPL in the well shortly after installation of well in 2002.

TVOC trend plots for the declining B-Zone and C-Zone wells show a direct correlation between HCS startup and decreasing TVOC concentrations. TVOC results for near source area wells including 171B, 172B, 150C and 168C illustrate that the hydraulic effects of the HCS extend to the southeastern portions of the B/C source limits.

D/E/F-Zone

Historical TVOC results for the D/E/F-Zone indicate an overall pattern of decreasing or stable chemistry trends. TVOC concentrations at far-field wells 147F and 156F have decreased by two orders of magnitude since 1996. The 2007 results support this significant trend of decreasing TVOCs in the far-field.

TVOC results for source area well 139D have shown a significant decease since 2000 and show a pattern of continuing TVOC reduction. TVOC concentrations have decreased by an order of magnitude at this location since startup of the HSC. Results for near source area well 136D show a trend towards TVOC concentrations to below 500 μg/l that were reported for this well in the 1990s. From a short-term perspective, TVOC concentrations have continually declined over the last two years. A similar decreasing trend is occurring in the F-Zone at this location where TVOC concentrations have declined from 8,458 μg/l in 2005 to 150 μg/l in 2007 at well 136F.

TVOC trend plots for far-field wells 146E and 146F show an overall decrease in TVOCs. The recent short-term TVOC increases at these locations (post-HCS start-up results) are attributed to the increased concentrations of cis-1,2-dichloroethene and vinyl chloride.

TVOC concentration trends for the D/E/F-Zone wells also correlate to the startup of the HCS. As illustrated on the trend plots for wells 136D, 139D, 145E, 136F, 150F and

156F. TVOC concentrations have apparently decreased at these locations in response to the startup of the HCS. The TVOC decline at far-field well 156F is significant considering its location in the distant far field.

G-Zone

Results for wells 147G1, 147G2, and 147G3 indicate an overall trend of declining TVOC since 2005. Biodegradation daughter compounds dominate TVOCs reported at these locations. A short-term increase at these locations in 2005 was followed by declining TVOC concentrations in 2006 and 2007.

3.6 Monitoring Natural Attenuation (MNA) Assessment

This section focuses on the natural anaerobic biodegradation of chlorinated solvent compounds in groundwater at the Necco Park Site. Primary constituents of concern are the chlorinated ethene compounds PCE and TCE. Three isomers of Dichloroethylene (DCE) are also present in groundwater (cis 1,2 DCE, trans 1,2 DCE, and, 1,1 DCE). In summary, biological reductive dechlorination, mediated by bacteria, is known to convert PCE to TCE, and TCE to cis 1,2 DCE, cis 1,2 DCE to vinyl chloride and vinyl chloride to ethene. The bacterium Dehalococcoides ethenogenes is known to be key to this process because it is the only organism known to convert all three isomers of DCE to vinyl chloride (VC) and ultimately to the fully dechlorinated, non-toxic ethene.

3.6.1 MNA Background

One of the requirements of the Record of Decision (ROD) for the Necco Park Source Area Operable Unit is to further characterize groundwater in the far-field area. As defined in the ROD, the far-field is the area outside the source area where chemical constituents attributable to the Necco Park site have been found to have contaminated groundwater. The far-field aqueous plume is defined as the plume of dissolved contaminants down gradient of the source area. The 2005 and 2006 reports confirmed that concentrations of the target constituents (PCE, TCE and reduced by products) decrease as groundwater flows south and west away from the Necco Park site. Additionally, in many wells, historic TVOC results showed significant reduction in target constituents over time. These results are consistent with a published reference showing active anaerobic microbial degradation transforming PCE and TCE to cDCE, VC and ultimately ethene in all zones (Lee et al, 1993)

The initial MNA assessment for this site is contained in the 2005 Annual Report where data on the concentrations of chlorinated solvents in the groundwater and DNA results indicating the presence of a microbial population competent for degrading chlorinated ethenes was presented. The following report on 2007 groundwater conditions at Necco Park is intended as an update to the 2006 report and the comprehensive 2005 report.

The three recognized lines of evidence for monitored natural attenuation of contaminants are as follows (USEPA, Monitored Natural Attenuation Directive, 1999):

- Reduction of contaminant concentrations over time or distance,
- Geochemical data that demonstrate conditions favorable for contaminant destruction, and

- Microbiological data from field or microcosm studies that directly demonstrate the occurrence of a natural attenuation process and its ability to degrade contaminants of concern.

Based on *Dehalococcoides* analyses conducted and the conditions observed in the groundwater, all three of these lines of evidence are observable at Necco Park.

Details of the Necco Park MNA monitoring program are presented in the *Long Term Groundwater Monitoring Plan* (CRG, 2005a). The MNA monitoring wells were sampled for a full suite of MNA parameters in 2000 and more recently during the 2005, 2006, and 2007 semi-annual sampling events. The resultant data are discussed in the following sections for the B/C-Zone and the D/E/F-Zone.

3.6.2 B/C Zone Results

The results of the MNA monitoring program for the 13 B/C-Zone wells are shown in the figures in Appendix D. For each of the B/C-Zone wells, the data from the four sampling events are plotted as a function of time so that concentration trends are apparent. Concentrations are plotted in mili-moles (molar equivalents) so that the relationships between parent compounds and daughter compounds (degradation products) are quantitatively accurate. Observations of data trends, along with select data from the most recent sampling event in parts per billion (ppb), are posted on the figures. A summary of the MNA results in all of the B/C-Zone wells is presented in Table 3-15.

Downgradient B/C-Zone Wells

As shown in Table 3-15, concentrations of total chlorinated ethenes show a strong decreasing trend in one of the four down gradient wells (151C). Since 2006 a slight increasing trend in total chlorinated ethenes was observed in wells 145B and 149C. Of the wells with the slightly increasing trend, 149C continues to show very low concentrations of total chlorinated ethenes consisting primarily of cDCE and VC; both products of dechlorination of higher chlorinated ethenes such as PCE and TCE. Similar to well 149C the contaminant pattern in well 145B is also dominated by cDCE and VC, and shows good ethene production, indicating complete dechlorination of PCE and TCE. In contrast, in 2007 well 145C showed a larger increase in total chlorinated ethenes relative to the 2006 results. Some of this increase is attributable to increased levels of cDCE and TCE, expected products of PCE dechlorination. Because ethene continues to be produced in this well, it appears that chlorinated ethenes are actively being dechlorinated in spite of the apparent increase in total chlorinated ethenes.

Although the total chlorinated ethene trend in the down gradient B/C wells is mixed, the observation of ample amounts of dechlorinated ethenes cDCE and VC indicates that in situ degradation of these compounds continues to be active. Additionally, the continued generation of ethene in all the downgradient wells except for 151C where chlorinated solvent levels are extremely low (<5 μg/l for each Cl-ethene) supports the interpretation that active natural attenuation of chlorinated ethenes is continuing.

Source Area B/C-Zone Wells

Similar to the results for the downgradient wells, the B/C zone source area wells exhibit mixed trends in total chlorinated ethenes. Well 139B continues to exhibit an increase since 2005 but is the only source area well showing significant increases in total chlorinated ethenes relative to the 2005 sampling. However, in spite of this increase, it should be noted that in well 139B the increased amounts of chlorinated ethenes are dominated by cDCE and VC, both indicators of active natural attenuation. Wells 111B and 137B both show slight increases in total chlorinated ethenes since 2006. However, these levels are equal or lower than those reported in 2005 suggesting that the 2006 measurements may be anomalous or represent changes in groundwater flow. Similar to well 139B, both wells 111B and 137B contain cDCE and VC. Concentration trends in the source area wells are difficult to interpret because they are within the hydraulic capture zone of the pumping system and do not represent consistent flow conditions. Reductions or increases in contaminant concentrations could be the result of pumping or changes in groundwater flow direction or velocity. However, in spite of the flow disruption due to pumping, significant concentrations of biodegradation daughter products (cDCE, VC and ethene) are present in all the source area wells. These results suggest that natural attenuation of chlorinated ethenes continues in all the source area wells, even those that show an increase in total chlorinated ethenes in 2007.

B/C Zone Geochemical Parameters

A summary of the geochemical parameters for the B/C-Zone wells are provided in Appendix A. Overall, these parameters continue to demonstrate highly reducing conditions favorable to biological reductive dechlorination. Dissolved oxygen is typically below 1 ppm. Redox potential is negative in all source area and downgradient wells, and is typically below -100 millivolts, and as low as -453 millivolts. Sulfide, an indicator of sulfate reducing conditions, and methane an indicator of low redox conditions are present in all source area wells and downgradient wells. TOC is present in all wells at concentrations above 1 ppm, with concentrations as high as 2,000 ppm, demonstrating that ample electron donor supply is present to support biological reductive dechlorination. All pH values are neutral to slightly alkaline, also favorable for dechlorinating bacteria. As reported in 2005, quantitative Gene Trak^{R} results support the field data by indicating the presence of a native population of microorganisms competent for reductive dechlorination of chlorinated ethenes to ethene.

3.6.3 D/E/F-Zone Results

The results of the MNA monitoring program for the 14 D/E/F-Zone wells are shown in the figures in Appendix D. A summary of the MNA results in all of the D/E/F-Zone wells is presented in Table 3-14.

Downgradient D/E/F Zone Wells

As shown in Table 3-16, concentrations of total chlorinated ethenes are decreasing in four of the eight downgradient wells, and essentially flat in two of the eight wells (147D and 148D). Some increases in total chlorinated ethenes were observed in two wells, 136E and 146F. This overall downward trend in the downgradient wells continues to support the site conceptual model of a shrinking chlorinated ethene plume in the D/E/F-Zone.

Similar to the trends observed in the B/C-Zone, ample daughter product generation is apparent in the D/E/F-Zone wells. In 146F, where a significant increase in total chlorinated ethenes was observed the increase was largely due to increased concentrations of the chlorinated ethene degradation product cDCE. Overall, VC, another indicator of chlorinated ethene degradation, is present in seven of the eight down gradient wells. The only well without VC is 148D, which is below detection limits for all VOC's except cDCE. Ethene, the fully dehalogenated end product, is present in six of the eight downgradient wells. The two wells with no detectable ethene, 156D, and 156E, also exhibit low concentrations of total chlorinated ethenes, 2 μg/l and 1 μg/l, respectively. The presence of degradation products in the downgradient wells is consistent with the conceptual model of a plume that is shrinking as a result of natural attenuation processes.

Source Area D/E/F-Zone Wells

In 2007 a slight decreasing concentration trend in chlorinated ethenes was observed in the D/E/F-Zone source area well 165D while concentrations remained stable in well 139D. In contrast, well 137D showed an increase in total chlorinated ethenes, although more than half of this increase was due to increased concentrations of cDCE and VC. It is believed that the stable concentrations observed in 139D and some of the observed increase in 137D may be reflect changes in source area groundwater pumping. Concentration trends in the source area wells are difficult to interpret because they are within the hydraulic capture zone of the pumping system and do not represent consistent flow conditions. Regardless of the difficulties in interpretation of flow paths, the presence of vinyl chloride and ethene is consistent with continued degradation of chlorinated ethenes even though concentrations are stable or increasing. Additionally, in well 165D the decreasing trend in total chlorinated ethenes is associated with an increasing trend in ethene, further evidence of active natural attenuation processes.

Significant biodegradation is occurring in the D/E/F-Zone source area, even in high-concentration wells such as 139D, where NAPL has been historically observed, and where some concentrations exceed the effective solubility and one percent pure phase solubility for a number of compounds. The strongest evidence is the presence of significant concentrations of the daughter products VC and ethene. Continuing high concentrations of parent compounds and total chlorinated ethenes are likely the result of continued dissolution of these compounds from sources which are not yet depleted.

D/E/F-Zone Geochemical Parameters

A summary of the geochemical parameters for the D/E/F-Zone wells is provided in Appendix A. Similar to the B/C-Zone, these parameters demonstrate highly reducing conditions favorable to biological reductive dechlorination. Dissolved oxygen is in all cases below 1ppm. All redox measurements are negative, and typically below –100 millivolts, extending as low as –403 millivolts. Sulfide is present in seven of the eight downgradient wells and in all three source area wells. Methane is present in all wells TOC is present at ppm levels in all source area and down gradient wells, ranging as high as 340 ppm in well 137D. Although, over all, the D/E/F zone wells have less TOC than the B/C wells this does not seem to inhibit natural attenuation of chlorinated ethenes. All pH values are neutral to slightly alkaline, also favorable for dechlorinating bacteria.

As reported in 2005 quantitative Gene Trak^{R} results support this data by indicating the presence of a native population of microorganisms competent for reductive dechlorination of chlorinated ethenes to ethene.

3.7 DNAPL Monitoring and Recovery

As described in the LGMP and the DNAPL Monitoring and Recovery Plan, monitoring for the occurrence of DNAPL has been conducted routinely at the Necco Park site since the early 1980s. A monitoring and recovery program was instituted in 1989 to remove free-phase DNAPL from monitoring and groundwater recovery wells. The historically established monitoring program was modified based on results of the PDIs. The 2007 monthly DNAPL monitoring results are summarized in Table 3-17.

Consistent with the 2006 observations, the only new recovery well that has accumulated DNAPL is RW-5. This well and the other B/C-Zone recovery wells (RW-4 and RW-10) are equipped with dedicated air-driven pumps for DNAPL recovery. DNAPL recovery is accomplished by groundwater pumping, which entrains DNAPL droplets and draws them into the well where they settle, coalesce, and accumulate. Trace or unrecoverable quantities of DNAPL were observed sporadically in monitoring wells 161C, 129C and 171B.

Approximately 205 gallons of DNAPL was recovered in 2007, all of which was recovered from well RW-5. The total quantity of DNAPL recovered since the program has been in place is approximately 7,841 gallons.

4.0 CAP MAINTENANCE

Remaining punch list items for the 2005 landfill cap construction activities were completed in June and August 2006. The results of the August 2006 overseeding event has been successful as permanent vegetation is established across the entire site, including the slopes. A lawn maintenance contractor was secured in September 2007 to maintain both the landfill cap and ditch vegetation. In 2007, landfill cap activities have transitioned from construction to maintenance activities and will be conducted in accordance with the CMMP. Results of the landfill cap maintenance inspection conducted in September 2007 are provided in Appendix E.

5.0 CONCLUSIONS AND RECOMMENDATIONS

5.1 Hydraulic Control Effectiveness

5.1.1 Conclusions

Groundwater elevation hydrographs along with potentiometric surface-contour maps, calculated drawdowns, and calculated horizontal hydraulic gradients illustrate the effectiveness of the HCS in creating source area hydraulic control in the AT, A, B, C, D, E and F-Zones at the DuPont Necco Park site:

- AT-Zone: HCS is effective for the entire zone.
- A-Zone: HCS is effective for the entire zone.
- B-Zone: HCS is generally effective; however, due to reduced efficiency of recovery well RW-10, the magnitude of control has been reduced in the portion of the site between RW-5 and RW-10 for 2007.
- C-Zone: HCS is generally effective; however, due to reduced efficiency of recovery well RW-5; the magnitude of control has been reduced in the southern portion of the site for 2007.
- D-Zone: HCS is effective for the entire zone.
- E-Zone: HCS is effective for the entire zone.
- F-Zone: HCS is effective for the entire zone.

Measures to address the reduced well efficiency at B/C-Zone recovery well observed in 4Q07 have been taken. Well maintenance completed in March is excepted to improve B/C-Zone hydraulic control.

5.1.2 Recommendations

- Replacement of B/C-Zone recovery well RW-10 with a new B/C-Zone recovery well installed in a BFBT pending approval of a Work Plan by the Agency.
- Replacement of compromised well 112C to continue C-Zone hydraulic monitoring in this portion of the site is recommended.
- Closure of former recovery wells RW-1 and RW-2.
- Installation of an A-Zone piezometer south of the CECOS secure cells at existing DuPont well location 168.

Replacement of monitoring well 112C, installation of an A-Zone piezometer at well location 168, and closure of former recovery wells R-1 and R-2 will be completed during the mobilization for installation of the BFBT.

5.2 Groundwater Chemistry Monitoring

5.2.1 Conclusions

The 2007 and historical chemistry monitoring results indicate the following:

- An overall decrease in TVOC concentrations for all groundwater flow zones in the source area and far-field.
- A-Zone chemistry results are consistent with historical results in that they show no significant off-site horizontal chemical migration in the overburden.
- Short-term TVOC decreases have occurred at key B/C-Zone source area limit wells including 171B and 172B.
- TVOC concentrations in the D/E/F-Zone are either stable or decreasing. TVOC concentrations at far-field wells 147F and 156F have decreased by two orders of magnitude since 1996.
- Analytical results for 2007 would not significantly change the A-Zone and B/C-Zone source area limits as delineated in the SAR.
- Analytical results for 2007 support the 2005 Annual Report conclusion of a reduced source area limit for the D/E/F-Zone as delineated in the SAR based on the analytical results from well 146E.
- Results from groundwater sampling events completed since the startup of the HCS show the effectiveness of the HCS in controlling zone-specific source areas.

5.2.2 Recommendations

The 2007 sampling program represents the last year of semi-annual groundwater sampling. In accordance with the LGMP, groundwater sampling frequency will revert to annually in 2008. An assessment of the 2008 sample results will be conducted to identify potential modifications to the chemical monitoring program, including analytical parameters and number of monitoring locations.

5.3 Monitored Natural Attenuation Assessment

5.3.1 Conclusions

Data on chlorinated ethenes in Necco Park is consistent with lines of evidence required for natural attenuation of contaminants (USEPA, Monitored Natural Attenuation Directive, 1999). Specifically, the results summarized above and in the 2007 report continue to show the following:

- contaminants in groundwater decrease along flowpaths from the source area to the down gradient zone,
- geochemical conditions are indicative of low redox conditions required for reductive dechlorination

- Previous results (2005) have confirmed the presence of bacteria competent for the complete dechlorination of chlorinated ethenes to ethane. The continued evidence of natural attenuation of chlorinated solvents is consistent with the presence of these organisms.

Overall, the generally observed stable to decreasing trends in total chlorinated solvents in both source area and downgradient wells and the presence of dechlorinated intermediates (cDCE, VC and ethene) strongly supports the interpretation that natural attenuation of chlorinated ethenes continues to occur at this site through bacterially mediated sequential reductive dechlorination.

5.3.2 Recommendations

It is recommended that sampling for natural attenuation parameters (groundwater geochemistry and COC's) is continued in both the far-field and source areas wells at the frequency described in the LGMP. The 2008 sampling results will be reviewed to identify potential modifications to the MNA sampling program. Pending 2008 results it is may be appropriate to drop the far-field and side gradient wells with extremely low concentrations of chlorinated ethenes from the sampling program.

5.4 DNAPL Monitoring and Recovery

5.4.1 Conclusions

Results of the 2007 DNAPL monitoring and historical recovery efforts indicate the following:

- DNAPL was observed in only four of the 30 locations used for DNAPL monitoring.
- Observations were limited to B/C-Zone wells RW-5, 129C, 161C, and 171B.
- 205 gallons of DNAPL recovered in 2007, all from recovery well RW-5.
- Approximately 7,841 gallons of DNAPL has been recovered since the recovery program was initiated in 1989.

Observations of DNAPL in 2007 were limited primarily to a few upper bedrock wells located in the southeast portion of the site. Monthly monitoring and removal, where encountered, will continue.

5.4.2 Recommendations

Continue DNAPL monitoring and recover DNAPL where encountered.

5.5 Landfill Cap

5.5.1 Conclusions and Recommendations

With establishment of a continuous vegetative cover the landfill cap construction is complete and will be now be maintained in accordance with the CMMP.

6.0 REFERENCES

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TABLES

Table 2-1
HCS Recovery Well Performance Summary*
2007
DuPont Necco Park

	B/C-ZONE						D/E/F-ZONE			
	RW-4		**RW-5**		**RW-10**		**RW-8**		**RW-9**	
	Total Gallons Pumped	**Uptime**	**Total Gallons Pumped**	**Uptime**	**Total Gallons Pumped**	**Uptime**	**Total Gallons Pumped**	**Uptime**	**Total Gallons Pumped**	**Uptime**
JANUARY	12,046	91.8%	158,832	96.6%	19,204	98.4%	351,765	96.4%	349,509	96.4%
FEBRUARY	9,346	97.2%	137,639	96.6%	17,261	96.9%	282,485	96.4%	354,005	96.4%
MARCH	10,511	74.0%	153,981	85.9%	28,279	94.5%	347,239	94.7%	405,903	93.9%
APRIL	7,038	100.0%	124,642	80.6%	20,824	100.0%	356,149	98.1%	557,811	98.1%
MAY	5,960	100.0%	135,861	87.2%	27,707	100.0%	332,405	92.8%	451,667	90.2%
JUNE	7,052	99.6%	101,948	64.6%	34,338	99.6%	302,294	98.2%	466,368	98.2%
JULY	14,167	96.9%	114,732	76.5%	41,012	100.0%	338,659	99.8%	539,350	99.8%
AUGUST	2,965	86.9%	107,972	75.9%	37,020	86.9%	301,424	86.0%	470,244	86.0%
SEPTEMBER	7,580	95.2%	115,382	97.0%	41,803	98.5%	329,661	97.6%	497,947	97.6%
OCTOBER	11,172	100.0%	107,324	94.0%	56,933	100.0%	318,350	95.3%	516,506	95.4%
NOVEMBER	7,019	99.9%	82,052	99.9%	11,571	37.1%	302,446	99.3%	416,414	99.3%
DECEMBER	14,997	100.0%	50,974	48.8%	27,042	100.0%	294,816	100.0%	480,299	100.0%
TOTAL / AVG.	109,853	95.1%	1,391,339	83.6%	362,994	92.6%	3,857,693	96.2%	5,506,023	95.9%

* Uptime totals include downtime as a result of routine scheduled maintenance.

Table 2-2
GWTF Process Sampling Results
2007
DuPont Necco Park
Niagara Falls, NY

		B/C INFLUENT				D/E/F INFLUENT				COMBINED EFFLUENT			
Analyte		2/23/07	5/2/07	8/23/07	11/26/07	2/23/07	5/2/07	8/23/07	11/26/07	2/23/07	5/2/07	8/23/07	11/26/07
Field Parameters													
SPECIFIC CONDUCTANCE	umhos/cm	39340	40600	34320	40340	4653	1660	4286	5218	9173	10130	8124	8378
TEMPERATURE	degrees C	10.2	11.9	18.4	12.4	11.7	11.7	13.1	12.1	10.8	13.6	16.4	13.7
COLOR	ns	Grey	Grey	Grey	Grey	Grey	Grey	Grey	Grey	Tan	Cloudy	Grey	Grey
ODOR	ns	NA	NA	Moderate	Moderate	NA	NA	Moderate	Moderate	NA	NA	Slight	Slight
PH	std units	4.86	6.84	5.5	5.77	7.17	7.13	7.06	6.39	7.47	7.46	7.47	7.1
REDOX	mv	-150	-276	-204	-185	-259	-230	-274	-305	-140	50	-150	-176
TURBIDITY	ntu	31.2	27.1	71.3	229	65.2	49.8	318	78.3	70.9	50	266	126
Inorganics													
BARIUM, DISSOLVED	ug/l	1380000	1280000	1310000	1340000	140 J	150 J	230	340	710	1200	65800	780
BARIUM, TOTAL	ug/l	1480000	1240000	1410000	1220000	110 J	91 J	2300	90 J	71300	29700	53300	47900
SULFATE	ug/l	1100	<12000 G	300 J	<120	907000	779000	777000	812000	404000	482000	445000	516000 J
Volatile Organics													
1,1,2,2-TETRACHLOROETHANE	ug/l	6000	5200	7300 J	7800	1500	1400	1800	1700	860	890	1100	1200 J
1,1,2-TRICHLOROETHANE	ug/l	2200	1900	2200 J	2700	2800	2700	2800	2800	680	770	880	1200
1,1-DICHLOROETHENE	ug/l	490 J	470 J	320 J	330 J	430 J	500	380 J	320 J	<4.5	<9.0	<6.3	<6.3
1,2-DICHLOROETHANE	ug/l	700 J	670	660 J	680	190 J	190 J	180 J	180 J	31	36 J	45	62
CARBON TETRACHLORIDE	ug/l	1300	1200	1200	1500	1500	1300	1200	1200	<4.8	<9.5	<4.3	8.1 J
CHLOROFORM	ug/l	14000	11000	10000	14000	5500	5100	4500	4100	180	200	260	410
CIS-1,2-DICHLOROETHENE	ug/l	19000	20000	18000 J	18000	12000	12000	11000 J	11000	320	400	540 J	900 J
METHYLENE CHLORIDE	ug/l	N/A	5300 J	4600 J	4500	N/A	5200 B	5100	4800	N/A	350 B	420	630 J
TETRACHLOROETHENE	ug/l	3900	3200 J	3200 J	5000	2100	1700	2000	1700	17 J	17 J	26 J	43
TRANS-1,2-DICHLOROETHENE	ug/l	1000	940 J	860 J	800	920 J	770	770	740	5.9 J	<8.0	11 J	17 J
TRICHLOROETHENE	ug/l	13000	11000	10000	15000	11000	10000	8500	8500	93	120	160	280
VINYL CHLORIDE	ug/l	5900	6200 J	4400 J	3800	1800	2200	1900	1900	<5.2	<10	<7.3	7.6 J
Semivolatile Organics													
2,4,5-TRICHLOROPHENOL	ug/l	<38	<38	<38	<190	450	430	450	360	350	380	280	310
2,4,6-TRICHLOROPHENOL	ug/l	<56	<56	<56	<280	240	190 J	250	200	190	180 J	180	170
3-METHYLPHENOL & 4-METHYLPHENOL	ug/l	340 J	310 J	220 J	420 J	29 J	22 J	22 J	3.5 J	18 J	70 J	49 J	27 J
HEXACHLOROBENZENE	ug/l	<2.6	<2.6	<2.6	58 J	<0.81	<1.3	<0.65	<0.65	14 J	<1.3	<0.43	<0.65
HEXACHLOROBUTADIENE	ug/l	1200	1300	1400	5300	60 J	49 J	48 J	39 J	200	54 J	27 J	76 J
HEXACHLOROETHANE	ug/l	600 J	590 J	580 J	1000 J	15 J	13 J	13 J	14 J	8.2 J	<12	<3.9	<5.8
PENTACHLOROPHENOL	ug/l	270 J	230 J	97 J	320 J	760	590 J	410 J	800	660	700 J	370	780
PHENOL	ug/l	310 J	350 J	140 J	310 J	45 J	51 J	44 J	39 J	78 J	90 J	53 J	65 J
TIC-1	ug/l	6200 J	6300 J	4200 J	4100 J	810 J	880 J	740 J	900 J	1800 J	1500 J	950 J	1300 J
TOTAL VOLATILES	ug/l	**67,490**	**67,080**	**62,740**	**74,110**	**39,740**	**43,060**	**40,130**	**38,940**	**2,187**	**2,783**	**3,442**	**4,758**

G indicates an elevated reporting limit. The sample required dilution for analysis due to matrix interference.

< and ND = Non detect at stated reporting limit
J= Analyte present. Reported value may not be precise.
UJ= Not detected. Reporting limit may not be accurate or precise.
NS= Not sampled
NA= Not applicable

Table 3-1
Hydraulic Monitoring Locations
Long-Term Groundwater Monitoring
DuPont - Necco Park

Well ID	Zone	Monitoring Frequency	Well ID	Zone	Monitoring Frequency	Well ID	Zone	Monitoring Frequency
111A	A	Quarterly	111B	B	Quarterly	151C	C	Quarterly
119A	A	Quarterly	115B	B	Quarterly	160C	C	Quarterly
123A	A	Quarterly	116B	B	Quarterly	161C	C	Quarterly
129A	A	Quarterly	118B	B	Quarterly	162C	C	Quarterly
131A	A	Quarterly	119B	B	Quarterly	168C	C	Quarterly
137A	A	Quarterly	120B	B	Quarterly	105D	D	Quarterly
140A	A	Quarterly	129B	B	Quarterly	115D	D	Quarterly
145A	A	Quarterly	130B	B	Quarterly	123D	D	Quarterly
146AR	A	Quarterly	136B	B	Quarterly	129D	D	Quarterly
150A	A	Quarterly	137B	B	Quarterly	130D	D	Quarterly
159A	A	Quarterly	138B	B	Quarterly	136D	D	Quarterly
173A	A	Quarterly	145B	B	Quarterly	139D	D	Quarterly
174A	A	Quarterly	146B	B	Quarterly	145D	D	Quarterly
175A	A	Quarterly	149B	B	Quarterly	148D	D	Quarterly
176A	A	Quarterly	150B	B	Quarterly	149D	D	Quarterly
179A	A	Quarterly	159B	B	Quarterly	159D	D	Quarterly
184A	A	Quarterly	160B	B	Quarterly	163D	D	Quarterly
185A	A	Quarterly	161B	B	Quarterly	164D	D	Quarterly
187A	A	Quarterly	167B	B	Quarterly	202D	D	Quarterly
188A	A	Quarterly	168B	B	Quarterly	203D	D	Quarterly
189A	A	Quarterly	169B	B	Quarterly	RW-8	D/E/F	Quarterly
191A	A	Quarterly	171B	B	Quarterly	129E	E	Quarterly
192A	A	Quarterly	172B	B	Quarterly	136E	E	Quarterly
193A	A	Quarterly	201B	B	Quarterly	142E	E	Quarterly
194A	A	Quarterly	BZTW-1	B	Quarterly	145E	E	Quarterly
D-11	A	Quarterly	BZTW-2	B	Quarterly	146E	E	Quarterly
RDB-3	A	Quarterly	D-23	B	Quarterly	163E	E	Quarterly
RDB-5	A	Quarterly	D-10	B/C	Quarterly	164E	E	Quarterly
D-13	A	Quarterly	D-14	B/C	Quarterly	165E	F	Quarterly
129AT	AT	Quarterly	RW-10	B/C	Quarterly	203E	F	Quarterly
184AT	AT	Quarterly	RW-4	B/C	Quarterly	129F	F	Quarterly
185AT	AT	Quarterly	RW-5	B/C	Quarterly	130F	F	Quarterly
188AT	AT	Quarterly	105C	C	Quarterly	145F	F	Quarterly
189AT	AT	Quarterly	112C	C	Quarterly	146F	F	Quarterly
190AT	AT	Quarterly	115C	C	Quarterly	148F	F	Quarterly
191AT	AT	Quarterly	123C	C	Quarterly	150F	F	Quarterly
192AT	AT	Quarterly	129C	C	Quarterly	163F	F	Quarterly
193AT	AT	Quarterly	130C	C	Quarterly	164F	F	Quarterly
194AT	AT	Quarterly	136C	C	Quarterly	165F	F	Quarterly
PZ-195AT+	*AT*	Quarterly	137C	C	Quarterly	202F	F	Quarterly
PZ-196AT+	*AT*	Quarterly	138C	C	Quarterly	203F	F	Quarterly
PZ-197AT+	*AT*	Quarterly	139C	C	Quarterly	130G	G	Quarterly
MW-198AT+	*AT*	Quarterly	145C	C	Quarterly	136G	G	Quarterly
PZ-199AT+	*AT*	Quarterly	146C	C	Quarterly	141G	G	Quarterly
PZ-200AT+	*AT*	Quarterly	149C	C	Quarterly	143G	G	Quarterly

AT = Top-of-clay

Notes: 1. Wells monitored monthly quarterly during 2007. 2. Well 112C will be replaced in 2008.

Table 3-2
Select AT-Zone 2007 Drawdowns
Post HCS Startup
DuPont Necco Park

Well	04/05/05	02/23/07	05/02/07	08/23/07	11/26/07
119AT	0.00	3.30	3.13	4.11	4.07
129AT	0.00	3.24	3.07	3.90	4.18
180AT	0.00	5.15	4.67	7.04	5.81
184AT	0.00	4.23	3.84	5.66	4.35
185AT	0.00	4.41	3.94	5.86	4.49
186AT	0.00	4.70	4.17	6.15	4.87
187AT	0.00	4.80	4.23	6.30	5.07
188AT	0.00	5.29	4.74	7.06	5.81
189AT	0.00	5.54	5.00	6.83	6.17
190AT	0.00	5.50	4.96	7.30	6.14
191AT	0.00	5.44	4.86	7.31	6.26
192AT	0.00	1.60	0.79	3.39	3.81
193AT	0.00	1.48	2.20	5.87	5.42
194AT	0.00	1.80	0.80	3.13	3.61

Notes:
1) Drawdowns calculated using April 5, 2005, water level event as baseline.
2) Monitoring well hydraulic heads above baseline (negative values) have been shaded.

Table 3-3
Select A-Zone 2007 Drawdowns
Post HCS Startup
DuPont Necco Park

Well	4/5/05	2/23/07	5/2/07	8/23/07	11/26/07
111A	0.00	3.59	3.43	3.92	4.17
119A	0.00	3.27	3.05	3.92	4.02
123A	0.00	1.74	1.83	2.16	2.41
129A	0.00	3.33	3.10	4.00	4.23
137A	0.00	2.79	2.78	4.47	3.05
146AR	0.00	1.16	1.38	4.11	1.29
150A	0.00	0.44	0.38	4.55	1.85
159A	0.00	1.33	1.12	2.13	2.43
163A	0.00	0.71	1.10	2.39	1.02
173A	0.00	2.89	2.28	3.60	2.76
174A	0.00	2.47	2.34	4.09	2.66
175A	0.00	0.88	0.44	2.12	2.26
176A	0.00	3.37	3.07	4.87	3.50
178A	0.00	3.87	3.46	5.31	3.92
179A	0.00	3.20	2.94	4.73	3.23
184A	0.00	2.30	1.76	3.47	2.34
185A	0.00	4.36	3.93	5.85	4.49
186A	0.00	8.02	7.36	8.05	6.09
187A	0.00	8.57	8.28	9.42	7.40
188A	0.00	11.26	11.12	11.56	9.68
189A[4]	0.00	10.74	10.65	10.90	8.84
190A	0.00	7.73	7.52	7.97	6.26
191A	0.00	4.24	3.89	4.60	3.92
192A	0.00	4.36	3.91	4.65	4.13
193A	0.00	1.65	1.16	2.45	2.48
194A	0.00	4.02	3.71	4.36	3.83
D-11	0.00	3.74	3.42	5.26	3.87
D-13	0.00	1.50	1.92	3.11	1.72
D-9	0.00	4.22	3.52	4.57	3.92
RDB-3	0.00	0.83	0.97	2.33	1.07
RDB-5	0.00	1.05	1.25	1.81	1.18

Notes:
1) Drawdowns calculated using April 5, 2005 water level event as baseline.
2) Monitoring well hydraulic heads above baseline (negative values) have been shaded.
3) NA = not availible.
4) Baseline elevation was recorded on May 5, 2004.

Table 3-4
Typical AT-Zone to A-Zone Vertical Gradients
DuPont Necco Park

Well Pair		A 5/02/07 AT-Zone Head	B 5/02/07 A-Zone Head	C AT-Zone Mid-Point of Well Screen	D A-Zone Mid-Point of Well Screen	Vertical Gradtient1,2 (B-A) / (C-D)
119AT	119A	573.44	573.69	570.92	564.73	0.04
129AT	129A	573.52	573.52	567.24	563.25	0.00
184AT	184A	572.09	572.14	570.46	564.65	0.01
185AT	185A	572.10	572.54	569.24	566.50	0.16
186AT	186A	572.15	565.15	569.58	561.13	-0.83
187AT	187A	572.38	565.48	570.33	561.99	-0.83
188AT	188A	572.96	561.75	570.43	559.21	-1.00
189AT	189A	573.05	562.99	569.76	559.30	-0.96
190AT	190A	573.06	565.56	569.81	558.23	-0.65
191AT	191A	573.16	569.88	569.48	558.20	-0.29
192AT	192A	572.82	570.06	569.82	556.10	-0.20
193AT	193A	577.52	571.95	572.38	559.76	-0.44
194AT	194A	575.40	569.97	571.12	558.80	-0.44

Note:
1) Unitless (ft/ft).
2) Negative values indicate a downward (from AT-Zone to A-Zone) gradient.

Table 3-5
Typical A-Zone to B-Zone Vertical Gradients
DuPont Necco Park

Well Pair		A 5/2/07 A-Zone Head	B 5/2/07 B-Zone Head	C A-Zone Mid-Point of Well Screen	D B-Zone Fracture Elevation[1]	Vertical Gradtient[2,3] (B-A) / (C-D)
111A	111B	573.59	572.45	573.94	561.80	-0.09
119A	119B	573.69	570.54	571.63	556.90	-0.21
129A	129B	573.52	570.72	570.10	557.80	-0.23
137A	137B	571.94	571.41	570.10	561.30	-0.06
145A	145B	572.28	566.54	564.19	546.30	-0.32
150A	150B	572.08	570.50	564.69	553.18	-0.14
159A	159B	577.98	574.49	580.62	562.90	-0.20

Note:
1) A B-Zone fracture was not observed in the 145B borehole, therefore the midpoint of the open hole was used.
2) Unitless (ft/ft).
3) Negative values indicate a downward (from A-Zone to B-Zone) gradient.

Table 3-6
Select B-Zone 2007 Drawdowns
Post HCS Startup
DuPont Necco Park

Well[1]	5/4/04	2/23/07	5/2/07	8/23/07	11/26/07
102B	0.00	1.87	1.64	2.35	2.56
111B	0.00	1.33	0.88	2.02	1.83
112B	0.00	2.76	2.40	2.96	3.06
116B	0.00	0.75	0.34	1.80	1.50
118B	0.00	1.99	1.56	7.49	3.04
119B	0.00	6.99	6.63	7.32	6.51
120B	0.00	2.57	2.27	2.90	2.82
129B	0.00	1.81	1.80	1.89	1.96
130B	0.00	3.64	3.20	3.15	3.50
136B	0.00	0.31	0.31	1.66	0.70
137B	0.00	0.77	0.48	1.92	0.59
138B	0.00	3.28	2.59	3.92	3.34
139B	0.00	4.34	3.81	4.70	4.41
145B	0.00	1.50	3.55	1.98	2.34
146B	0.00	0.24	0.16	1.50	0.12
149B	0.00	0.54	0.10	1.53	0.18
150B	0.00	0.84	0.41	1.68	0.39
151B	0.00	0.19	3.32	0.62	0.81
159B	0.00	1.35	0.63	2.05	1.50
160B	0.00	2.86	2.25	3.06	2.88
161B	0.00	3.05	2.53	3.38	3.44
163B	0.00	-0.19	-0.01	1.27	0.06
167B	0.00	6.09	5.56	6.44	5.67
168B	0.00	2.05	1.53	2.76	4.01
169B	0.00	3.33	2.71	3.50	3.43
171B	0.00	2.87	2.15	2.98	2.67
172B	0.00	2.49	1.82	2.52	2.23
D-14	0.00	1.62	1.06	2.13	1.52
D-23	0.00	9.71	9.62	10.29	8.35
RW-4	0.00	25.39	25.46	27.44	26.95
RW-5	0.00	12.80	12.71	13.75	13.26
RW-10	0.00	8.80	8.81	8.89	8.79

Notes:
1) Drawdowns calculated using May 4, 2004 water level event as baseline.
2) Monitoring well hydraulic heads above baseline (negative values) have been shaded.

Table 3-7
Select C-Zone 2007 Drawdowns
Post HCS Startup
DuPont Necco Park

Well[1]	5/4/04	2/23/07	5/2/07	8/23/07	11/26/07
105C	0.00	1.03	0.28	1.33	0.91
112C	0.00	0.79	-3.91	-4.10	2.28
115C	0.00	1.71	0.91	2.20	1.71
129C	0.00	3.46	3.25	4.35	3.26
130C	0.00	0.53	-0.10	1.07	0.42
136C	0.00	0.50	0.11	1.42	0.43
137C	0.00	0.64	0.05	1.20	0.55
138C	0.00	0.42	-0.17	0.95	0.31
139C	0.00	4.24	3.19	3.76	4.08
145C	0.00	1.82	2.11	2.05	2.19
146C	0.00	0.07	-0.40	0.94	0.03
149C	0.00	0.83	0.41	1.59	1.19
150C	0.00	-0.33	0.58	0.44	0.51
151C	0.00	0.87	0.05	0.81	0.26
159C	0.00	0.70	0.01	1.29	0.68
160C	0.00	2.21	1.34	2.24	2.09
161C	0.00	2.59	1.75	2.37	2.62
162C	0.00	1.65	1.11	2.55	2.24
168C	0.00	2.64	1.92	2.76	2.33
D-14	0.00	0.62	0.06	1.13	0.52
RW-4	0.00	25.39	25.46	27.44	26.95
RW-5	0.00	12.80	12.71	13.75	13.26
RW-10	0.00	8.80	8.81	8.89	8.79

Notes:
1) Drawdowns calculated using May 4, 2004 water level event as baseline.
2) Monitoring well hydraulic heads above baseline (negative values) have been shaded.
3) Seal for well casing at 112C has failed based on 12/1/06 data.

Table 3-8
Select D, E, and F-Zone 2007 Drawdowns
Post HCS Startup
DuPont Necco Park

Well[1]	5/4/04	2/23/07	5/2/07	8/23/07	11/26/07
105D	0.00	6.79	6.29	6.37	6.40
111D	0.00	6.90	6.56	6.46	6.51
115D	0.00	6.75	6.28	6.28	6.34
123D	0.00	3.47	2.62	3.17	3.20
130D	0.00	6.34	5.95	5.99	5.96
136D	0.00	6.73	6.27	6.34	6.24
139D	0.00	2.01	1.40	2.15	2.07
145D	0.00	2.23	4.52	2.50	2.56
148D	0.00	3.31	3.42	6.13	4.94
149D	0.00	3.99	4.79	4.69	4.36
159D	0.00	7.12	6.69	6.65	6.71
163D	0.00	5.98	4.69	6.41	5.65
164D	0.00	4.03	3.40	4.74	3.25
129E	0.00	2.49	1.72	2.51	2.39
136E	0.00	6.93	6.49	6.52	6.45
145E	0.00	2.18	1.17	1.98	1.84
146E	0.00	7.04	6.67	6.55	6.64
150E	0.00	5.33	4.93	5.08	4.97
163E	0.00	7.61	7.25	7.27	7.23
164E	0.00	7.28	6.98	6.93	6.88
165E	0.00	7.30	7.01	6.91	6.94
112F[3]	0.00	2.15	1.39	1.94	1.89
129F	0.00	2.44	1.71	2.34	2.80
130F	0.00	6.56	6.37	5.93	6.94
136F	0.00	7.20	6.69	6.71	6.68
145F	0.00	2.06	1.18	2.03	2.41
146F	0.00	6.70	6.16	5.94	6.14
148F	0.00	0.51	1.19	-0.07	1.29
150F	0.00	4.99	5.02	4.15	4.85
163F	0.00	7.16	6.83	6.75	6.73
164F	0.00	7.19	6.86	6.87	6.79
165F	0.00	7.46	7.23	7.07	7.14
RW-8	0.00	9.16	9.03	9.07	8.78
RW-9	0.00	8.11	8.08	8.05	7.95

Note:
1) Drawdowns calculated using May 4, 2004, water level event as baseline.
2) Monitoring well hydraulic heads above baseline (negative values) have been shaded.
3) Baseline water elevation collected on May 8, 2005.

Table 3-9
DNAPL Components and Solubility Criteria Values
DuPont Necco Park

Contaminant	Mole Fraction in DNAPL (%)	Pure-Phase Solubility (ug/l)	One-Percent Pure-Phase solubility (ug/l)	Effective Solubility (ug/l)
Hexachlorobutadiene	59	2,000	20	1,180
Hexachloroethane	9	50,000	500	4,500
Hexachlorobenzene	2	11	0.11	0.22
Carbon tetrachloride	5	800,000	8,000	40,000
Chloroform	1	8,000,000	80,000	80,000
Tetrachloroethene	3	150,000	1,500	4,500
1,1,2,2-Tetrachloroethane	5	2,900,000	29,000	145,000
Trichloroethene	4	1,100,000	11,000	44,000

Table 3-10
2005 - 2007 Annual Sampling
Effective Solubility Exceedances for DNAPL Compounds
DuPont Necco Park

Well ID	Flow Zone	Analyte	Criteria (ppb)	Concentration 2005 1st Event	Concentration 2005 2nd Event	Concentration 2006 1st Event	Concentration 2006 2nd Event	Concentration 2007 1st Event	Concentration 2007 2nd Event
105C	C	Carbon Tetrachloride	40,000	N/S	N/S	N/S	5300 J	N/S	3,600 J
		Hexachlorobutadiene	1,180	1,700	BC	N/S	N/S	N/S	N/S
		Chloroform	80,000	BC	180,000	N/S	120,000	N/S	90,000
		Tetrachloroethene	4,500	32,000	35,000	N/S	36,000	N/S	37,000 J
		Trichloroethene	44,000	280,000	190,000	N/S	190,000	N/S	160,000
105D	D	Carbon Tetrachloride	40,000	150,000	83,000	N/S	170,000	N/S	190,000
		Chloroform	80,000	98,000	35,000	N/S	80,000	N/S	90,000
		Tetrachloroethene	4,500	12,000	57,000	N/S	11,000	N/S	13,000 J
		Trichloroethene	44,000	120,000	51,000	N/S	110,000	N/S	120,000
137C	C	Tetrachloroethene	4,500	8,500	22,000	N/S	7,900	N/S	2,200
137D	D	Tetrachloroethene	4,500	5,100	4,900	N/S	BC	N/S	7,200
		Trichloroethene	44,000	64,000	76,000	N/S	BC	N/S	91,000
		Hexachlorobenzene	0.22	3.0	11.0	N/S	N/S	N/S	N/S
139D	D	Hexachlorobutadiene	1,180	1,200	BC	N/S	N/S	N/S	N/S
171B	B	Hexachlorobutadiene	1,180	2,100	BC	BC	BC	N/S	BC
		Hexachlorobenzene	0.22	BC	4.0	31 J	3.4 J	N/S	1.4 J

BC: Below Criteria
N/S: Not Sampled
Note: Wells 105C and 105D are located on the landfill and are MNA Source Area wells.

Table 3-11
2005 - 2007 Annual Sampling
1% of Pure-Phase Solubility Exceedances for DNAPL Compounds
DuPont Necco Park

Well ID	Flow Zone	Analyte	Criteria (ppb)	Concentration 2005		Concentration 2006		Concentration 2007	
				1st Event	2nd Event	1st Event	2nd Event	1st Event	2nd Event
105C	C	Hexachlorobutadiene	20	1,700	BC	N/S	N/S	N/S	N/S
		Carbon Tetrachloride	8,000	25,000	BC	N/S	BC	N/S	BC
		Chloroform	80,000	250,000	180,000	N/S	120,000	N/S	90,000
		Tetrachloroethene	1,500	32,000	35,000	N/S	36,000	N/S	37,000 J
		Trichloroethene	11,000	280,000	190,000	N/S	190,000	N/S	160,000
105D	D	Hexachlorobutadiene	20	95.0	BC	N/S	N/S	N/S	N/S
		Carbon Tetrachloride	8,000	150,000	83,000	N/S	170,000	N/S	190,000
		Chloroform	80,000	98,000	BC	N/S	80,000	N/S	90,000
		Tetrachloroethene	1,500	12,000	5,700	N/S	11,000	N/S	13,000 J
		1,1,2,2-Tetrachlorethane	29,000	N/S	N/S	N/S	88,000	N/S	79,000
		Trichloroethene	11,000	120,000	51,000	N/S	110,000	N/S	120,000
136C	C	Tetrachloroethene	1,500	4,100	3,600	3,300	3,100	5,200	3,800
137C	C	Tetrachloroethene	1,500	8,500	22,000	N/S	7,900	N/S	2,200
		Trichloroethene	11,000	BC	19,000	N/S	16,000	N/S	20,000
137D	D	Tetrachloroethene	1,500	5,100	4,900	N/S	BC	N/S	7,200
		Trichloroethene	11,000	64,000	76,000	N/S	27,000	N/S	91,000
139B	B	Tetrachloroethene	1,500	N/S	N/S	N/S	2000 J	N/S	4,600
		Hexachlorobutadiene	20	78	BC	N/S	N/S	N/S	N/S
		1,1,2,2-Tetrachlorethane	29000	N/S	N/S	N/S	29,000	N/S	BC
139D	D	Hexachlorobenzene	0.11	38.0	11.0	N/S	N/S	N/S	N/S
		Tetrachloroethene	1,500	1,900	BC	N/S	BC	N/S	BC
165E	E	Hexachlorobutadiene	20	27.0	BC	32 J	46 J	BC	45 J
168C	C	Hexachlorobutadiene	20	330	64.0	54 J	N/S	44 J	BC
171B	B	Hexachlorobutadiene	20	2,100	130	BC	BC	BC	BC
		Hexachlorobenzene	0.11	BC	4.0	3.1 J	3.4 J	BC	1.4 J
172B	B	Hexachlorobutadiene	20	140	89	140 J	110	BC	110
		Tetrachloroethene	1,500	1,800	BC	BC	BC	BC	BC
D-11	A	Hexachlorobutadiene	20	29	BC	BC	BC	BC	BC

BC: Below Criteria

N/S: Not Sampled

Note: Wells 105C and 105D are located on the landfill and are MNA Source Area wells.

Table 3-12
Chemical Monitoring Locations
Long-Term Groundwater Monitoring
DuPont Necco Park

MONITORING WELL	ZONE	MONITORING WELL	ZONE
D-11	A	**105D**	D
D-13	A	123D	D
D-9	A	136D	D
137A	A	**137D**	D
145A	A	145D	D
146AR	A	148D	D
150A	A	**139D**	D
111B	B	147D	D
136B	B	149D*	D
137B	B	156D	D
139B	B	165D	D
141B	B	136E	E
145B*	B	145E	E
146B	B	146E	E
149B*	B	150E	E
150B	B	156E	E
151B*	B	165E	E
153B	B	136F	F
168B	B	146F	F
171B	B	147F	F
172B	B	150F*	F
105C	C	156F	F
136C	C	147G1	G1
137C	C	147G2	G2
141C*	C	147G3	G3
145C*	C		
146C*	C		
149C	C		
150C*	C		
151C	C		
168C	C		

*Well does not meet bedrock zone water bearing criteria ($k<10^{-4}$ cm/sec).

Wells shown in **bold** are used solely for the MNA evaluation and will not be used for Long-term chemistry monitoring.

Table 3-13
Indicator Parameter List
Long-Term Groundwater Monitoring
DuPont Necco Park

INORGANIC AND GENERAL WATER QUALITY PARAMETERS	VOLATILE ORGANIC COMPOUNDS	SEMIVOLATILE ORGANIC COMPOUNDS
pH*	Vinyl chloride	Hexachloroethane
Specific conductivity*	1,1-dichloroethene	Hexachlorobutadiene
Temperature*	Trans-1,2-dichloroethene	Phenol
Turbidity*	Cis-1,2-dichloroethene	2,4,6-trichlorophenol
Dissolved oxygen *	Chloroform	2,4,5-trichlorophenol
Redox potential*	Carbon tetrachloride	Pentachlorophenol
Chloride	1,2-dichloroethane	Hexachlorobenzene
Dissolved barium	Trichloroethene	4-methlyphenol
	1,1,2-trichloroethane	TIC-1
	Tetrachloroethene	
	1,1,2,2-tetrachloroethane	

*Field parameter

Table 3-14
Monitored Natural Attenuation Parameters
DuPont Necco Park

Field Parameters	Miscellaneous Parameters
Specific Conductance	Alkalinity
Temperature	Chloride
Dissolved Oxygen	Nitrate Nitrogen
pH	Sulfate
Eh (Redox)	Sulfide as S
Gases	Total Organic Carbon
Ethane	
Ethene	
Methane	
Propane	
Dissolved Metals	
Iron	
Manganese	

Table 3-15
MNA B/C Zone Wells
DuPont Necco Park

MNA   B/C Zone Wells

Well	Location	Last NAPL observation	Conc. Trend 2005 - 2007	Dominant Cl - ethene species	2007 Ethene Production	2005 total Cl-ethenes (ug/L)	2006 total Cl-ethenes (ug/L)	2007 total Cl-ethenes (ug/L)
141B	Upgradient	NA	Clean	NA	moderate	0	0	0
141C	Upgradient	NA	Flat	VC	Weak	2	1	1
111B	Source Area	NA	Slight Increase	TCE, cDCE, VC	Good	758	398	746
137B	Source Area	NA	Slight Increase	TCE, cDCE, VC	Moderate	1,114	664	750
139B	Source Area	1992	Increasing	PCE, TCE cDCE, VC	Good	1,447	23,800	50,300
105C	Source Area	1992	Decreasing	PCE, TCE cDCE, tDCE, 1,1 DCE, VC	Good	260,800	260,800	231,200
137C	Source Area	NA	Decreasing	PCE, TCE cDCE, VC	Good	51,200	45,110	38,220
145B	Downgradient	NA	Slight Increase	TCE, cDCE, VC	Moderate	4,400	29,850	30,690
145C	Downgradient	NA	Increasing	cDCE, VC	Moderate	8,900	7,650	15,560
149C	Downgradient	NA	Slight Increase	cDCE, VC	Good	10	16	27
151C	Downgradient	NA	Decreasing	cDCE, VC	BDL	220	12	8
153B	Sidegradient	NA	Clean	NA	BDL	0	0	0

NA = not applicable
ND= no data
BDL = Below Detection Limit

Table 3-16
MNA D/E/F Zone Wells
DuPont Necco Park

MNA D/E/F Zone Wells

Well	Location	Last NAPL observation	Conc. Trend 2005 - 2007	Dominant Cl - ethene Species	2007 Ethene Production	2005 total Cl-ethenes (ug/L)	2006 total Cl-ethenes (ug/L)	2007 total Cl-ethenes (ug/L)
137D	Source Area	NA	Increasing	PCE, TCE , cDCE, VC, tDCE, 1,1,DCE	Moderate	94,500	35,470	120,700
139D	Source Area	1992	Flat	TCE	Weak	2,690	1,843	1,845
165D	Source Area	NA	Slight Decrease	VC	Good	1,102	597	498
136D	Downgradient	NA	Decreasing	TCE, cDCE VC	Good	1,819	1,170	468
147D	Downgradient	NA	Flat	VC	Weak	183	168	164
148D	Downgradient	NA	Flat	cDCE	Weak	1	1	1
156D	Downgradient	NA	Slight Decrease	VC	BDL	5	3	2
136E	Downgradient	NA	Slight increase	TCE, cDCE, VC , tDCE	Good	17	16	36
146E	Downgradient	NA	Decreasing	cDCE, VC	Good	17,120	15,060	12,020
156E	Downgradient	NA	Slight Decrease	VC	BDL	3	2	1
146F	Downgradient	NA	Increasing	cDCE, VC	Moderate	20,470	20,310	22,160
149D	Sidegradient	NA	Flat	cDCE, VC	Weak	0	1	1
145E	Sidegradient	NA	Increasing	cDCE, VC	Good	11,750	3,010	14,760
150F	Sidegradient	NA	Flat	cDCE, VC	Weak	2,755	1,740	1,707

NA = not applicable
ND= no data

Table 3-17
2007 DNAPL Recovery Summary
DuPont Necco Park

Well ID	Frequency	8-Jan		13-Feb		9-Mar		12-Apr		18-May		15-Jun		20-Jul		23-Aug		28-Sep		26-Oct		26-Nov		18-Dec	
		FT	GALS	FT	GALS	FT	GALS	FT	GALS	FT	GALS	FT	GALS	FT	GALS	FT	GALS	FT	GALS	FT	GALS	FT	GALS	FT	GALS
RW-1	Monthly	0.0		0.0		0.0		0.0		0.0		0.0		0.0		0.0		0.0		0.0		0.0		0.0	
RW-2	Monthly	0.0		0.0		0.0		0.0		0.0		0.0		0.0		0.0		0.0		0.0		0.0		0.0	
RW-4	Monthly	0.0		0.0		0.0		0.0		0.0		0.0		0.0		0.0		0.0		0.0		0.0		0.0	
RW-5	Monthly	**6.0**	**26.0**	**5.0**	**25.0**	**4.0**	**16.0**	**4.0**	**22.0**	**5.0**	**12.0**	**4.0**	**18.0**	**2.5**	**15.0**	**4.0**	**18.0**	**4.0**	**18.0**	**3.0**	**19.0**	**3.0**	**16.0**	**TRACE**	**0.0**
TRW-6	Monthly	0.0		0.0		0.0		0.0		0.0		0.0		0.0		0.0		0.0		0.0		0.0		0.0	
TRW-7	Monthly	0.0		0.0		0.0		0.0		0.0		0.0		0.0		0.0		0.0		0.0		0.0		0.0	
D-23	Monthly	0.0		0.0		0.0		0.0		0.0		0.0		0.0		0.0		0.0		0.0		0.0		0.0	
VH-117A	Monthly	na		0.0		0.0		0.0		0.0		0.0		0.0		0.0		0.0		0.0		0.0		0.0	
VH-123A	Monthly	0.0		0.0		0.0		0.0		0.0		0.0		0.0		0.0		0.0		0.0		0.0		0.0	
VH-129A	Monthly	0.0		0.0		0.0		0.0		0.0		0.0		0.0		0.0		0.0		0.0		0.0		0.0	
VH-129C	Monthly	0.0		0.0		0.0		0.0		0.0		0.0		TRACE		0.0		0.0		0.0		0.0		0.0	
VH-160B	Monthly	0.0		0.0		0.0		0.0		0.0		0.0		0.0		0.0		0.0		0.0		0.0		0.0	
VH-160C	Monthly	0.0		0.0		0.0		0.0		0.0		0.0		0.0		0.0		0.0		0.0		0.0		0.0	
VH-161B	Monthly	0.0		0.0		0.0		0.0		0.0		0.0		0.0		0.0		0.0		0.0		0.0		0.0	
VH-161C	Monthly	0.0		0.0		TRACE		0.0		0.0		0.0		0.0		0.0		0.0		0.0		0.0		0.0	
VH-162C	Monthly	0.0		0.0		0.0		0.0		0.0		0.0		0.0		0.0		0.0		0.0		0.0		0.0	
VH-190A	Monthly	0.0		0.0		0.0		0.0		0.0		0.0		0.0		0.0		0.0		0.0		0.0		0.0	
VH-167B	Monthly	0.0		0.0		0.0		0.0		0.0		0.0		0.0		0.0		0.0		0.0		0.0		0.0	
VH-168B	Monthly	0.0		0.0		0.0		0.0		0.0		0.0		0.0		0.0		0.0		0.0		0.0		0.0	
VH-168C	Monthly	0.0		0.0		0.0		0.0		0.0		0.0		0.0		0.0		0.0		0.0		0.0		0.0	
VH-169B	Monthly	0.0		0.0		0.0		0.0		0.0		0.0		0.0		0.0		0.0		0.0		0.0		0.0	
VH-170B	Monthly	0.0		0.0		0.0		0.0		0.0		0.0		0.0		0.0		0.0		0.0		0.0		0.0	
VH-171B	Monthly	TRACE		TRACE		TRACE		0.0		0.0		0.0		0.0		0.0		0.0		0.0		0.0		0.0	
VH-172B	Monthly	0.0		0.0		0.0		0.0		0.0		0.0		0.0		0.0		0.0		0.0		0.0		0.0	
VH-131A	Semi-annually	na		na		0.0		0.0		0.0		0.0		na		na		0.0		na		na		na	
VH-139A	Semi-annually	na		na		0.0		0.0		na		0.0		na		na		0.0		na		na		na	
VH-139C	Semi-annually	na		na		0.0		0.0		na		0.0		na		na		0.0		na		na		na	
CECOS52SR	Semi-annually	na		na		0.0		0.0		na		0.0		na		na		0.0		na		na		na	
CECOS18SR	Semi-annually	na		na		0.0		0.0		na		0.0		na		na		0.0		na		na		na	
CECOS-53	Semi-annually	na		na		0.0		0.0		na		0.0		na		na		0.0		na		na		na	

na - not applicable/not taken
GALS - gallons purged

FIGURES

DUPONT

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Barley Mill Plaza, Building 27
Wilmington, Delaware 19805

SITE LOCATION MAP

Necco Park Site
Niagara Falls, New York

SCALE	DESIGNED	DRAWN	CAD FILE NO.
No Scale		DEL	Site_Location
DATE	CHECKED	APPROVED	FIGURE
10/16/03	KAS		1

Legend

- DuPont Monitoring Well
- Allied Waste Monitoring Well
- DuPont Extraction Well
- Former DuPont Extraction Well
- DuPont Peizometer
- Chemical Monitoring Location

NOTE: Wells in bold will be used for the MNA evaluation.

Peizometer ID Conversions

New ID	Former ID
184A	RDB-12
185A	177A
187A	RDB-15
188A	166A
189A	181A
190A	167A
191A	182A
192A	183A
193A	RDB-22

N:\18983203.00005\DB\GIS\locations.apr CHEMICAL MONITORING LOCATIONS_2
3/22/2008

WARNING
IT IS VIOLATION OF SECTION 7209, SUBDIVISION 2, OF THE NEW YORK STATE EDUCATION LAW FOR ANY PERSON OTHER THAN WHOSE SEAL APPEARS ON THIS DRAWING, TO ALTER IN ANY WAY AN ITEM ON THIS DRAWING. IF AN ITEM IS ALTERED, THE ALTERING ENGINEER SHALL AFFIX TO TO THE ITEM HIS SEAL AND THE NOTATION "ALTERED BY" FOLLOWED BY HIS SIGNATURE AND THE DATE OF SUCH ALTERATION, AND A SPECIFIC DESCRIPTION OF THE ALTERATION.

REVISIONS

NO.	DATE	DESCRIPTION	NO.	DATE	DESCRIPTION
1	11/08/05	REVISION #1			

DESIGNED BY: SPM
DRAWN BY: CNE
CHECKED BY: XXX
PROJ. ENGR. XXX

URS
Group Consultants
77 Goodell Street, Buffalo, New York 14203
(716)856-5636 - (716)856-2545 fax

JOB No. 18983203.00005

DUPONT
NECCO PARK

NIAGARA FALLS NEW YORK

WELL AND PIEZOMETER LOCATIONS
DUPONT NECCO PARK

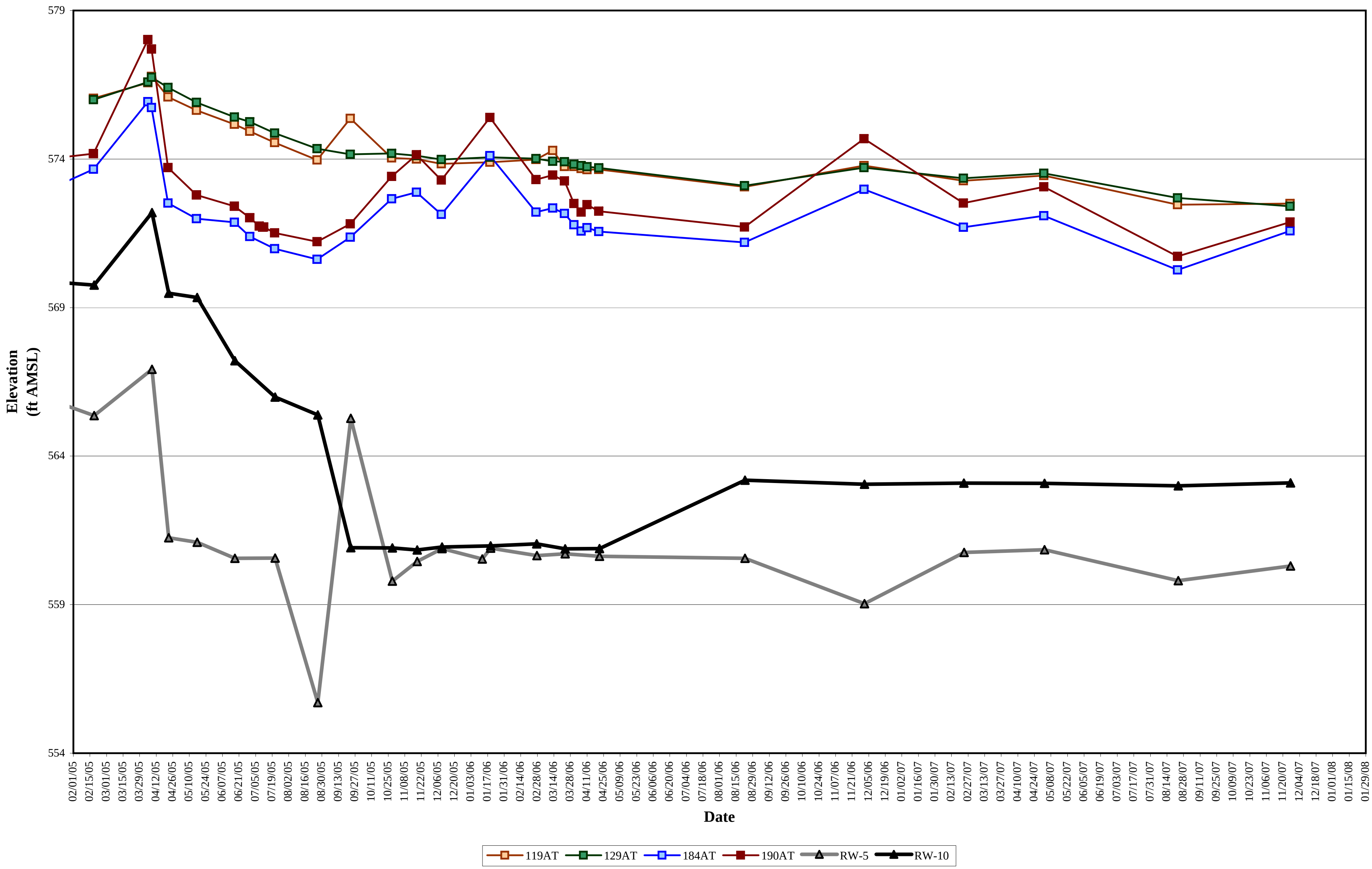
175 0 175 350 Feet

Scale: 1" = 175' - 0'

Date: OCT 2005

FIGURE 3-1

Figure 3-2
Select AT-Zone Monitoring Wells
Groundwater Elevations 2005 - 2007
DuPont Necco Park



2/27/2008
2:48 PM

2007 GW Elevation Trends - A&AT Zones.xls
Select AT-Zone Gph

Figure 3-3
Select A-Zone Monitoring Wells
Groundwater Elevations 2005 - 2007
DuPont Necco Park

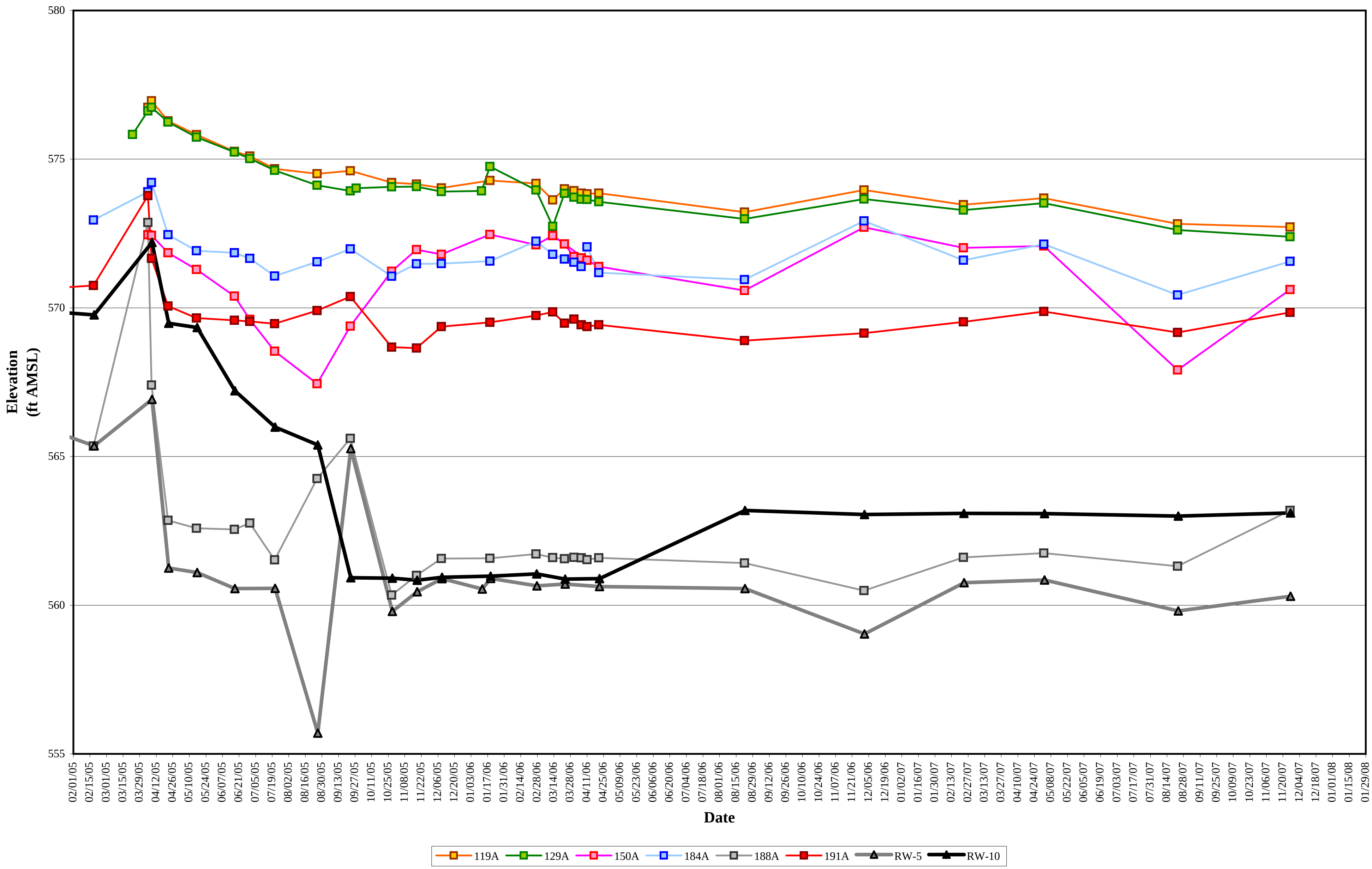


Figure 3-4
Select B-Zone Monitoring Wells
Groundwater Elevations 2005 to 2007
DuPont Necco Park

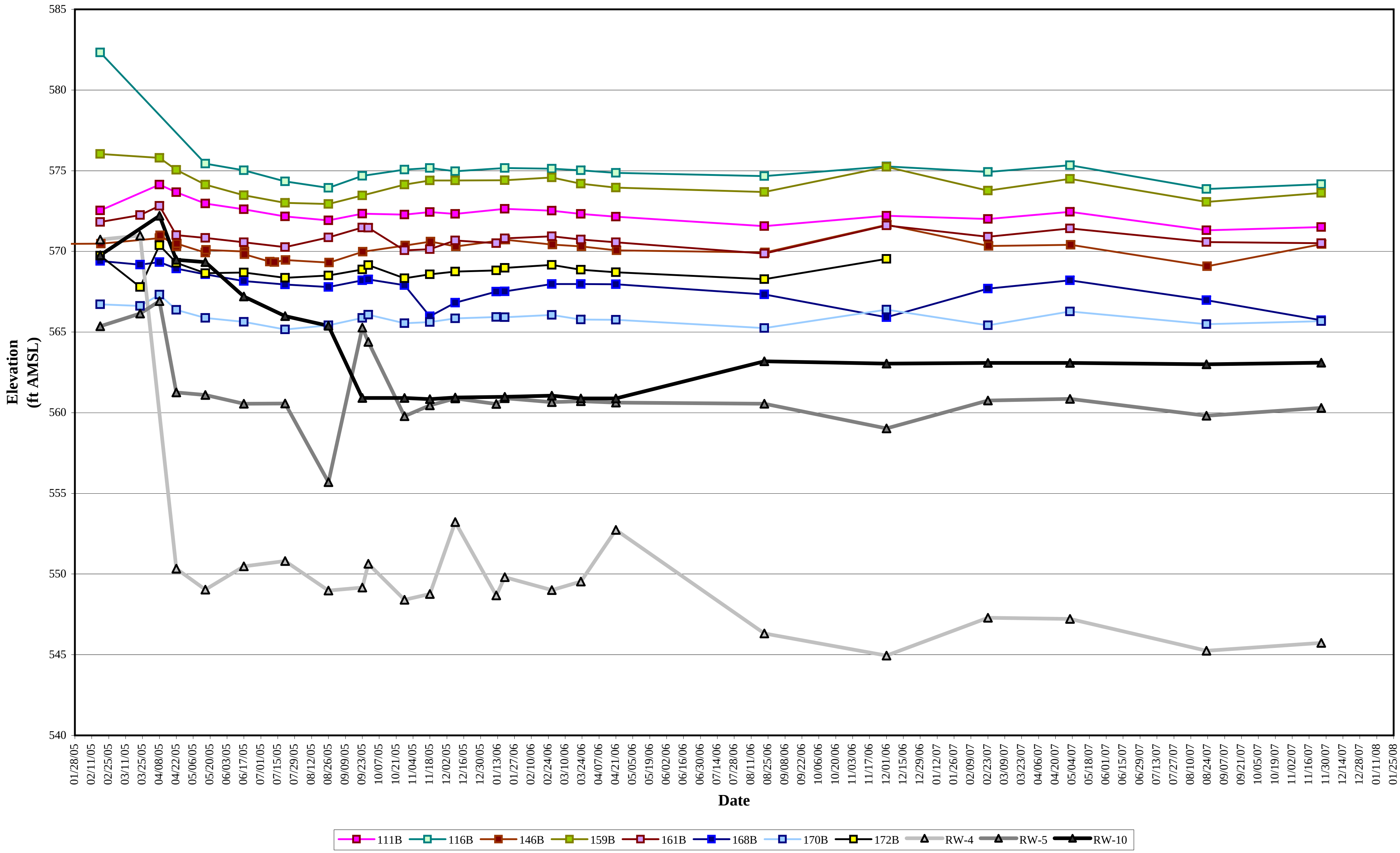
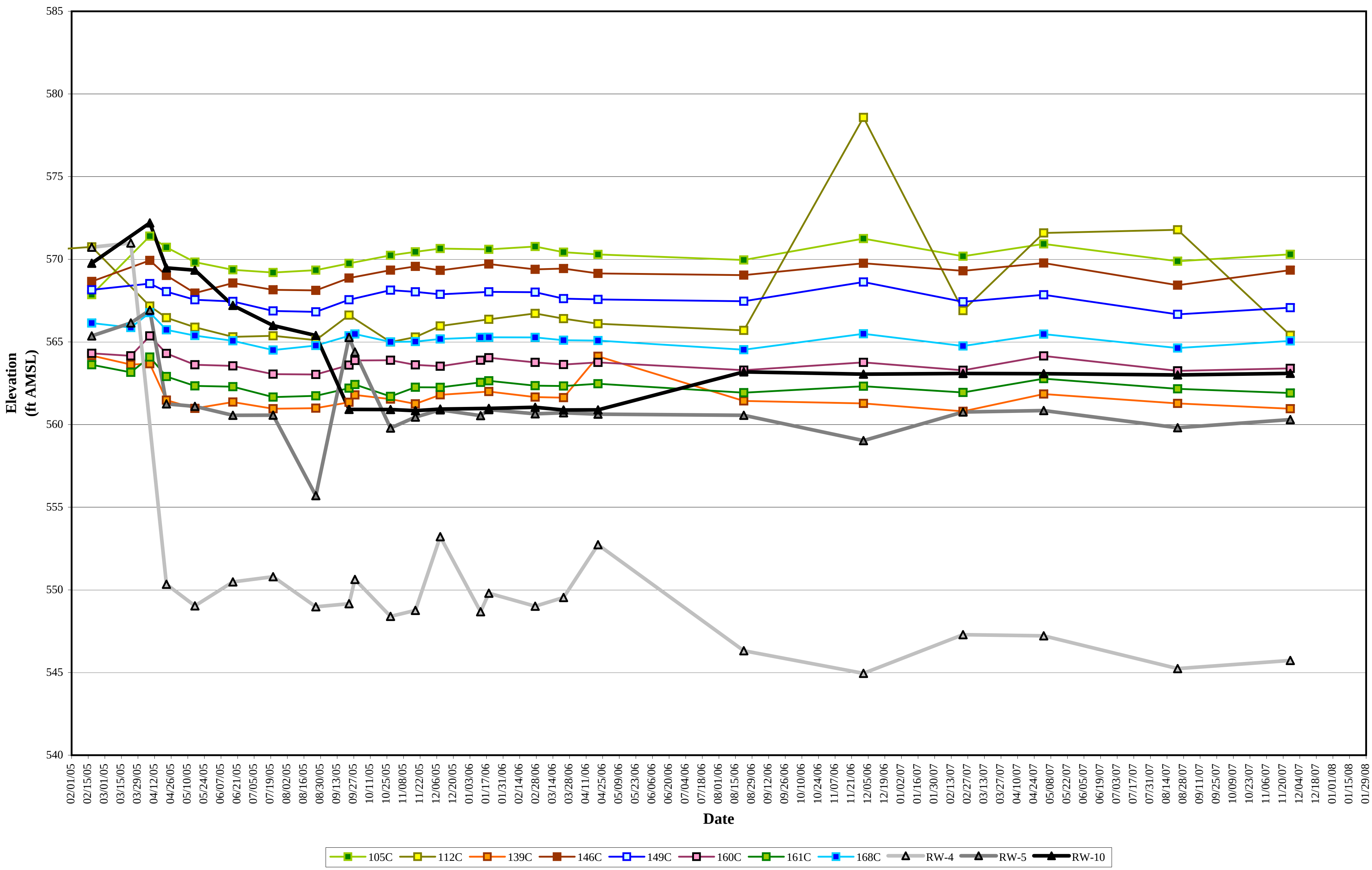


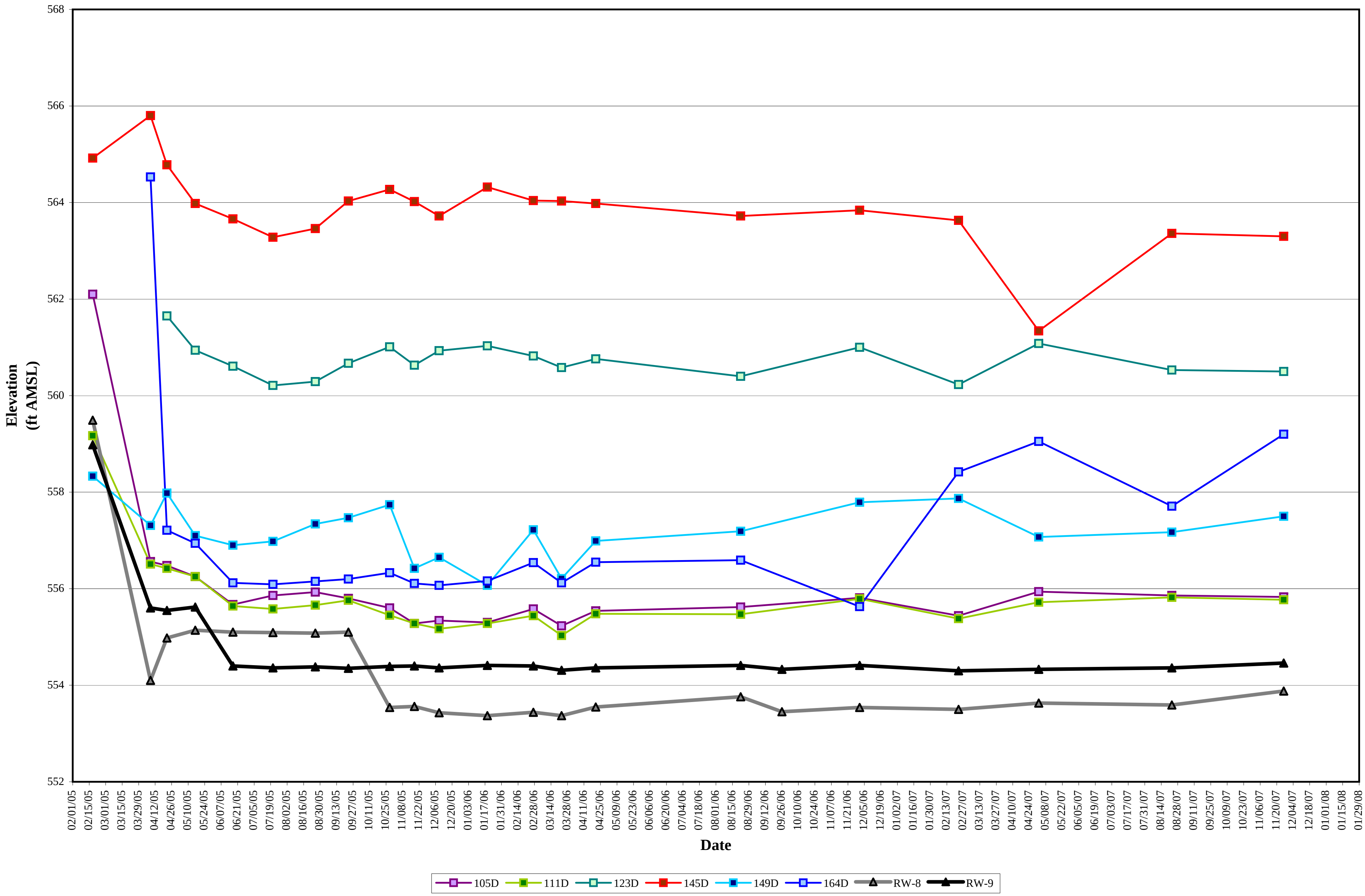
Figure 3-5
Select C-Zone Monitoring Wells
Groundwater Elevations 2005 to 2007
DuPont Necco Park



2/28/2008
9:02 AM

2007 of GW Elevation Trends - C Zone.xls
Selected

Figure 3-6
Select D-Zone Monitoring Wells
Groundwater Elevations 2005 to 2007
DuPont Necco Park



2/28/2008
10:08 AM

2007 of GW Elevation Trends - D Zone.xls
Selected

Figure 3-7
Select E-Zone Monitoring Wells
Groundwater Elevations 2005 to 2007
DuPont Necco Park

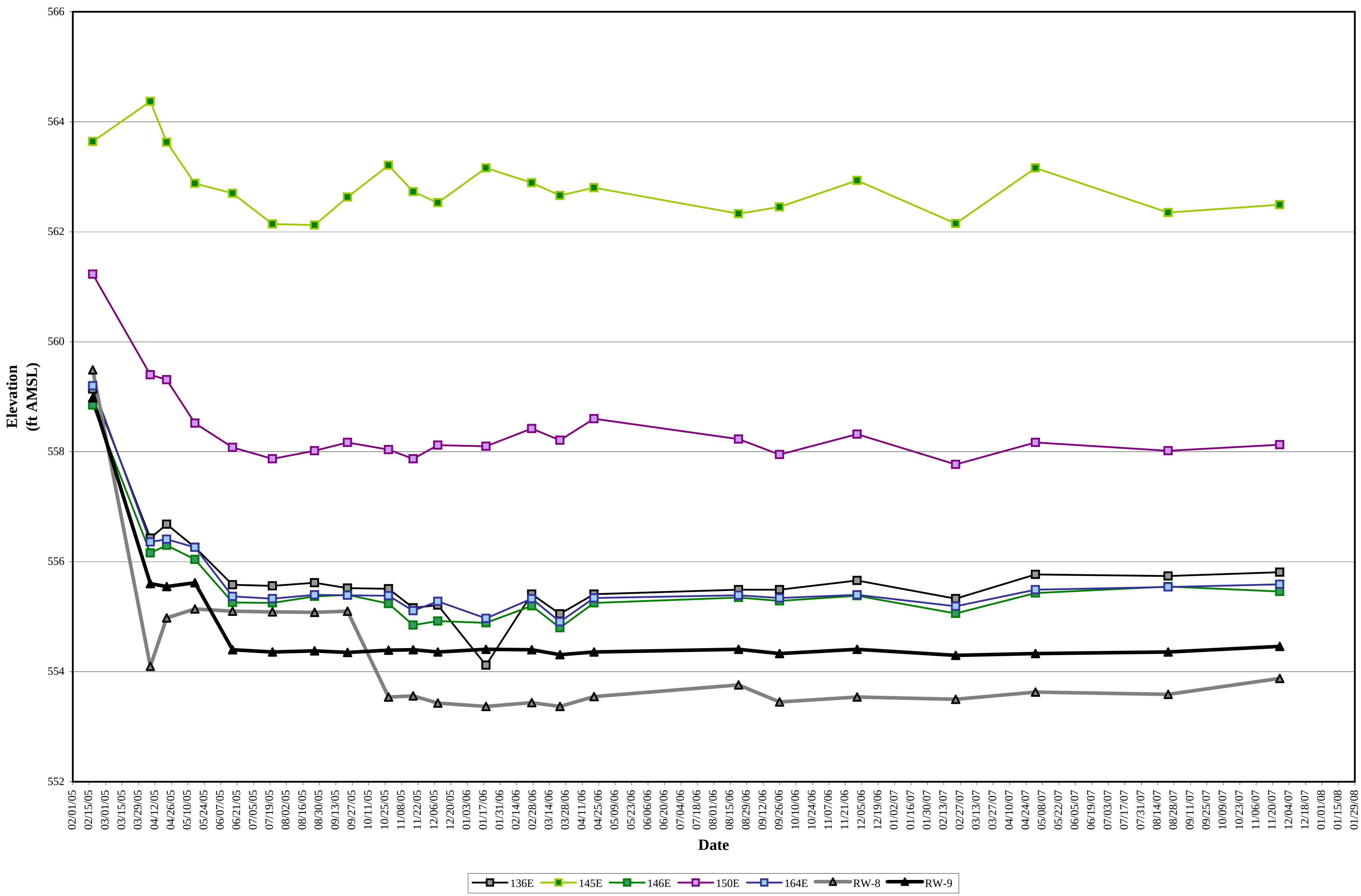
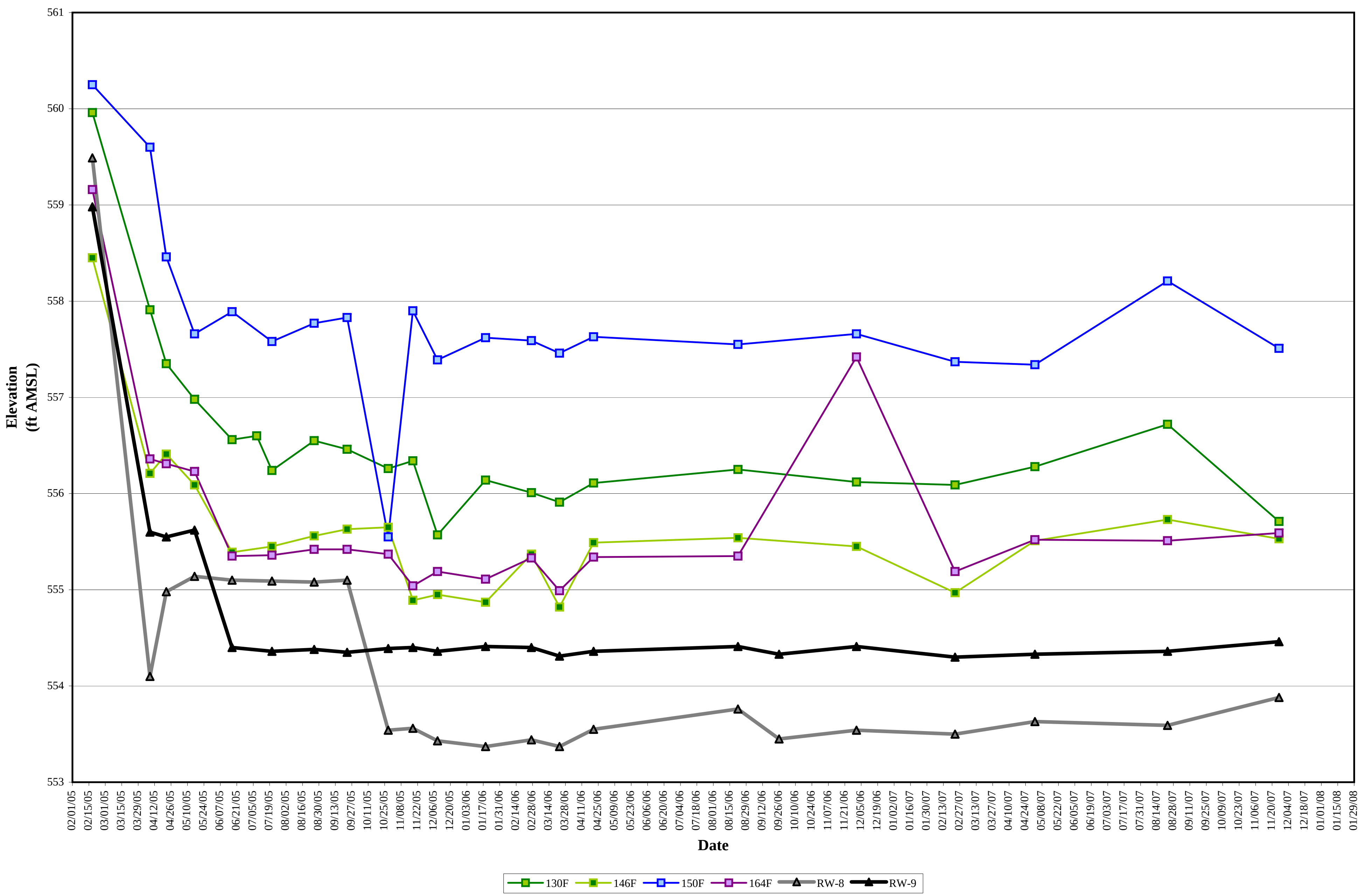
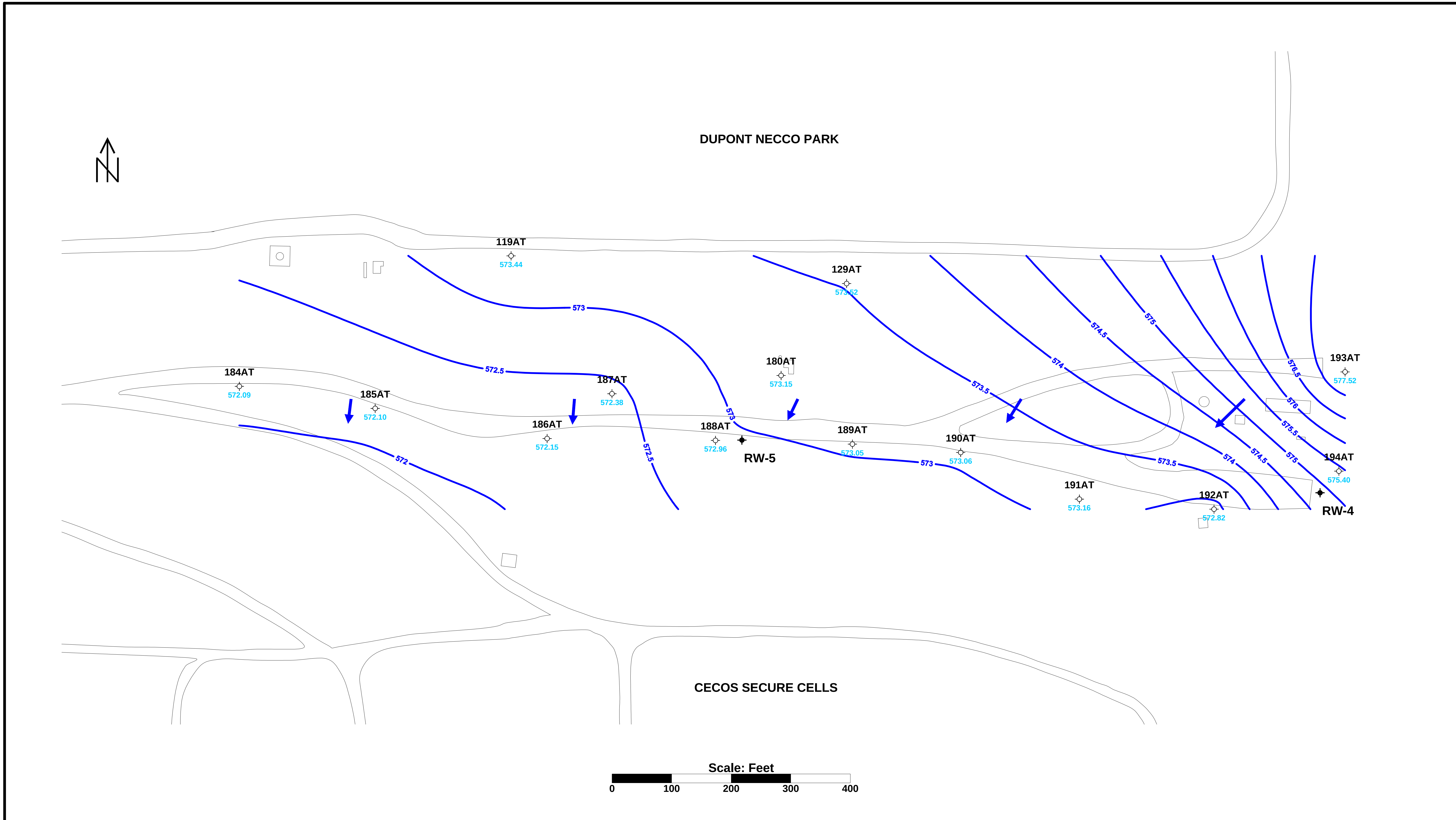


Figure 3-8
Select F-Zone Monitoring Wells
Groundwater Elevations 2005 to 2007
DuPont Necco Park





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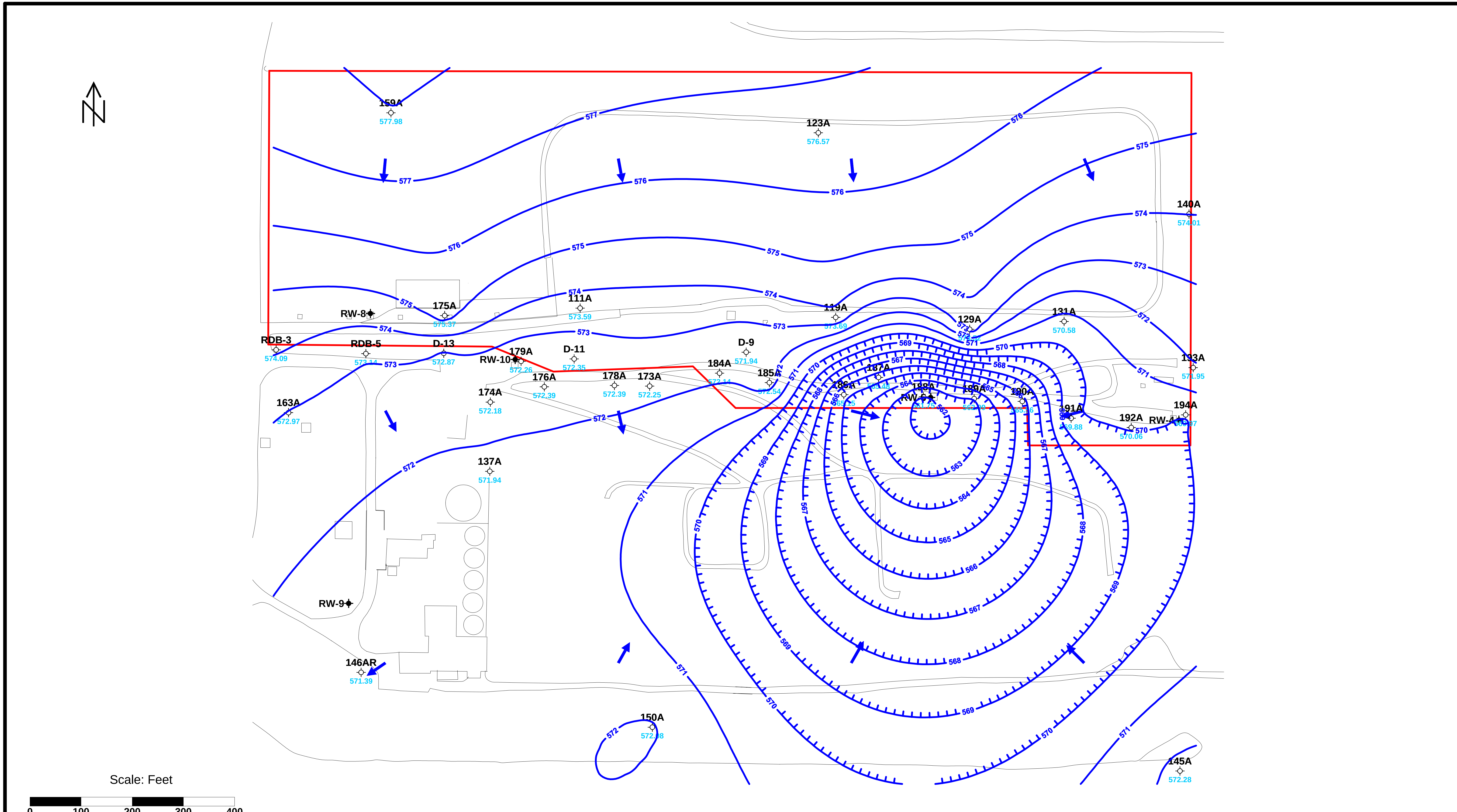
An Alliance between DuPont and URS Diamond

Buffalo Avenue & 26th Street
Niagara Falls, NY 14302

LEGEND

3B	Well ID
	Monitoring Well
	Pumping Well
	Potentiometric Contour
	Structure
	Road

Figure 3-9
Potentiometric Surface Map
DuPont Necco Park: AT-Zone
May 2, 2007



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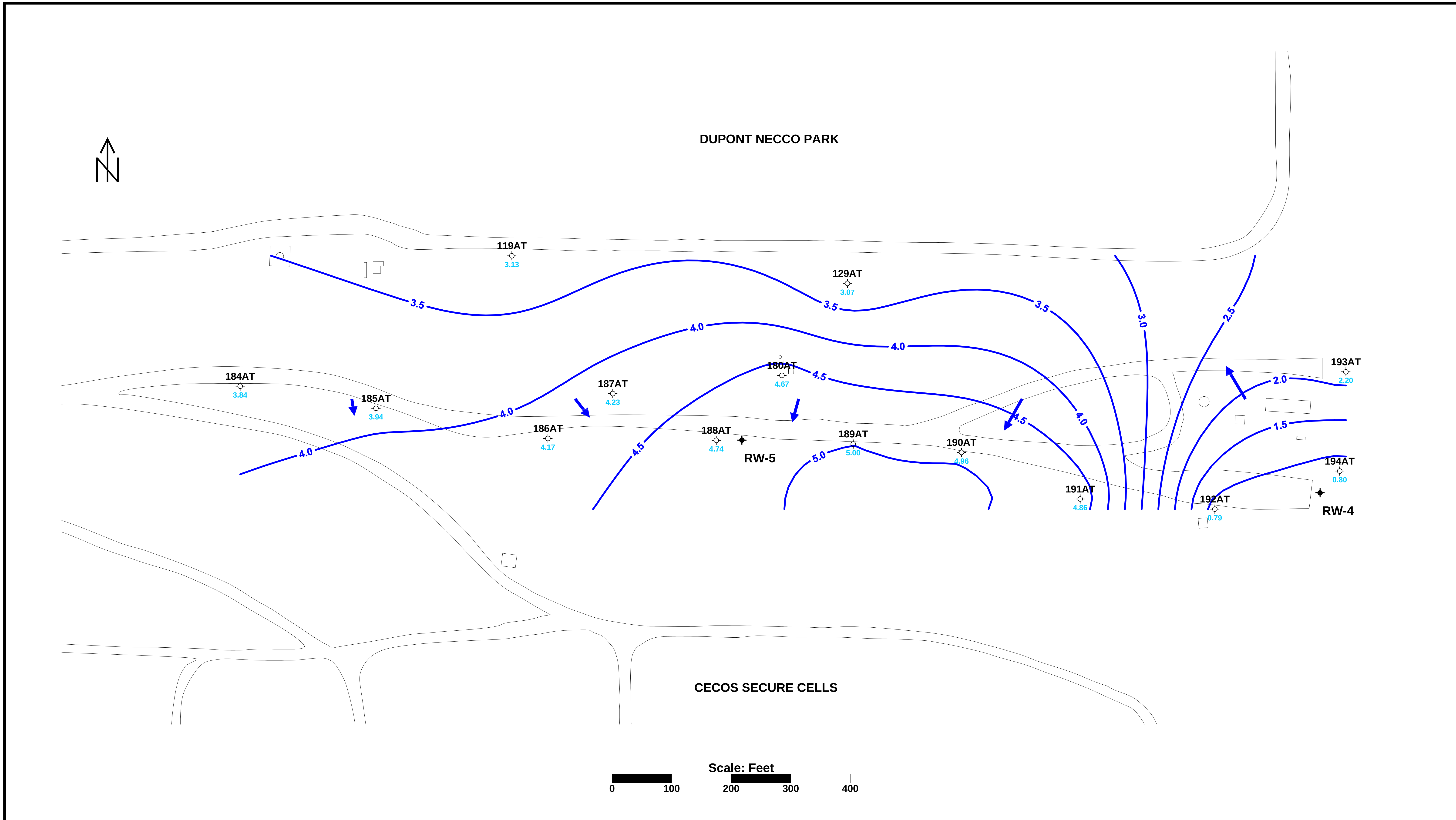
LEGEND

3B	Well ID		Potentiometric Contour		Source Area Delineation
	Monitoring Well		Structure		
	Pumping Well		Road		

Figure 3-10
Potentiometric Surface Map
DuPont Necco Park: A-Zone
May 2, 2007

Necco Park/General Surfer Grid Files and Data/20072Q Data Packet/2007-05-02 A to F Zones w-SA Lines.srf



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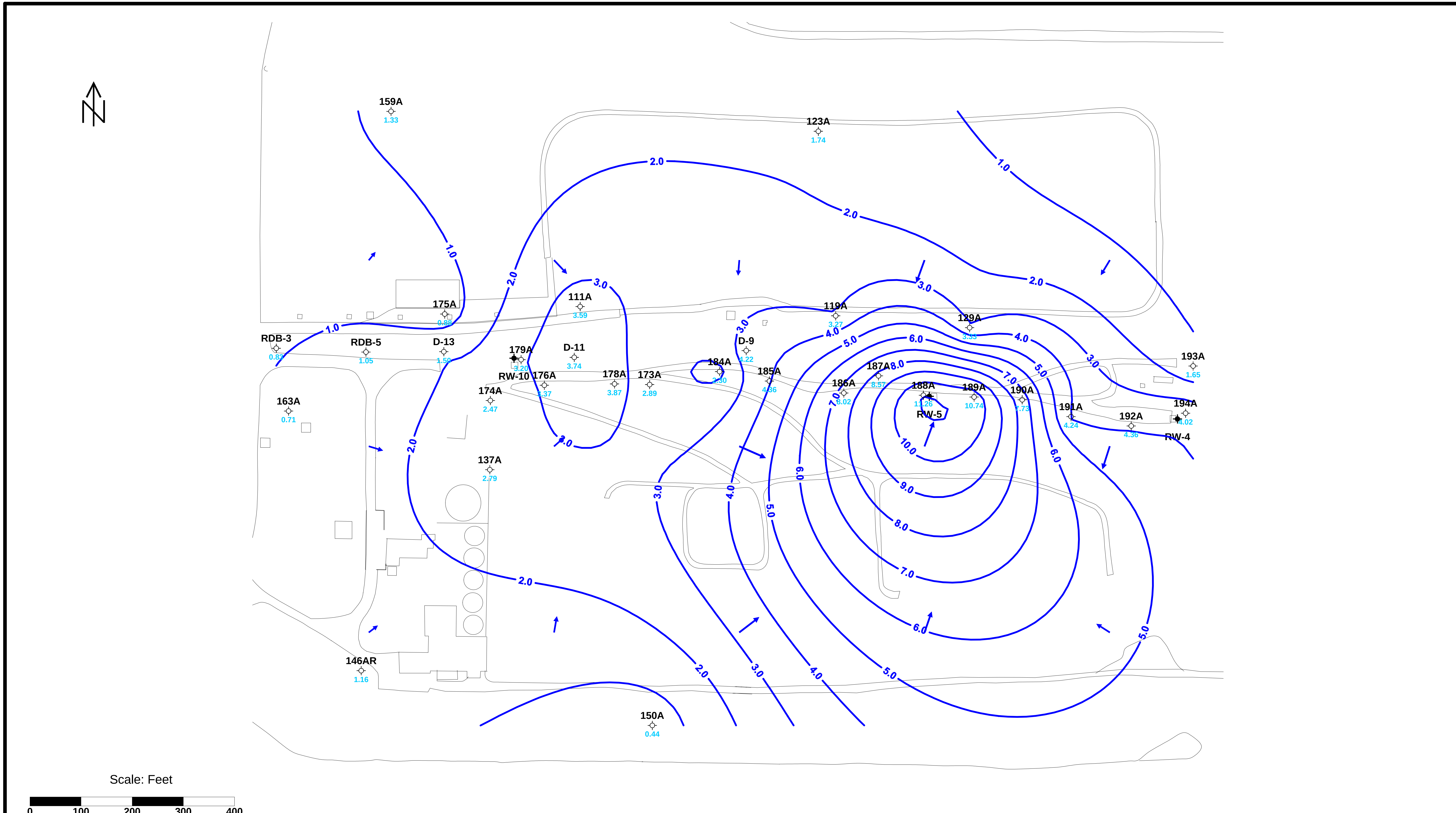
LEGEND

3B	Well ID		Potentiometric Contour
	Monitoring Well		Structure
	Pumping Well		Road

Figure 3-11
Drawdown Contour Map
DuPont Necco Park: AT-Zone
April 5, 2005 (Static) to May 2, 2007



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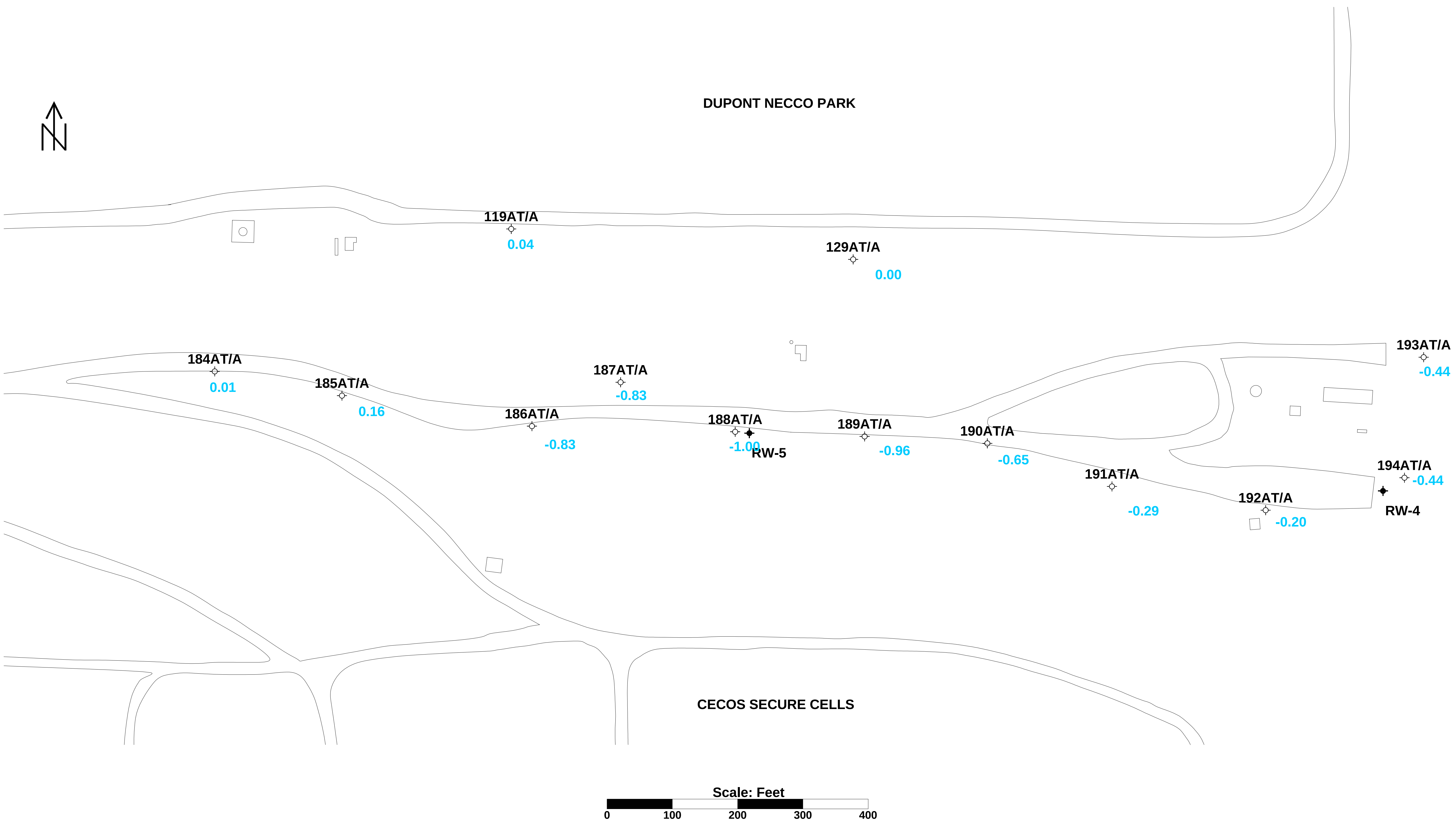
LEGEND

3B	Well ID		Potentiometric Contour		Source Area Delineation
	Monitoring Well		Structure		
	Pumping Well		Road		

Figure 3-12
Drawdown Contour Map
DuPont Necco Park: A-Zone
April 5, 2005 (Static) to May 2, 2007

Necco Park/General Surfer Grid Files and Data/20072Q Data Packet/2007-05-02 A to F Zones w-SA Lines.srf



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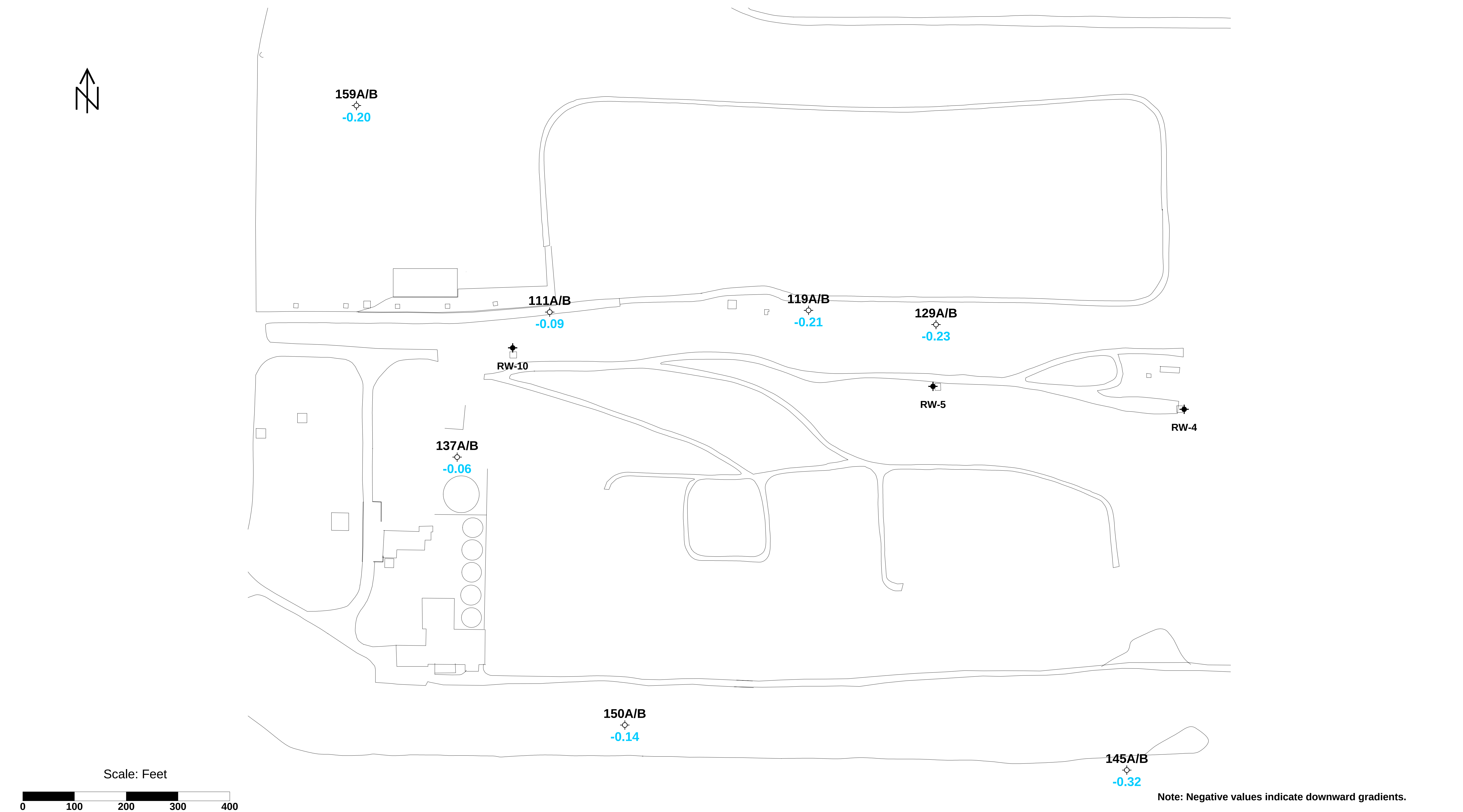
Niagara Falls, NY 14302

LEGEND

3B	Well ID		Potentiometric Contour
	Monitoring Well		Structure
	Pumping Well		Road

Figure 3-13
Vertical Gradient: AT-Zone to A-Zone
DuPont Necco Park
May 2, 2007



Note: Negative values indicate downward gradients.

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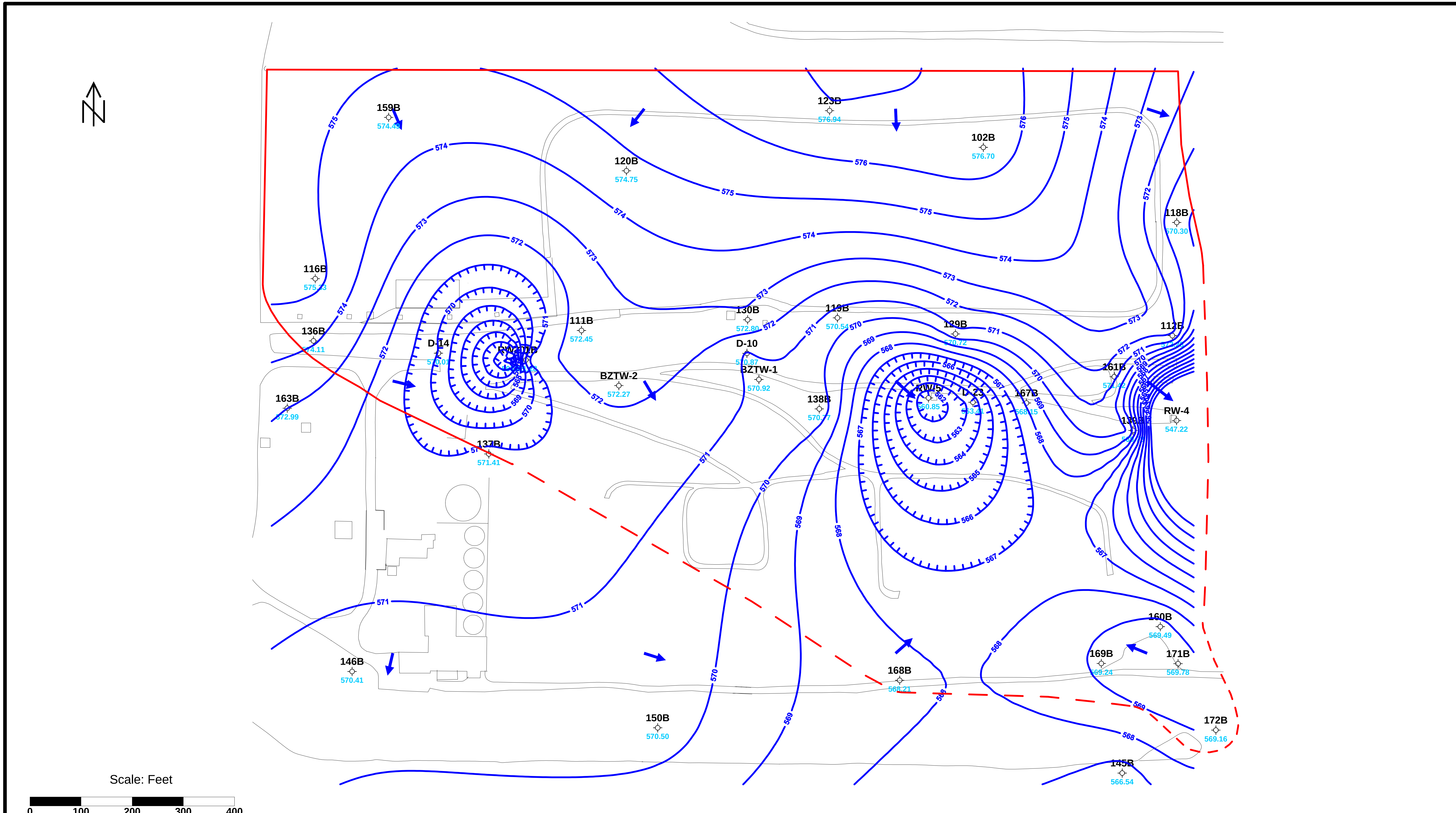
Niagara Falls, NY 14302

LEGEND

3B	Well ID		Potentiometric Contour
	Monitoring Well		Structure
	Pumping Well		Road
			Source Area Delineation

Figure 3-14
Vertical Gradient: A-Zone to B-Zone
DuPont Necco Park
May 2, 2007



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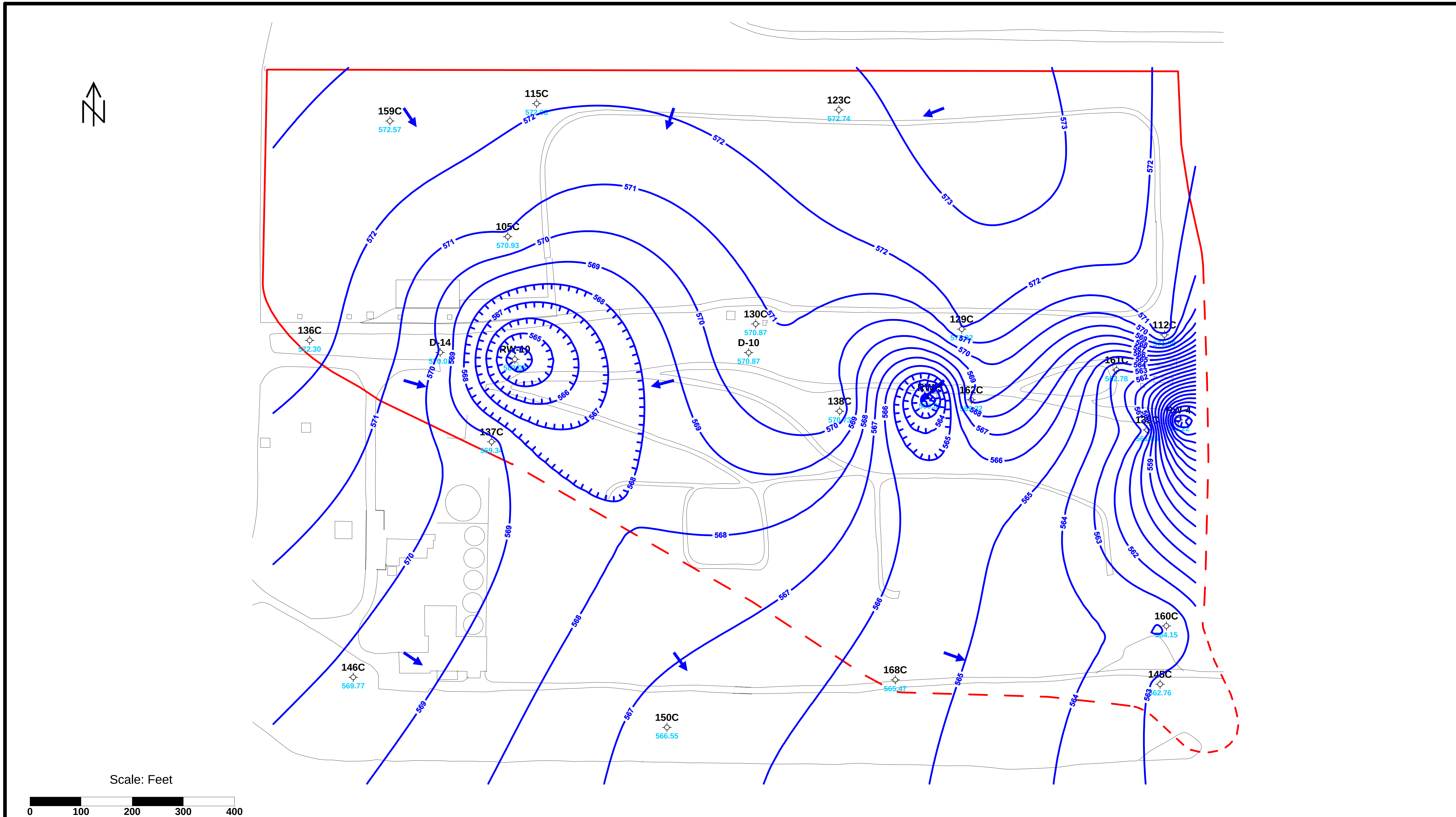
Niagara Falls, NY 14302

LEGEND

3B	Well ID
	Monitoring Well
	Pumping Well
	Potentiometric Contour
	Structure
	Road
	Source Area Delineation

Figure 3-15
Potentiometric Surface Map
DuPont Necco Park: B-Zone
May 2, 2007

Necco Park/General Surfer Grid Files and Data/20072Q Data Packet/2007-05-02 A to F Zones w-SA Lines.srf



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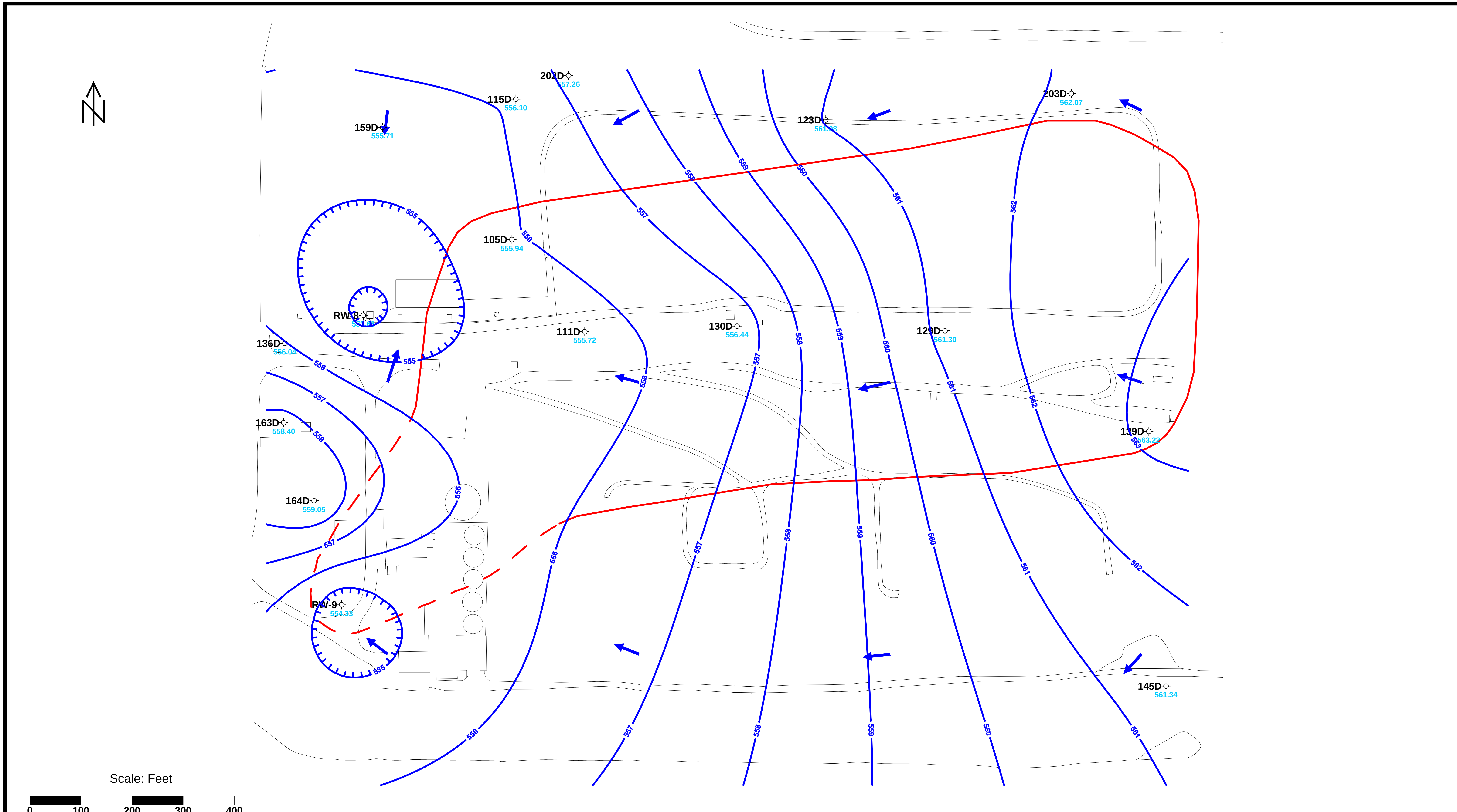
Buffalo Avenue & 26th Street
Niagara Falls, NY 14302

LEGEND

3B	Well ID	Potentiometric Contour	Source Area Delineation
	Monitoring Well	Structure	
	Pumping Well	Road	

Figure 3-16
Potentiometric Surface Map
DuPont Necco Park: C-Zone
May 2, 2007

Necco Park/General Surfer Grid Files and Data/2007Q Data Packet/2007-05-02 A to F Zones w-SA Lines.srf



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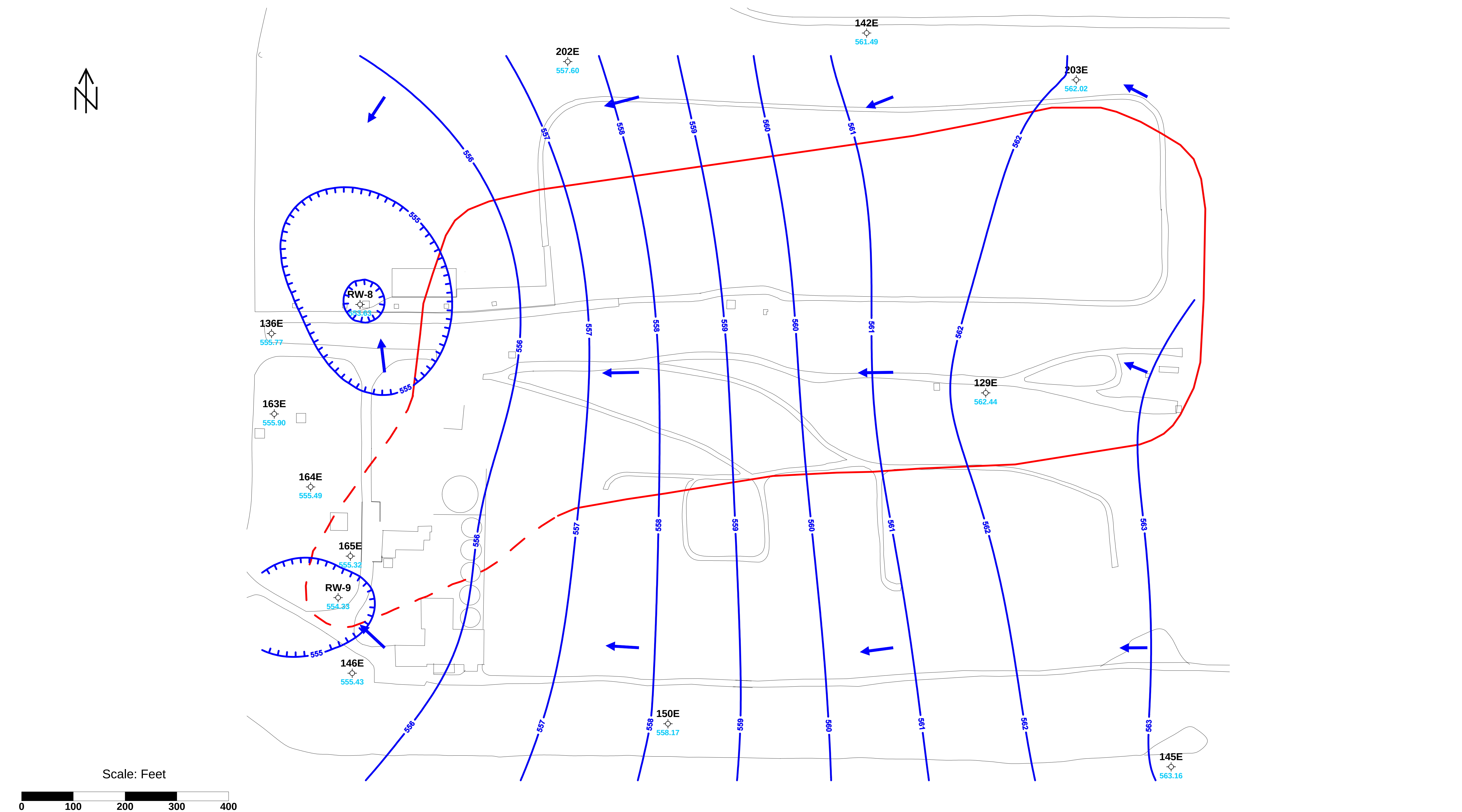
Niagara Falls, NY 14302

LEGEND

3B	Well ID		Potentiometric Contour		Source Area Delineation
	Monitoring Well		Structure		
	Pumping Well		Road		

Figure 3-17
Potentiometric Surface Map
DuPont Necco Park: D-Zone
May 2, 2007

Necco Park/General Surfer Grid Files and Data/20072Q Data Packet/2007-05-02 A to F Zones w-SA Lines.srf



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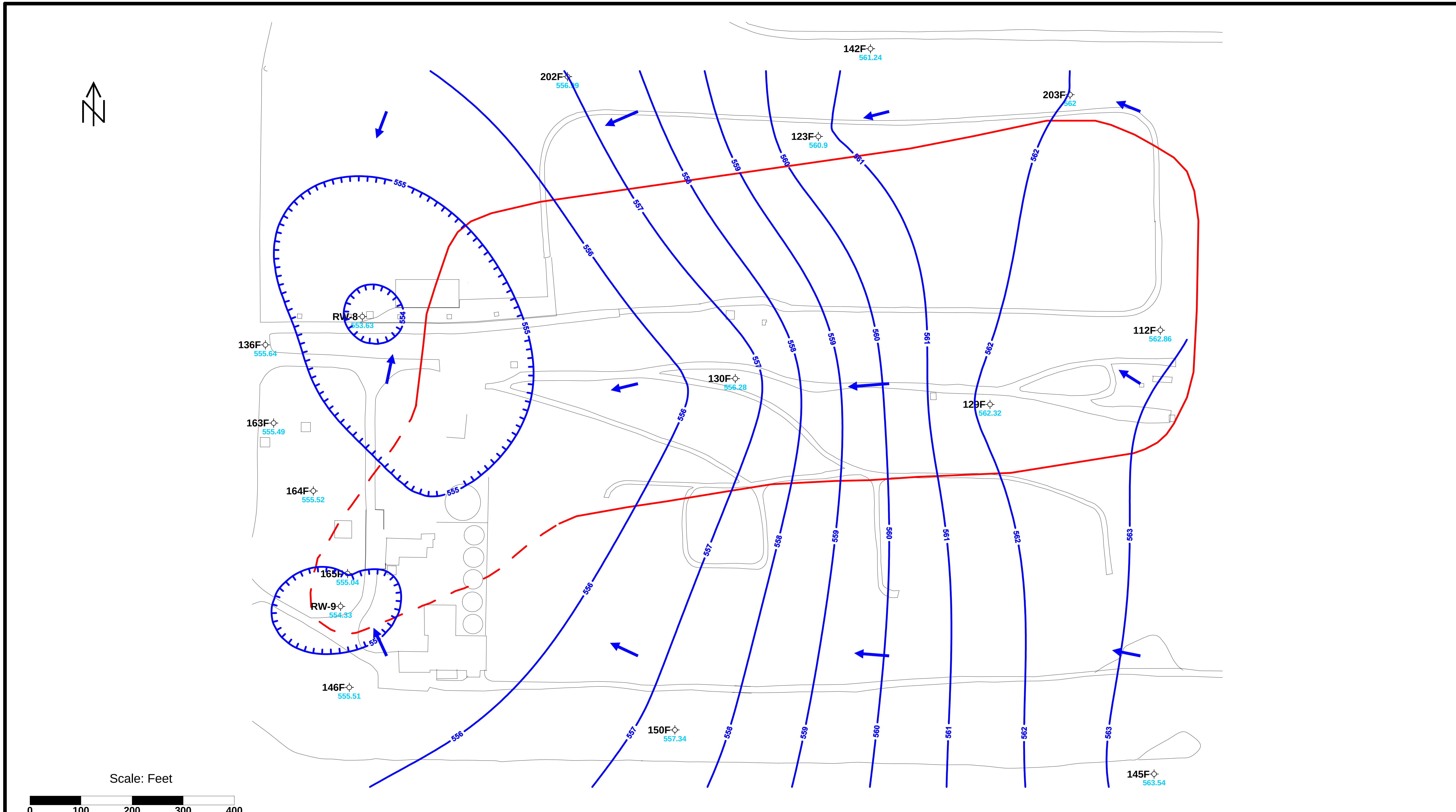
Niagara Falls, NY 14302

LEGEND

3B	Well ID		Potentiometric Contour		Source Area Delineation
	Monitoring Well		Structure		
	Pumping Well		Road		

Figure 3-18
Potentiometric Surface Map
DuPont Necco Park: E-Zone
May 2, 2007

Necco Park/General Surfer Grid Files and Data/20072Q Data Packet/2007-05-02 A to F Zones w-SA Lines.srf



DUPONT

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Buffalo Avenue & 26th Street
Niagara Falls, NY 14302

LEGEND

3B	Well ID		Potentiometric Contour		Source Area Delineation
	Monitoring Well		Structure		
	Pumping Well		Road		

Figure 3-19
Potentiometric Surface Map
DuPont Necco Park: F-Zone
May 2, 2007

Necco Park/General Surfer Grid Files and Data/20072Q Data Packet/2007-05-02 A to F Zones w-SA Lines.srf

APPENDICES

APPENDIX A

2007 RECOVERY WELL & SEMI-ANNUAL SAMPLING RESULTS

Table A-1
2007 Recovery Well Analytical Data
DuPont Necco Park

Analyte	units	RW-4 5/2/07 1	RW-4 5/2/07 2	RW-5 5/2/07 1	RW-8 5/2/07 1	RW-9 5/2/07 1	RW-10 5/2/07 1	EQBLK 5/2/07 1	TBLK 5/2/07 1
Field Parameters									
SPECIFIC CONDUCTANCE (FIELD)	UMHOS/CM	8170	NS	44700	4040	4840	10480	NS	NS
TEMPERATURE (FIELD)	DEGREES C	15.1	NS	13.3	12.7	12.6	21.1	NS	NS
COLOR QUALITATIVE (FIELD)	NS	turbid yellow	NS	clear	clear	clear	grey	NS	NS
PH (FIELD)	STD UNITS	7.2	NS	6.63	6.99	6.97	7.19	NS	NS
REDOX (FIELD)	MV	-403	NS	-286	-418	-398	-300	NS	NS
TURBIDITY QUANTITATIVE (FIELD)	NTU	64.2	NS	3.72	0.6	1.78	108.9	NS	NS
Volatile Organics									
1,1,2,2-TETRACHLOROETHANE	ug/l	14000	14000	5800	1400	1800	5900 J	<0.22	<0.22
1,1,2-TRICHLOROETHANE	ug/l	550	550	2000	2700	2900	2700	<0.22	<0.22
1,1-DICHLOROETHENE	ug/l	<90	<75	700 J	390 J	710	760 J	<0.18	<0.18
1,2-DICHLOROETHANE	ug/l	<80	<67	800	210 J	170 J	890 J	<0.16	<0.16
CARBON TETRACHLORIDE	ug/l	3500	3400	1300	2700	1200	2100	<0.19	<0.19
CHLOROFORM	ug/l	5900	6000	8600	7900	4000	25000 J	<0.16	<0.16
CIS-1,2 DICHLOROETHENE	ug/l	330 J	310 J	24000	8100	15000	18000 J	<0.21	<0.21
METHYLENE CHLORIDE	ug/l	100 J	100 J	6000	2600	8300	6900	<0.19	<0.19
TETRACHLOROETHYLENE	ug/l	2000	1800	2900	2700	1600	7400 J	<0.19	<0.19
TRANS-1,2-DICHLOROETHENE	ug/l	92 J	92 J	1600	830	1200	1100	<0.16	<0.16
TRICHLOROETHENE	ug/l	3500	3300	11000	11000	10000	21000	<0.28	<0.28
VINYL CHLORIDE	ug/l	220 J	190 J	10000	1800	3500	7000	<0.21	<0.21
Other Organics									
2,4,5-TRICHLOROPHENOL	ug/l	<77	<190	31 J	750	260	190 J	<0.96	NS
2,4,6-TRICHLOROPHENOL	ug/l	<110	<280	21 J	450	67	120 J	<1.4	NS
3- AND 4- METHYLPHENOL	ug/l	<0.75	<0.75	120 J	22 J	23 J	570 J	<0.75	NS
HEXACHLOROBENZENE	ug/l	<5.2	<13	<0.65	<1.6	<0.43	<3.2	<0.065	NS
HEXACHLOROBUTADIENE	ug/l	2800	4600	270	160 J	13 J	590	<0.51	NS
HEXACHLOROETHANE	ug/l	910 J	890 J	170 J	36 J	4.9 J	130 J	<0.58	NS
PENTACHLOROPHENOL	ug/l	<38	<96	84 J	1900	35 J	1300 J	<0.48	NS
PHENOL	ug/l	<77	<190	78 J	29 J	74	1000	<0.96	NS
Other Parameters									
DISSOLVED BARIUM	ug/l	290	260	1530000	110 J	130 J	9000	<3.2	NS
CHLORIDE	ug/l	2470000	2430000	19100000	726000	1100000	9300000	<100	NS
TICs									
Tentatively Identified Compound 01	ug/l	520 J	510 J	1900 J	590 J	530 J	7200 J	<NS J	NS
Total Volatiles		30192	29742	74700	42330	50380	98750	0	0

< and ND = Non detect at stated reporting limit

Table A-2
Summary of 2007 Analytical Results
DuPont Necco Park

			A-ZONE WELLS														
			VH-D-9	VH-D-9	VH-D-11	VH-D-11	VH-D-13	VH-D-13	VH-137A	VH-137A	VH-145A	VH-145A	VH-145A	VH-146AR	VH-146AR	VH-150A	VH-150A
		Total (T)/	4/24/07	9/27/07	4/25/07	9/26/07	4/24/07	9/27/07	5/2/07	10/9/07	5/1/07	5/1/07	10/11/07	5/8/07	10/12/07	4/27/07	9/28/07
Analyte	**units**	**Diss. (D)**	1	1	1	1	1	1	1	1	1	DUP	1	1	1	1	1
Volatile Organics																	
1,1,2,2-TETRACHLOROETHANE	ug/l	T	<0.22 UJ	<0.18 UJ	<1.1	<0.45	<0.22 UJ	<0.18 UJ	<1.1	<0.3	<0.22	<0.22	<0.18	<0.22	<0.18	<0.22	<0.18
1,1,2-TRICHLOROETHANE	ug/l	T	<0.22	<0.27	<1.1	<0.68	<0.22	<0.27	<1.1	<0.45	<0.22	<0.22	<0.27	<0.22	<0.27	<0.22	<0.27
1,1-DICHLOROETHENE	ug/l	T	<0.18	<0.19	29	20	0.44 J	<0.19	12	6.1	<0.18	<0.18	<0.19	0.20 J	1.1 J	<0.18	<0.19
1,2-DICHLOROETHANE	ug/l	T	0.79 J	<0.22	4.7 J	2.5	1.4	<0.22	3.2 J	1.9	<0.16	<0.16	<0.22	<0.16	<0.22	<0.16	<0.22
CARBON TETRACHLORIDE	ug/l	T	<0.19	<0.13	<0.95	<0.32	<0.19	<0.13	<0.95	<0.22	<0.19	<0.19	<0.13	<0.19	<0.13	<0.19	<0.13
CHLOROFORM	ug/l	T	<0.16	<0.16 UJ	1.3 J	2.9	<0.16	<0.16 UJ	1.6 J	2.7	<0.16	<0.16	<0.16	<0.16	<0.16	<0.16	<0.16
CIS-1,2 DICHLOROETHENE	ug/l	T	<0.21	0.3 J	110	26	1.5	0.49 J	78	41	0.40 J	0.44 J	0.55 J	<0.21	0.89 J	0.30 J	0.39 J
TETRACHLOROETHYLENE	ug/l	T	<0.19	<0.29	60	22	2.7	<0.29	49	35	<0.19	<0.19	<0.29	<0.19	<0.29 UJ	<0.19 UJ	<0.29
TRANS-1,2-DICHLOROETHENE	ug/l	T	0.17 J	<0.19	8.5	4.5	0.82 J	0.73 J	5.4	3.3	<0.16	<0.16	0.7 J	<0.16	0.21 J	<0.16	<0.19
TRICHLOROETHENE	ug/l	T	<0.28	<0.17	170	100	3.8	1.5	96	59	<0.28	<0.28	0.42 J	<0.28	<0.17	<0.28	<0.17
VINYL CHLORIDE	ug/l	T	<0.21	<0.22	61	9.4	1.5	0.32 J	62	24	<0.21	<0.21	0.81 J	1	4.2	<0.21	<0.22
Dissolved Gasses																	
ETHANE	ug/l	T	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
ETHENE	ug/l	T	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
METHANE	ug/l	T	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
PROPANE	ug/l	T	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Semivolatile Organics																	
2,4,5-TRICHLOROPHENOL	ug/l	T	<0.96	<0.96	<4.8	2.6 J	<1.9	<2.4	<3.8	<1.9	<0.96	<0.96	<0.96	8.0 J	<0.96	<0.96	<0.96
2,4,6-TRICHLOROPHENOL	ug/l	T	<1.4	<1.4	<7.0	<1.4	<2.8	<3.5	<5.6	<2.8	<1.4	<1.4	<1.4	<1.4	<1.4	<1.4	<1.4
3- AND 4- METHYLPHENOL	ug/l	T	<0.75	<0.75	56 J	7.9 J	21 J	5.3 J	22 J	9.2 J	<0.75	<0.75	<0.75	<0.75	<0.75	<0.75	<0.75
HEXACHLOROBENZENE	ug/l	T	<0.065	<0.065	<0.32	<0.065	<0.13	<0.16	<0.26	<0.13	<0.065	<0.065	<0.065	<0.065	<0.065	<0.065	<0.065
HEXACHLOROBUTADIENE	ug/l	T	<0.51	<0.51	2.6 J	4.5 J	2.1 J	<1.3	3.0 J	<1	<0.51	<0.51	<0.51	<0.51	<0.51	<0.51	<0.51
HEXACHLOROETHANE	ug/l	T	<0.58	<0.58	<2.9	<0.58	<1.2	<1.4	<2.3	<1.2	<0.58	<0.58	<0.58	<0.58	<0.58	<0.58	<0.58
PENTACHLOROPHENOL	ug/l	T	<0.48	<0.48	4.8 J	5.1 J	2.5 J	<1.2	4.5 J	1.8 J	<0.48	<0.48	<0.48	1.7 J	<0.48	<0.48	<0.48
PHENOL	ug/l	T	<0.96	<0.96	42 J	23	44	12 J	130	48	<0.96	<0.96	<0.96	<0.96	1.8 J	<0.96	<0.96
TIC 1	ug/l	T	1.3 J	1.4 J	230 J	60 J	64 J	13 J	76 J	10 J	<NS J	<NS J	13 J	0.86 J	0.51 J	<NS J	<NS J
Inorganics																	
BARIUM, DISSOLVED	ug/l	D	160 J	91 B	300	100 U	280	780	8000	4100	54 B	50 B	130 J	33 B	56 B	55 B	68 B
IRON, DISSOLVED	ug/l	D	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
MANGANESE, DISSOLVED	ug/l	D	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
CHLORIDE	ug/l	T	832000 B	754000 B	1160000 B	533000	1330000	3240000	489000 B	194000 B	18900 B	24000 B	2260000	455000 B	374000 B	79700 B	91000 B
NITRATE/NITRITE NITROGEN	ug/l	T	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
SULFATE	ug/l	T	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
ALKALINITY, BICARB. AS CACO3 AT	ug/l	T	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
TOTAL ORGANIC CARBON	ug/l	T	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
SULFIDE	ug/l	T	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Field Parameters																	
DEPTH TO WATER FROM TOC	Feet	T		9.79		7.91		7.48		8.47			8.51		7.12		8.26
ODOR (FIELD)	NS	T	NONE	NONE	NONE	NONE	NONE	NONE	NONE	NONE	NONE	NS	SLIGHT	NONE	NONE	NONE	NONE
SPECIFIC CONDUCTANCE (FIELD)	UMHOS/CM	T	3590	4010	7890	2840	7600	125030	5390	4210	1520	NS	7080	1770	1770	1800	2210
TEMPERATURE (FIELD)	DEGREES C	T	8.2	14.1	7.6	15.7	8.1	15.4	9.4	18.2	8.5	NS	11.7	15.2	14.5	10.1	13.6
DISSOLVED OXYGEN (FIELD)	UG/L	T	460	200	610	450	730	1060	400	250	510	NS	260	290	230	550	350
COLOR QUALITATIVE (FIELD)	NS	T	BROWN	LT. TAN TINT	CLEAR	CLEAR	CLEAR	_T. YELLOW TINT	CLEAR	CLEAR	CLEAR	NS	CLEAR	GREY	GREY	CLEAR	CLEAR
PH (FIELD)	STD UNITS	T	7.14	7.25	7.46	7.56	7.28	7.56	7.72	9.04	7.08	NS	7.33	7.48	7.48	7.06	7.23
REDOX (FIELD)	MV	T	-256	-127	31	-102	143	-7	57	-60	66	NS	-230	69	126	-7	45
TURBIDITY QUANTITATIVE (FIELD)	NTU	T	30.7	6.25	1.09	1.84	7.34	3.59	2.54	3.9	6.03	NS	1.37	13.7	16.6	31.9	3.18
Total Volatiles	ug/l	T	**0.96**	**0.3**	**444.5**	**187.3**	**12.16**	**3.04**	**307.2**	**173**	**0.4**	**0.44**	**2.48**	**1.2**	**6.4**	**0.3**	**0.39**

< and ND = Non detect at stated reporting limit

Table A-2
Summary of 2007 Analytical Results
DuPont Necco Park

			B-ZONE WELLS																
			VH-111B	VH-136B	VH-136B	VH-137B	VH-137B	VH-139B	VH-141B	VH-145B	VH-145B	VH-146B	VH-146B	VH-149B	VH-149B	VH-150B	VH-150B	VH-151B	VH-151B
		Total (T)/	10/10/07	5/3/07	10/10/07	5/2/07	10/9/07	10/11/07	9/27/07	5/1/07	10/11/07	5/8/07	10/12/07	4/30/07	10/8/07	4/27/07	9/28/07	4/24/07	9/27/07
Analyte	**units**	**Diss. (D)**	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Volatile Organics																			
1,1,2,2-TETRACHLOROETHANE	ug/l	T	<6	<4.9	<0.18	<1.5	<3	27000	<0.9 UJ	<140	<150	<0.22	<0.18	<0.22	<0.18	<0.22	<0.72	<0.22 UJ	<0.18 UJ
1,1,2-TRICHLOROETHANE	ug/l	T	14 J	<4.9	<0.27	<1.5	<4.5	1700	<1.4	300 J	420 J	<0.22	<0.27	<0.22	<0.27	<0.22	<1.1	<0.22	<0.27
1,1-DICHLOROETHENE	ug/l	T	98	<4.0	9.1	14	26	<240	<0.95	470 J	490 J	5.9	4.9 J	0.23 J	0.38 J	<0.18	<0.76	<0.18	0.86 J
1,2-DICHLOROETHANE	ug/l	T	350	<3.6	<0.22	4.1 J	7.4 J	410 J	<1.1	<100	<180	<0.16	<0.22	<0.16	<0.22	<0.16	<0.88	<0.16	<0.22
CARBON TETRACHLORIDE	ug/l	T	<4.3	<4.2	<0.13	<1.3	<2.2	<160	<0.65	<120	<110	<0.19	<0.13	<0.19	<0.13	<0.19	<0.52	<0.19	<0.13
CHLOROFORM	ug/l	T	170	<3.6	<0.16	<1.1	<2.7	10000	<0.8 UJ	450 J	520 J	<0.16	<0.16	<0.16	2.3	<0.16	<0.64	<0.16	<0.16 UJ
CIS-1,2 DICHLOROETHENE	ug/l	T	320	730	770	110	200	24000	<0.85 UJ	17000	20000	27	29 J	3.6	4.8	0.51 J	<0.68	0.49 J	1.6 J
TETRACHLOROETHYLENE	ug/l	T	<9.7	580	890	72	120	4600	<1.4	220 J	<240	<0.19	<0.29 UJ	<0.19	<0.29	<0.19 UJ	<1.2	<0.19	<0.29
TRANS-1,2-DICHLOROETHENE	ug/l	T	38	29 J	35	7.1	14 J	5600	<0.95	1400	1500	2.6	2.5 J	0.41 J	0.51 J	0.69 J	<0.76	0.45 J	2.1
TRICHLOROETHENE	ug/l	T	110	140	320	150	250	7500	<0.85	4800	5400	1.4	1.6	0.39 J	0.47 J	<0.28	<0.68	0.54 J	2.1
VINYL CHLORIDE	ug/l	T	180	35	36	100	140	8600	<1.1 UJ	4200	3300	15	11	4.9	6.1	1.6	1 J	0.35 J	1.7
Dissolved Gasses																			
ETHANE	ug/l	T	16	NS	NS	NS	35	47	19	NS	84	NS	NS	NS	NS	NS	NS	NS	6.4
ETHENE	ug/l	T	1900	NS	NS	NS	180	1100	23	NS	530	NS	NS	NS	NS	NS	NS	NS	5.4
METHANE	ug/l	T	2100	NS	NS	NS	1600	2500	780	NS	1100	NS	NS	NS	NS	NS	NS	NS	510
PROPANE	ug/l	T	1.2	NS	NS	NS	1.3	<0.088	4.9	NS	4.6	NS	NS	NS	NS	NS	NS	NS	3.4
Semivolatile Organics																			
2,4,5-TRICHLOROPHENOL	ug/l	T	NS	1600	4800	<3.8	5.8 J	NS	NS	<4.8	<2.4	44	49	2.8 J	3.7 J	<9.6	<4.8	<2.4	<0.96
2,4,6-TRICHLOROPHENOL	ug/l	T	NS	210 J	610 J	<5.6	<5.6	NS	NS	<7.0	<3.5	7.4 J	8.1 J	<1.4	<1.4	<14	<7	<3.5	<1.4
3- AND 4- METHYLPHENOL	ug/l	T	NS	<0.75	<0.75	28 J	48 J	NS	NS	54 J	68	10 J	12 J	<0.75	1.5 J	74 J	58 J	<0.75	<0.75
HEXACHLOROBENZENE	ug/l	T	NS	<3.2	<8.1	<0.26	<0.26	NS	NS	<0.32	<0.16	<0.13	<0.13	<0.065	<0.065	<0.65	<0.32	<0.16	<0.065
HEXACHLOROBUTADIENE	ug/l	T	NS	<26	<64	3.8 J	<2	NS	NS	<2.6	<1.3	<1.0	<1	<0.51	<0.51	<5.1	<2.6	<1.3	<0.51
HEXACHLOROETHANE	ug/l	T	NS	<29	<72	<2.3	<2.3	NS	NS	<2.9	<1.4	<1.2	<1.2	<0.58	<0.58	<5.8	<2.9	<1.4	<0.58
PENTACHLOROPHENOL	ug/l	T	NS	1900 J	2800 J	4.4 J	4.4 J	NS	NS	<2.4	<1.2	45 J	59 J	<0.48	<0.48	<4.8	<2.4	<1.2	<0.48
PHENOL	ug/l	T	NS	<48	<120	130	110	NS	NS	8.5 J	10 J	<1.9	<1.9	<0.96	<0.96	<9.6	32 J	<2.4	4.1 J
TIC 1	ug/l	T	NS	<NS J	50 J	89 J	130 J	NS	NS	880 J	820 J	6.9 J	7 J	11 J	3.2 J	14 J	60 J	8.1 J	22 J
Inorganics																			
BARIUM, DISSOLVED	ug/l	D	NS	94 B	170 J	11500	7100	NS	NS	84 B	73 B	30 B	33 B	72 B	66 B	51400	51600	360	360
IRON, DISSOLVED	ug/l	D	82300	NS	NS	NS	<81	184000	42 J	NS	<81	NS	NS	NS	NS	NS	NS	NS	60 J
MANGANESE, DISSOLVED	ug/l	D	1200	NS	NS	NS	0.5 B	3300 J	0.65 B	NS	77 J	NS	NS	NS	NS	NS	NS	NS	0.67 B
CHLORIDE	ug/l	T	5200000 J	196000 B	193000 B	711000 B	886000 J	18700000 B	1240000 B	7110000	7190000 B	259000 B	286000 B	287000 B	238000 B	2880000	3120000	296000 B	471000 B
NITRATE/NITRITE NITROGEN	ug/l	T	<20	NS	NS	NS	40 B	<20	<20	NS	<20	NS	NS	NS	NS	NS	NS	NS	300 B
SULFATE	ug/l	T	<240	NS	NS	NS	16500 B	4100 B	405000 B	NS	721000 B	NS	NS	NS	NS	NS	NS	NS	12900 B
ALKALINITY, BICARB. AS CACO3 AT	ug/l	T	920000	NS	NS	NS	1100000	380000 B	110000 B	NS	210000 B	NS	NS	NS	NS	NS	NS	NS	660000
TOTAL ORGANIC CARBON	ug/l	T	780000 B	NS	NS	NS	26000	120000	15000	NS	28000	NS	NS	NS	NS	NS	NS	NS	2000
SULFIDE	ug/l	T	15000	NS	NS	NS	3100 B	25000	5400	NS	59000	NS	NS	NS	NS	NS	NS	NS	<380
Field Parameters																			
DEPTH TO WATER FROM TOC	Feet	T	14.53		8.37		8.07	16.53	6.01		7.67		7.38		5.01		NS		8.34
ODOR (FIELD)	NS	T	SLIGHT	NONE	NONE	NONE	NONE	MODERATE	NONE	SLIGHT	SLIGHT	NONE	NONE	NONE	NONE	SLIGHT	NS	NONE	
SPECIFIC CONDUCTANCE (FIELD)	UMHOS/CM	T	16000	1950	1870	8790	6830	34600	4770	19100	20300	1343	1381	1830	1580	8590	NS	4370	5120
TEMPERATURE (FIELD)	DEGREES C	T	14.3	10.7	15.8	11.1	15.3	13.3	13.8	10.1	12.8	11.3	14	11.6	18.3	11.3	NS	14.1	18.1
DISSOLVED OXYGEN (FIELD)	UG/L	T	180	270	180	490	100	170	350	220	140	210	90	850	780	310		720	350
COLOR QUALITATIVE (FIELD)	NS	T	YELLOW TINT	CLEAR	BLACK SPEC	CLEAR	CLEAR	LT. GREY	CLEAR	CLEAR	LT.GREY TIN	CLEAR	CLEAR	CLEAR	CLEAR	GREY	NS	CLEAR	LT. TAN TINT
PH (FIELD)	STD UNITS	T	7.48	7.37	7.28	7.69	8.16	7.42	7.51	7.34	7.63	7.6	7.84	7.45	7.73	6.92	NS	8.02	7.85
REDOX (FIELD)	MV	T	-187	-353	-269	22	-453	-111	-43	-234	-373	-109	-63	103	-55	-307	NS	69	-33
TURBIDITY QUANTITATIVE (FIELD)	NTU	T	20.1	4.59	5.69	2.63	3.31	4.34	5.59	2.07	9.72	0.93	5.82	3.43	13.06	4.94	NS	7.03	6.86
Total Volatiles	ug/l	T	**1280**	**1514**	**2060.1**	**457.2**	**757.4**	**89410**	**0**	**28840**	**31630**	**51.9**	**49**	**9.53**	**14.56**	**2.8**	**1**	**1.83**	**8.36**

< and ND = Non detect at stated reporting limit

Table A-2
Summary of 2007 Analytical Results
DuPont Necco Park

			B-ZONE WELLS (Cont.)							C-ZONE WELLS							
			VH-153B	VH-168B	VH-168B	VH-171B	VH-171B	VH-172B	VH-172B	VH-105C	VH-136C	VH-136C	VH-137C	VH-141C	VH-145C	VH-145C	VH-146C
		Total (T)/	10/8/07	10/9/07	5/3/07	5/8/07	10/10/07	4/25/07	9/26/07	10/12/07	5/3/07	10/10/07	10/9/07	9/27/07	4/25/07	9/26/07	5/8/07
Analyte	**units**	**Diss. (D)**	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Volatile Organics																	
1,1,2,2-TETRACHLOROETHANE	ug/l	T	<0.18	190 J	<140	<0.22	<3.6	1000	700	<900	<22	<36	480 J	<0.18 UJ	20 J	490	<0.22
1,1,2-TRICHLOROETHANE	ug/l	T	<0.27	4300	2200	<0.22	<5.4	49 J	35 J	7600	<22	<54	510 J	<0.27	170	2800	<0.22
1,1-DICHLOROETHENE	ug/l	T	<0.19	560 J	170 J	<0.18	<3.8	15 J	<13	3400 J	<18	<38	540 J	<0.19	33 J	360 J	0.19 J
1,2-DICHLOROETHANE	ug/l	T	<0.22	920	520 J	<0.16	<4.4	<8.0	<15	1300 J	<16	<44	220 J	<0.22	97	220 J	<0.16
CARBON TETRACHLORIDE	ug/l	T	<0.13	<110	<120	<0.19	<2.6	52	27 J	3600 J	<19	<26	<72	<0.13	<11	<54	<0.19
CHLOROFORM	ug/l	T	<0.16	710 J	420 J	<0.16	<3.2	200	130	90000	<16	<32	5500	<0.16 UJ	120	2000	<0.16
CIS-1,2 DICHLOROETHENE	ug/l	T	<0.17	26000	18000	260	200	1600	1500	20000 J	62 J	70 J	9900	<0.17 UJ	1600	8100	1.8
TETRACHLOROETHYLENE	ug/l	T	<0.29	<240	<120	<0.19	<5.8	600	480	37000 J	3800	5200	2200	0.29 J	<11	<120	<0.19
TRANS-1,2-DICHLOROETHENE	ug/l	T	<0.19	520 J	300 J	16	5.6 J	190	160	4900 J	<16 UJ	<38	380 J	<0.19	83	1100	0.40 J
TRICHLOROETHENE	ug/l	T	<0.17	300 J	240 J	<0.28	<3.4	450	270	160000	1000	1200	20000	<0.17	170	3300	0.48 J
VINYL CHLORIDE	ug/l	T	<0.22	12000	6700	420	350	300	480	3300 J	<21	<44	5200	<0.22	610	2700	3.1
Dissolved Gasses																	
ETHANE	ug/l	T	13	NS	NS	NS	NS	NS	NS	67	NS	NS	100	1.6	NS	37	NS
ETHENE	ug/l	T	<0.057	NS	NS	NS	NS	NS	NS	2000	NS	NS	930	3.3	NS	420	NS
METHANE	ug/l	T	110	NS	NS	NS	NS	NS	NS	2400	NS	NS	4900	140	NS	2200 J	NS
PROPANE	ug/l	T	0.43 J	NS	NS	NS	NS	NS	NS	9.6	NS	NS	2.3	0.64	NS	4.4	NS
Semivolatile Organics																	
2,4,5-TRICHLOROPHENOL	ug/l	T	NS	<9.6	140 J	<4.8	<4.8	<4.8	<3.8	NS	710 J	<960	NS	NS	<9.6	<48	<0.96
2,4,6-TRICHLOROPHENOL	ug/l	T	NS	<14	<70	<7.0	<7	<7.0	<5.6	NS	2100 J	2700 J	NS	NS	<14	<70	<1.4
3- AND 4- METHYLPHENOL	ug/l	T	NS	190 J	110 J	<0.75	<0.75	2.8 J	2.3 J	NS	<0.75	<0.75	NS	NS	120 J	130 J	<0.75
HEXACHLOROBENZENE	ug/l	T	NS	<0.65	<3.2	<0.32	1.4 J	<0.32	<0.26	NS	<32	<65	NS	NS	<0.65	<3.2	<0.065
HEXACHLOROBUTADIENE	ug/l	T	NS	<5.1	<26	5.0 J	5.9 J	120	110	NS	<260	<510	NS	NS	<5.1	<26	0.67 J
HEXACHLOROETHANE	ug/l	T	NS	<5.8	<29	<2.9	<2.9	15 J	13 J	NS	<290	<580	NS	NS	<5.8	<29	<0.58
PENTACHLOROPHENOL	ug/l	T	NS	<4.8	230 J	<2.4	<2.4	5.4 J	<1.9	NS	27000	29000 J	NS	NS	<4.8	<24	<0.48
PHENOL	ug/l	T	NS	230	190 J	<4.8	<4.8	<4.8	<3.8	NS	<480	<960	NS	NS	260	320 J	<0.96
TIC 1	ug/l	T	NS	3100 J	17000 J	860 J	580 J	63 J	49 J	NS	<NS J	<NS J	NS	NS	150 J	14000 J	1.9 J
Inorganics																	
BARIUM, DISSOLVED	ug/l	D	NS	560	520	26 B	87 B	26 B	67 U	NS	74 B	73 B	NS	NS	2000	460	46 B
IRON, DISSOLVED	ug/l	D	1500	NS	NS	NS	NS	NS	NS	3900	NS	NS	200	100	NS	45900	NS
MANGANESE, DISSOLVED	ug/l	D	160	NS	NS	NS	NS	NS	NS	16 B	NS	NS	48	220	NS	4100	NS
CHLORIDE	ug/l	T	208000	14800000	15500000 J	4990000 B	5280000 B	2550000	2470000 B	5620000 B	213000 B	217000 B	1340000 B	315000 B	58400000	72000000	241000 B
NITRATE/NITRITE NITROGEN	ug/l	T	<20	NS	NS	NS	NS	NS	NS	<20	NS	NS	<20	20 B	NS	20 U	NS
SULFATE	ug/l	T	340000	NS	NS	NS	NS	NS	NS	321000 B	NS	NS	32500 B	425000 B	NS	658000 B	NS
ALKALINITY, BICARB. AS CACO3 AT	ug/l	T	110000 B	NS	NS	NS	NS	NS	NS	2300000	NS	NS	110000 B	47000 B	NS	300000 B	NS
TOTAL ORGANIC CARBON	ug/l	T	3000	NS	NS	NS	NS	NS	NS	2000000	NS	NS	100000	5000	NS	46000	NS
SULFIDE	ug/l	T	<380	NS	NS	NS	NS	NS	NS	29000	NS	NS	37000 B	2900	NS	38000	NS
Field Parameters																	
DEPTH TO WATER FROM TOC	Feet	T	4.56	12.59			11.23		9.03	25.67		10.77	9.99	15.52		13.56	
ODOR (FIELD)	NS	T	NONE	SLIGHT			SLIGHT		NONE	MODERATE	NONE	NONE	SLIGHT	NONE	MODERATE	MODERATE	NONE
SPECIFIC CONDUCTANCE (FIELD)	UMHOS/CM	T	1470	34700	37000	13510	13230	8810	9720	15900	2300	2250	3410	1920	10000	10000	1520
TEMPERATURE (FIELD)	DEGREES C	T	17.6	15.2	13.2	18.1	13.9	10	15	12.7	11.2	15.6	14.8	13.2	9.3	19.3	12.6
DISSOLVED OXYGEN (FIELD)	UG/L	T	110	60			170		280	690	280	170	110	280	850	160	190
COLOR QUALITATIVE (FIELD)	NS	T	ORANGE	GREY TINT	CLEAR	BLACK	BLACK	GREY	BLACK TINT	SLIGHT	CLEAR	CLEAR	GREY TINT	LT. BRN TINT	YELLOW	BLACK TINT	CLEAR
PH (FIELD)	STD UNITS	T	7.24	7.53	7.19	7.24	7.5	7	7.27	7.67	7.77	7.87	7.61	7.16	7.13	7.33	7.5
REDOX (FIELD)	MV	T	10	-243	-286	-343	-232	-311	-151	-328	-475	-293	-391	13	-206	-294	35
TURBIDITY QUANTITATIVE (FIELD)	NTU	T	80.7	3.84	8.04	23.5	6.48	47.5	13.03	26.9	1.69	4.49	19.26	21.6	21.3	9.35	9.92
Total Volatiles	**ug/l**	**T**	**0**	**45500**	**28550**	**696**	**555.6**	**4456**	**3782**	**331100**	**4862**	**6470**	**44930**	**0.29**	**2903**	**21070**	**5.97**

< and ND = Non detect at stated reporting limit

Table A-2
Summary of 2007 Analytical Results
DuPont Necco Park

Analyte	units	Total (T)/ Diss. (D)	C-ZONE WELLS (Continued)									D-ZONE WELLS					
			VH-146C	VH-149C	VH-149C	VH-150C	VH-150C	VH-151C	VH-151C	VH-168C	VH-168C	VH-105D	VH-123D	VH-123D	VH-136D	VH-136D	VH-136D
			10/12/07	4/30/07	10/8/07	4/27/07	9/28/07	4/24/07	9/27/07	5/3/07	10/9/07	10/12/07	9/24/07	4/24/07	4/25/07	4/25/07	9/26/07
			1	1	1	1	1	1	1	1	1	1	1	1	1	DUP	1
Volatile Organics																	
1,1,2,2-TETRACHLOROETHANE	ug/l	T	<0.18	<0.22	<0.18	<0.22	<0.18	<0.22 UJ	<0.18 UJ	1200	1300	79000	<0.18	<0.22 UJ	<2.2	<2.0	<1.8
1,1,2-TRICHLOROETHANE	ug/l	T	<0.27	<0.22	<0.27	<0.22	<0.27	<0.22	<0.27	1900	2000	170000	<0.27	<0.22	19	17	9.7 J
1,1-DICHLOROETHENE	ug/l	T	0.29 J	<0.18	1.2	1.4	3.8	<0.18	<0.19	250	310	1400 J	0.36 J	<0.18	10	8.3 J	6.4 J
1,2-DICHLOROETHANE	ug/l	T	<0.22	<0.16	<0.22	<0.16	<0.22	<0.16	<0.22	74 J	98 J	11000	<0.22	<0.16	50	52	27
CARBON TETRACHLORIDE	ug/l	T	<0.13	<0.19	<0.13	<0.19	<0.13	<0.19	<0.13	430	440	190000	<0.13	<0.19	<1.9	<1.7	<1.3
CHLOROFORM	ug/l	T	<0.16	<0.16	<0.16	0.28 J	0.19 J	0.21 J	<0.16 UJ	1700	1700	90000	<0.16	<0.16	83	72	26
CIS-1,2 DICHLOROETHENE	ug/l	T	2.8 J	2	10	14	16	2.4	1.5 J	1400	1500	7600 J	1.7	1.8	330	270	260
TETRACHLOROETHYLENE	ug/l	T	<0.29 UJ	<0.19	<0.29	0.45 J	1.5	<0.19	<0.29	330	320	13000 J	0.9 J	<0.19	5.8 J	5.0 J	<2.9
TRANS-1,2-DICHLOROETHENE	ug/l	T	0.41 J	0.27 J	1.6	4.5	4.6	2.7	2.6	310 J	320	2500 J	<0.19	8.6	33	34	8.1 J
TRICHLOROETHENE	ug/l	T	0.75 J	<0.28	0.49 J	11	13	1	<0.17	2600	2500	120000	0.51 J	1.2	180	160	84
VINYL CHLORIDE	ug/l	T	7.4	3	14	16	19	4.2	3.9	400	570	<1400	1.1	2.5	160	130	110
Dissolved Gasses																	
ETHANE	ug/l	T	NS	NS	<0.062		NS		73		NS	4.9	NS				13 J
ETHENE	ug/l	T	NS	NS	34		NS		<0.057		NS	260	NS				970 J
METHANE	ug/l	T	NS	NS	680		NS		2300		NS	390	NS				830 J
PROPANE	ug/l	T	NS	NS	0.17 J		NS		3		NS	1	NS				2.6 J
Semivolatile Organics																	
2,4,5-TRICHLOROPHENOL	ug/l	T	<0.96	<0.96	2.1 J	1.1 J	1 J	<3.8	<0.96	<48	<19	NS	<48	<24	46	35	13 J
2,4,6-TRICHLOROPHENOL	ug/l	T	<1.4	<1.4	<1.4	<1.4	<1.4	<5.6	<1.4	<70	<28	NS	<70	<35	9.4 J	8.5 J	4.1 J
3- AND 4- METHYLPHENOL	ug/l	T	<0.75	<0.75	2.9 J	<0.75	<0.75	<0.75	<0.75	32 J	17 J	NS	<0.75	34 J	3.9 J	3.5 J	1.2 J
HEXACHLOROBENZENE	ug/l	T	<0.065	<0.065	<0.065	<0.065	<0.065	<0.26	<0.065	<3.2	<1.3	NS	<3.2	<1.6	<0.13	<0.16	<0.065
HEXACHLOROBUTADIENE	ug/l	T	0.53 J	<0.51	<0.51	<0.51	<0.51	<2.0	<0.51	44 J	18 J	NS	<26	<13	<1.0	<1.3	<0.51
HEXACHLOROETHANE	ug/l	T	<0.58	<0.58	<0.58	<0.58	<0.58	<2.3	<0.58	<29	<12	NS	<29	<14	<1.2	<1.4	<0.58
PENTACHLOROPHENOL	ug/l	T	<0.48	<0.48	<0.48	<0.48	<0.48	<1.9	<0.48	53 J	<9.6	NS	<24	<12	13 J	18 J	2 J
PHENOL	ug/l	T	3.5 J	<0.96	<0.96	3.3 J	3.6 J	<3.8	<0.96	150 J	100 J	NS	1800	870	<1.9	<2.4	0.96 J
TIC 1	ug/l	T	7.3 J	3.8 J	8.8 J	31 J	37 J	25 J	17 J	10000 J	3000 J	NS	<NS J	<NS J	29 J	44 J	12 J
Inorganics																	
BARIUM, DISSOLVED	ug/l	D	46 B	43 B	68 B	60 B	29 B	83 B	40 B	360	280	NS	22 J	18 B	230	230	180 J
IRON, DISSOLVED	ug/l	D	NS	NS	<81	NS	NS	NS	160	NS	NS	23000	NS	NS	NS	NS	86 J
MANGANESE, DISSOLVED	ug/l	D	NS	NS	4.7 B	NS	NS	NS	36	NS	NS	780 J	NS	NS	NS	NS	200
CHLORIDE	ug/l	T	257000 B	278000 B	320000	1150000	1140000 B	1350000	1200000 B	25200000	17800000	6310000 B	183000	319000 B	288000 B	294000 B	232000 J
NITRATE/NITRITE NITROGEN	ug/l	T	NS	NS	<20	NS	NS	NS	<20	NS	NS	<20	NS	NS	NS	NS	<20
SULFATE	ug/l	T	NS	NS	365000	NS	NS	NS	1620000 B	NS	NS	776000 B	NS	NS	NS	NS	273000 J
ALKALINITY, BICARB. AS CACO3 AT	ug/l	T	NS	NS	49000 B	NS	NS	NS	160000 B	NS	NS	970000	NS	NS	NS	NS	150000 J
TOTAL ORGANIC CARBON	ug/l	T	NS	NS	8000	NS	NS	NS	7000	NS	NS	1700000	NS	NS	NS	NS	7000
SULFIDE	ug/l	T	NS	NS	29000	NS	NS	NS	34000	NS	NS	34000	NS	NS	NS	NS	19000 J
Field Parameters																	
DEPTH TO WATER FROM TOC	Feet	T	8.23		5.81		10.25		8.79		14.63	39	36.47				23.64
ODOR (FIELD)	NS	T	NONE	NONE	NONE	SLIGHT	SLIGHT	SLIGHT	NONE		SLIGHT	MODERATE	NONE	NONE	SLIGHT	NS	NONE
SPECIFIC CONDUCTANCE (FIELD)	UMHOS/CM	T	1540	1263	1620	5450	5860	6090	6180	54400	49000	17000	3380	3090	1004	NS	1089
TEMPERATURE (FIELD)	DEGREES C	T	13.2	12.8	16.9	12.4	12.9	15.9	17	14	15.4	11.3	12.8	11	10.8	NS	14.6
DISSOLVED OXYGEN (FIELD)	UG/L	T	240	520	200	330	180	490	200		60	240	800	510	1370	NS	560
COLOR QUALITATIVE (FIELD)	NS	T	CLEAR	CLEAR	CLEAR	CLEAR	_T GREY TINT	BLACK	LT.GREY TIN	BLACK	BLACK	BLACK SPEC	CLEAR	GREY	GREY	NS	GREY TINT
PH (FIELD)	STD UNITS	T	7.71	7.42	7.4	7.14	7.39	7.15	7.16	6.98	7.35	7.36	7.44	7.2	7.55	NS	7.04
REDOX (FIELD)	MV	T	27	86	-142	-478	-390	-414	-352	-435	-350	-177	-67	-9	-71	NS	-217
TURBIDITY QUANTITATIVE (FIELD)	NTU	T	7.81	13.6	8.15	3.41	3.2	41.2	1.93	3.75	9.87	7.98	3.98	2.01	15.5	NS	6.07
Total Volatiles	**ug/l**	**T**	**11.65**	**5.27**	**27.29**	**47.63**	**58.09**	**10.51**	**8**	**10594**	**11058**	**684500**	**4.57**	**14.1**	**870.8**	**748.3**	**531.2**

< and ND = Non detect at stated reporting limit

Table A-2
Summary of 2007 Analytical Results
DuPont Necco Park

Analyte	units	Total (T)/ Diss. (D)	VH-136D 9/26/07 DUP	VH-137D 10/9/07 1	VH-139D 10/11/07 1	VH-145D 5/1/07 1	VH-145D 10/11/07 1	VH-147D 4/26/07 1	VH-147D 9/25/07 1	VH-148D 5/1/07 1	VH-148D 9/25/07 1	VH-149D 4/30/07 1	VH-149D 10/8/07 1	VH-156D 4/23/07 1	VH-156D 9/24/07 1	VH-165D 4/30/07 1	VH-165D 10/8/07 1
			D-ZONE WELLS (Continued)														
Volatile Organics																	
1,1,2,2-TETRACHLOROETHANE	ug/l	T	<1.8	2000 J	86	<8.8 UJ	<7.2	<0.55	<0.72	<0.22	<0.18	<0.22	<0.18	<0.22	<0.18	<3.4	<0.9
1,1,2-TRICHLOROETHANE	ug/l	T	9 J	13000	19 J	120 J	120	<0.55	<1.1	<0.22	<0.27	<0.22	<0.27	<0.22	<0.27	17	9.9
1,1-DICHLOROETHENE	ug/l	T	5.7 J	4100 J	<11	24 J	26 J	<0.45	<0.76	<0.18	<0.19	<0.18	<0.19	<0.18	<0.19	<2.8	2.1 J
1,2-DICHLOROETHANE	ug/l	T	26	<1100	<13	12 J	12 J	<0.40	<0.88	<0.16	<0.22	<0.16	<0.22	<0.16	<0.22	28	32
CARBON TETRACHLORIDE	ug/l	T	<1.3	1900 J	<7.6	<7.6	<5.2	<0.48	<0.52	<0.19	<0.13	<0.19	<0.13	<0.19	<0.13	<2.9	<0.65
CHLOROFORM	ug/l	T	26	120000	95	62 J	46	<0.40	<0.64	<0.16	<0.16	<0.16	<0.16	<0.16	<0.16	4.9 J	15
CIS-1,2 DICHLOROETHENE	ug/l	T	250	13000	48 J	1100 J	890	96	91	1.1	1.1	0.57 J	0.73 J	0.49 J	0.57 J	19	8.8
TETRACHLOROETHYLENE	ug/l	T	<2.9	7200	220	<7.6 UJ	<12	<0.48	<1.2	<0.19	<0.29	<0.19	<0.29	<0.19 UJ	<0.29	<2.9	2.3 J
TRANS-1,2-DICHLOROETHENE	ug/l	T	9.4 J	3600 J	32 J	150 J	140	1.9 J	1.5 J	<0.16	<0.19	<0.16	0.19 J	0.31 J	0.35 J	25	50
TRICHLOROETHENE	ug/l	T	83	91000	1500	30 J	15 J	<0.70	<0.68	<0.28	<0.17	<0.28	<0.17	<0.28	<0.17	<4.3	4.9 J
VINYL CHLORIDE	ug/l	T	120	1800 J	45 J	880 J	860	47	72	<0.21	<0.22	1.2	1.2	1.6	1.4	560	130
Dissolved Gasses																	
ETHANE	ug/l	T	5.8 J	12	6.3		NS		0.47 J		19		10		0.89	NS	17
ETHENE	ug/l	T	610 J	130	23		NS		2.7		3.1		16		<0.057	NS	1000
METHANE	ug/l	T	480 J	950	540		NS		100		330		1400		220	NS	860
PROPANE	ug/l	T	1 J	2.3	<0.088		NS		0.12 J		6.3		0.56		0.15 J	NS	1.9
Semivolatile Organics																	
2,4,5-TRICHLOROPHENOL	ug/l	T	31 J	NS	NS	<19	<48	<0.96	<0.96	<0.96	<0.96	<0.96	<0.96	<0.96	<0.96	31 J	24 J
2,4,6-TRICHLOROPHENOL	ug/l	T	5.7 J	NS	NS	<28	<70	<1.4	<1.4	<1.4	<1.4	<1.4	<1.4	<1.4	<1.4	<7.0	<5.6
3- AND 4- METHYLPHENOL	ug/l	T	1.2 J	NS	NS	24 J	25 J	<0.75	<0.75	<0.75	<0.75	<0.75	<0.75	<0.75	<0.75	8.2 J	15 J
HEXACHLOROBENZENE	ug/l	T	<0.065	NS	NS	<1.3	<3.2	<0.065	<0.065	<0.065	<0.065	<0.065	<0.065	<0.065	<0.065	<0.32	<0.26
HEXACHLOROBUTADIENE	ug/l	T	<0.51	NS	NS	<10	<26	<0.51	<0.51	<0.51	<0.51	<0.51	<0.51	<0.51	<0.51	<2.6	<2
HEXACHLOROETHANE	ug/l	T	<0.58	NS	NS	<12	<29	<0.58	<0.58	<0.58	<0.58	<0.58	<0.58	<0.58	<0.58	<2.9	<2.3
PENTACHLOROPHENOL	ug/l	T	6.4 J	NS	NS	<9.6	<24	<0.48	<0.48	<0.48	<0.48	<0.48	<0.48	<0.48	<0.48	<2.4	<1.9
PHENOL	ug/l	T	<0.96	NS	NS	150 J	140 J	<0.96	<0.96	<0.96	12	<0.96	<0.96	<0.96	<0.96	6.2 J	<3.8
TIC 1	ug/l	T	9.9 J	NS	NS	2500 J	4800 J	1.9 J	<NS J	<NS J	<NS J	7.9 J	12 J	<NS J	0.33 J	340 J	220 J
Inorganics																	
BARIUM, DISSOLVED	ug/l	D	190 J	NS	NS	1100	1200	32 B	25 B	39 B	30 B	77 B	49 B	33 B	38 J	70 B	130 J
IRON, DISSOLVED	ug/l	D	120	210	1700	NS	NS	NS	820	NS	<32	NS	<81	NS	630	NS	<81
MANGANESE, DISSOLVED	ug/l	D	210	580	250 J	NS	NS	NS	45	NS	3.2 B	NS	35	NS	74	NS	150
CHLORIDE	ug/l	T	21500 U	2340000	933000 B	30000000	25800000 B	29500 B	38700 B	67600 B	110000	305000 B	245000	252000 B	208000	405000 B	432000
NITRATE/NITRITE NITROGEN	ug/l	T	<20	<20	20 B	NS	NS	NS	<20	NS	100	NS	<20	NS	<20	NS	<20
SULFATE	ug/l	T	34100 U	1260000 B	1430000 B	NS	NS	NS	1130000 B	NS	306000	NS	635000	NS	632000	NS	176000 B
ALKALINITY, BICARB. AS CACO3 AT	ug/l	T	200000 J	800000	270000 B	NS	NS	NS	220000 B	NS	51000 B	NS	28000 B	NS	320000	NS	110000 B
TOTAL ORGANIC CARBON	ug/l	T	9000	340000	4000 B	NS	NS	NS	900 B	NS	5000	NS	5000	NS	2000	NS	26000
SULFIDE	ug/l	T	26000 J	160000 B	30000	NS	NS	NS	<380	NS	2100	NS	17000	NS	28000 B	NS	32000
Field Parameters																	
DEPTH TO WATER FROM TOC	Feet	T	NS	13.5	23.03		12.02		25.22		10.61		16.01		38.15		14.08
ODOR (FIELD)	NS	T	NS	SLIGHT	SLIGHT	MODERATE	MODERATE	NONE	NONE	NONE	NONE	NONE	NONE	NONE	NONE		NONE
SPECIFIC CONDUCTANCE (FIELD)	UMHOS/CM	T	NS	9010	4370	61300	54000	1980	2230	1415	1040	2130	2100	2260	2290	1790	1730
TEMPERATURE (FIELD)	DEGREES C	T	NS	16.9	13.1	11.3	13.9	11.8	14.9	9.4	16.8	15.3	17.4	14.5	13.9	13.8	16
DISSOLVED OXYGEN (FIELD)	UG/L	T	NS	290	180	600	180	650	480	650	330	250	470	560	500		200
COLOR QUALITATIVE (FIELD)	NS	T	NS	BLACK TINT	BLACK TINT	BLACK	BLACK	CLEAR	CLEAR	CLEAR	YELLOW	CLEAR	CLEAR	BLACK	BLACK	YELLOW	BLACK
PH (FIELD)	STD UNITS	T	NS	7.3	7.2	6.96	7.41	7.15	7.09	7.24	7.37	7.47	7.47	7.38	7.28	7.46	7.22
REDOX (FIELD)	MV	T	NS	-335	-309	-421	-388	40	-34	123	95	-401	-28	166	-57	37	-334
TURBIDITY QUANTITATIVE (FIELD)	NTU	T	NS	17.13	10.98	13.1	13.94	1.56	1.33	16.6	19.7	32.3	14.67	7.6	9.71	27.5	14.01
Total Volatiles	**ug/l**	**T**	**520.1**	**257600**	**2045**	**2378**	**2109**	**144.9**	**164.5**	**1.1**	**1.1**	**1.77**	**2.12**	**2.4**	**2.32**	**653.9**	**255**

< and ND = Non detect at stated reporting limit

Table A-2
Summary of 2007 Analytical Results
DuPont Necco Park

			E-ZONE WELLS													
			VH-136E	VH-136E	VH-136E	VH-145E	VH-145E	VH-146E	VH-146E	VH-150E	VH-150E	VH-156E	VH-156E	VH-156E	VH-165E	VH-165E
		Total (T)/	5/3/07	10/10/07	10/10/07	5/1/07	10/11/07	4/25/07	9/26/07	4/27/07	9/28/07	4/23/07	4/23/07	9/24/07	4/30/07	10/8/07
Analyte	**units**	**Diss. (D)**	1	1	DUP	1	1	1	1	1	1	1	DUP	1	1	1
Volatile Organics																
1,1,2,2-TETRACHLOROETHANE	ug/l	T	<0.31	<0.18	<0.18	<44	<60 UJ	<28	130 J	<3.1	<6	<0.22	<0.22	<0.18	1800 J	1900
1,1,2-TRICHLOROETHANE	ug/l	T	1.8	0.81 J	0.85 J	<44	<90 UJ	<28	110 J	<3.1	<9	<0.22	<0.22	<0.27	1600	1600
1,1-DICHLOROETHENE	ug/l	T	<0.26	<0.19	<0.19	<36	<63	460	120 J	3.1 J	<6.3	<0.18	<0.18	<0.19	420 J	380 J
1,2-DICHLOROETHANE	ug/l	T	44	36	37	<32	<73	<20	<73	<2.3	<7.3	<0.16	<0.16	<0.22	330 J	300 J
CARBON TETRACHLORIDE	ug/l	T	<0.27	<0.13	<0.13	<38	<43	<24	<43	<2.7	<4.3	<0.19	<0.19	<0.13	350 J	290 J
CHLOROFORM	ug/l	T	3.7	3.2	3.2	120 J	180 J	180	62 J	<2.3	<5.3	<0.16	<0.16	<0.16	3500	2300
CIS-1,2 DICHLOROETHENE	ug/l	T	5	5.4	5.5	5500	6600	4100	4800	210	170	0.29 J	0.36 J	0.3 J	19000	20000
TETRACHLOROETHYLENE	ug/l	T	<0.27	<0.29	<0.29	38 J	<97	<24	<97	<2.7 UJ	<9.7	<0.19 UJ	<0.19 UJ	<0.29	850 J	900
TRANS-1,2-DICHLOROETHENE	ug/l	T	18 J	9.3	9.4	1100	1400 J	220	260 J	3.9 J	<6.3	<0.16	<0.16	<0.19	550 J	520 J
TRICHLOROETHENE	ug/l	T	6.1	6.5	6.4	76 J	160 J	580	140 J	<4.0	<5.7	<0.28	<0.28	<0.17	7800	7900
VINYL CHLORIDE	ug/l	T	12	15	15	4500	6600 J	1200	6700 J	460	370	2.4	1.8	0.85 J	4900	4800
Dissolved Gasses																
ETHANE	ug/l	T	NS	8.5	11	NS	65	NS	6.3	NS	NS	NS	NS	1.7	NS	NS
ETHENE	ug/l	T	NS	540	690	NS	680	NS	670	NS	NS	NS	NS	<0.057	NS	NS
METHANE	ug/l	T	NS	390	580	NS	2600 J	NS	1600 J	NS	NS	NS	NS	290	NS	NS
PROPANE	ug/l	T	NS	1.6	2.2	NS	<0.088	NS	0.91	NS	NS	NS	NS	0.33 J	NS	NS
Semivolatile Organics																
2,4,5-TRICHLOROPHENOL	ug/l	T	<4.8	<0.96	<0.96	<4.8	<4.8	35 J	220	<24	<19	<0.96	<0.96	<0.96	1400	940
2,4,6-TRICHLOROPHENOL	ug/l	T	<7.0	<1.4	<1.4	<7.0	<7	9.1 J	34 J	<35	<28	<1.4	<1.4	<1.4	150 J	150 J
3- AND 4- METHYLPHENOL	ug/l	T	<0.75	1.4 J	1.4 J	<0.75	<0.75	21 J	27 J	<0.75	9.1 J	<0.75	<0.75	<0.75	<0.75	40 J
HEXACHLOROBENZENE	ug/l	T	<0.32	<0.065	<0.065	<0.32	<0.32	<0.32	<0.32	<1.6	<1.3	<0.065	<0.065	<0.065	<3.2 R	<2.6
HEXACHLOROBUTADIENE	ug/l	T	<2.6	<0.51	<0.51	<2.6	<2.6	<2.6	6.6 J	<13	<10	<0.51	<0.51	<0.51	<26	45 J
HEXACHLOROETHANE	ug/l	T	<2.9	<0.58	<0.58	<2.9	<2.9	<2.9	<2.9	<14	<12	<0.58	<0.58	<0.58	<29 R	<23
PENTACHLOROPHENOL	ug/l	T	<2.4	0.95 J	<0.48	<2.4	<2.4	<2.4	<2.4	<12	<9.6	<0.48	<0.48	<0.48	78 J	120 J
PHENOL	ug/l	T	<4.8	<0.96	<0.96	<4.8	<4.8	<4.8	<4.8	530	560	<0.96	<0.96	<0.96	<48	45 J
TIC 1	ug/l	T	33 J	50 J	49 J	350 J	330 J	710 J	640 J	6400 J	5000 J	<NS J	<NS J	0.27 J	630 J	780 J
Inorganics																
BARIUM, DISSOLVED	ug/l	D	230	220	210	110 B	43 B	71 B	95 U	110 B	97 B	31 B	31 B	31 J	520	430
IRON, DISSOLVED	ug/l	D	NS	<81	<81	NS	10400	NS	63 J	NS	NS	NS	NS	5300	NS	NS
MANGANESE, DISSOLVED	ug/l	D	NS	170	170	NS	890 J	NS	150	NS	NS	NS	NS	100	NS	NS
CHLORIDE	ug/l	T	291000 B	238000 B	237000 B	4710000	4040000 B	504000 B	816000 B	5570000	5630000	249000 B	250000 B	229000	976000	859000 B
NITRATE/NITRITE NITROGEN	ug/l	T	NS	30 B	20 B	NS	<20	NS	<20	NS	NS	NS	NS	<20	NS	NS
SULFATE	ug/l	T	NS	290000 B	294000 B	NS	804000 B	NS	1120000	NS	NS	NS	NS	688000	NS	NS
ALKALINITY, BICARB. AS CACO3 AT	ug/l	T	NS	240000 B	240000 B	NS	310000 B	NS	400000 B	NS	NS	NS	NS	290000	NS	NS
TOTAL ORGANIC CARBON	ug/l	T	NS	9000 B	9000 B	NS	19000	NS	23000	NS	NS	NS	NS	2000	NS	NS
SULFIDE	ug/l	T	NS	52000	57000	NS	68000	NS	120000	NS	NS	NS	NS	22000 B	NS	NS
Field Parameters																
DEPTH TO WATER FROM TOC	Feet	T		23.81	NS		NS		NS		18.66			38.08		22.06
ODOR (FIELD)	NS	T	NONE	NONE	NS	SLIGHT	NS	MODERATE	NS	MODERATE	MODERATE	NONE	NS	NONE		NONE
SPECIFIC CONDUCTANCE (FIELD)	UMHOS/CM	T	1750	1530	NS	13760	NS	3900	NS	16900	18.4	1750	NS	1620	2900	3170
TEMPERATURE (FIELD)	DEGREES C	T	12.5	13.3	NS	10.6	NS	10.9	NS	12.8	14.4	14.4	NS	14.2	12.5	15.6
DISSOLVED OXYGEN (FIELD)	UG/L	T	380	120	NS	310	NS	60	NS	970	130	630	NS	150		100
COLOR QUALITATIVE (FIELD)	NS	T	CLEAR	CLEAR	NS	YELLOW	NS	BLACK	NS	BLACK	BLACK	GREY	NS	BLACK	GREY	BLACK
PH (FIELD)	STD UNITS	T	7.14	7.33	NS	7.09	NS	7.25	NS	6.86	7.31	7.46	NS	7.4	7.3	7.29
REDOX (FIELD)	MV	T	-419	-344	NS	-139	NS	-441	NS	-449	-380	65	NS	-35	-316	-213
TURBIDITY QUANTITATIVE (FIELD)	NTU	T	1.63	2.54	NS	9.52	NS	4.75	NS	6.2	8.36	12.1	NS	26.9	18.5	13.91
Total Volatiles	ug/l	T	**90.6**	**76.21**	**77.35**	**11334**	**14940**	**6740**	**12322**	**677**	**540**	**2.69**	**2.16**	**1.15**	**41100**	**40890**

Table A-2
Summary of 2007 Analytical Results
DuPont Necco Park

			F-ZONE WELLS										G-ZONE WELLS						
			VH-136F	VH-136F	VH-146F	VH-146F	VH-147F	VH-147F	VH-150F	VH-150F	VH-156F	VH-156F	VH-147G1	VH-147G1	VH-147G1	VH-147G2	VH-147G2	VH-147G3	VH-147G3
		Total (T)/	5/3/07	10/10/07	5/8/07	10/12/07	4/26/07	9/25/07	4/27/07	9/28/07	4/23/07	9/24/07	4/26/07	9/25/07	9/25/07	4/26/07	9/25/07	4/26/07	9/25/07
Analyte	units	Diss. (D)	1	1	1	1	1	1	1	1	1	1	1	1	DUP	1	1	1	1
Volatile Organics																			
1,1,2,2-TETRACHLOROETHANE	ug/l	T	<1.5	<0.3	<110	<130	<0.22	<0.18	<7.3	<6	<0.22	<0.18	<18	1.1	1.5 J	<31	<30	38 J	110 J
1,1,2-TRICHLOROETHANE	ug/l	T	4.0 J	2.5	170 J	200 J	<0.22	<0.27	<7.3	<9	0.29 J	<0.27	<18	0.69 J	0.87 J	<31	<45	41 J	<110
1,1-DICHLOROETHENE	ug/l	T	<1.2	0.35 J	550	670 J	<0.18	<0.19	6.2 J	7 J	0.20 J	<0.19	<15	<0.19	<0.32	<26	<32	<30	<79
1,2-DICHLOROETHANE	ug/l	T	19	18	<80	<160	<0.16	<0.22	<5.3	<7.3	1.8	1.6	72 J	7.6	9.8	490	270	67 J	130 J
CARBON TETRACHLORIDE	ug/l	T	<1.3	<0.22	<95	<93	<0.19	<0.13	<6.3	<4.3	<0.19	<0.13	<16	<0.13	<0.22	<27	<22	<32	<54
CHLOROFORM	ug/l	T	7.7	7.3	<80	<110	<0.16	<0.16	<5.3	<5.3	0.47 J	0.54 J	<13	0.54 J	0.64 J	<23	<27	60 J	<67
CIS-1,2 DICHLOROETHENE	ug/l	T	40	16	15000	16000 J	0.71 J	0.73 J	860	980	6.5 J	6.1	93	4.8	4.7	290	210	630	1300
TETRACHLOROETHYLENE	ug/l	T	2.0 J	2.1	<95	<210 UJ	<0.19	<0.29	<6.3 UJ	<9.7	0.31 J	<0.29	<16	<0.29	<0.48	<27 UJ	<48	<32	<120
TRANS-1,2-DICHLOROETHENE	ug/l	T	34 J	47	760	830 J	<0.16	<0.19	<5.3	<6.3	21	12	420	27	36	290	150 J	400	420
TRICHLOROETHENE	ug/l	T	6.7	12	<140	160 J	<0.28	<0.17	<9.3	<5.7	3.7	3.1	<23	1.9	2	<40	<28	<47	<71
VINYL CHLORIDE	ug/l	T	150	45	5200	4500	1.3	1	580	720	34	17	2000	27	28	5100	2800	4000	5700
Dissolved Gasses																			
ETHANE	ug/l	T	NS	NS	NS	9.3	NS	NS	NS	84	NS	NS	NS	NS	NS	NS	NS	NS	NS
ETHENE	ug/l	T	NS	NS	NS	140	NS	NS	NS	64	NS	NS	NS	NS	NS	NS	NS	NS	NS
METHANE	ug/l	T	NS	NS	NS	2400	NS	NS	NS	4300	NS	NS	NS	NS	NS	NS	NS	NS	NS
PROPANE	ug/l	T	NS	NS	NS	0.82	NS	NS	NS	1.1	NS	NS	NS	NS	NS	NS	NS	NS	NS
Semivolatile Organics																			
2,4,5-TRICHLOROPHENOL	ug/l	T	<4.8	<0.96	140	150	<0.96	<0.96	<24	<19	1.1 J	2.5 J	<3.8	<0.96	<0.96	4.4 J	12	4.2 J	2.6 J
2,4,6-TRICHLOROPHENOL	ug/l	T	<7.0	<1.4	43 J	55 J	<1.4	<1.4	<35	<28	<1.4	<1.4	<5.6	<1.4	<1.4	<1.4	<1.4	<5.6	<1.4
3- AND 4- METHYLPHENOL	ug/l	T	<0.75	1.5 J	61 J	70 J	<0.75	<0.75	32 J	37 J	<0.75	<0.75	<0.75	<0.75	<0.75	<0.75	<0.75	<0.75	<0.75
HEXACHLOROBENZENE	ug/l	T	<0.32	<0.065	<0.43	<0.65	<0.065	<0.065	<1.6	<1.3	<0.065	<0.065	<0.26	<0.065	<0.065	<0.065	<0.065	<0.26	<0.065
HEXACHLOROBUTADIENE	ug/l	T	<2.6	<0.51	<3.4	<5.1	<0.51	<0.51	<13	<10	<0.51	<0.51	<2.0	<0.51	<0.51	<0.51	<0.51	<2.0	<0.51
HEXACHLOROETHANE	ug/l	T	<2.9	<0.58	<3.9	<5.8	<0.58	<0.58	<14	<12	<0.58	<0.58	<2.3	<0.58	<0.58	<0.58	<0.58	<2.3	<0.58
PENTACHLOROPHENOL	ug/l	T	<2.4	<0.48	<3.2	<4.8	<0.48	<0.48	<12	<9.6	<0.48	<0.48	<1.9	<0.48	<0.48	1.8 J	1.4 J	6.5 J	1.8 J
PHENOL	ug/l	T	<4.8	<0.96	250	340	<0.96	<0.96	420	500	<0.96	<0.96	<3.8	<0.96	<0.96	<0.96	<0.96	<3.8	<0.96
TIC 1	ug/l	T	40 J	18 J	1800 J	1000 J	<NS J	<NS J	6700 J	5500 J	2.1 J	1.6 J	19 J	3.4 J	1.8 J	130 J	100 J	120 J	100 J
Inorganics																			
BARIUM, DISSOLVED	ug/l	D	95 B	140 J	120 B	91 B	39 B	36 B	200	160 J	9.8 B	20 J	47 B	15 B	15 B	26 B	20 B	42 B	31 B
IRON, DISSOLVED	ug/l	D	NS	NS	NS	190	NS	NS	NS	206000	NS	NS	NS	NS	NS	NS	NS	NS	NS
MANGANESE, DISSOLVED	ug/l	D	NS	NS	NS	1200 J	NS	NS	NS	3000	NS	NS	NS	NS	NS	NS	NS	NS	NS
CHLORIDE	ug/l	T	310000 B	280000 J	3060000	3120000 B	150000 B	149000 B	10600000	10500000	184000 B	269000	1220000 B	285000 B	240000	1470000 B	1310000	2370000	2470000
NITRATE/NITRITE NITROGEN	ug/l	T	NS	NS	NS	<20	NS	NS	NS	<20	NS	NS	NS	NS	NS	NS	NS	NS	NS
SULFATE	ug/l	T	NS	NS	NS	1010000 B	NS	NS	NS	816000 B	NS	NS	NS	NS	NS	NS	NS	NS	NS
ALKALINITY, BICARB. AS CACO3 AT	ug/l	T	NS	NS	NS	1000000	NS	NS	NS	310000 B	NS	NS	NS	NS	NS	NS	NS	NS	NS
TOTAL ORGANIC CARBON	ug/l	T	NS	NS	NS	86000	NS	NS	NS	190000	NS	NS	NS	NS	NS	NS	NS	NS	NS
SULFIDE	ug/l	T	NS	NS	NS	370000	NS	NS	NS	7900	NS	NS	NS	NS	NS	NS	NS	NS	NS
Field Parameters																			
DEPTH TO WATER FROM TOC	Feet	T		24.64		20.55		21.46		17.6		37.58		23.09	NS		23.38		22.84
ODOR (FIELD)	NS	T	NONE	SLIGHT	SLIGHT	SLIGHT	NONE	NONE	MODERATE	MODERATE	NONE	NONE	SLIGHT	SLIGHT	NS	NONE	NONE	SLIGHT	NONE
SPECIFIC CONDUCTANCE (FIELD)	UMHOS/CM	T	1520	1479	10190	1017	2800	3100	27600	29900	2330	2680	5910	5590	NS	5170	3690	9100	9410
TEMPERATURE (FIELD)	DEGREES C	T	12.6	13.1	13.6	11.5	11.8	14.5	12.7	14.6	14.2	13.1	12.3	16.9	NS	12.9	15.7	13.1	15.7
DISSOLVED OXYGEN (FIELD)	UG/L	T	380	80	390	170	590	530	750	140	500	300	350	200	NS	450	200	530	170
COLOR QUALITATIVE (FIELD)	NS	T	CLEAR	LT. GREY	CLEAR	GREY TINT	GREY	CLEAR	CLEAR	GREY TINT	GREY	GREY	GREY	GREY	NS	BLACK	GREY TINT	GREY	GREY TINT
PH (FIELD)	STD UNITS	T	7.25	7.3	7.03	7.43	7.19	7.14	6.93	7.42	7.38	7.32	7.12	7.18	NS	7.47	7.38	7.09	7.25
REDOX (FIELD)	MV	T	-122	-343	-456	-403	10	-19	-283	-217	77	-93	-11	-48	NS	52	-55	-422	-294
TURBIDITY QUANTITATIVE (FIELD)	NTU	T	6.86	5.53	2.58	3.3	15.4	7.24	1.78	3.83	3.72	2.81	4.1	13.19	NS	11.4	19.1	3.68	3.08
Total Volatiles	**ug/l**	**T**	**263.4**	**150.25**	**21680**	**22360**	**2.01**	**1.73**	**1446.2**	**1707**	**68.27**	**40.34**	**2585**	**70.63**	**83.51**	**6170**	**3430**	**5236**	**7660**

< and ND = Non detect at stated reporting limit

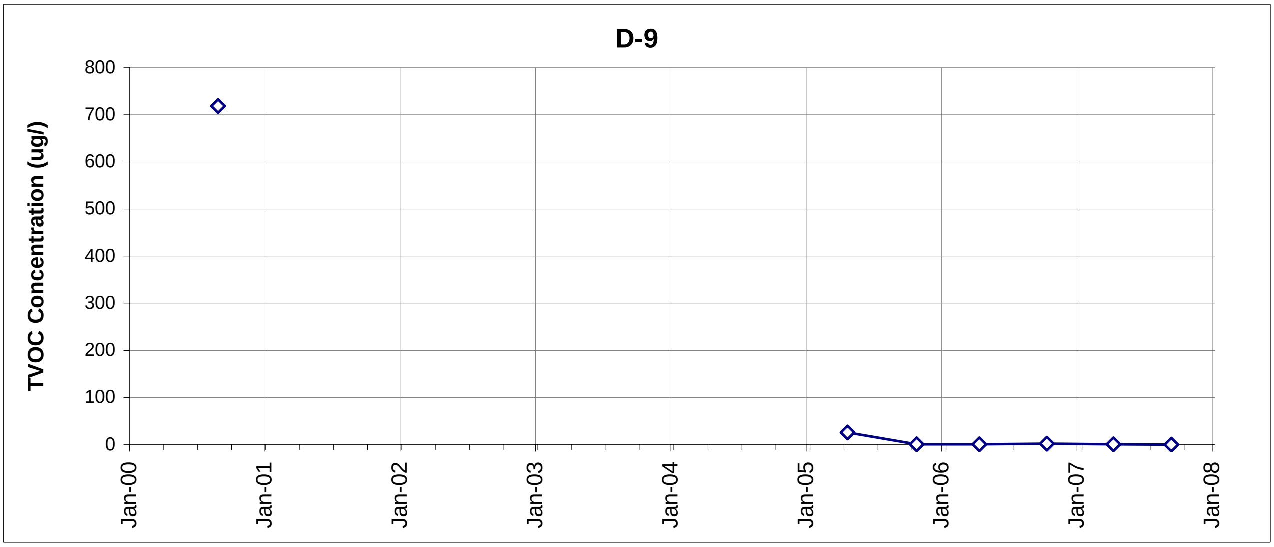
APPENDIX B
DATA VALIDATION SUMMARY LABORATORY REPORTS

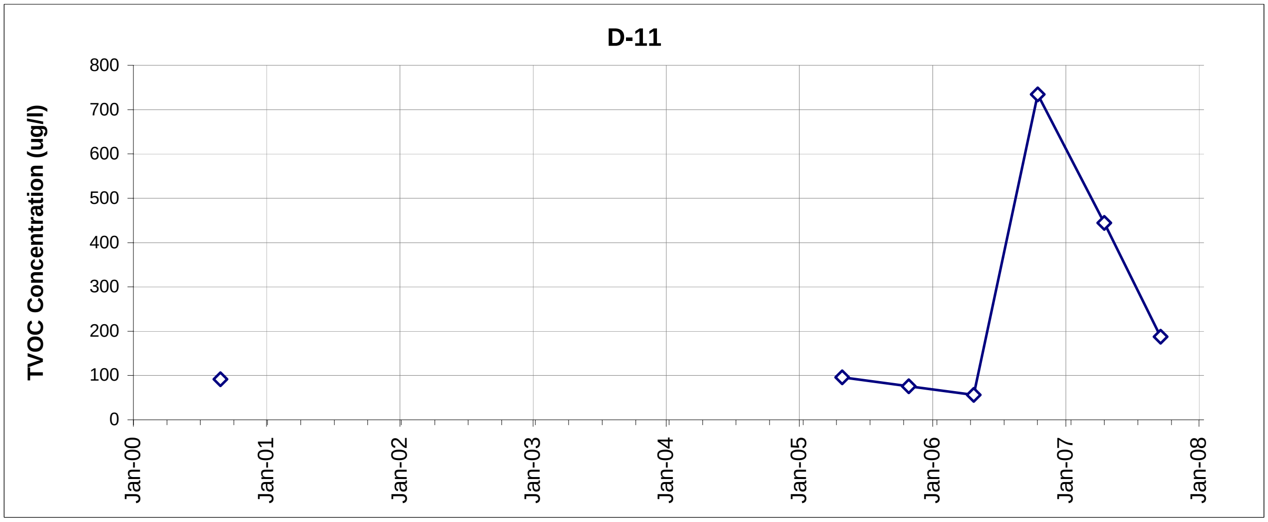
- Provided on CD only - no Hardcopy attached -

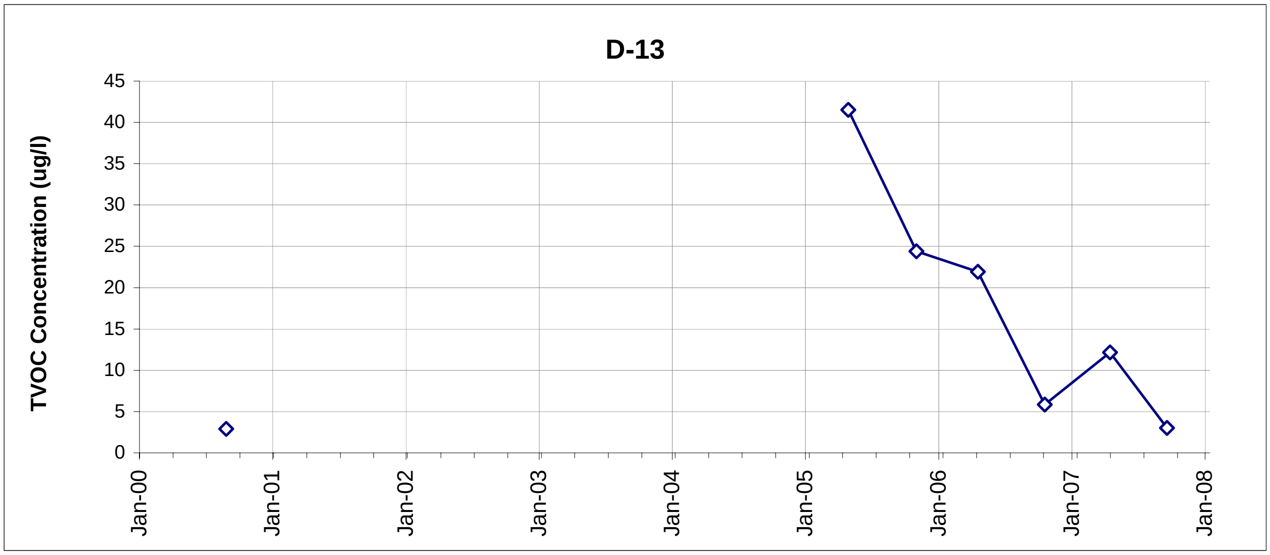
APPENDIX C

TVOC CONCENTRATION TREND PLOTS

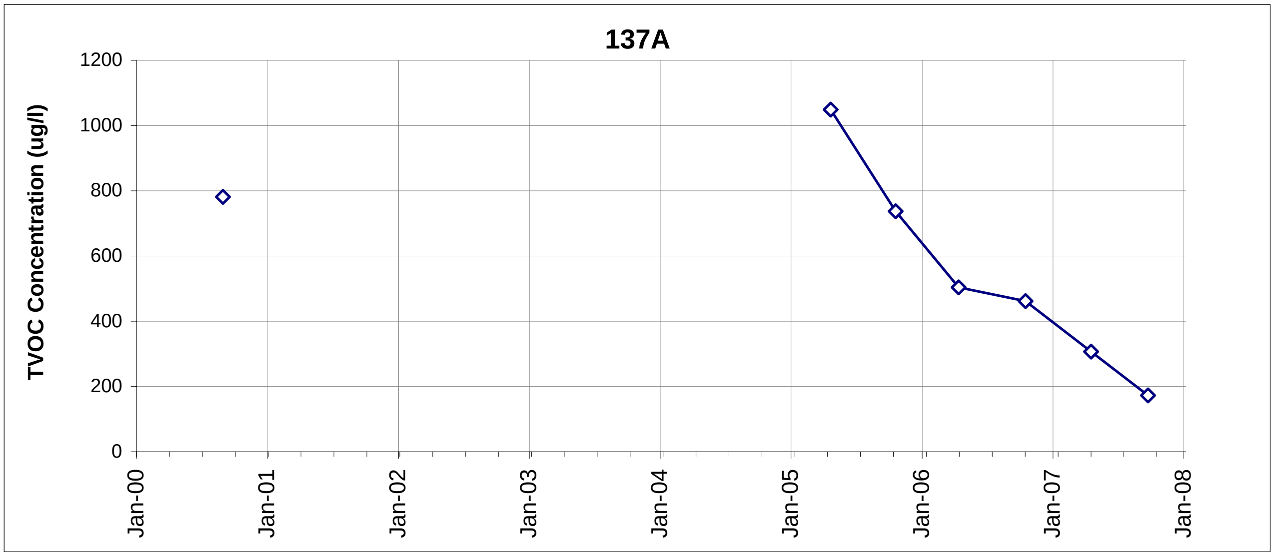
Appendix C: TVOC Concentration Trend Plots
A-Zone Wells
Necco Park

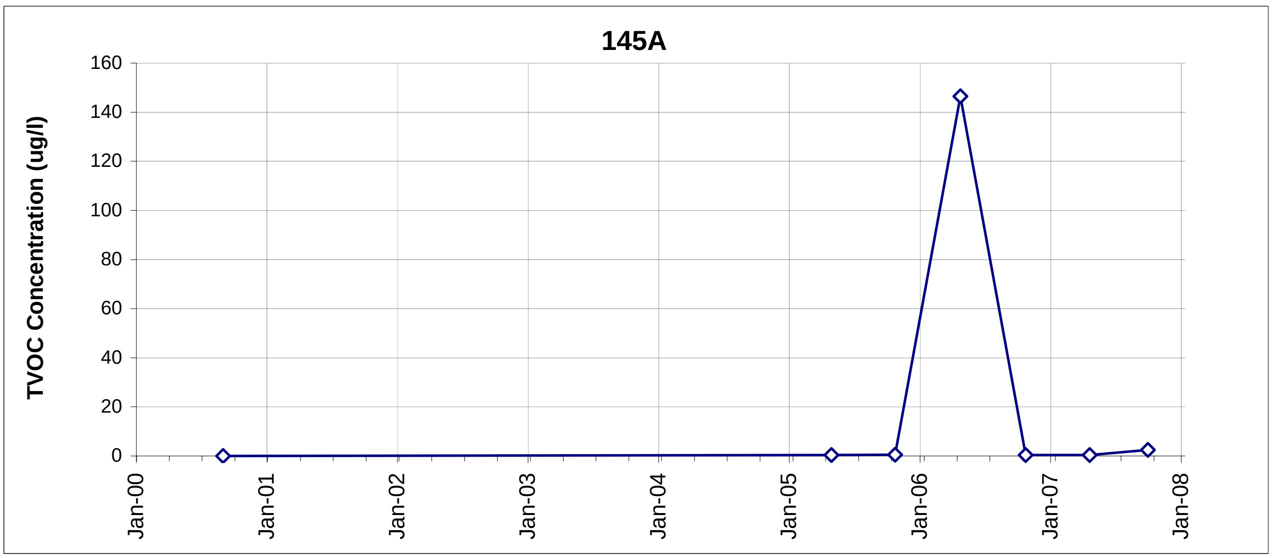


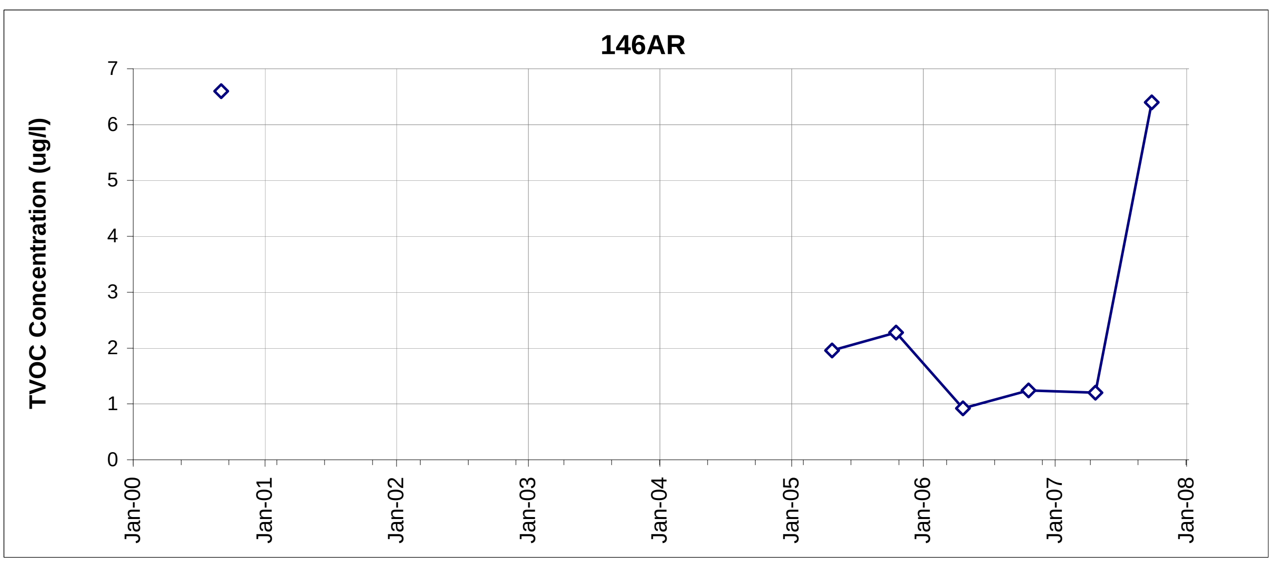




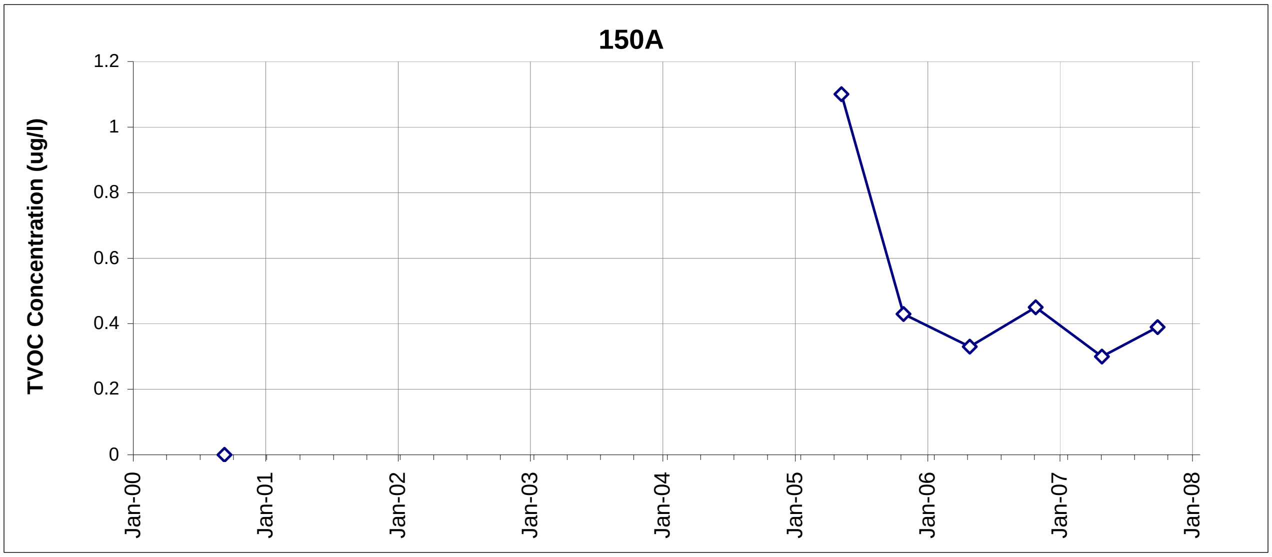
Appendix C: TVOC Concentration Trend Plots
A-Zone Wells
Necco Park



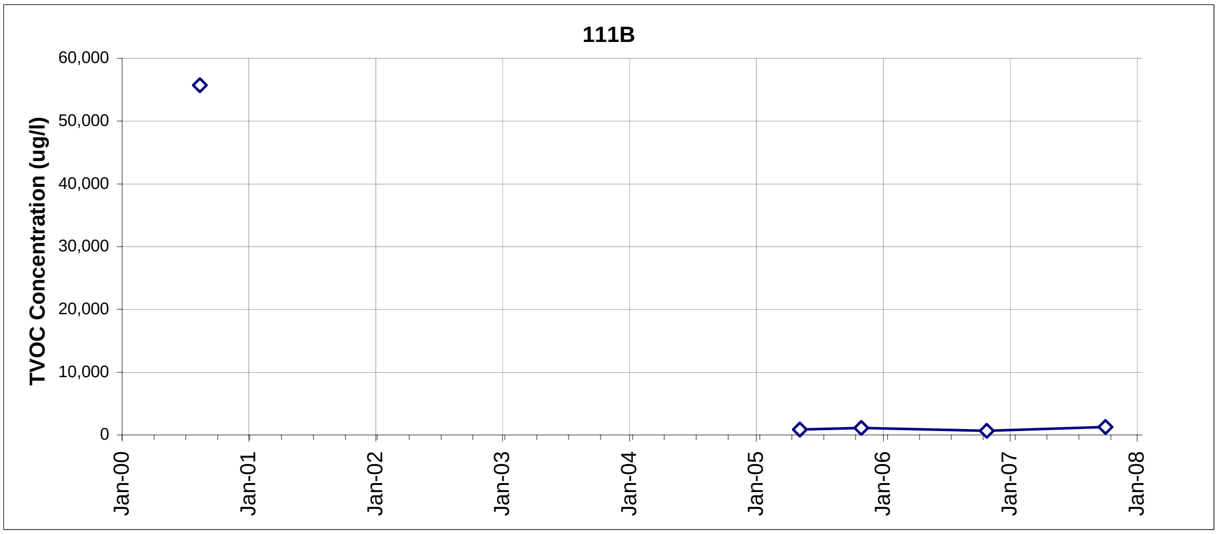


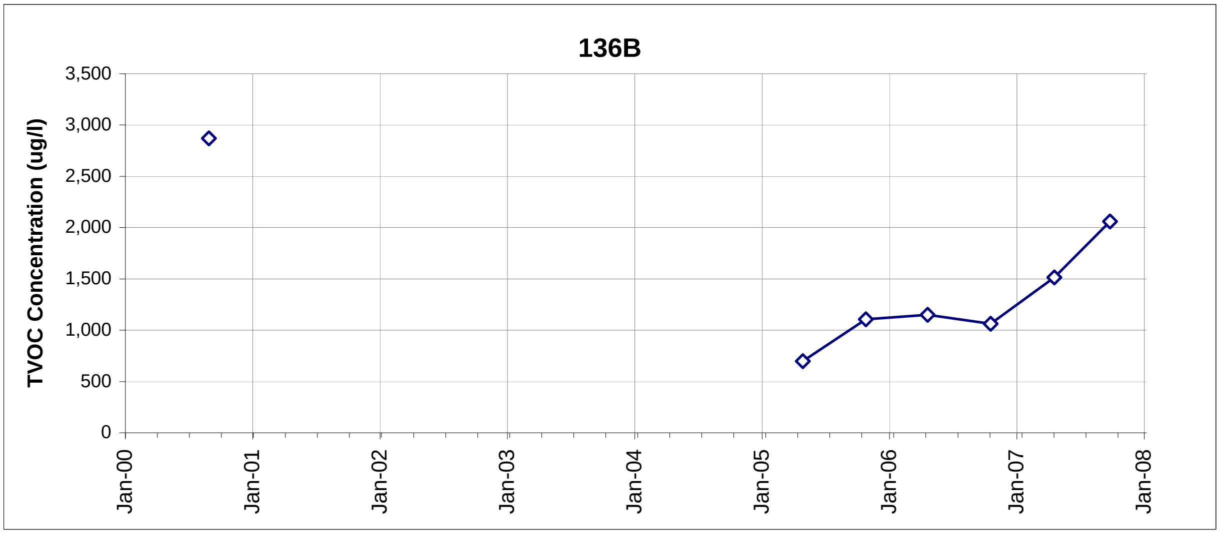


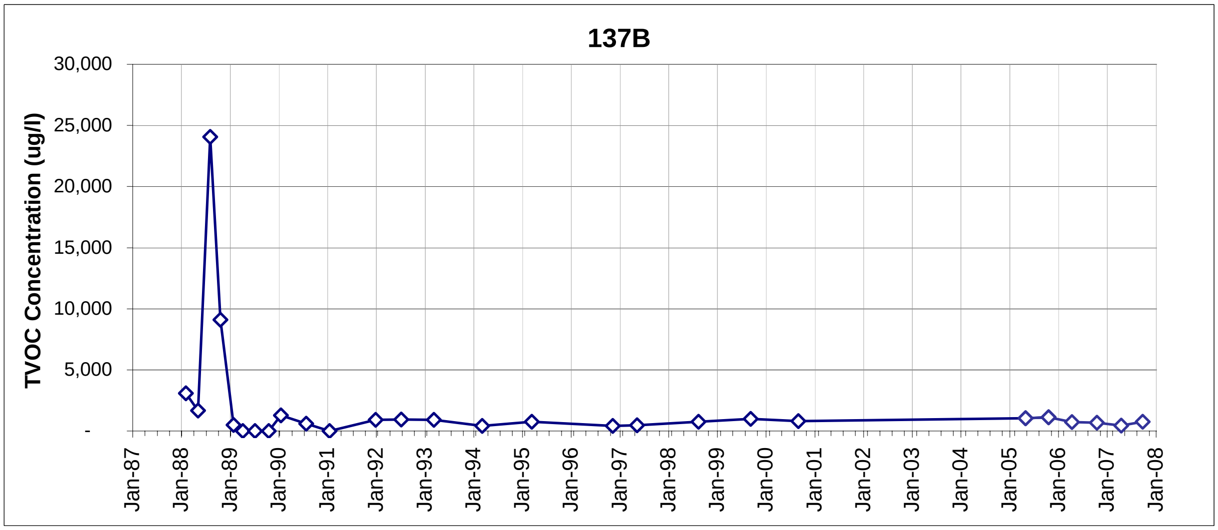
Appendix C: TVOC Concentration Trend Plots
A-Zone Wells
Necco Park



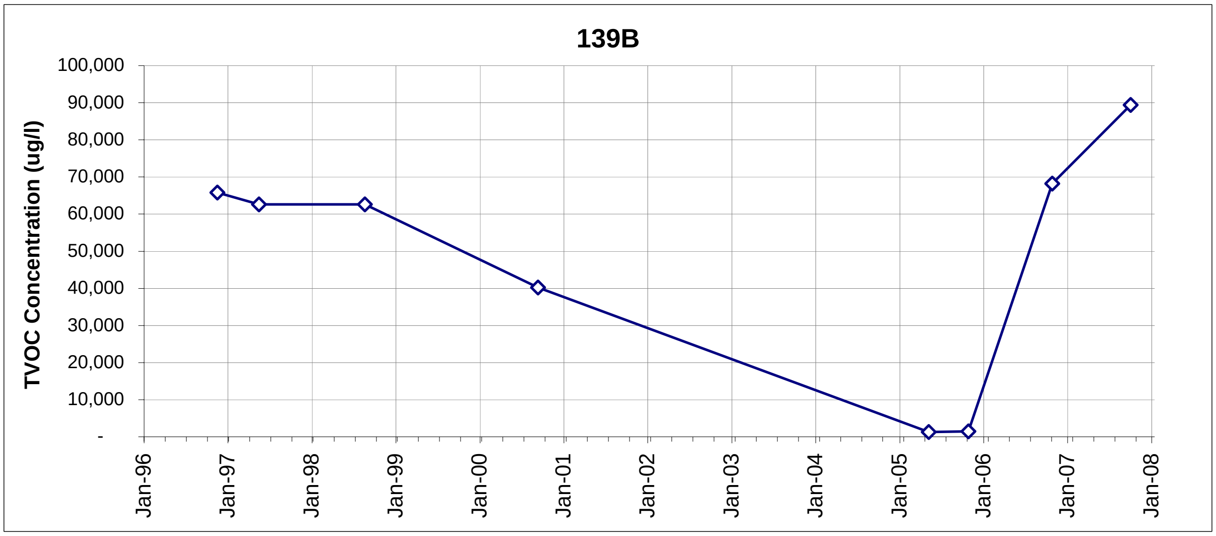
Appendix C: TVOC Concentration Trend Plots
B-Zone Wells
Necco Park

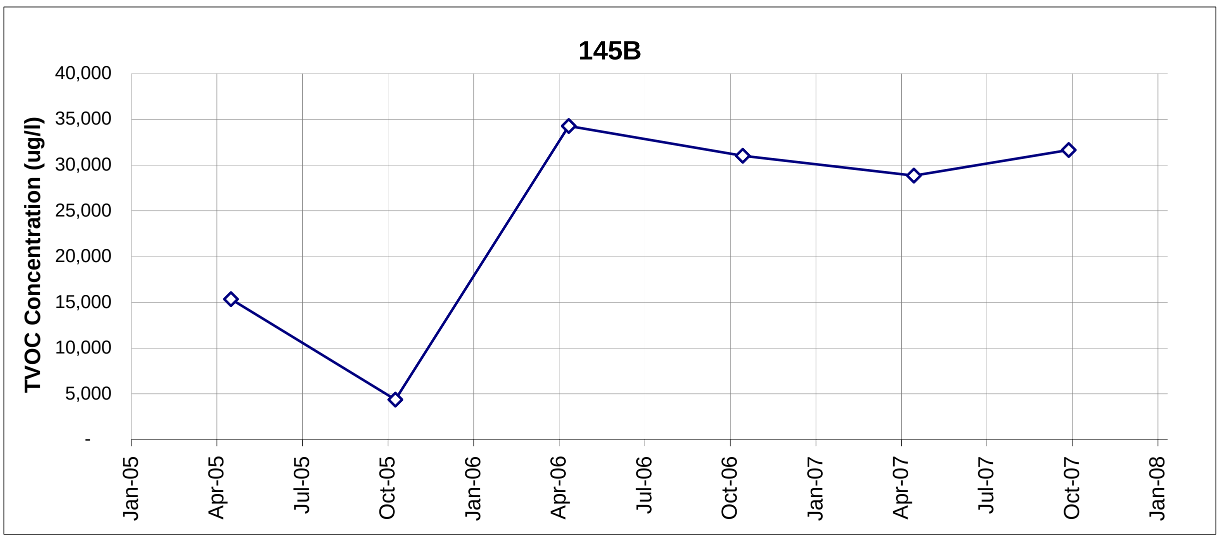


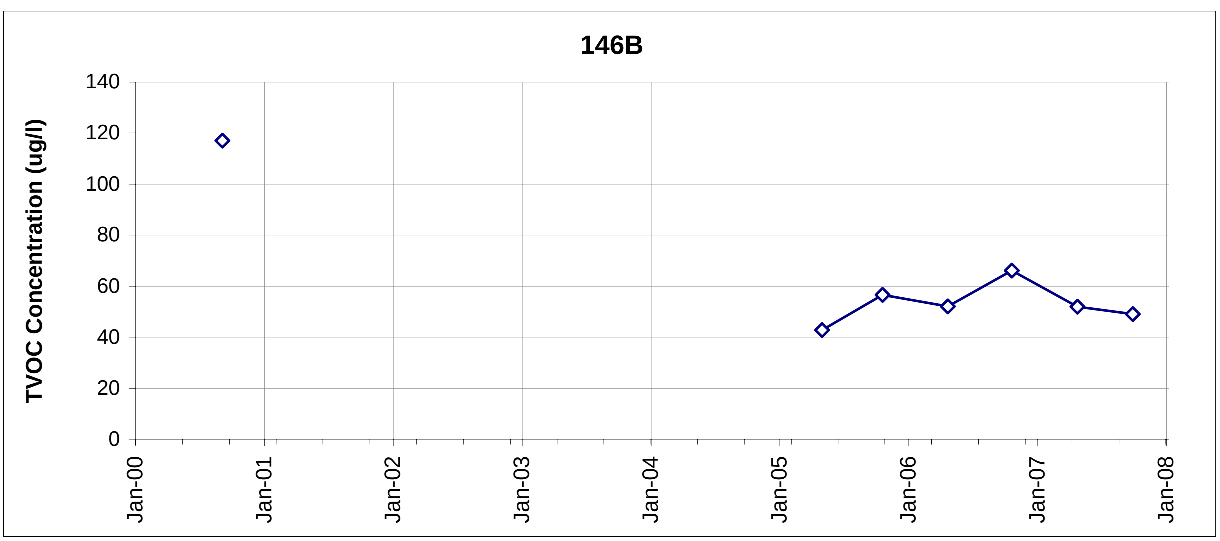




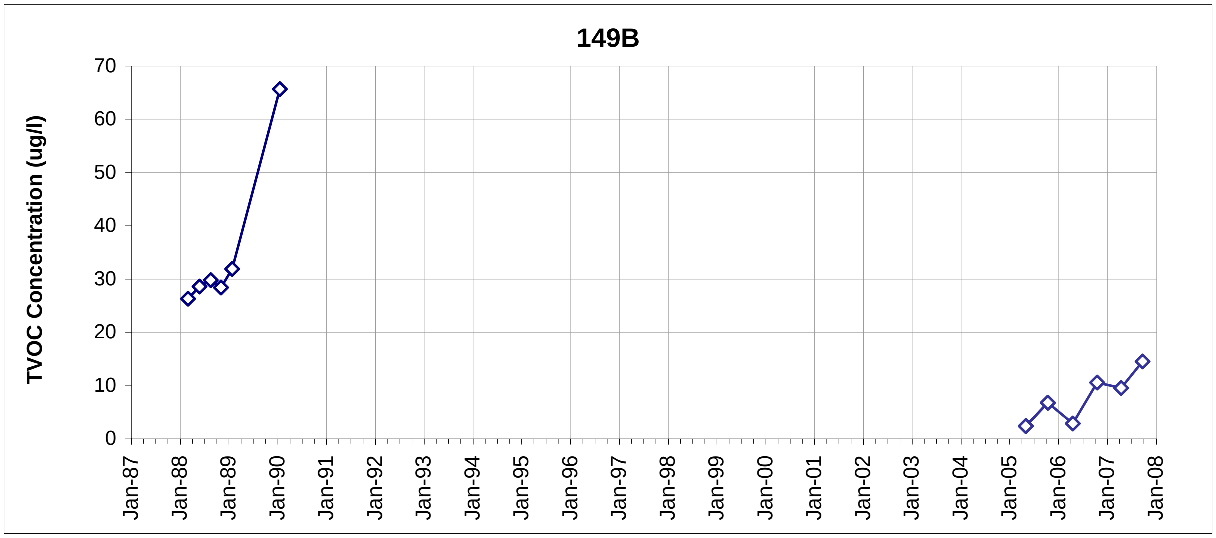
Appendix C: TVOC Concentration Trend Plots
B-Zone Wells
Necco Park

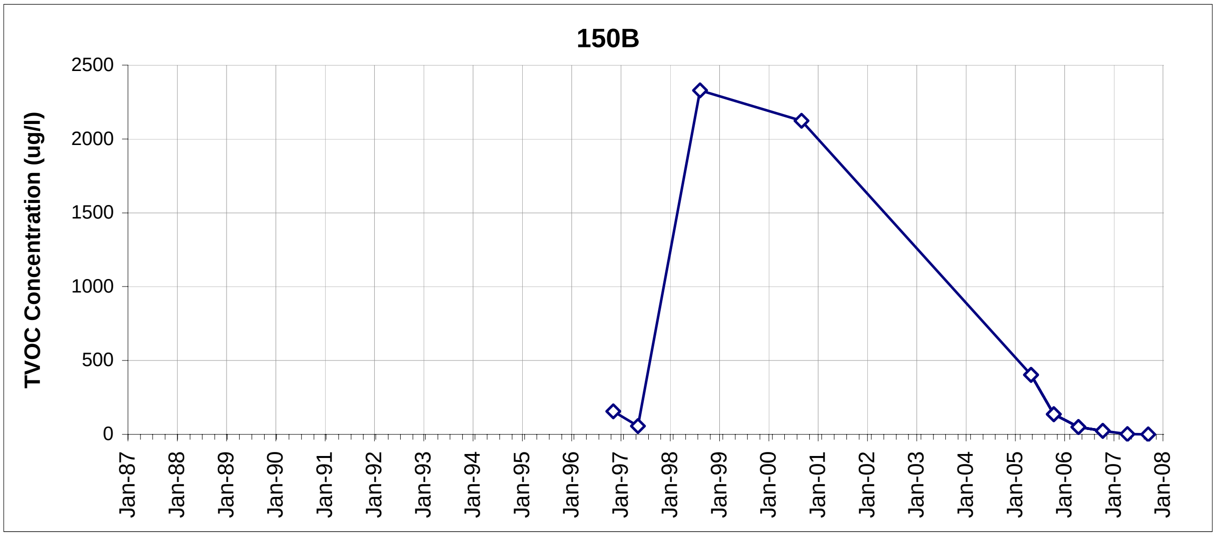


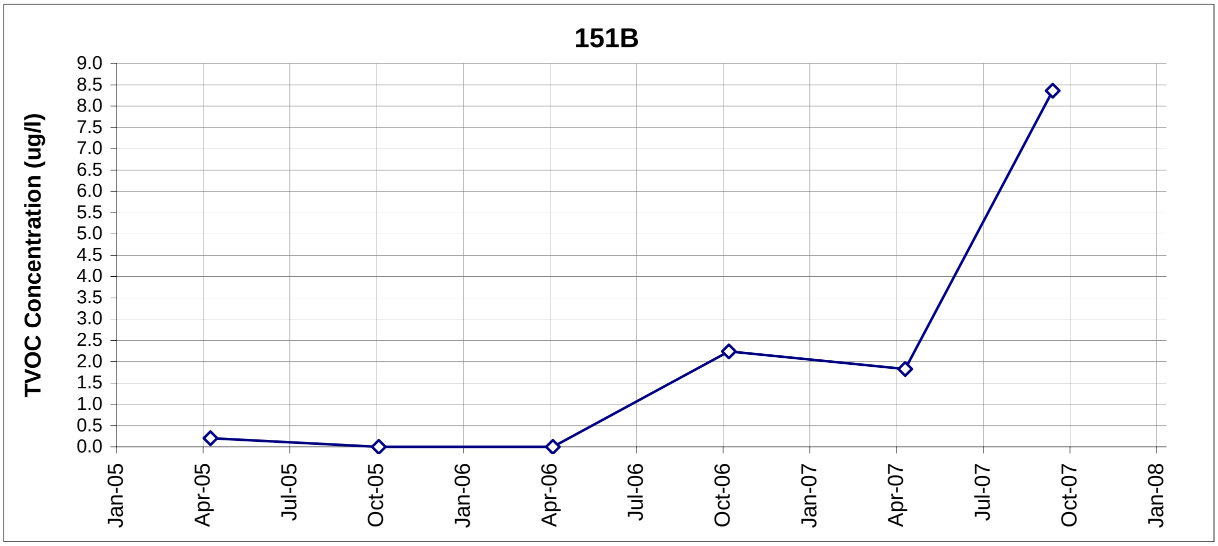




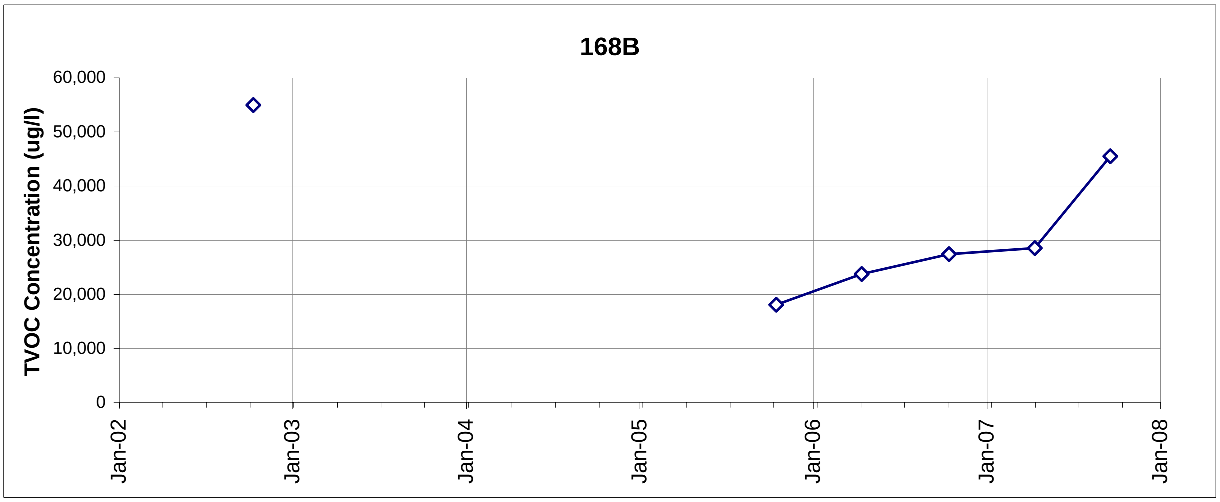
Appendix C: TVOC Concentration Trend Plots
B-Zone Wells
Necco Park

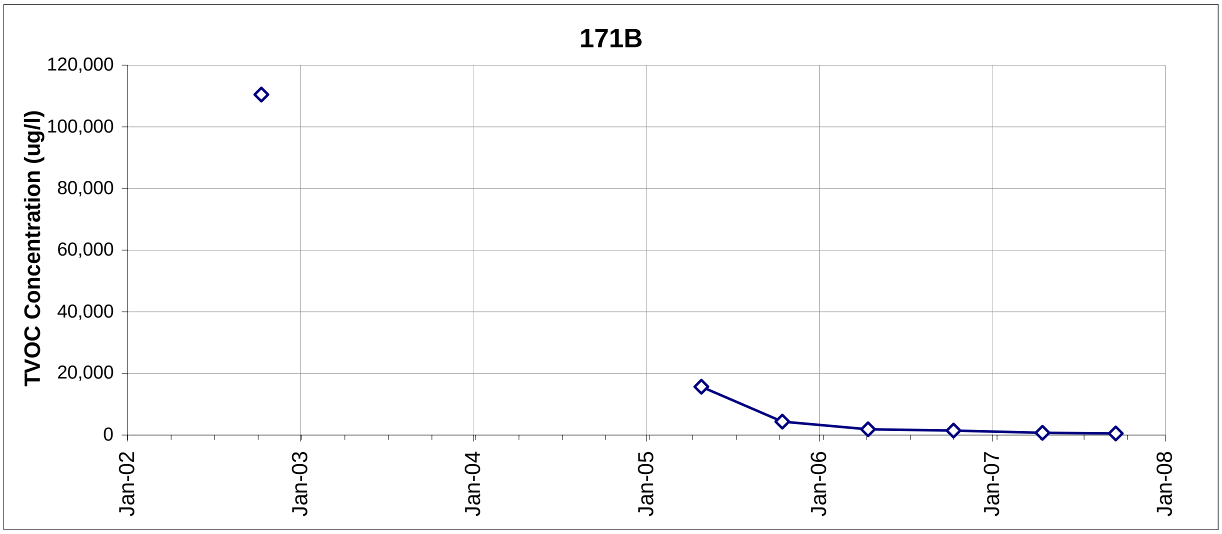


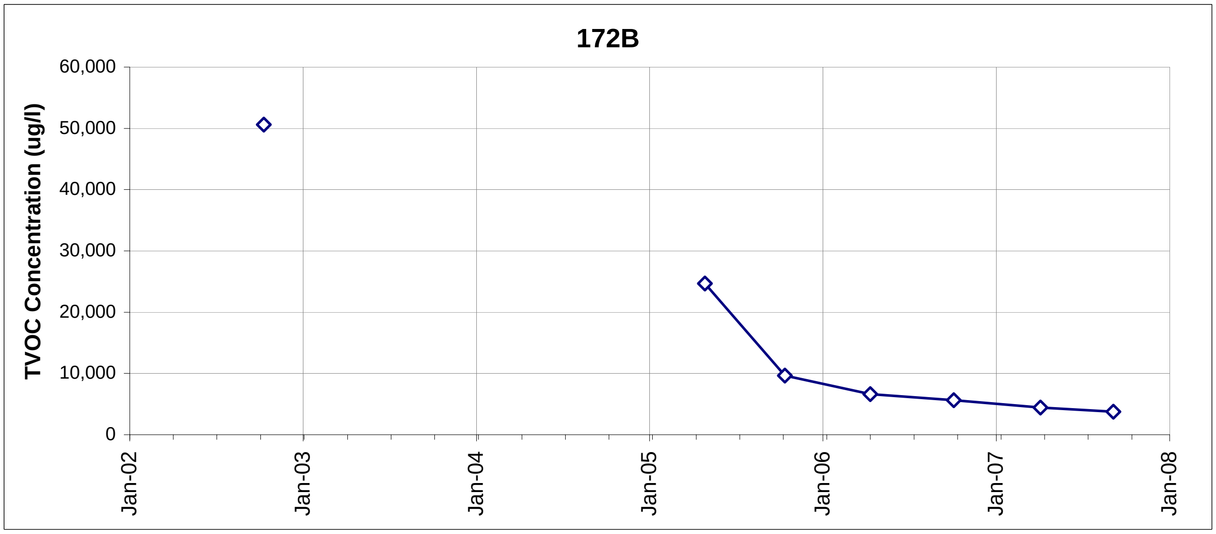




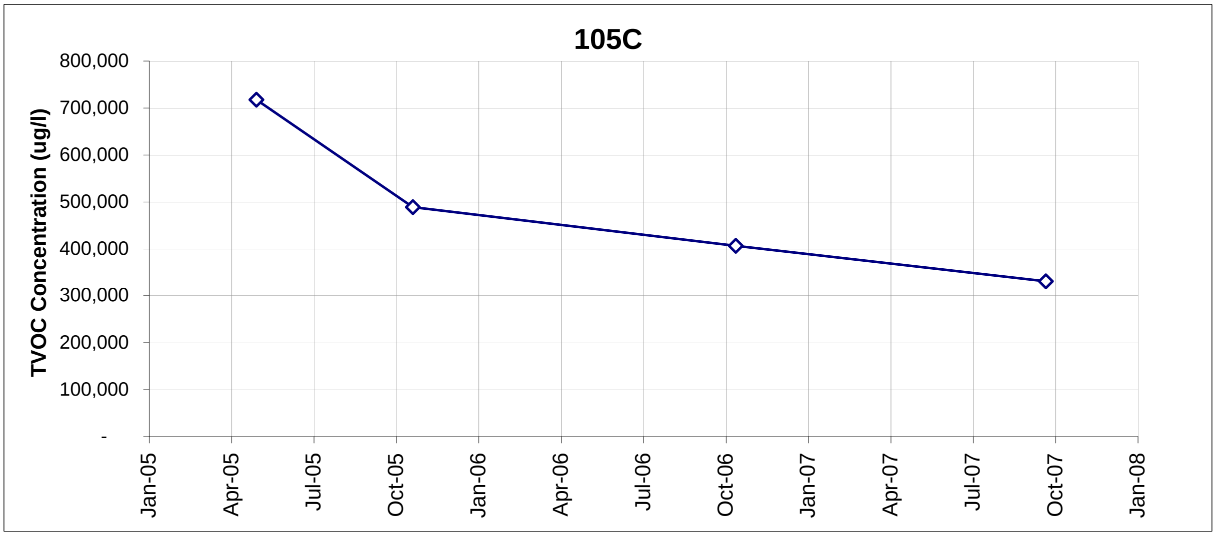
Appendix C: TVOC Concentration Trend Plots
B-Zone Wells
Necco Park

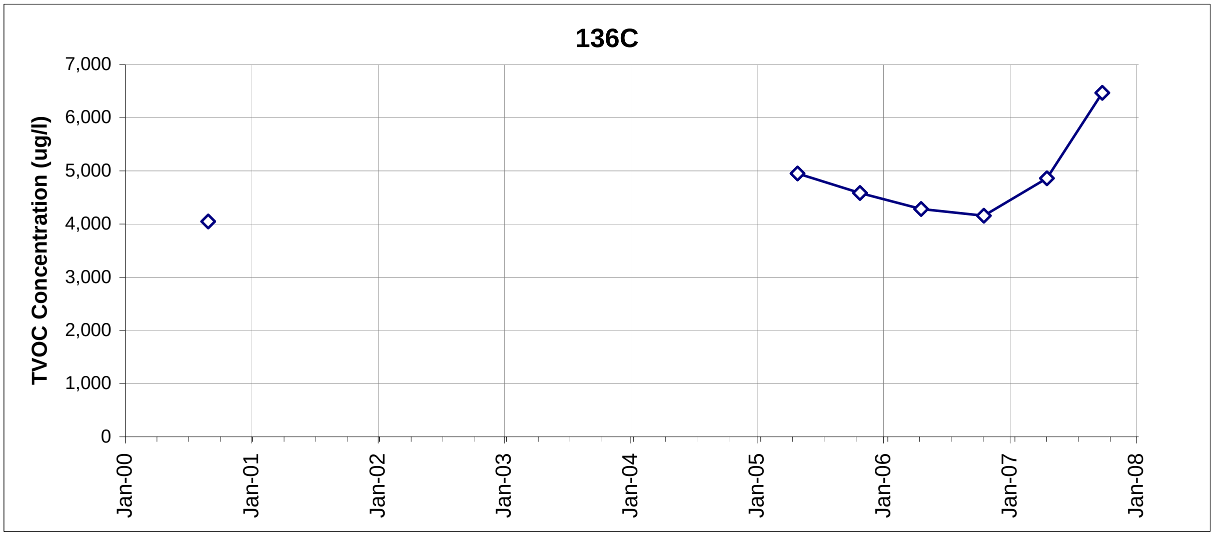


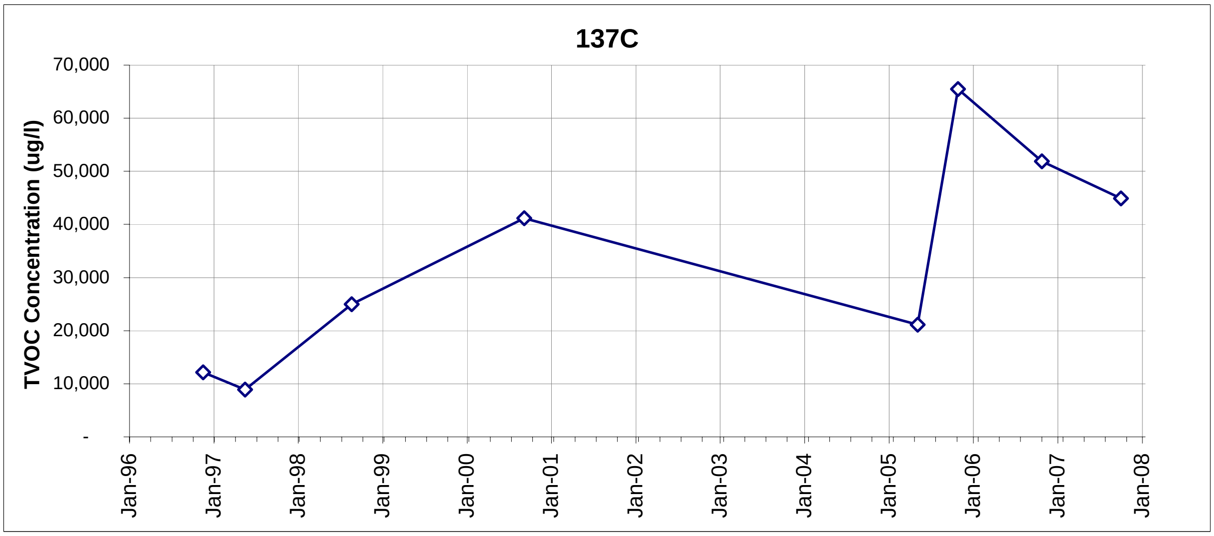




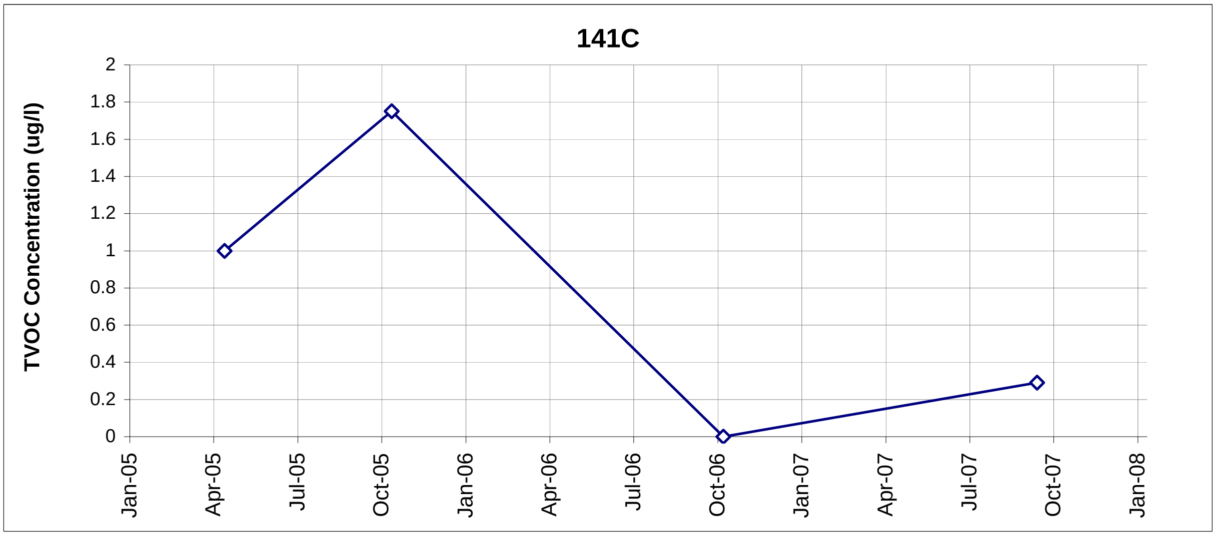
Appendix C: TVOC Concentration Trend Plots
C-Zone Wells
Necco Park

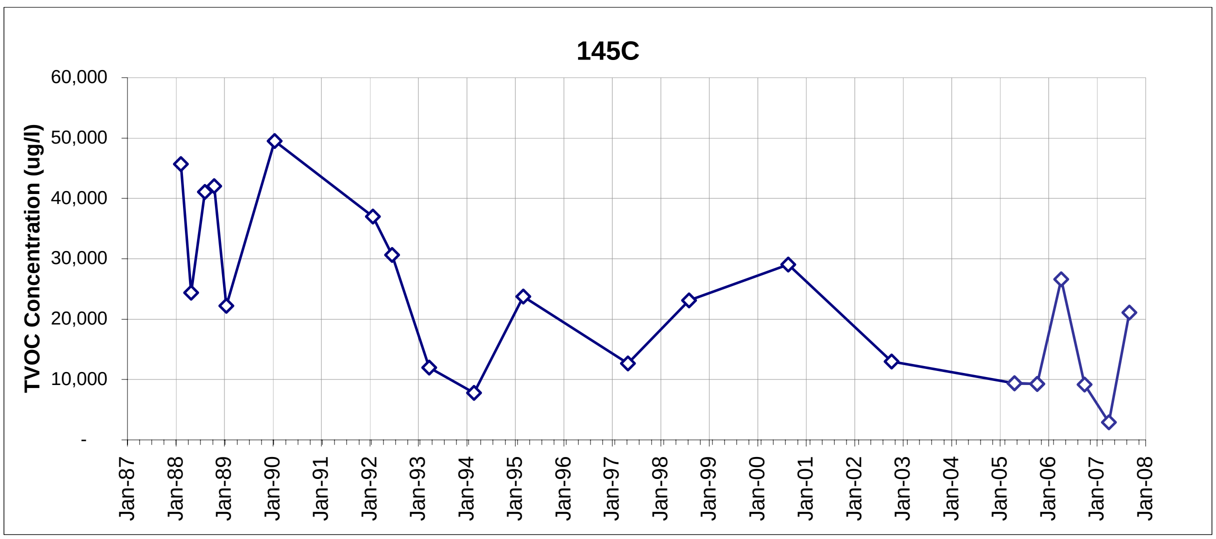


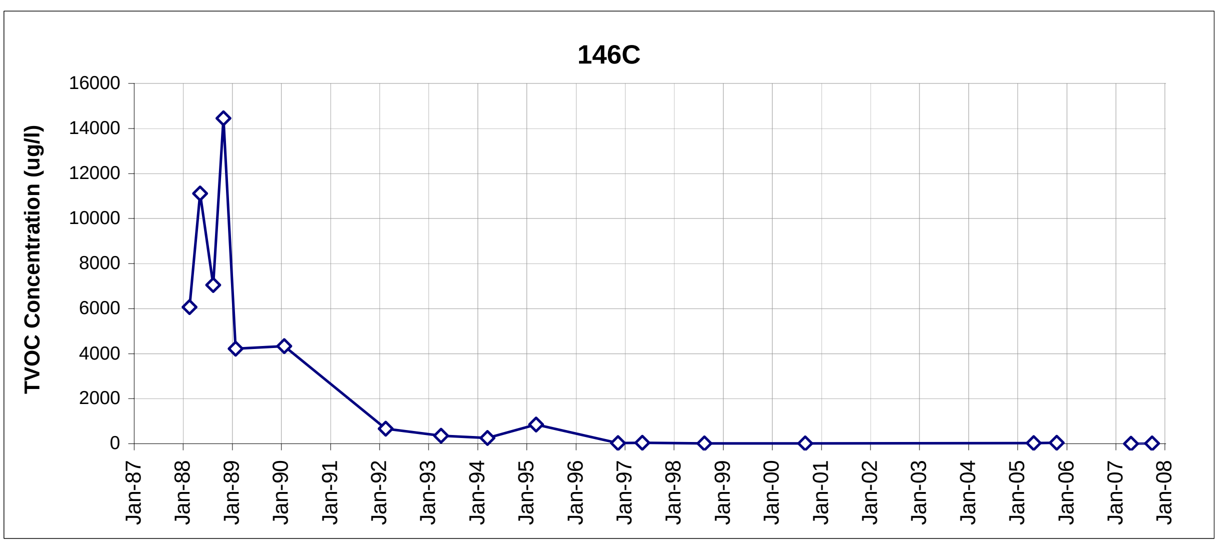




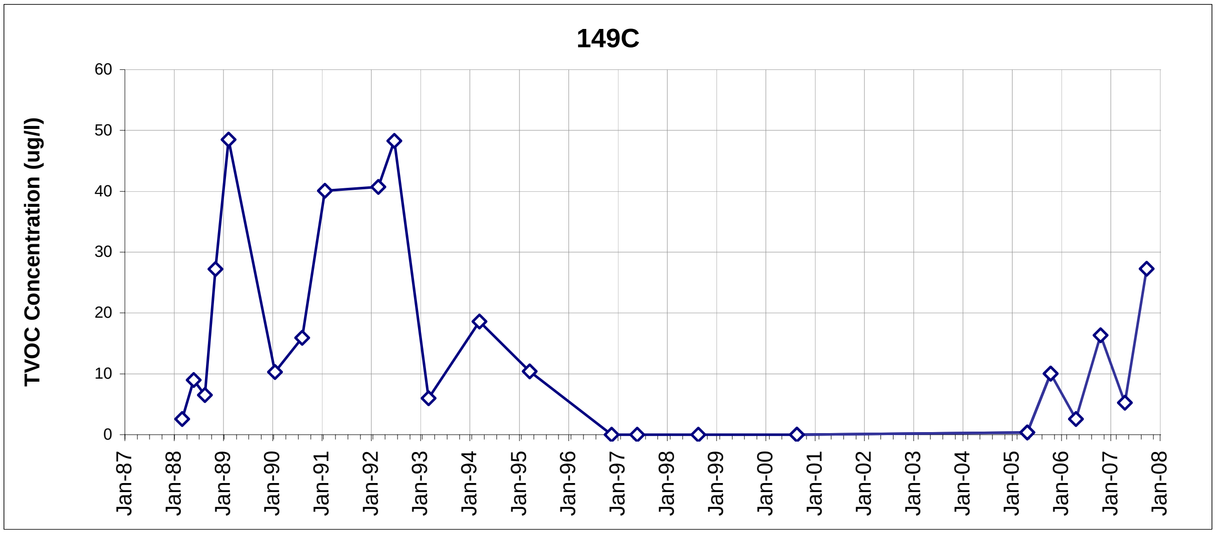
Appendix C: TVOC Concentration Trend Plots
C-Zone Wells
Necco Park

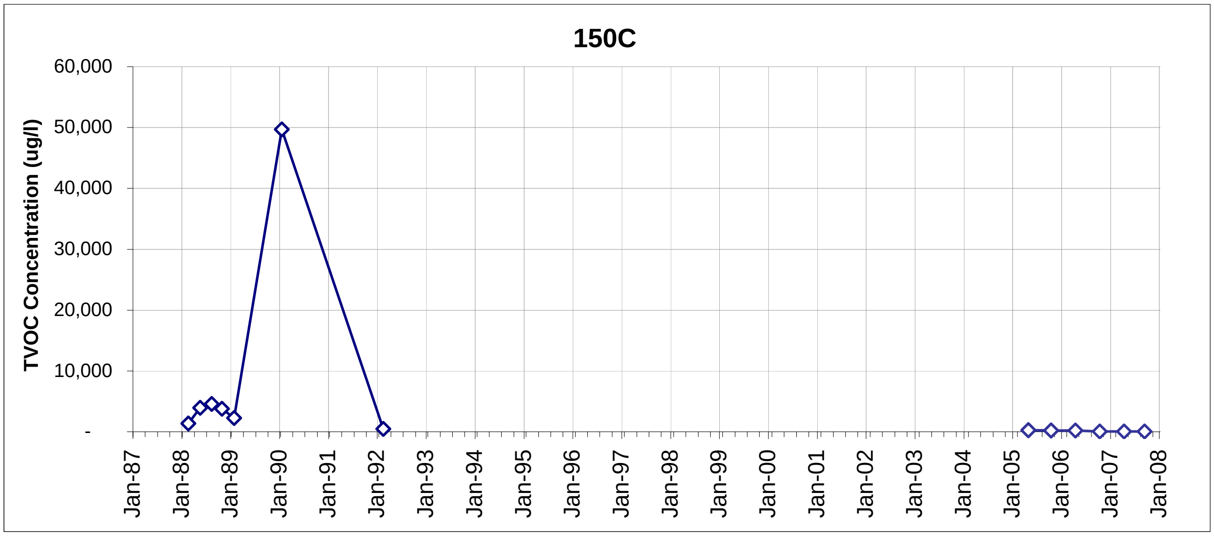


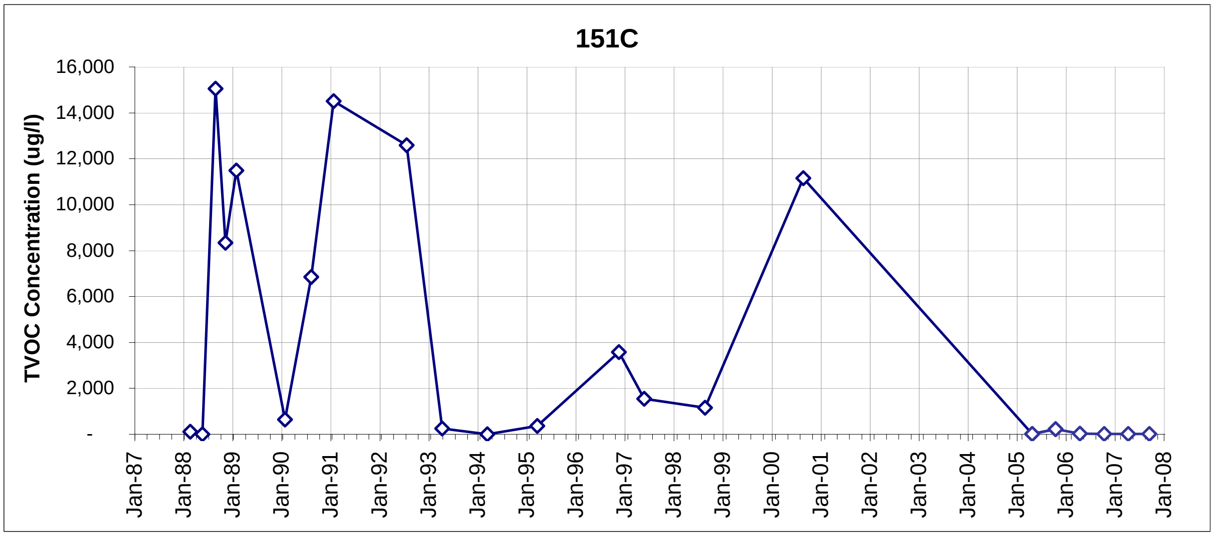




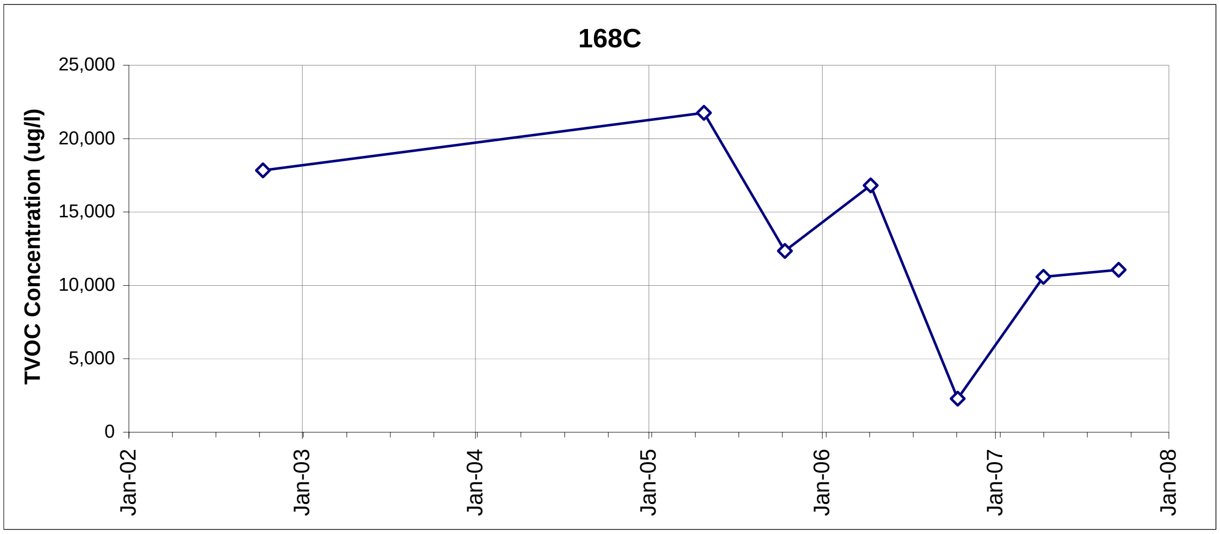
Appendix C: TVOC Concentration Trend Plots
C-Zone Wells
Necco Park



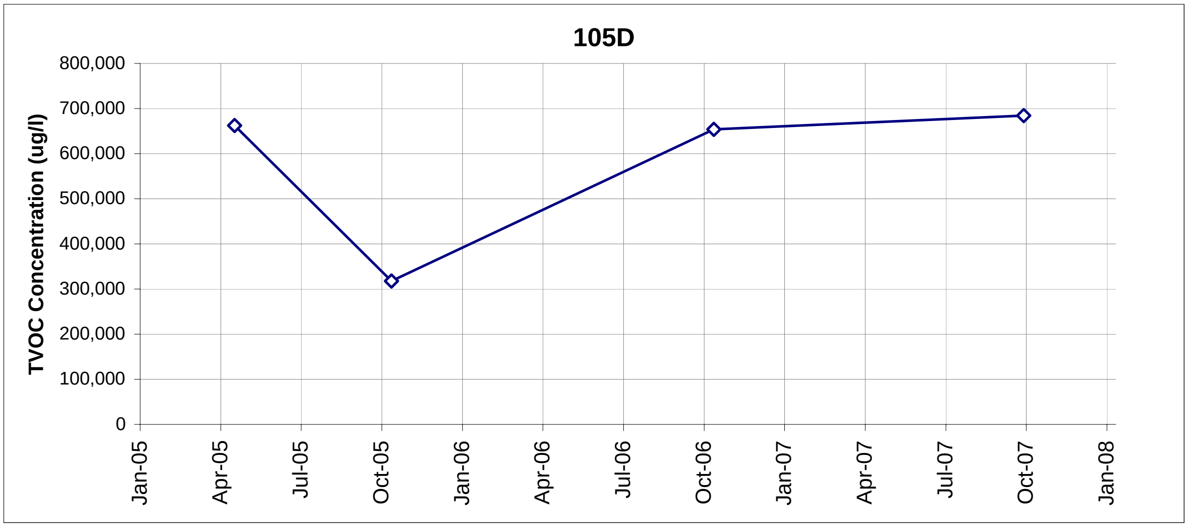


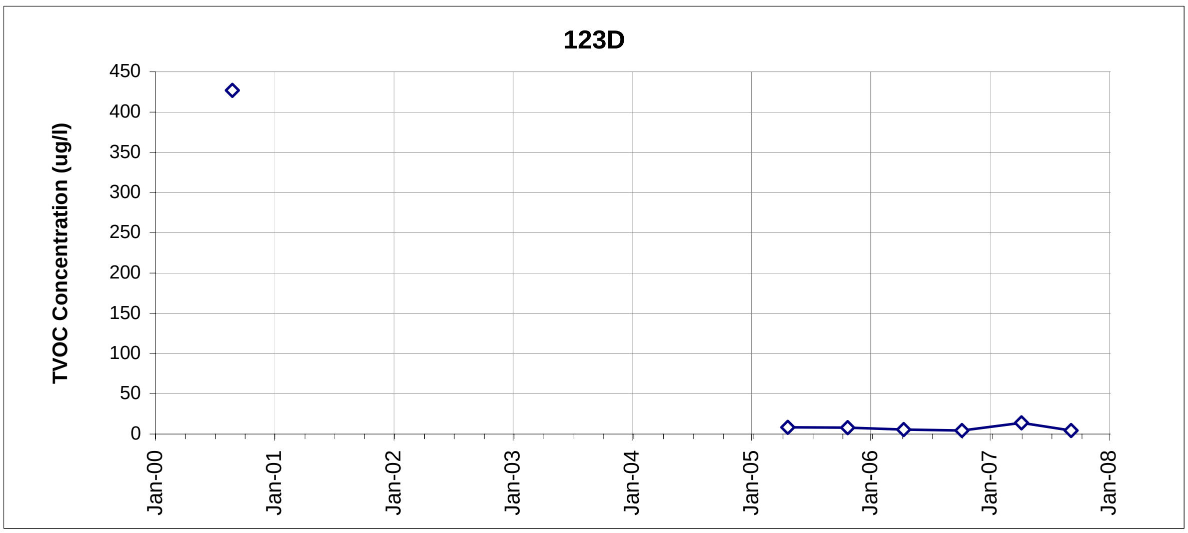


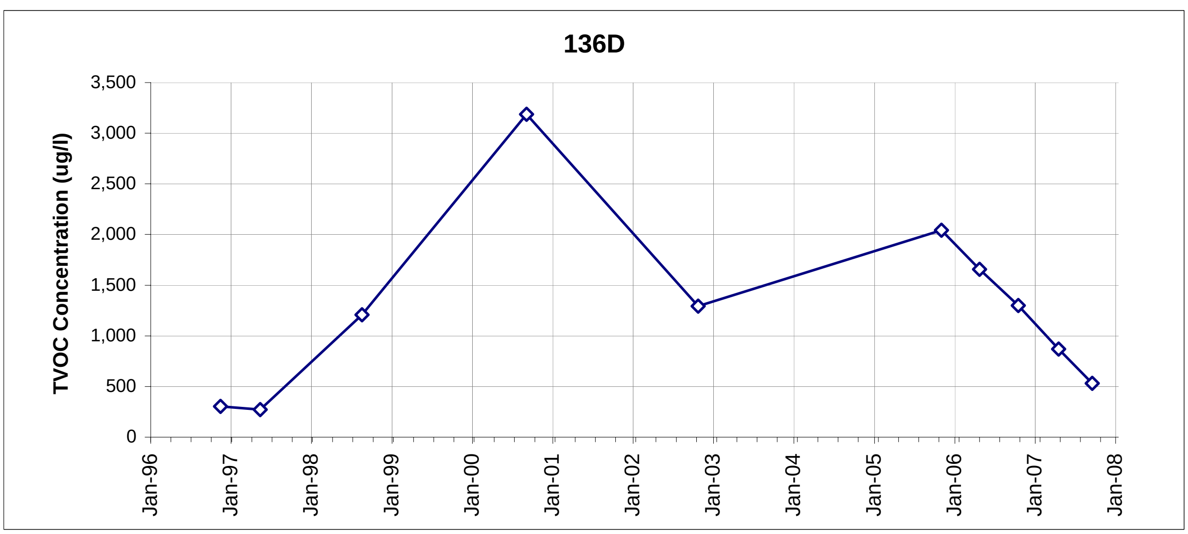
Appendix C: TVOC Concentration Trend Plots
C-Zone Wells
Necco Park

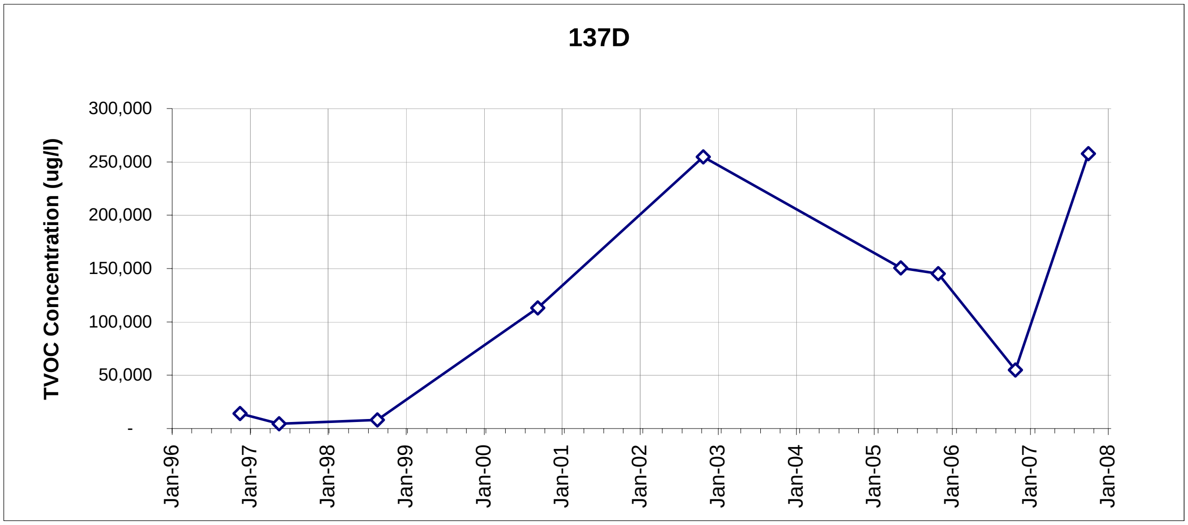


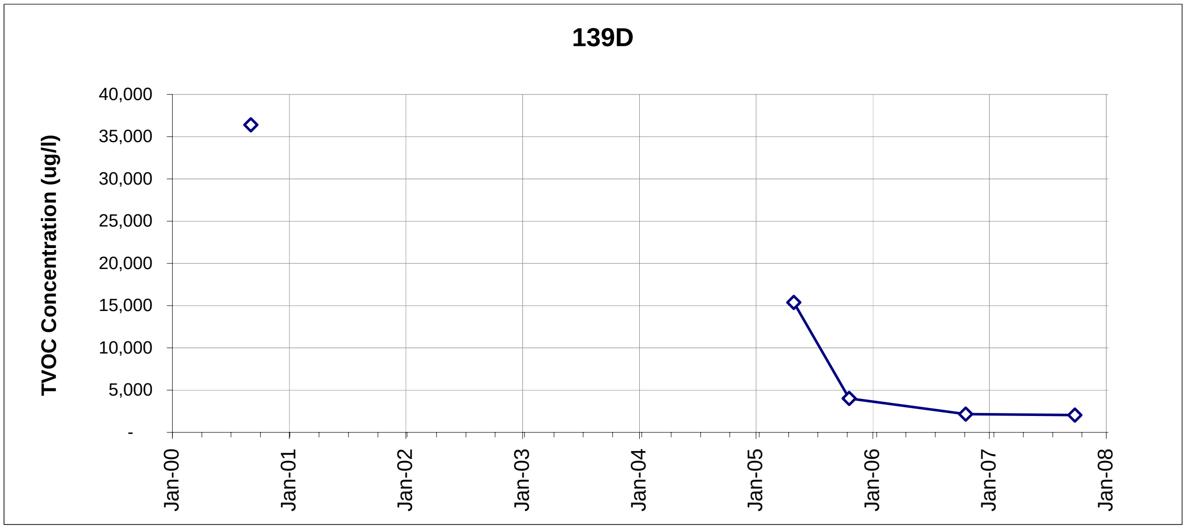
Appendix C: TVOC Concentration Trend Plots
D-Zone Wells
Necco Park

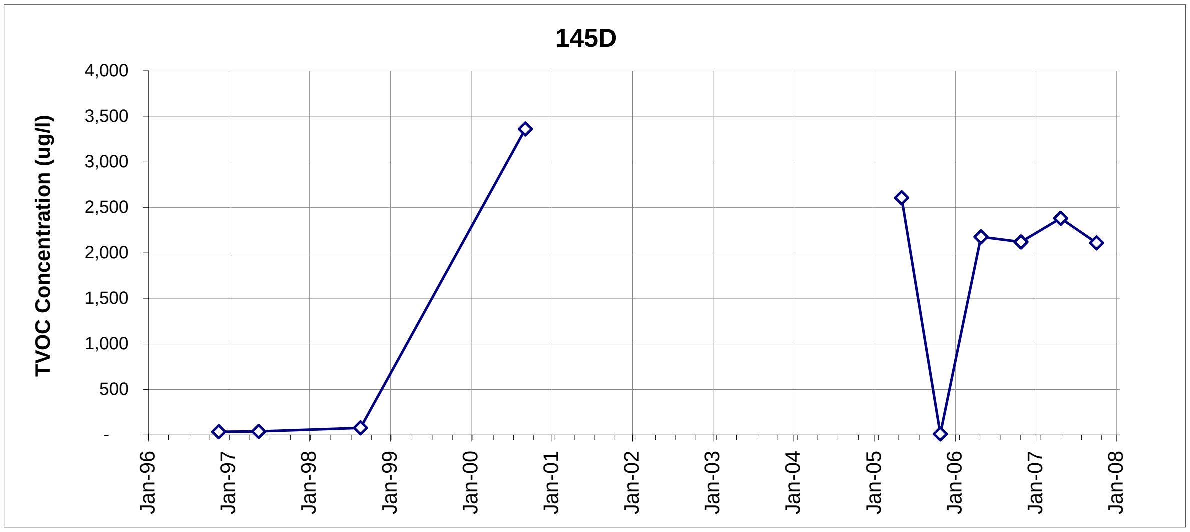




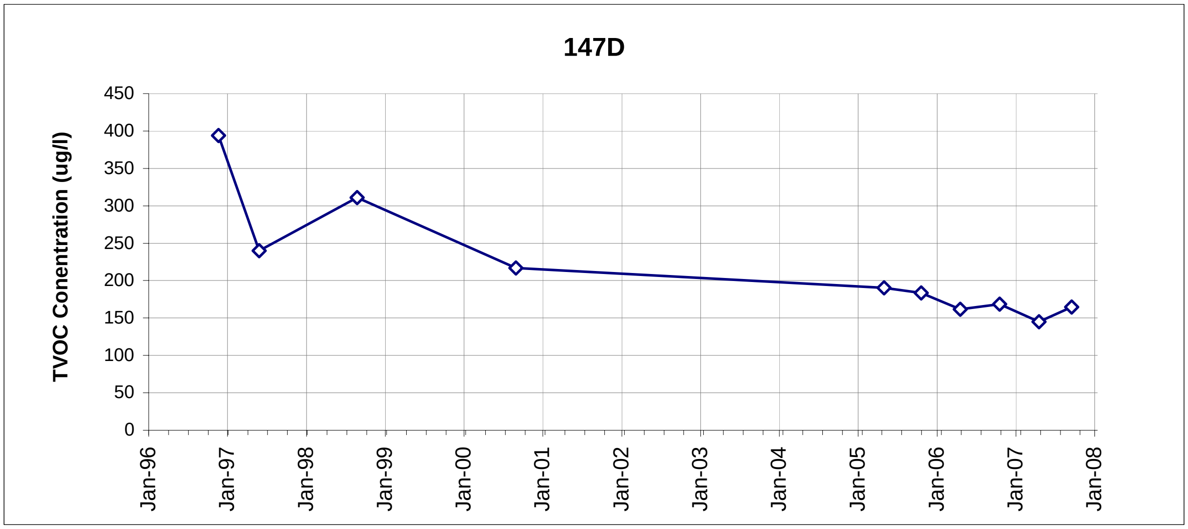


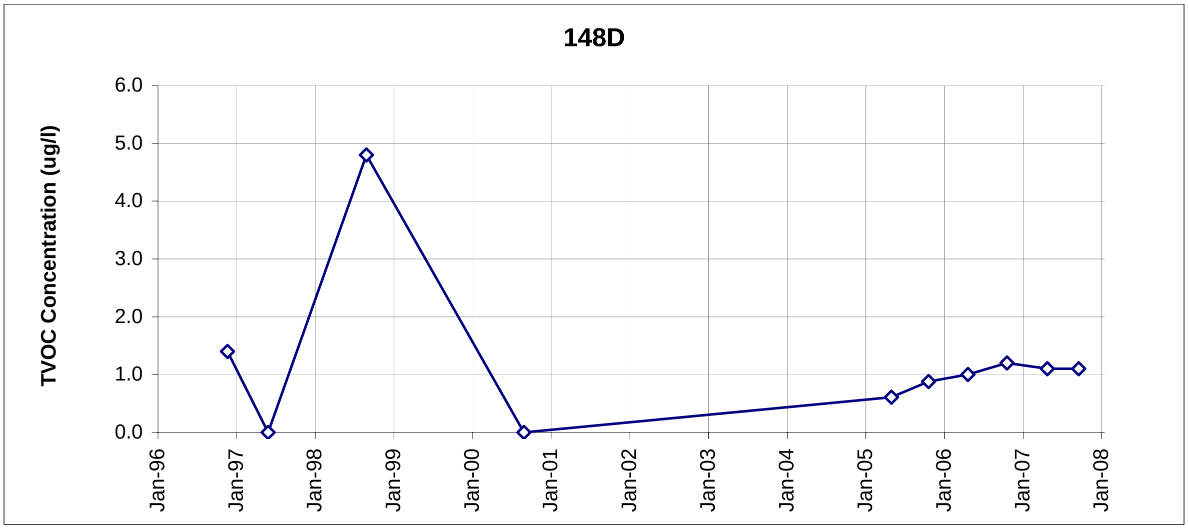

137D
TVOC Concentration (ug/l)
300,000
250,000
200,000
150,000
100,000
50,000
-
Jan-96
Jan-97
Jan-98
Jan-99
Jan-00
Jan-01
Jan-02
Jan-03
Jan-04
Jan-05
Jan-06
Jan-07
Jan-08

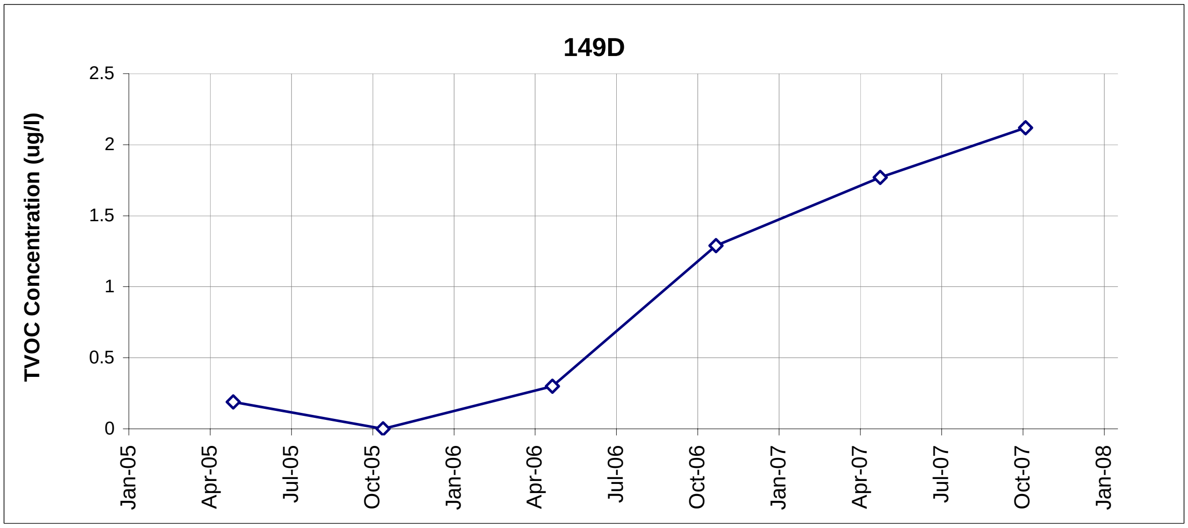

139D
TVOC Concentration (ug/l)
40,000
35,000
30,000
25,000
20,000
15,000
10,000
5,000
-
Jan-00
Jan-01
Jan-02
Jan-03
Jan-04
Jan-05
Jan-06
Jan-07
Jan-08


145D
TVOC Concentration (ug/l)
4,000
3,500
3,000
2,500
2,000
1,500
1,000
500
-
Jan-96
Jan-97
Jan-98
Jan-99
Jan-00
Jan-01
Jan-02
Jan-03
Jan-04
Jan-05
Jan-06
Jan-07
Jan-08

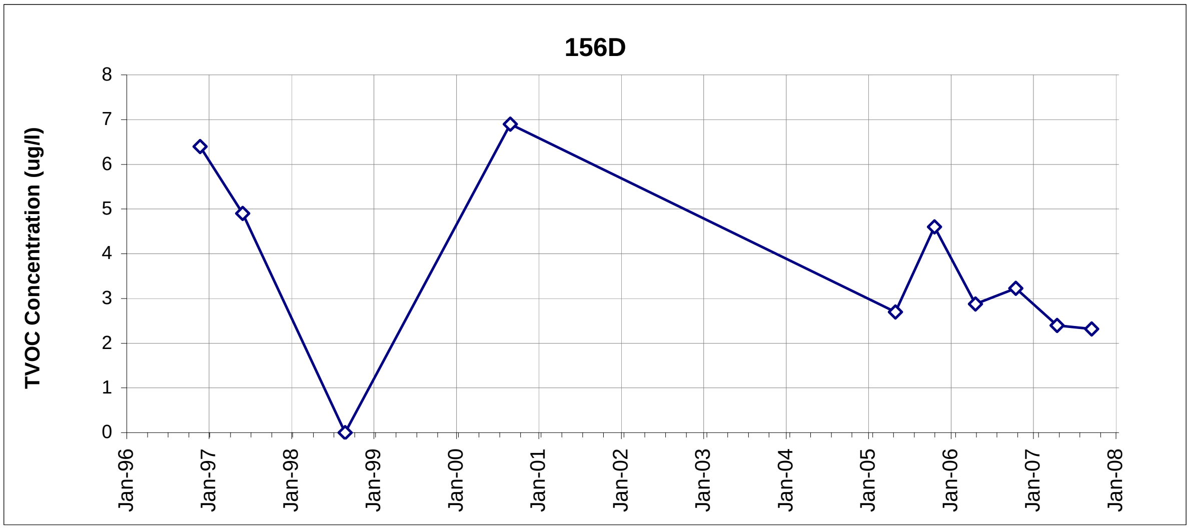
Appendix C: TVOC Concentration Trend Plots
D-Zone Wells
Necco Park

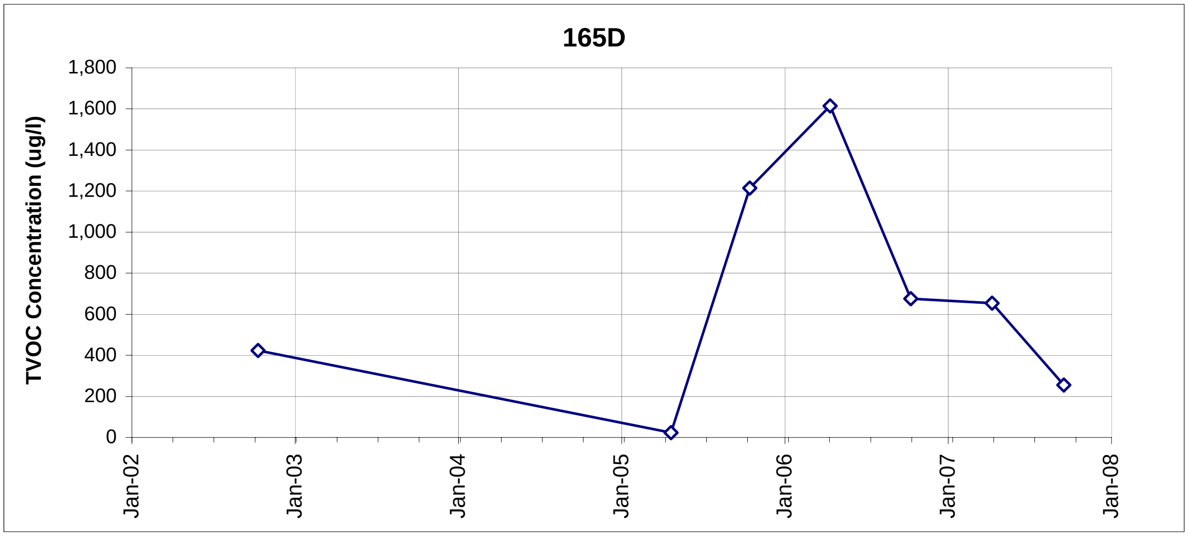




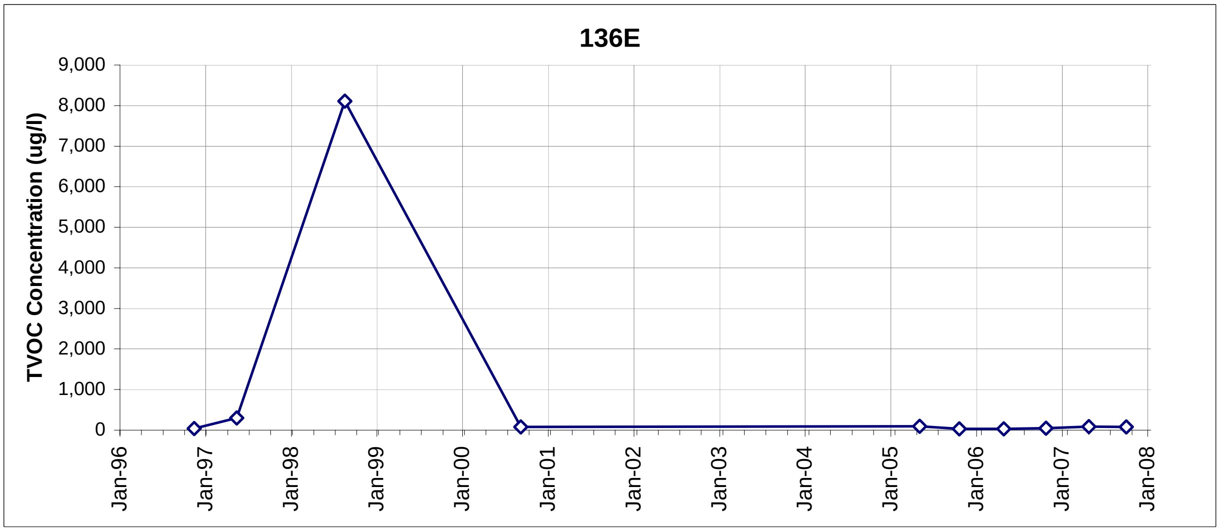


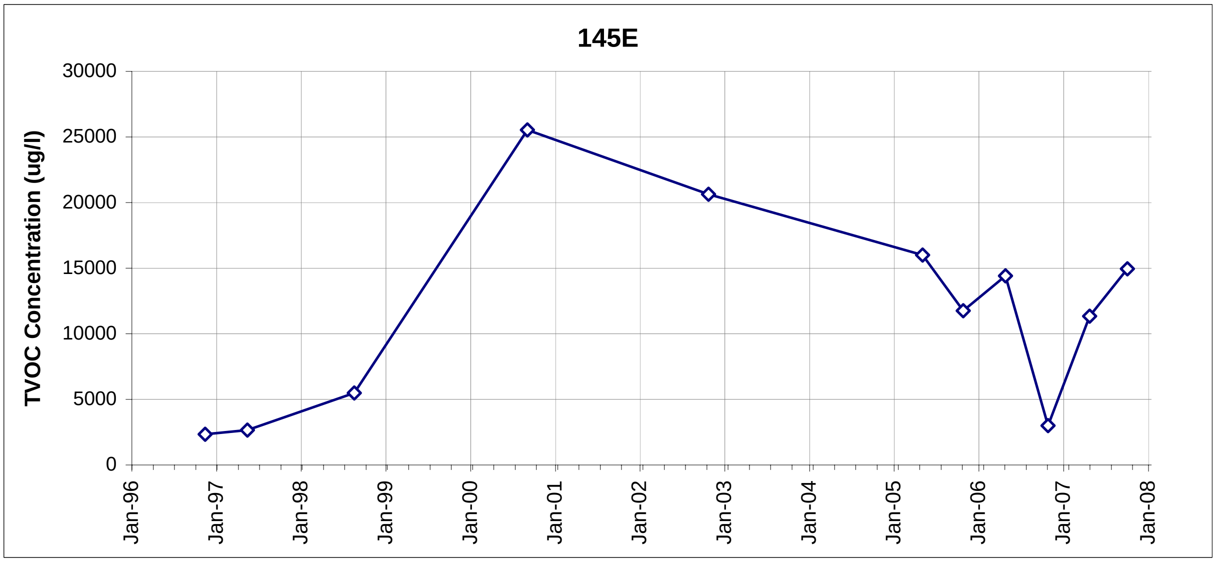
Appendix C: TVOC Concentration Trend Plots
D-Zone Wells
Necco Park

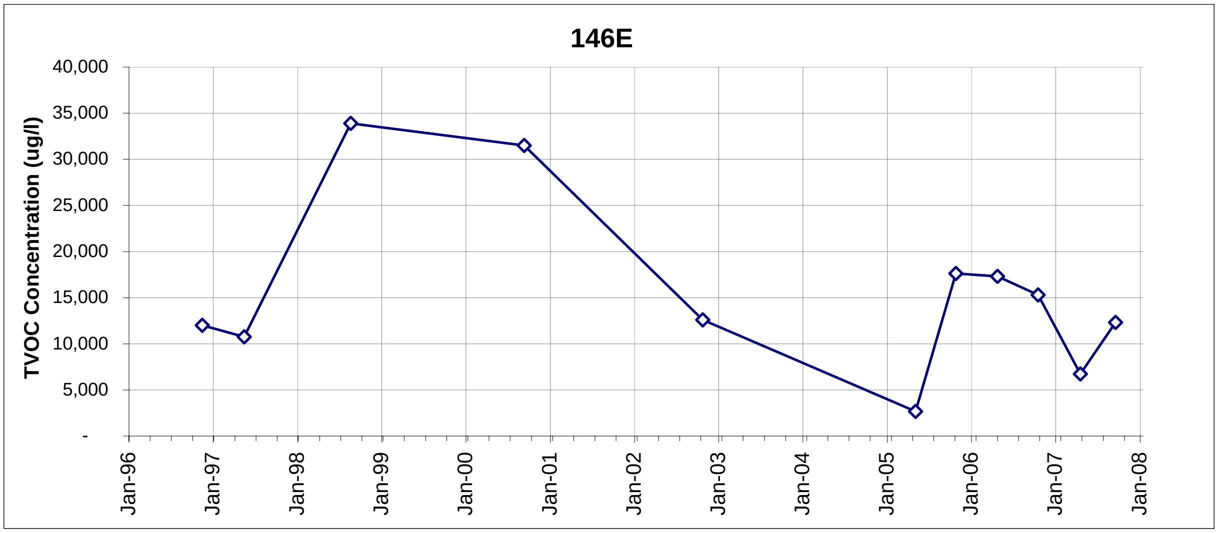




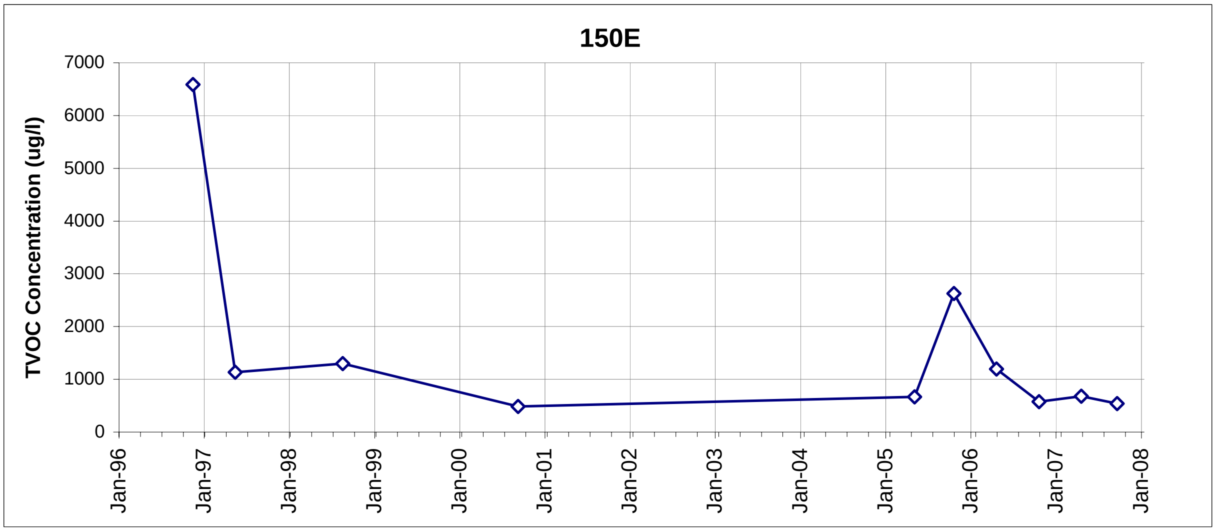
Appendix C: TVOC Concentration Trend Plots
E-Zone Wells
Necco Park

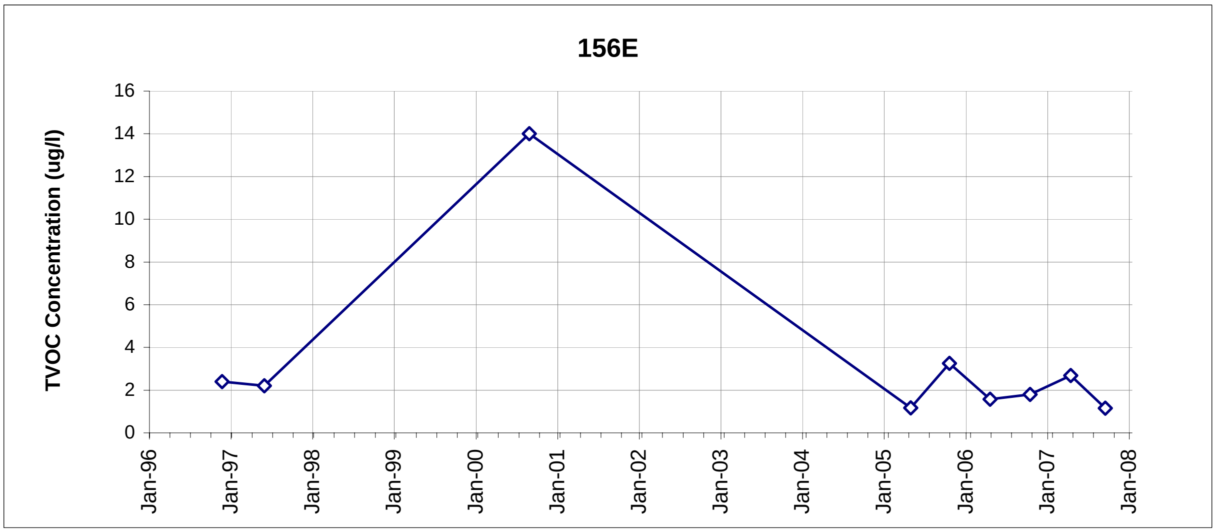


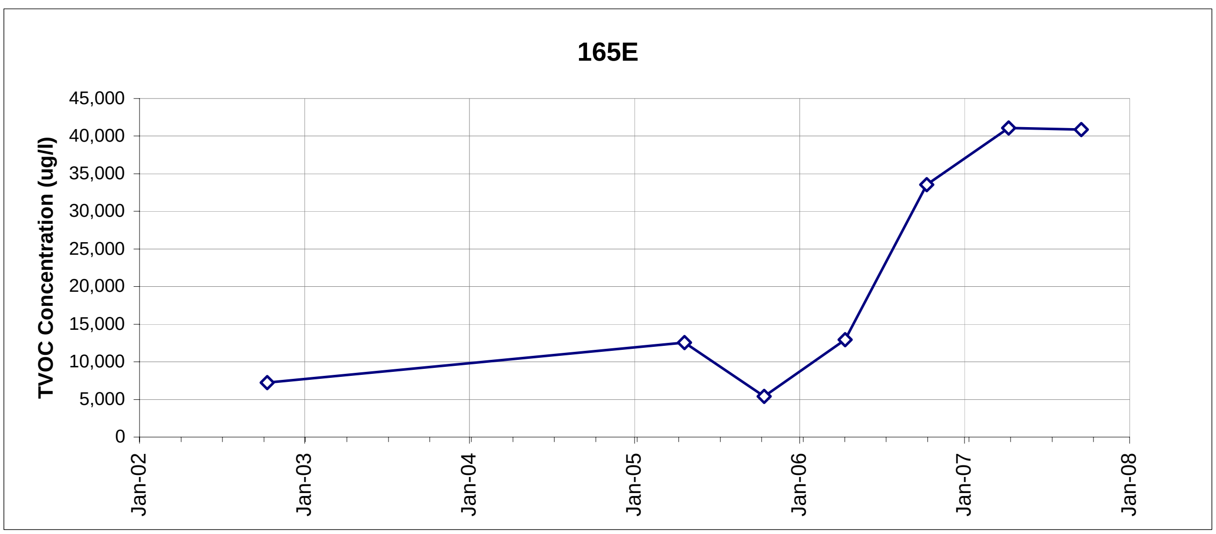




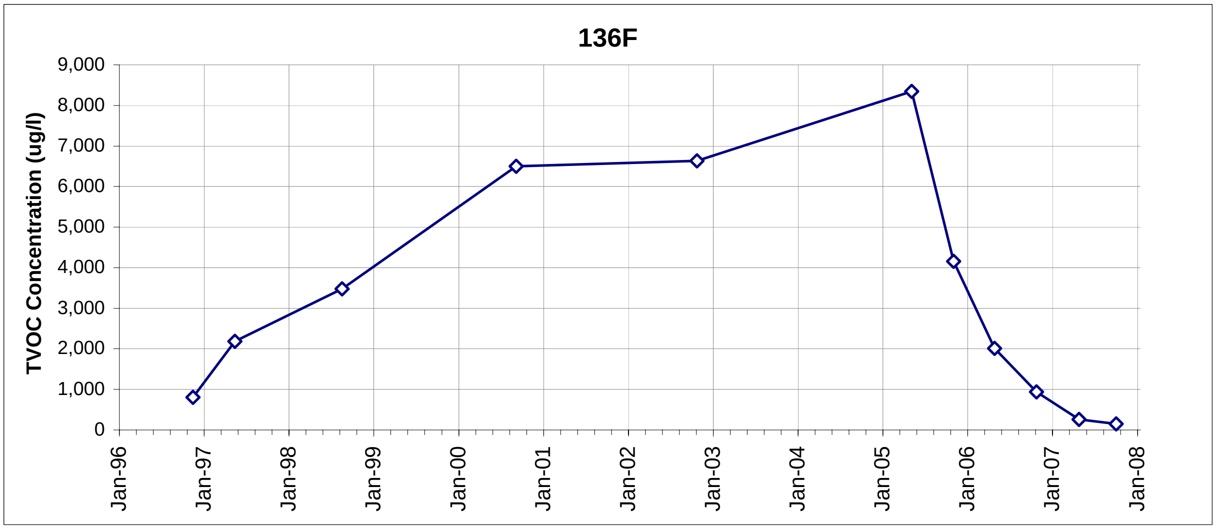
Appendix C: TVOC Concentration Trend Plots
E-Zone Wells
Necco Park

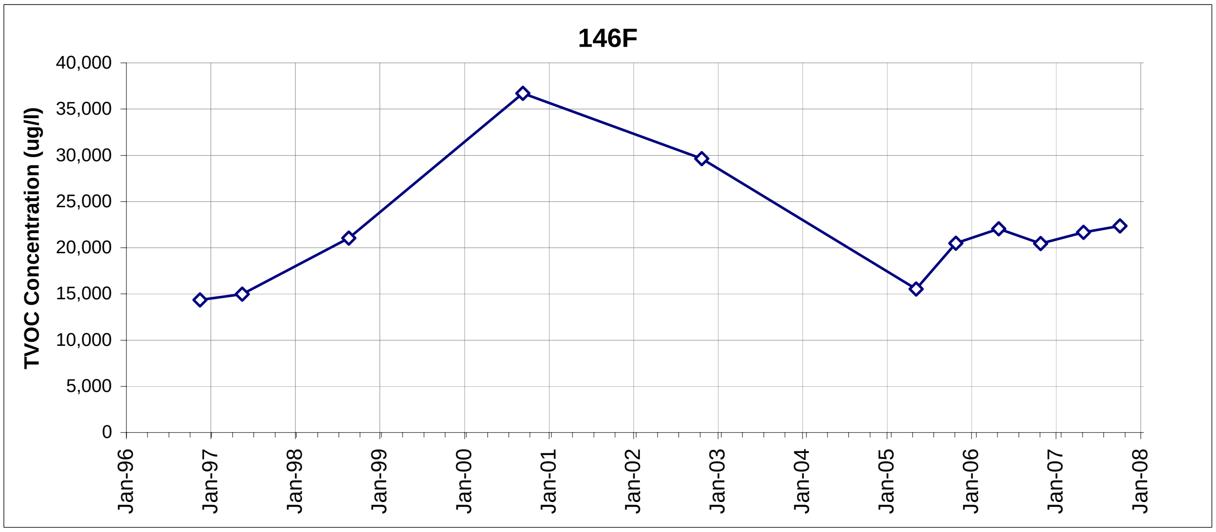


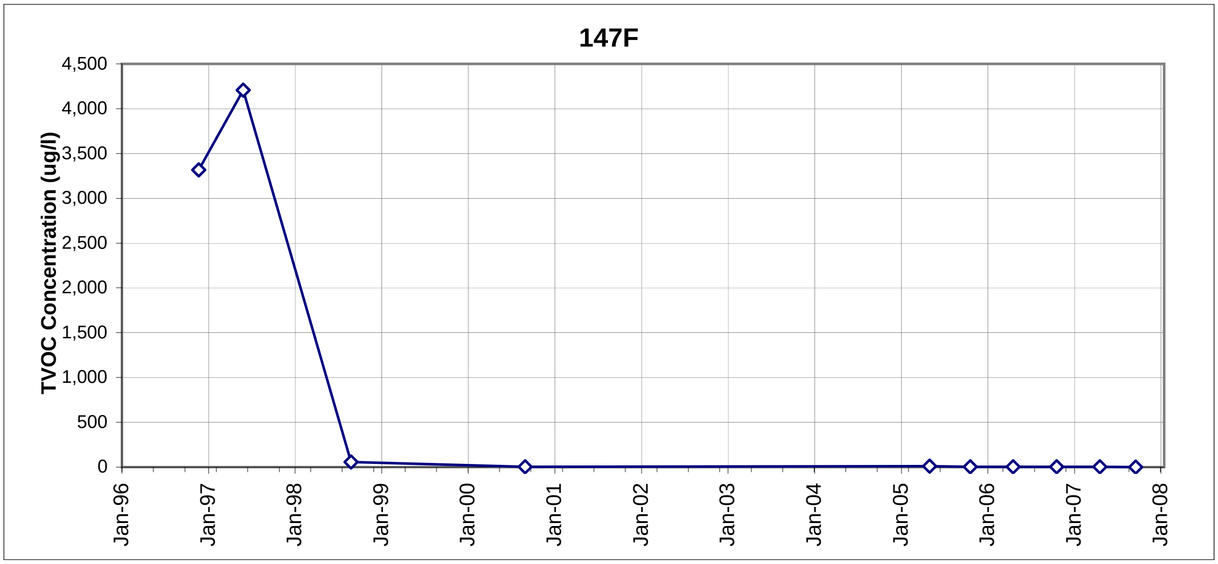




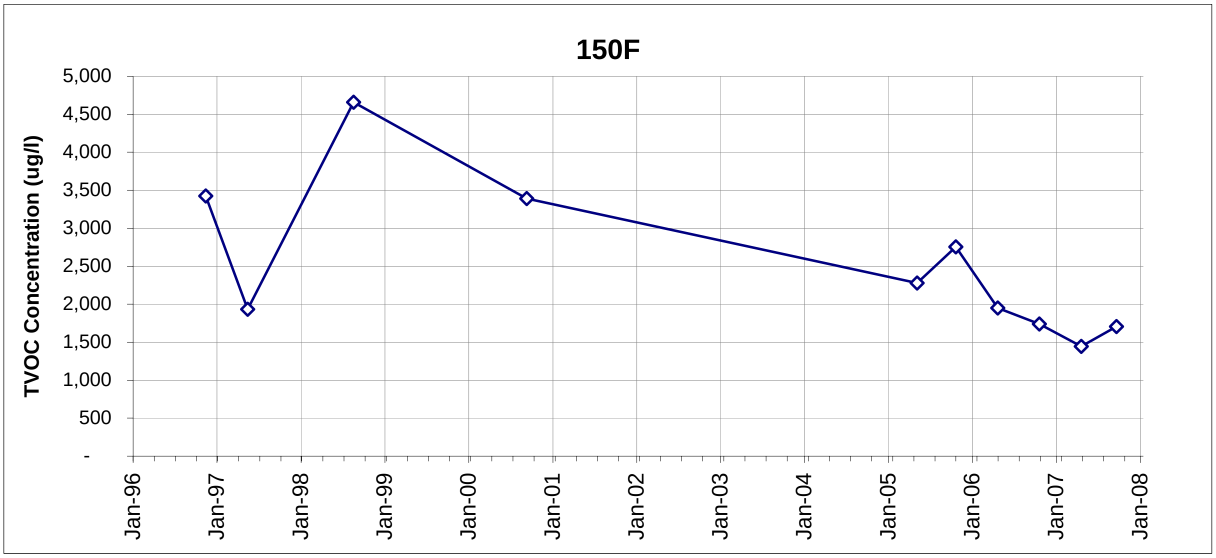
Appendix C: TVOC Concentration Trend Plots
F-Zone Wells
Necco Park

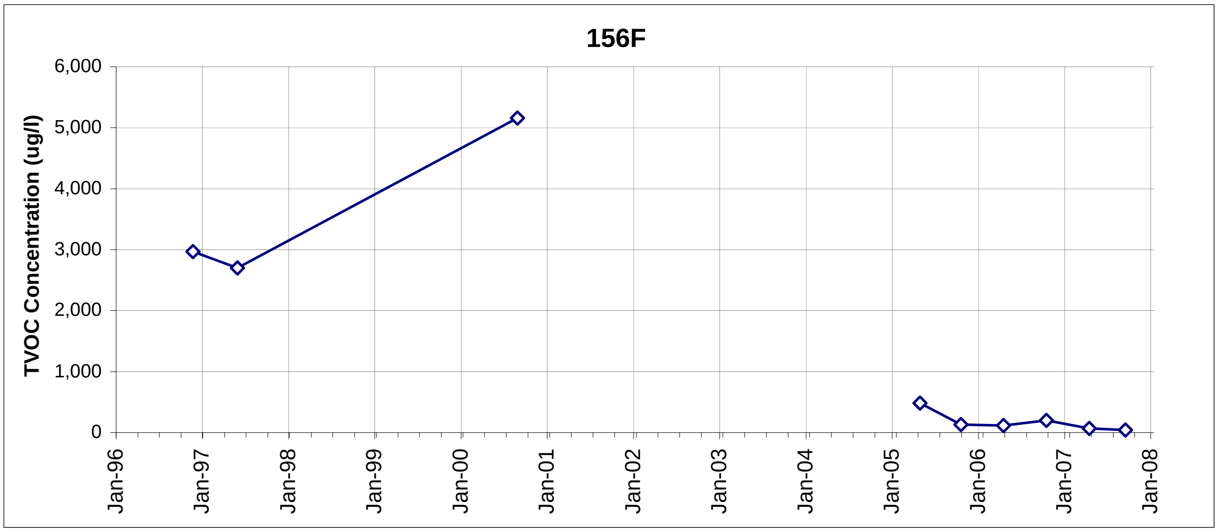




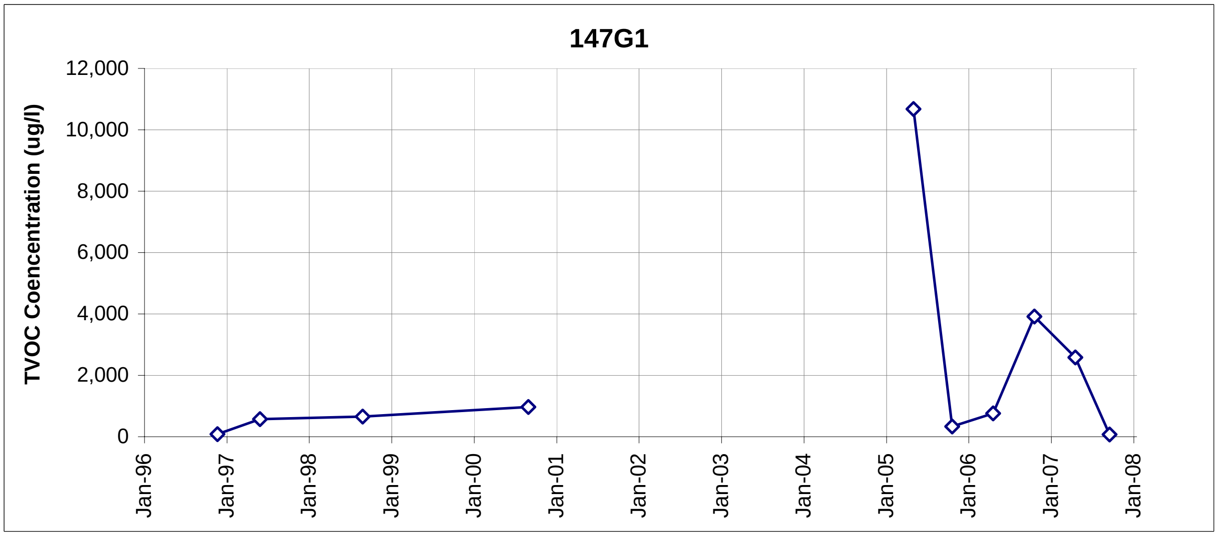


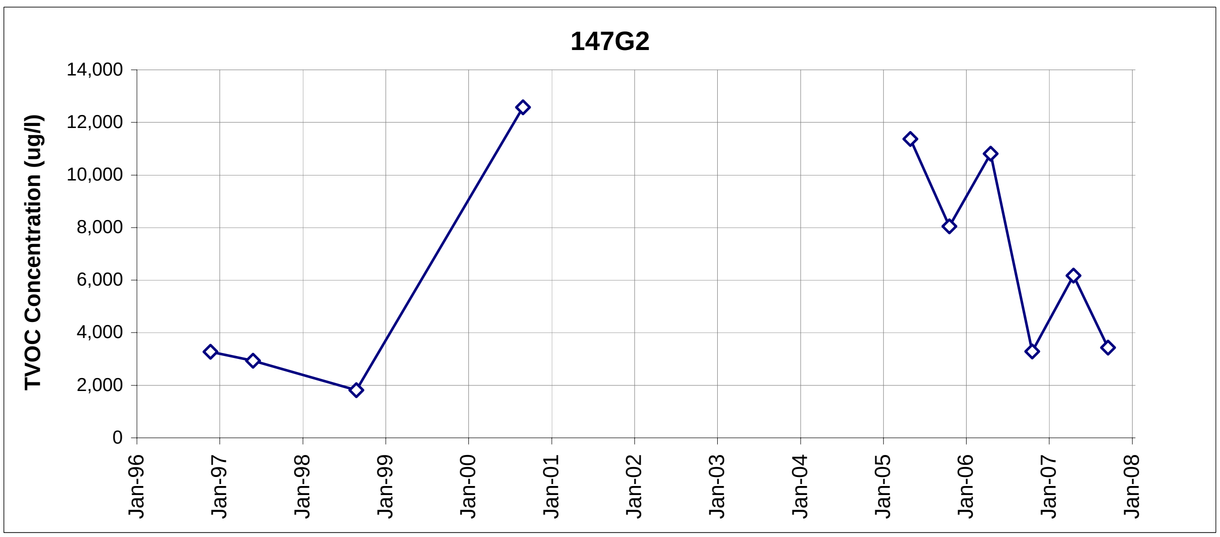
Appendix C: TVOC Concentration Trend Plots
F-Zone Wells
Necco Park

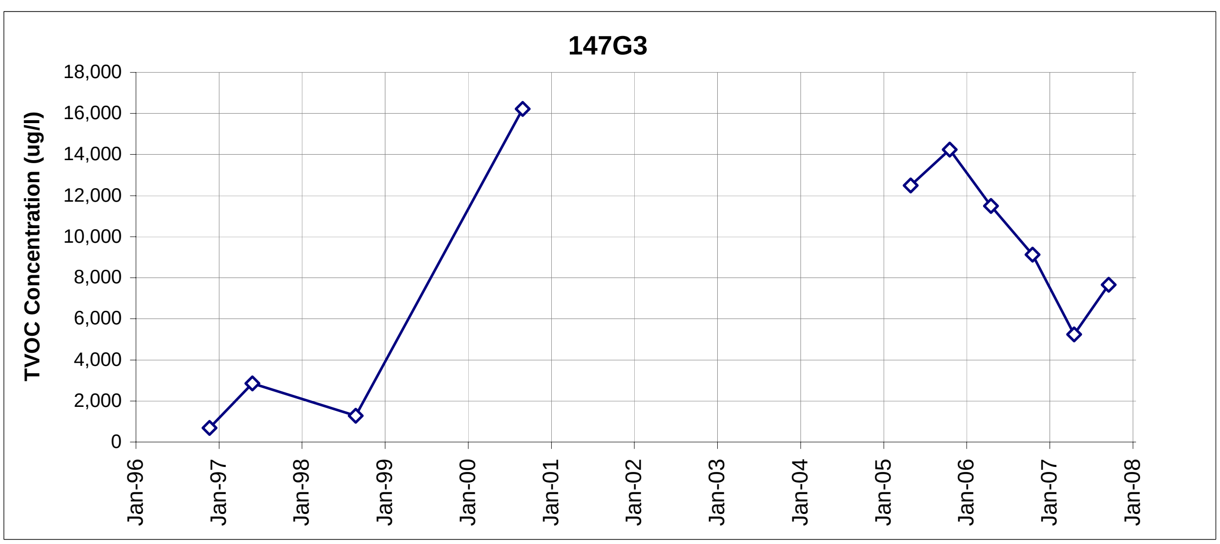




Appendix C: TVOC Concentration Trend Plots
G-Zone Wells
Necco Park







APPENDIX D

CHLORINATED ETHENES & ETHENE

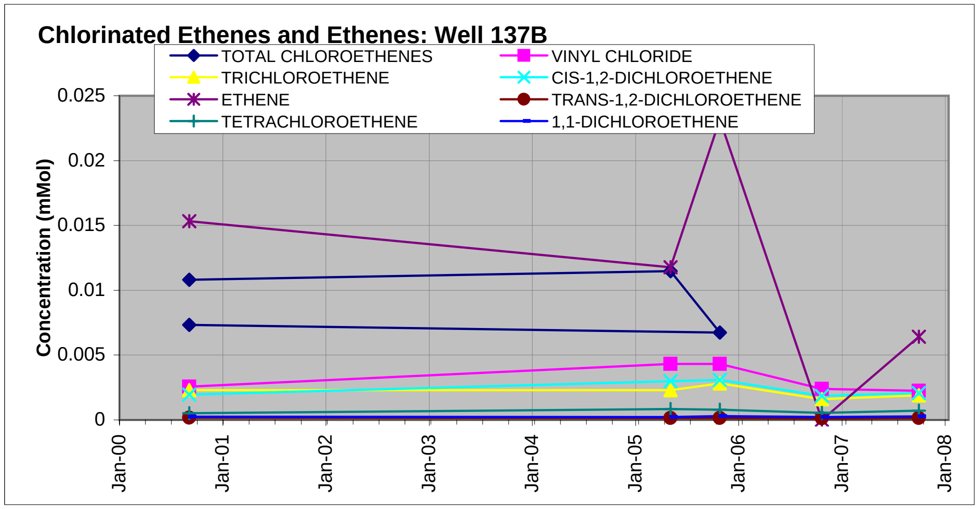
Appendix D: Chlorinated Ethenes and Ethene
B/C - Zone Wells
DuPont Necco Park

WELL 137B

Monitoring Well Summary

- Source area
- Slight increase of Chlorinated Ethenes 2005-2007
- Mostly TCE, cDCE, VC
- No DHE data available
- Moderate Ethene Production

2007 Sample Results	(ppb)
PCE	120
TCE	250
Cis- 1,2 DCE	200
VC	140
Trans-1,2 DCE	14.5
1,1-DCE	26
TOTAL	**750**

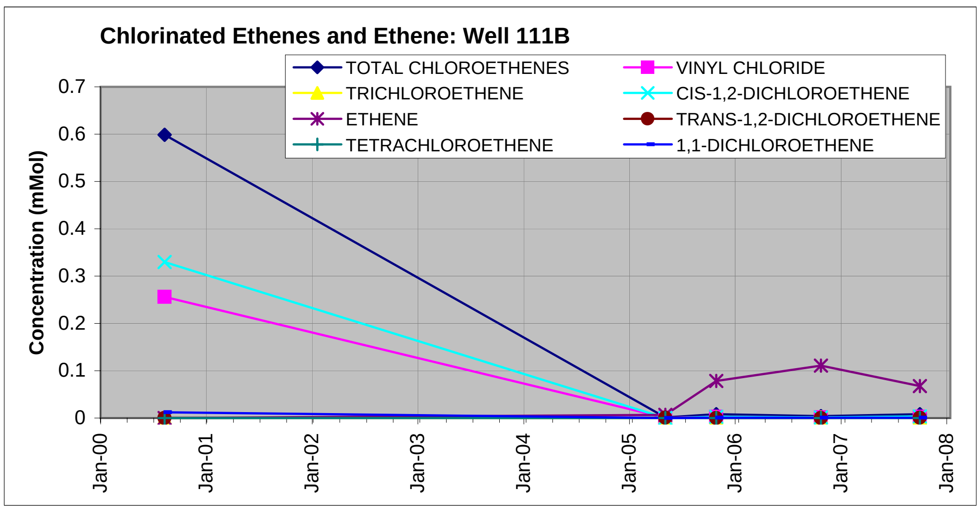


WELL 111B

Monitoring Well Summary

- Source area
- Slight increase in Total Chlorinated Ethenes 2006-2007
- Mostly TCE, cDCE, VC
- Good Ethene production
- Strong DHE signal

2007 Sample Results	(ppb)
PCE	<9.7
TCE	110
Cis- 1,2 DCE	320
VC	180
Trans-1,2 DCE	38
1,1-DCE	98
TOTAL	**746**

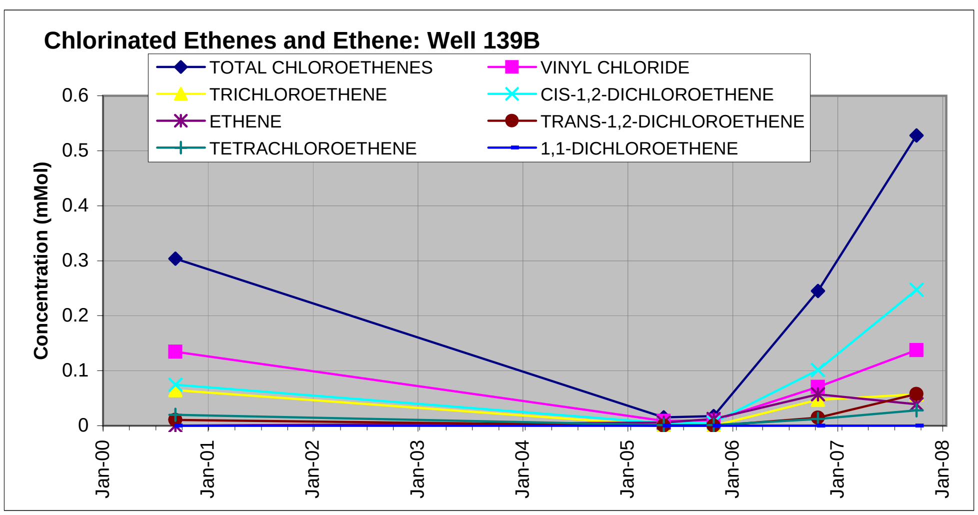


WELL 139B

Monitoring Well Summary

- Source area
- NAPL observed in 1992
- Continued Increase in Total Chlorinated Ethenes 2000-2007
- Mostly cDCE, VC, PCE
- Good Ethene production
- Exceeds 1% Pure Phase Solubility Criteria (PCE)

2007 Sample Results	(ppb)
PCE	4,600
TCE	7,500
Cis- 1,2 DCE	24,000
VC	8,600
Trans-1,2 DCE	5,600
1,1-DCE	<240
TOTAL	**50,300**



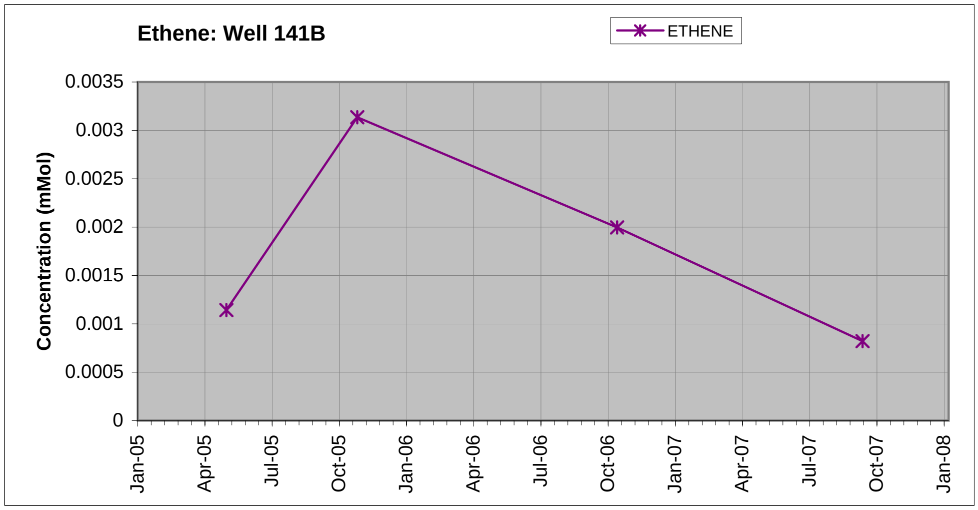
Appendix D: Chlorinated Ethenes and Ethene
B/C - Zone Wells
DuPont Necco Park

WELL 141B

Monitoring Well Summary

- Upgradient Well
- Clean: No Chlorinated Ethenes detected
- Weak DHE signal
- Moderate Ethene production

2007 Sample Results	(ppb)
PCE	<1.4
TCE	<0.85
Cis- 1,2 DCE	<0.85
VC	<1.1
Trans-1,2 DCE	<0.95
1,1-DCE	<0.95
TOTAL	**0**

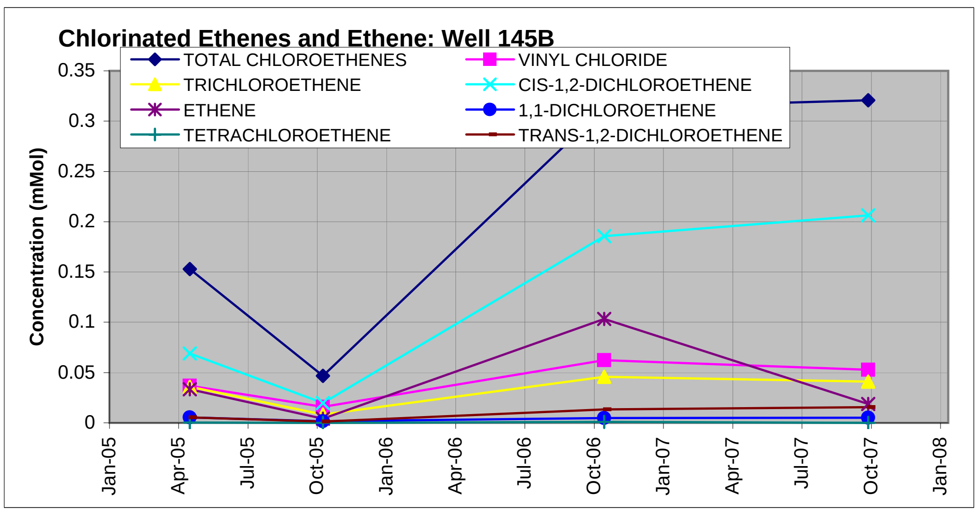


WELL 145B

Monitoring Well Summary

- Down gradient Well
- Slight Increase in Total Chlorinated Ethenes 2006-2007
- Mostly TCE, cDCE, VC
- DHE not detected
- Moderate Ethene production

2007 Sample Results	(ppb)
PCE	<240
TCE	5,400
Cis- 1,2 DCE	20,000
VC	3,300
Trans-1,2 DCE	1,500
1,1-DCE	490
TOTAL	**30,690**

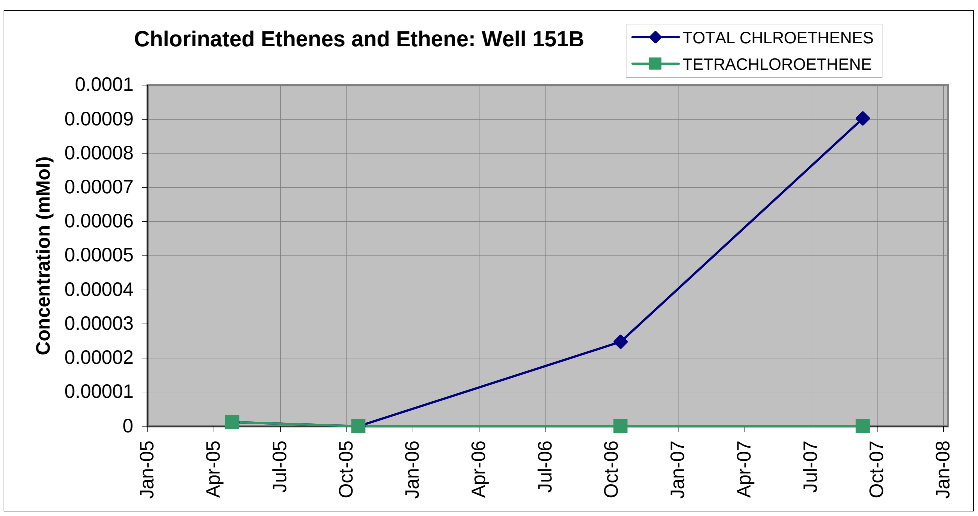


WELL 151B

Monitoring Well Summary

- Far downgradient well
- Clean: No Chlorinated Ethenes detected
- Moderate DHE signal
- No 2007 data available

2007 Sample Results	(ppb)
PCE	<0.29
TCE	2.1
Cis- 1,2 DCE	1.6
VC	1.7
Trans-1,2 DCE	2.1
1,1-DCE	0.86
TOTAL	**8.36**

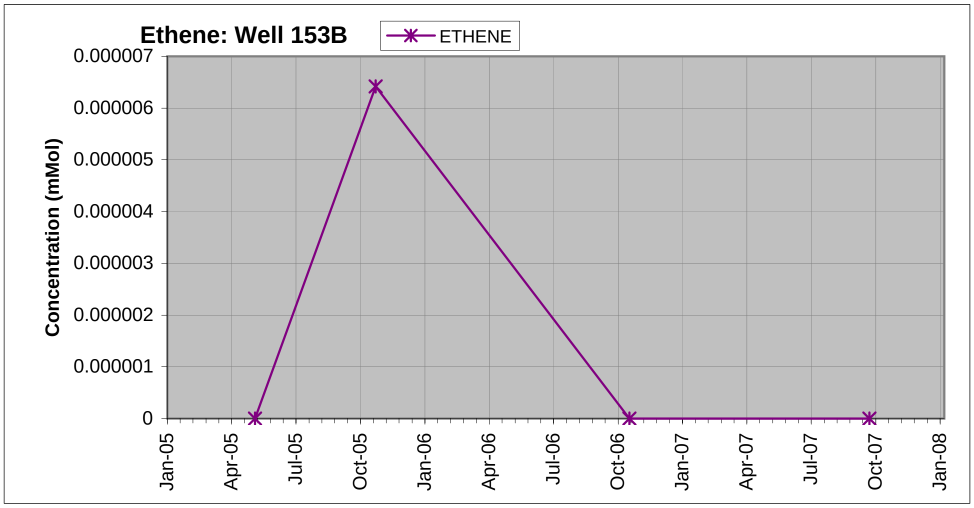


Appendix D: Chlorinated Ethenes and Ethene
B/C - Zone Wells
DuPont Necco Park
WELL 153B

Monitoring Well Summary

- East side gradient well
- Clean: No Chlorinated Ethenes detected
- Moderate DHE signal

2007 Sample Results	**(ppb)**
PCE	<0.29
TCE	<0.17
Cis- 1,2 DCE	<0.17
VC	<0.22
Trans-1,2 DCE	<0.19
1,1-DCE	<0.19
TOTAL	**0**

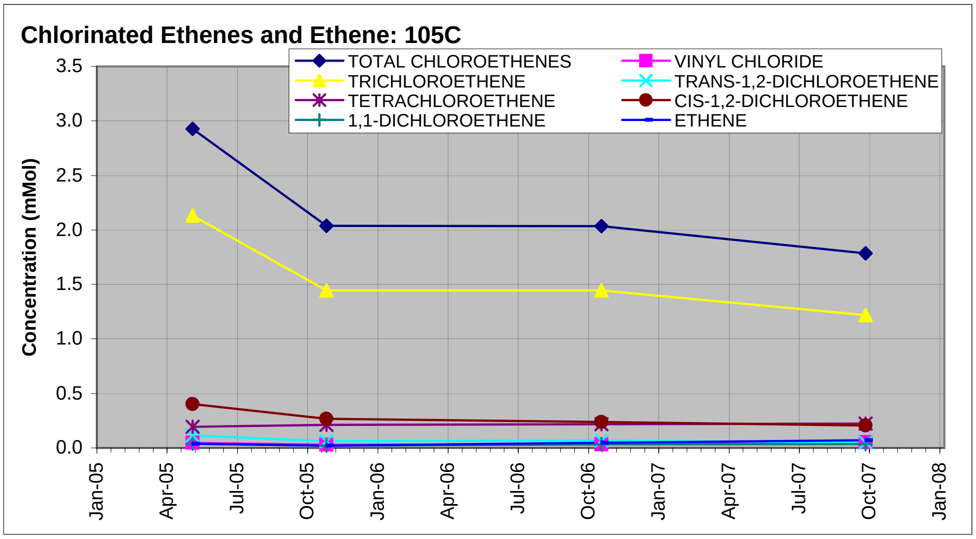


WELL 105C

Monitoring Well Summary

- Source area
- DNAPL observed in 1992
- Exceeds effective solubility and 1% absolute solubility for: PCE, TCE, CF
- Declining total chlorinated Ethenes 2000-2007
- Moderate DHE signal
- Good Ethene production
- High Chloroform: 90,000 ppb

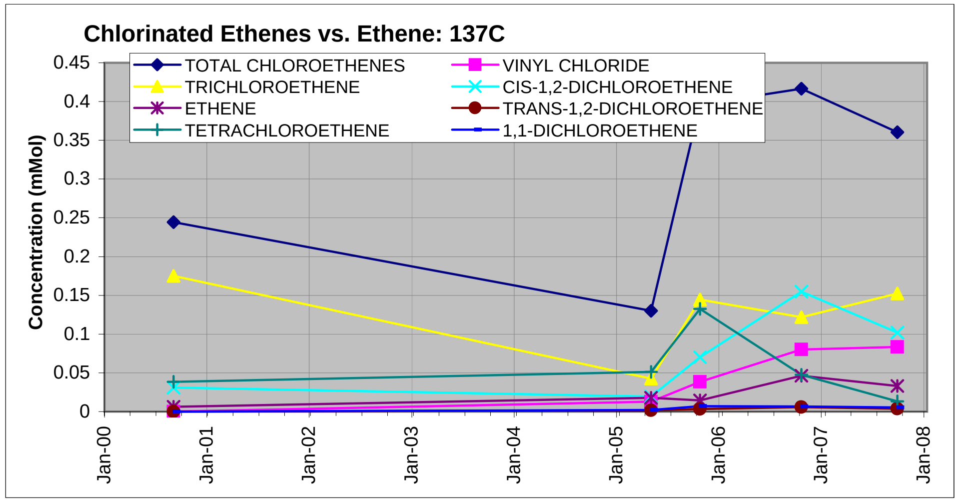
2007 Sample Results	**(ppb)**
PCE	37,000
TCE	160,000
Cis- 1,2 DCE	20,000
VC	3,300
Trans-1,2 DCE	4,900
1,1-DCE	3,400
TOTAL	**406,600**



Appendix D: Chlorinated Ethenes and Ethene
C/D - Zone Wells
Necco Park

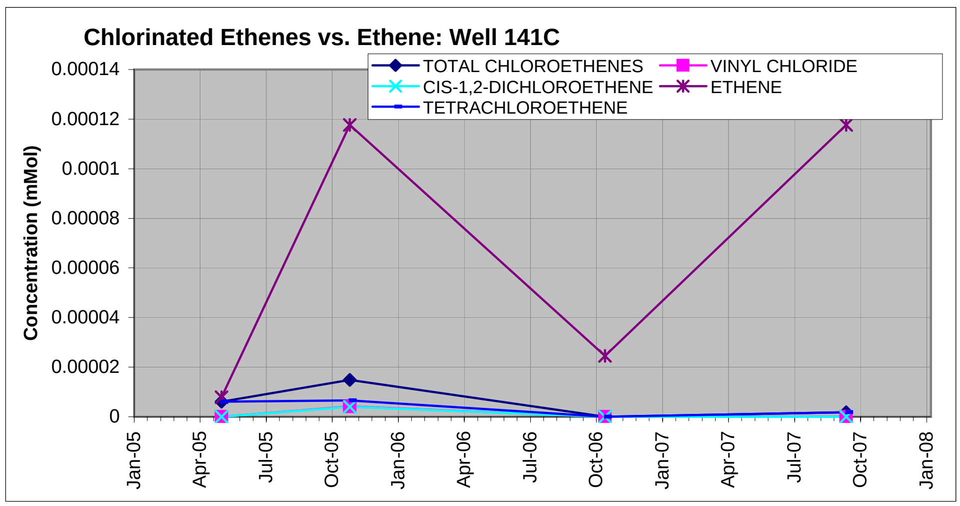
WELL: 137C

Monitoring Well Summary	
· Source area	
· Exceeds Effective Solubility for PCE	
· Exceeds 1% Pure Phase Solubility (PCE, TCE)	
· Decreasing Total chlorinated Ethenes 2005-2006	
· Good Ethene production	
· Moderate/Strong DHE signal	
2007 Sample Results	**(ppb)**
PCE	2,200
TCE	20,000
Cis- 1,2 DCE	9,900
VC	5,200
Trans-1,2 DCE	380
1,1-DCE	540
TOTAL	**38,220**



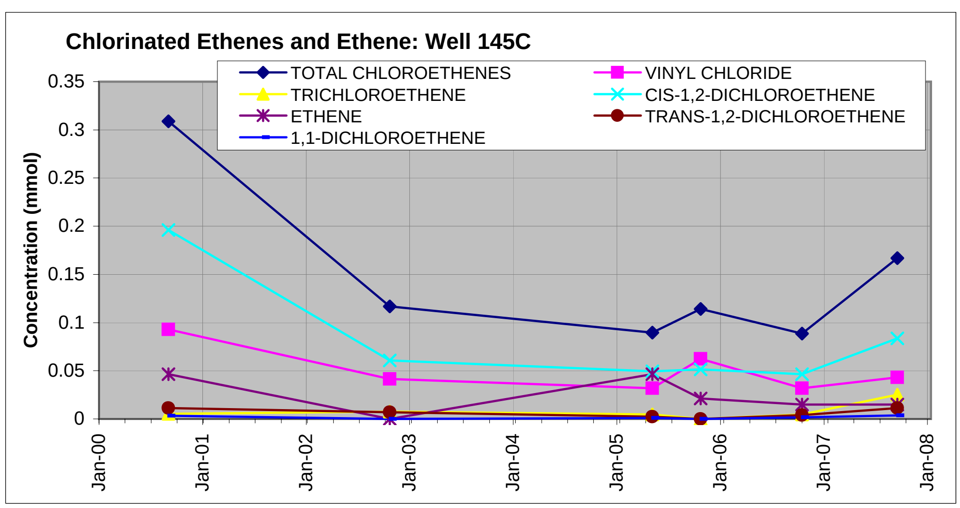
WELL: 141C

Monitoring Well Summary	
· Upgradient	
· VC present	
· Weak ethene production	
· Strong DHE signal	
2007 Sample Results	**(ppb)**
PCE	<0.29
TCE	<0.17
Cis- 1,2 DCE	<0.17
VC	<0.22
Trans-1,2 DCE	<0.19
1,1-DCE	<019
TOTAL	**0**



WELL: 145C

Monitoring Well Summary	
· Downgradient	
· Near Source Boundary	
· Increasing trend of Chlorinated Ethenes	
· Mostly cDCE and VC	
· Moderate ethene production	
· DHE signal not detected	
2007 Sample Results	**(ppb)**
PCE	<120
TCE	3,300
Cis- 1,2 DCE	8,100
VC	2,700
Trans-1,2 DCE	1,100
1,1-DCE	360
TOTAL	**15,560**

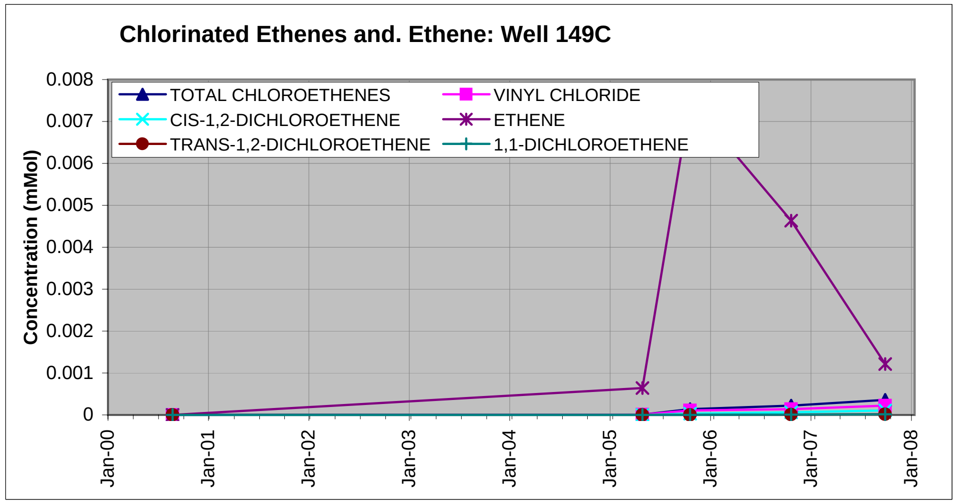


WELL: 149C

Monitoring Well Summary

- Downgradient
- Slight increase in Total Chlorinated Ethenes 2000-2007
- Mostly cDCE, VC
- Good ethene production
- Moderate DHE signal

2007 Sample Results	(ppb)
PCE	<0.29
TCE	0.49
Cis- 1,2 DCE	10
VC	14
Trans-1,2 DCE	1.6
1,1-DCE	1.2
TOTAL	**27**

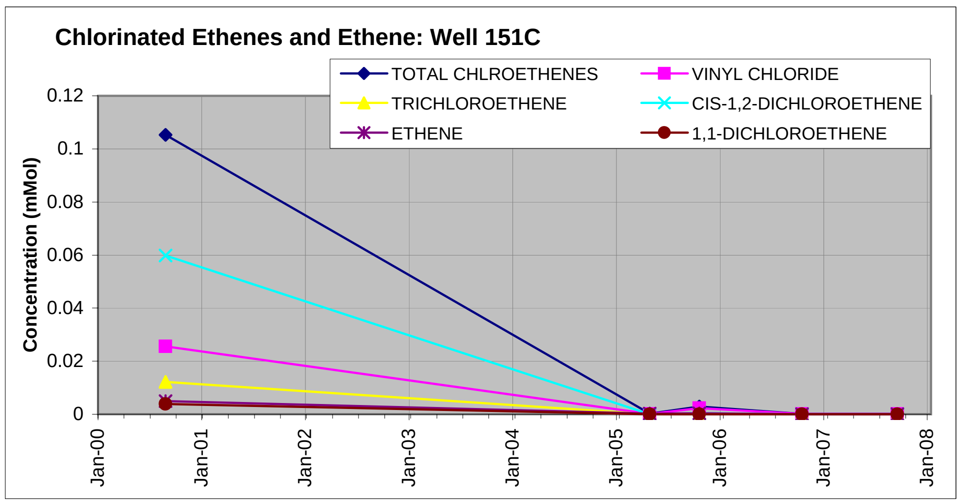


WELL: 151C

Monitoring Well Summary

- Far downgradient
- Declining total Chlorinated Ethenes 2000-2007
- Moderate / Strong DHE signal
- Weak ethene production

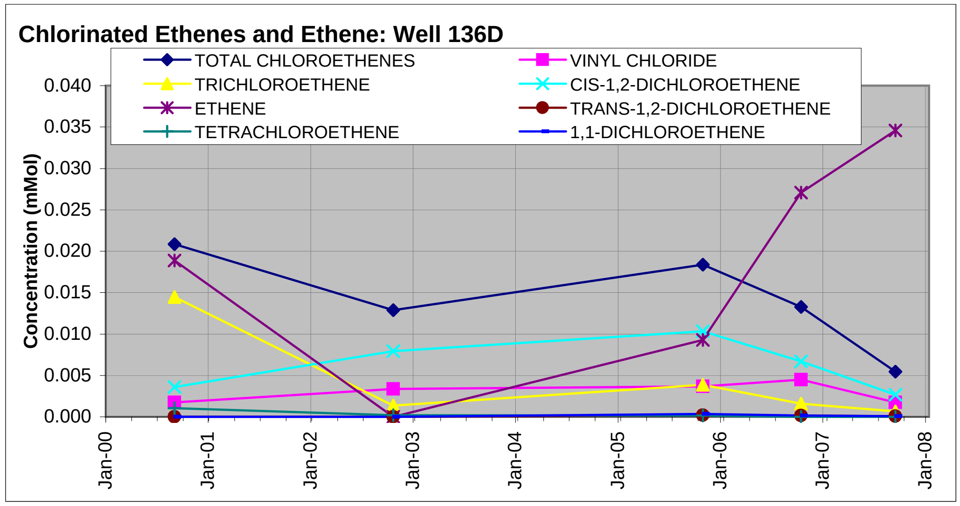
2007 Sample Results	(ppb)
PCE	<0.29
TCE	<0.17
Cis- 1,2 DCE	1.5
VC	3.9
Trans-1,2 DCE	2.6
1,1-DCE	<0.19
TOTAL	**8**



Appendix D: Chlorinated Ethenes and Ethene
C/D - Zone Wells
Necco Park

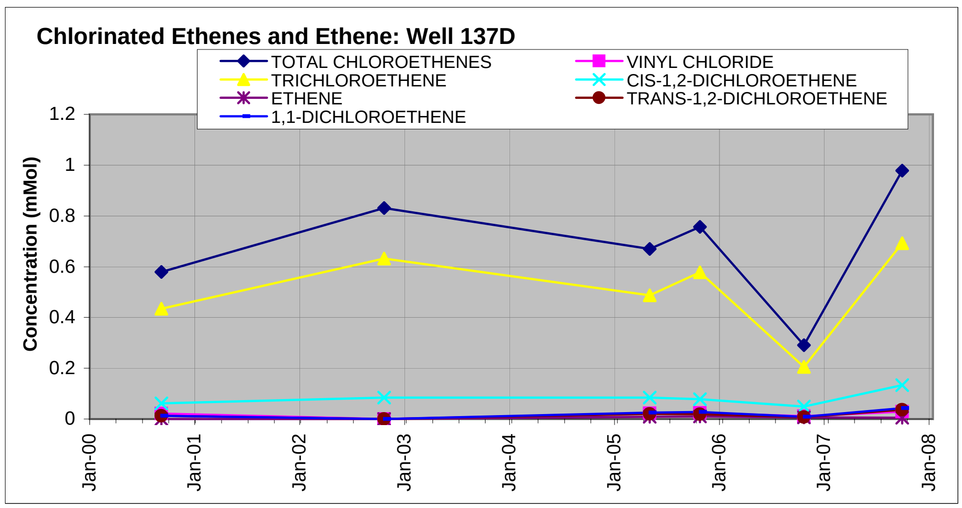
WELL: 136D

Monitoring Well Summary	
· Near downgradient well · Continued reduction in total chlorinated ethenes 2000-2007 · Mostly TCE, cDCE, VC · Good ethene production · Moderate / Strong DHE signal	
2007 Sample Results	**(ppb)**
PCE	<2.9
TCE	84
Cis- 1,2 DCE	260
VC	84
Trans-1,2 DCE	8.1
1,1-DCE	6.4
TOTAL	**468**



WELL: 137D

Monitoring Well Summary	
· Source area · Exceeds 1% solubility for PCE, TCE · Increasing total chlorinated ethenes 2006-2007 · Exceeds effective solubility for PCE, TCE dominant species · DHE not detected · Moderate ethene production	
2007 Sample Results	**(ppb)**
PCE	7200
TCE	91000
Cis- 1,2 DCE	13000
VC	1800
Trans-1,2 DCE	3600
1,1-DCE	4100
TOTAL	**120,700**



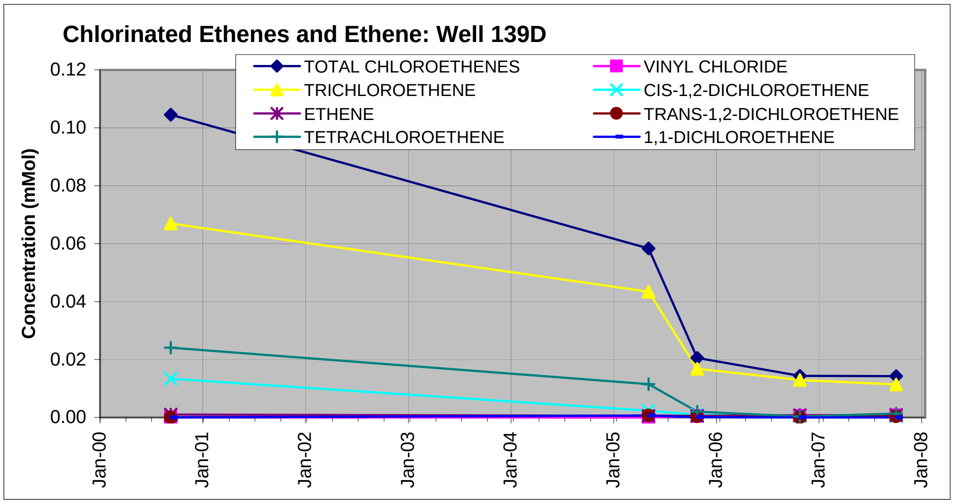
Appendix D: Chlorinated Ethenes and Ethene
D/E - Zone Wells
Necco Park

WELL: 139D

Monitoring Well Summary

- Source area
- DNAPL observed 1992
- Flat total chlorinated ethene trend 2006-2007
- DHE not detected
- Weak ethene production

2007 Sample Results	(ppb)
PCE	220
TCE	1,500
Cis- 1,2 DCE	48
VC	45
Trans-1,2 DCE	32
1,1-DCE	<11
TOTAL	**1,845**

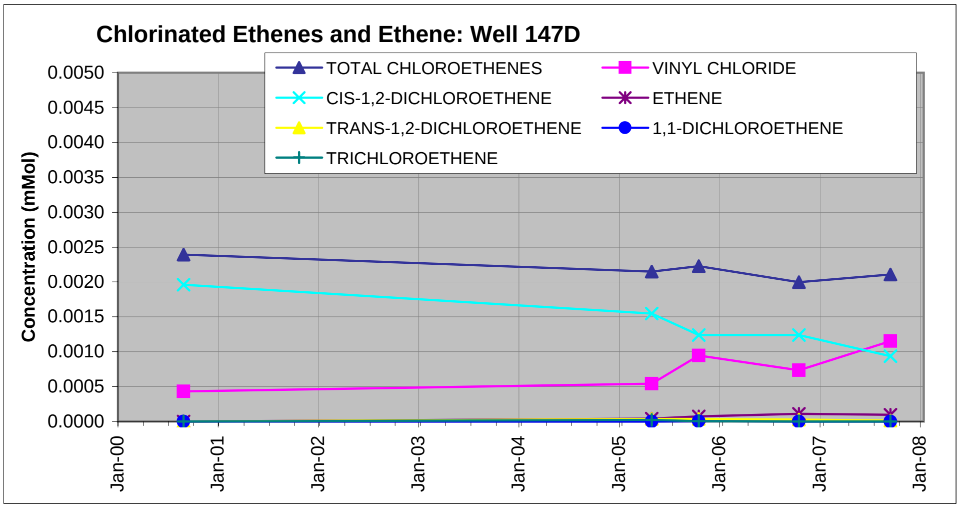


WELL: 147D

Monitoring Well Summary

- Far downgradient
- Flat total chlorinated ethenes 2000-2007
- Mostly VC
- Moderate DHE signal
- Weak ethene production

2007 Sample Results	(ppb)
PCE	<1.2
TCE	<0.68
Cis- 1,2 DCE	91
VC	72
Trans-1,2 DCE	2
1,1-DCE	<0.76
TOTAL	**164**

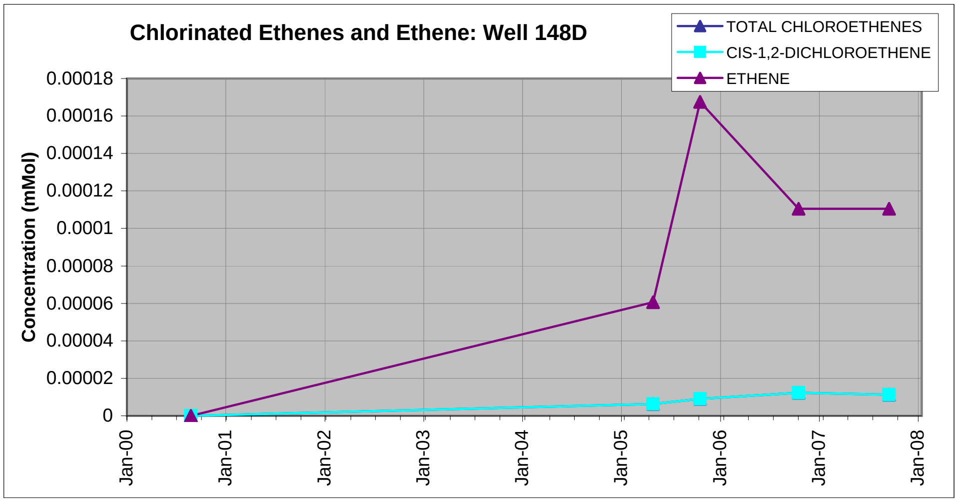


WELL: 148D

Monitoring Well Summary

- Downgradient
- Flat Total Chlorinated Ethene trend 2005-2007
- Mostly cDCE
- Weak ethene production
- Weak DHE signal

2007 Sample Results	(ppb)
PCE	<0.29
TCE	<0.17
Cis- 1,2 DCE	1
VC	<0.22
Trans-1,2 DCE	<0.19
1,1-DCE	<0.19
TOTAL	**1**



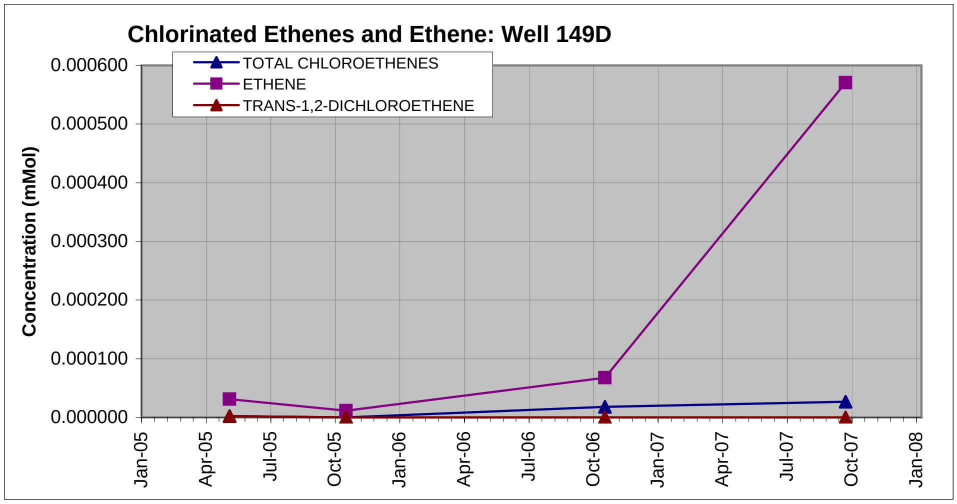
Appendix D: Chlorinated Ethenes and Ethene
D/E - Zone Wells
Necco Park

WELL: 149D

Monitoring Well Summary

- Side gradient
- Flat Total Chlorinated Ethene trend 2005-2007
- Mostly tDCE
- Weak Ethene production
- Moderate DHE signal

2007 Sample Results	(ppb)
PCE	<0.29
TCE	<0.17
Cis- 1,2 DCE	1
VC	1
Trans-1,2 DCE	0
1,1-DCE	<0.19
TOTAL	**1**

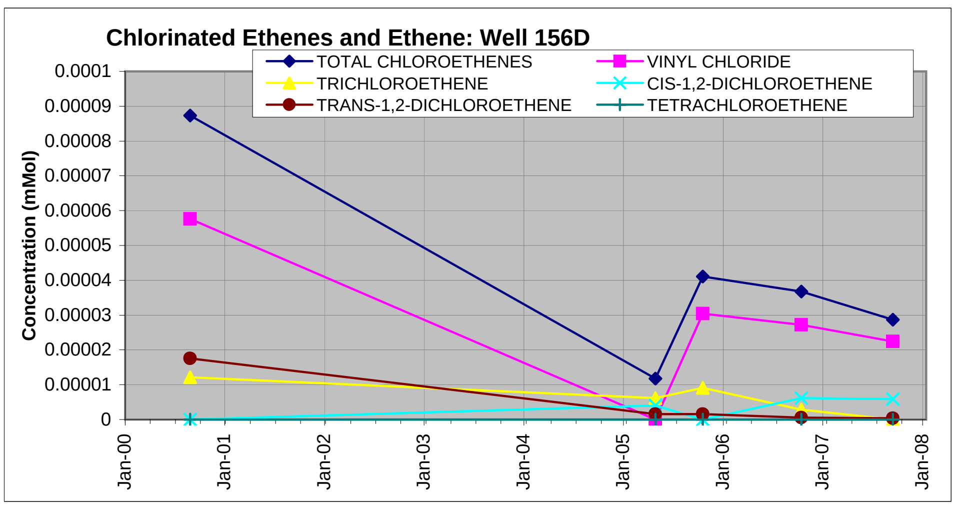


WELL: 156D

Monitoring Well Summary

- Far downgradient
- Clean-All chlorinated ethenes below 2 ppb
- Mostly VC
- Moderate DHE signal

2007 Sample Results	(ppb)
PCE	<0.29
TCE	<0.17
Cis- 1,2 DCE	1
VC	1
Trans-1,2 DCE	0
1,1-DCE	<0.19
TOTAL	**2**

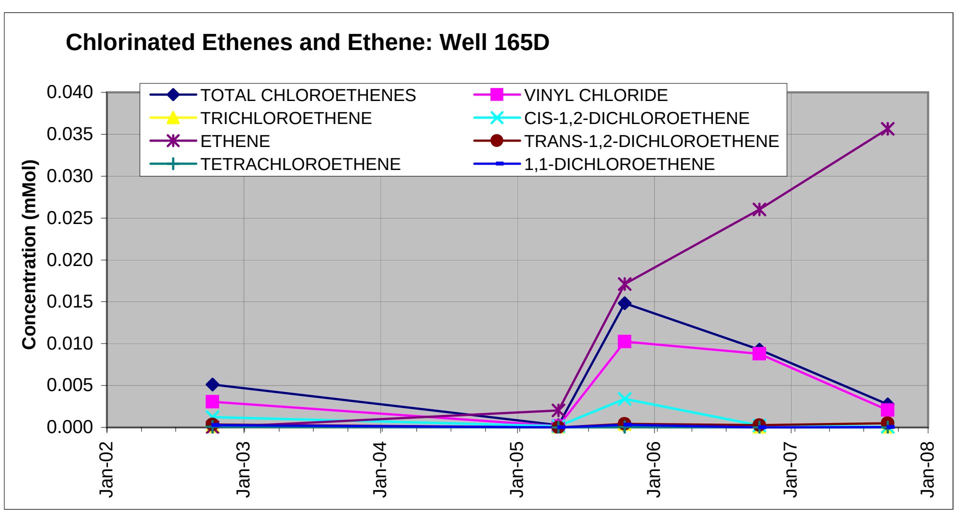


WELL: 165D

Monitoring Well Summary

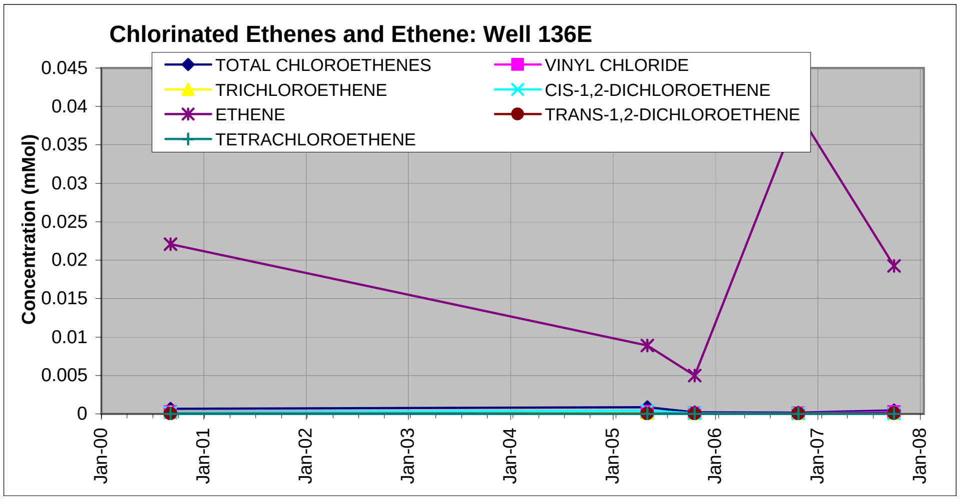
- Source area
- Near source boundary
- Decreasing Total Chlorinated Ethenes 2005-2007
- Good ethene production
- DHE not detected
- Primarily VC

2007 Sample Results	(ppb)
PCE	2
TCE	5
Cis- 1,2 DCE	9
VC	130
Trans-1,2 DCE	50
1,1-DCE	2
TOTAL	**498**



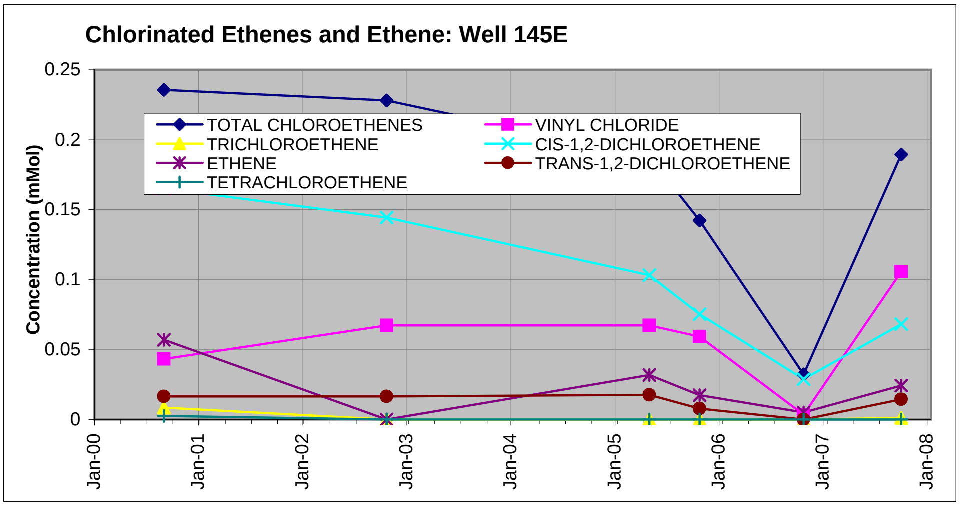
WELL: 136E

Monitoring Well Summary	
· Near downgradient · Slight Increase of Chlorinated Ethenes 3006-2007 · Good ethene production · Strong DHE signal	
2007 Sample Results	**(ppb)**
PCE	<0.29
TCE	6.5
Cis- 1,2 DCE	5.4
VC	15
Trans-1,2 DCE	9.3
1,1-DCE	<0.19
TOTAL	**36**



WELL: 145E

Monitoring Well Summary	
· Sidegradient · Increasing total chlorinated ethenes 2006-2007 · Mostly cDCE, VC · Moderate DHE signal · Good Ethene production	
2007 Sample Results	**(ppb)**
PCE	<97
TCE	160
Cis- 1,2 DCE	6,600
VC	6,600
Trans-1,2 DCE	1,400
1,1-DCE	<63
TOTAL	**14,760**

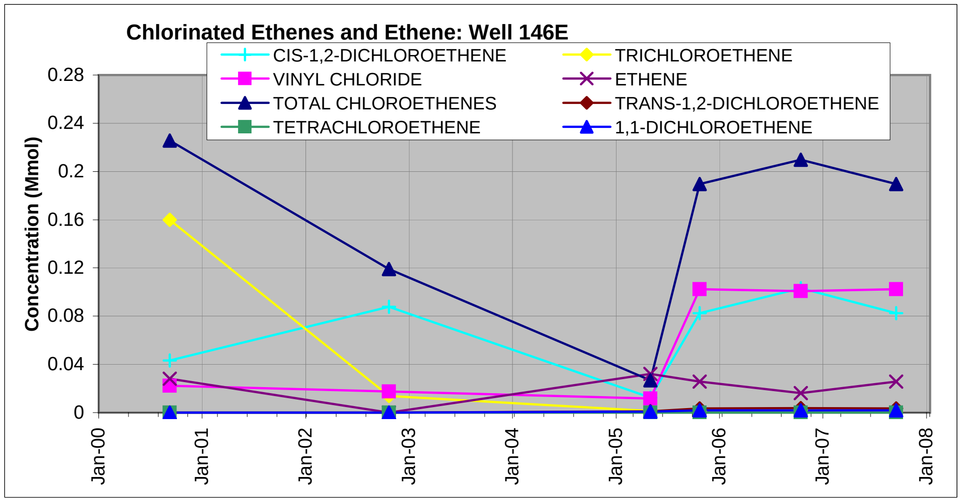


Appendix D: Chlorinated Ethene and Ethene
E/F - Zone Wells
Necco Park

WELL: 146E

Monitoring Well Summary
- Source area
- Near source boundary
- Decreasing total chlorinated ethenes 2005-2007
- Primarily VC and cDCE
- Strong DHE signal
- Good Ethene production

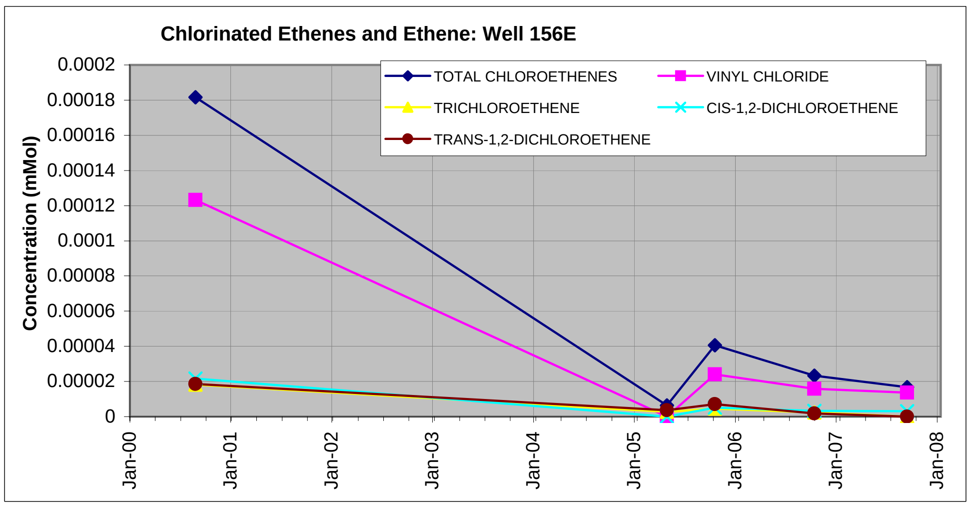
2007 Sample Results	(ppb)
PCE	<97
TCE	140
Cis- 1,2 DCE	4,800
VC	6,700
Trans-1,2 DCE	260
1,1-DCE	120
TOTAL	**12,020**



WELL: 156E

Monitoring Well Summary
- Far downgradient
- Slight decrease in chlorinated ethenes
- Moderate DHE signal

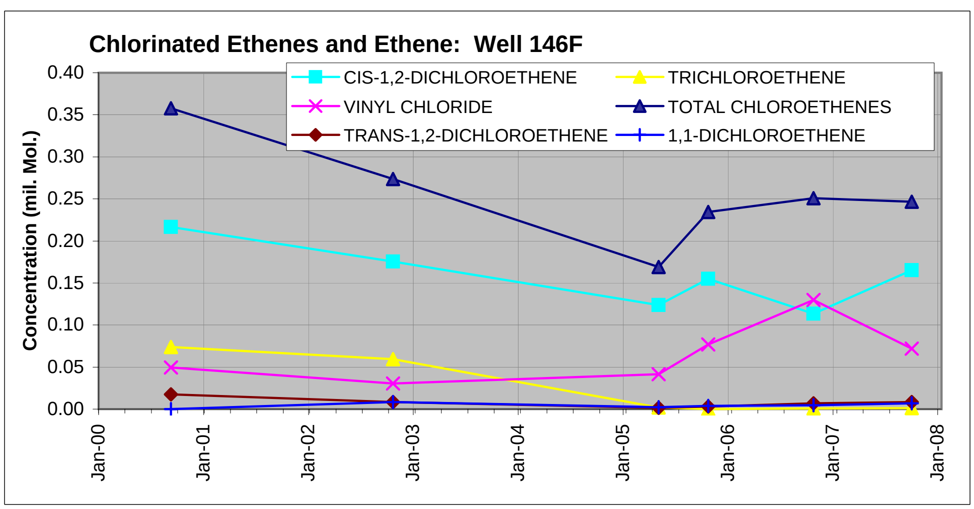
2007 Sample Results	(ppb)
PCE	<0.29
TCE	<0.17
Cis- 1,2 DCE	0.3
VC	0.85
Trans-1,2 DCE	<0.19
1,1-DCE	<0.19
TOTAL	**1**



WELL: 146F

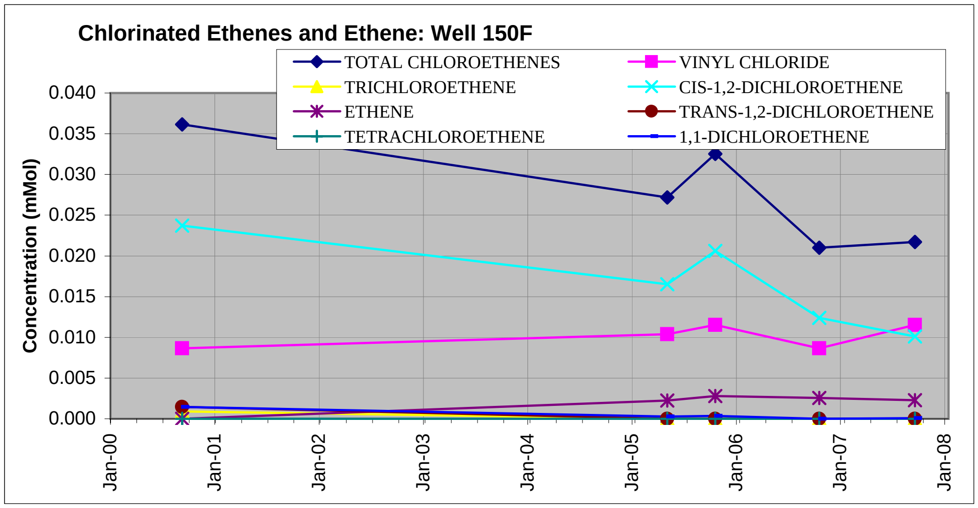
Monitoring Well Summary
- Source area
- Near source boundary
- Increasing total chlorinated ethenes 2006-2007
- Primarily cDCE, VC
- Moderate Ethene production

2007 Sample Results	(ppb)
PCE	<210
TCE	160
Cis- 1,2 DCE	16,000
VC	4,500
Trans-1,2 DCE	830
1,1-DCE	670
TOTAL	**22,160**



WELL: 150F

Monitoring Well Summary	
· Sidegradient · Flat total chlorinated ethenes trend 2006-2007 · Mostly cDCE, VC · Weak ethene production	
2007 Sample Results	**(ppb)**
PCE	<9.7
TCE	6
Cis- 1,2 DCE	980
VC	720
Trans-1,2 DCE	<6.3
1,1-DCE	7
TOTAL	**1,707**



APPENDIX E

LANDFILL CAP INSPECTION RESULTS

EXHIBIT A
NECCO PARK LANDFILL
CAP AND SURFACE WATER DRAINAGE
INSPECTION CHECKLIST

DATE: 09/04/2007
INSPECTOR: Dawn M. Walczak
WITNESSES: Gerald Shepard

EMERGENCY CONTACT:
GERALD SHEPARD
716.278.5149

CONDITION: (Check) (Not Acceptable or Not Present require comments below)

	Acceptable	Not Acceptable	Present	Not Present	Remarks
1) Vegetative Cover, Ditches, Culverts	X				
a) Sediment Build-Up/Debris				X	
b) Pooling or Ponding				X	
c) Slope Integrity	X				
d) Overall Adequacy	X				
e) Culvert Condition	X				
2) Access Roads	X				
3) Landfill Cover System					
a) Erosion Damage			X		Minor ruts on south slope
b) Leachate Seeps				X	
c) Settlement				X	
d) Stone Aprons	X				
e) Vegetation	X				
f) Animal Burrows			X		mole burrows
4) Slope Stability					
a) Landfill Top Soil	X				
b) Landfill Side Slope	X				
5) Gas Vents	X				1 Gas Vent requires repair
6) Monitoring Wells	X				

COMMENTS:

DESCRIPTION OF CONDITION:

- Landfill Vegetation requires mowing.
- Cap/Vegetation acceptable.
- Ditch integrity acceptable.

DESCRIPTION OF CONCERN:

- One Gas Vent in North East corner of site requires repair.

DESCRIPTION OF REMEDY:

- Gas Vent coupling needs to be reattached with adhesive. Very minor repair

-dw

EXHIBIT B
NECCO PARK LANDFILL
CAP AND SURFACE WATER DRAINAGE
MAINTENANCE CHECKLIST

DATE: 09/04/07
INSPECTOR: Dawn M. Walczak
WITNESSES: Gerald Shepard

EMERGENCY CONTACT:
GERALD SHEPARD
716.278.5149

Maintenance Performed (Check)	Item	Performed by:	Remarks
	1) Vegetative Cover:		
	a) Seeding	dw/JS	2006 Overseed event successful.
	b) Fertilizing	" "	
	c) Topsoil Replaced	" "	
X	d) Removal of Undesirable Vegetation	dw/JS / NAPIER	Cut ditch vegitation
	2) Drainage Ditches		
	a) Sediment Removal	dw/JS	
	b) Fill	" "	
	c) Regrading	" "	
	d) Stone Apron Repair	" "	
	e) Vegetative Cover Placement	" "	
	f) Liner Replacement	" "	
	3) Access Road		
	a) Excavation	dw/JS	
	b) Fill	" "	
	c) Grading	" "	
	d) Stone Paving	" "	
	4) Landfill Cap		
	a) Excavation	dw/JS	
	b) Cover Materials	" "	
	- topsoil	" "	
	- barrier protection layer	" "	
	- drainage composite	" "	
	- geomembrane	" "	
	- geotextile	" "	
	c) Testing	" "	
	d) Barrier Protection Layer	" "	
X	e) Vegetative Cover	" "	mowed 9/2007
	5) Gas Vents		
X	- Pipes	JS	Single Gas Vent repair
	- Bedding and Adjacent Media		
	6) Other		

DESCRIPTION OF MAINTENANCE ACTIVITIES: ____________________