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Summary of Environmental Monitoring 2011

Tibbetts Road Site

Barrington, New Hampshire

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Summary of Environmental Monitoring 2011

Tibbetts Road Site, Barrington, New Hampshire

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1. INTRODUCTION

ARCADIS U.S., Inc. (ARCADIS) conducted two semi-annual groundwater monitoring events in May and November 2011 in accordance with the environmental monitoring program for the Tibbetts Road Site (Site), located in Barrington, New Hampshire. This event consisted of groundwater gauging and sampling of monitoring wells and former extraction wells.

The primary objectives of the environmental monitoring program are to 1) monitor the extent of impacted groundwater at the Site as remedial efforts proceed, 2) obtain data to demonstrate compliance with the Interim Groundwater Cleanup Levels (ICLs) that have been established for the Site (United States Environmental Protection Agency [USEPA] 1992), and 3) evaluate natural biodegradation of groundwater impacts at the Site. This report summarizes the field and laboratory analytical data collected in 2011 and provides a brief discussion of the results.

An updated Conceptual Site Model (CSM), modified from the original version included as part of the *Summary of Environmental Monitoring 2008* report (ARCADIS, 2009*),* is attached to this report as **Appendix A***.* The CSM was prepared to address several of the "Recommendations and Follow-up Actions" proposed by the USEPA in the *Tibbetts Road Superfund Site, Second 5-Year Review* (USEPA, June 2008*).* The updated CSM is attached to this report for reference and will be modified as new information becomes available. Changes to the CSM are summarized in Section 2.0. The 2011 environmental monitoring data are summarized beginning in Section 3.0.

2. CHANGES TO THE CONCEPTUAL SITE MODEL

The Tibbetts Road Site is located at 23 Tibbetts Road (former 216 Tibbetts Road) in Barrington, New Hampshire (Site). Barrington is a town in the southeast part of the state, approximately 2 miles northeast of the junction of Route 4 and Hall Road. The location of the Site is identified on **Figure 1**. The area is primarily rural and utilized for single family and seasonal residences. The Site consists of a two-acre parcel located on a topographic high (approximately 330 feet above mean sea level [amsl]) with land surface sloping to the southwest toward the Oyster Creek watershed and to the north-northeast toward Swains Lake and the Bellamy River watershed. Swains Lake, a popular recreation destination, is located approximately 1,000 feet north of the Site.

The elevation of the region generally ranges from 100 to 400 feet amsl with higher elevations located to the west-northwest of the Site and the lower elevations located to

the southeast. The regional topography is shown on **Figure 1**. The general Site layout, the surrounding area and the location of the existing monitoring wells is provided as **Figure 2**.

Based on data collected during the 2011 environmental monitoring and remedial investigation activities, the following additions and/or modifications have been made to the CSM presented in **Appendix A**:

- The Swains Lake Village Water District (SLVWD) has completed pilot testing of a proposed bedrock water supply located on the SLVWD property north of the Site. Two deep bedrock test wells (SWL-6alt and SWL-7) were installed to depths of 460 ft and 400 ft, respectively. Preliminary results indicate that each of these wells produces water at a rate of approximately 75 gpm. The wells have been connected to the existing treatment building, and are anticipated to be fully operational in 2012.

- Four new bedrock boreholes (MW-300, MW-301, MW-302, and MW-303) were installed in 2011 to complete additional characterization of the bedrock and groundwater quality on-Site and on the Site perimeter. A total of 54 additional packer pumping tests were completed on these boreholes installed in 2011 to determine bulk hydraulic conductivity values and contaminant distribution. In the former in-situ chemical oxidation (ISCO) “source” area, Site constituents of concern (COCs) were detected above ICLs throughout borehole MW-301, which was cored to 300 feet bgs. Lower levels of contamination were detected in boreholes MW-300 (northeast of the ISCO area) and MW-303 (south-west of the Site, across Tibbetts Road). COCs in borehole MW-302 (north of the Site, across Hall Road) were detected below laboratory detection limits.

- As a part of the 2011 site investigation activities, packer pumping tests were completed at historical open-bedrock monitoring wells 61R, 63R, 65R, and 67R. A total of three to four packer tests were completed at each location, targeting documented fracture zones. In general, the COC levels were similar (regardless of depth or pumping rate) to the semi-annual analytical results presented in the *Summary of Environmental Monitoring 2011* report. Based on the drawdown data observed during the sampling activities, the fracture zones observed within these wells appear to be in direct hydraulic communication with each other. This inter-fracture connectivity, as well as long-term inter-borehole communication, has eliminated stratification of the groundwater impacts in these areas.

- As of the date of this report, the 13 residential bedrock wells in the Cedar Creek development (formerly referred to as the "Sera Lane development," located south of the site) have been sampled. A total of eight wells were identified with volatile organic compounds (VOCs) in groundwater. Residents with wells that have VOCs greater than 1 microgram per liter (ug/L) are currently being provided with bottled water. A more permanent solution for providing clean drinking water in this development is currently being evaluated.

- Based on the concentrations of COCs present in the "source area" and the presence of new off-Site pumping sources, a pilot test of groundwater recirculation and oxidant addition will be proposed to the USEPA in 2012. The proposed injection events will leverage the new bedrock groundwater information collected in 2011 to better target the majority of the source mass. Based on the result of the pilot test, the recirculation cell can be expanded in the heavily impacted "fracture zone" identified at the Site. Through the proposed oxidant injections, ARCADIS intends to reduce contaminant concentrations in the "source area" to levels more appropriate for monitored natural attenuation.

- A total of twenty-two soil borings were installed in the general proximity of monitoring well EW-10S in 2011 to delineate residual source material that may be contributing to elevated VOC concentrations observed in EW-10S. COCs were detected in three borings in excess of New Hampshire soil screening criteria, and additional low-level detections indicate a limited area of impacted soil from 5 to 15 feet below ground surface. A proposed excavation plan to remove impacted soil will be presented to the USEPA in 2012. Details of the investigation are included in the Summary of Overburden Investigation Activities, February 2, 2012.

3. GROUNDWATER MONITORING 2011

Twenty-three monitoring wells were selected for the semi-annual groundwater sampling completed in May 2011; a total of twenty-eight wells were sampled in November 2011. A summary of the wells selected for monitoring, and the geologic units screened by each well are presented in **Table 1**.

3.1 Methodology

The following methods were used to complete the 2011 environmental monitoring activities.

3.1.1 Water-Level Measurements

Groundwater elevations were measured in monitoring, extraction and injection wells during the May and November 2011 sampling events. The depth to groundwater and groundwater elevations are presented in **Table 2**. The measurements were made to the nearest hundredth of a foot using an electronic water-level indicator. All levels were recorded as depth below the top of the well casing (unless otherwise noted on the table) and converted to piezometric head amsl using a surveyed well elevation. The indicator probe was cleaned with a detergent wash and distilled water rinse between wells to prevent cross-contamination.

3.1.2 Groundwater Sampling

From May 9 to 12 and November 14 to 18, 2011, ARCADIS collected groundwater samples from the wells listed in **Table 1** using the USEPA Region I Low-Stress Purge and Sampling method (USEPA 1996). All purging and sampling was done using a Masterflex peristaltic or Grundfos submersible pump with dedicated tubing. Field parameters were measured using a multi-sensor groundwater quality meter with a flow-through cell. Purged water was discharged to the ground surface in the immediate vicinity of each well. Quality control samples including field replicates, matrix spike/matrix spike duplicates and trip blanks were obtained during the sampling event.

3.1.3 Laboratory Analyses

Groundwater samples were submitted to TestAmerica Laboratories of Nashville, Tennessee for analysis. The May and November groundwater samples were submitted for analysis of volatile organic compounds (VOCs) (USEPA 8260B), total arsenic and manganese by (USEPA 6010B) and nitrate and nitrite (USEPA 353.2). Select samples were analyzed for ethene, ethane and methane (method RSK-147) and dissolved arsenic and manganese (USEPA 6010B).

As discussed with the New Hampshire Department of Environmental Services (NHDES) and outlined in the *Environmental Monitoring Program 2010* report, ARCADIS has agreed that samples from three wells screened in the overburden (57S, 75D, 73S) and three wells screened in the bedrock (65R, 169R and 201R) would be analyzed for 1,4-dioxane using EPA Method 8260 with select ion monitoring (SIM) to achieve the required performance standard of 3.0 µg/L. The rationale for the selection of these wells included wells where 1,1,1-trichloroethane or 1,1-dichloroethene had

been previously detected; locations were distributed across representative areas of the Site. It was also agreed that samples from three wells screened in the overburden (EW-10S, 57S and EW-2S) and three wells screened in the bedrock (69R, 169R and 201R) would be analyzed for 1,2-dibromoethane (EDB) using EPA Method 8011. The rationale for the selection of these wells included wells where BTEX compounds had been or are currently detected and distributed across the Site. In addition, 1,3,5-trichlorobenzene was added to the list of VOCs analyzed by Method 8260 in all wells where samples are obtained for the analysis of VOCs.

Based on discussions with the USEPA (Mr. Darryl Luce) in 2010, five additional overburden wells (50S, 54S, 71S, 79S, 80S) were sampled in November 2011 as part of a vapor intrusion risk evaluation for houses adjacent to the Site. All wells were analyzed for VOCs by Method 8260 and 1,4-dioxane with SIM, utilizing lower detection limits in order to better meet risk-based vapor intrusion screening levels. Results of the vapor intrusion sampling were included in the Vapor Intrusion Evaluation, February 28, 2012.

Copies of the laboratory analytical reports are provided in **Appendix B**. A data validation/verification review for each laboratory analytical data package was performed by ENOVIS, Inc. A summary of the ENOVIS data reviews and quality assurance/quality control results and copies of the ENOVIS data reports are also presented in **Appendix B**.

3.2 Groundwater Sampling Results

The following sections provide a discussion of the 2011 groundwater monitoring data. For a broad overview of the analytical and groundwater elevation data with respect to the Site history and historical data trends, please refer to the CSM report provided as **Appendix A**.

3.2.1 Groundwater Elevation and Flow

A summary of the 2011 groundwater elevation measurements is provided as **Table 2**. In general, groundwater elevation in 2011 demonstrated a trend similar to that of previous years. A summary of the vertical gradient between overburden and bedrock wells measured in 2011 is provided in **Table 3**. Bedrock wells generally indicate a groundwater elevation several feet below that of nearby overburden wells.

A groundwater elevation contour map prepared from the May 2011 groundwater elevation data is presented as **Figure 3**. Monitoring wells used to create this contour map were selected based on the depth of installation and the corresponding screened hydrostratigraphic units. In general, only wells installed within the upper till and glacial outwash deposits were used to construct the contour map. As shown on Figure 3, groundwater in the shallow overburden appears to flow radially away from a groundwater high located along the southeastern property boundary, generally centered on monitoring well EW-1S. This configuration is generally consistent with previous water-table maps prepared for the Site by ARCADIS (Geraghty & Miller, Inc. 1995, 1996c, 1996d, 1996e, 1996f, 1997a, 1997b, ARCADIS Geraghty & Miller, Inc. 1998, 2000, 2001, ARCADIS G & M 2002, 2003, 2004, 2005, 2006, ARCADIS U.S., Inc. 2007b, 2008, 2009, 2010).

Groundwater elevation within the bedrock wells reflects an average across all fracture sets. Due to the hydraulic nature of fractured bedrock and the current construction of bedrock monitoring wells (primarily open bedrock boreholes), the piezometric head within specific fracture sets is impossible to determine given that the horizontal gradient within specific governing fracture sets is unknown. Therefore, a bedrock groundwater flow map has not been prepared for the Site.

3.2.2 Groundwater Quality

Overall, the concentrations of VOCs and metals in groundwater during the May and November 2011 sampling events were lower than or consistent with concentrations detected during previous sampling events. A summary of the May and November 2011 laboratory analytical results are included as **Table 4**. Summary tables that include all of the historical VOC data for each well, and a table summarizing the natural attenuation data are included as **Appendix C and D**, respectively. **Table 5** presents the results of the additional parameters required by NHDES. A brief discussion of the groundwater results by constituent group is presented in the following sections.

3.2.2.1 Volatile Organic Compounds

Concentration trend charts for both the overburden and bedrock wells are included in **Appendices E and F**, respectively. Trend charts are only constructed for wells that have been sampled regularly and have had consistent detections of COCs over time.

Of the thirteen overburden wells sampled during 2011, only one well, EW-10S, exhibited an ICL exceedance for VOC parameters. The former extraction well EW-10S

has had consistent concentrations of ethylbenzene and toluene since it was installed in 1997 with some fluctuations below the ICLs. In addition, trichloroethene was detected above the ICL criteria twice at this location since 2009. The impacts appear to be localized as nearby wells (e.g. 51S, 73S and 50S) do not contain VOCs above ICL criteria. There is a large variance between the May and November groundwater analytical results for well EW-10S. This variation has occurred in the past as well, and suggests that EW-10S is installed at the edge of a variable plume or perhaps the plume intersected by EW-10S is small and varies seasonal with respect to orientation.

A separate source area evaluation was completed in the EW-10S area in June 2011. The investigation identified a source mass in saturated till with similar compounds as detected downgradient at EW-10S. A work plan for limited excavation to remove this source material will be prepared in 2012.

As indicated by the trend charts included as **Appendix E**, the concentration of COCs within the overburden wells as a whole has decreased over time. This decrease is likely due to a combination of source removal, groundwater remediation activities including VER, emplacement of the phyto-cover, and natural attenuation.

Of the 15 bedrock wells sampled in 2011, 12 exhibited ICL exceedances for at least one VOC parameter. As shown on the trend charts included as **Appendix F**, the concentration of COCs has generally decreased in bedrock wells over time. The exception to this is at wells 35R, 61R, 67R, 106R, 201R and 205R where VOC concentrations have remained stable or decreased more slowly. The concentration of benzene at 106R has remained relatively consistent over a long period of time. This well is downgradient of the bedrock source area and as the source mass is reduced the concentration of benzene at this location is expected to also decrease with time. Exceedances at 201R and 205R have historically consisted of benzene and CVOCs. The concentration of TCE at 201R and 205R has been decreasing and the concentration of DCE has remained stable or showed a decreasing trend. A low concentration of vinyl chloride in wells in this area suggests reductive dechlorination. Benzene at both of these locations has slowly decreased over time. The concentration of methyl-isobutyl-ketone (MIBK) at well 205R has generally remained stable.

The additional compounds added to the analyte list by NHDES (1,4-dioxane, EDB and 1,3,5-trichloroethylene) were not detected above laboratory detection limits or regulatory standards in the wells sampled for these parameters.

The COCs that will drive risk associated with the Site in the future are BTEX compounds and CVOCs. The distributions of these COCs are provided graphically on **Figures 4 through 8**. The iso-concentration maps were drawn considering the bedrock drilling and sampling results completed in 2011, as well as the results of the residential well sampling of the Cedar Creek wells. Additional details regarding these activities are included in the revised CSM report **(Appendix A)**. As discussed in the CSM report, BTEX compounds appear to have migrated to the north and south of the ISCO area and are spread out along fractures oriented to the northeast-southwest. The distributions of TCE and total CVOCs are similar to BTEX. The distribution of DCE is more concentrated around the ISCO area and, as indicated above, suggests reductive dechlorination of CVOCs.

3.2.2.2 Metals

Concentrations of arsenic and manganese were detected in both the overburden and bedrock monitoring wells in 2011.

- Four out of eight overburden wells sampled in May 2011 exhibited concentrations of arsenic above ICL criteria; three wells exceeded ICL criteria for manganese.

- Nine out of fifteen bedrock wells sampled in May 2011 exhibited concentrations of arsenic above ICL criteria; one well exceeded ICL for manganese.

- Five out of eight overburden wells sampled in November 2011 exhibited concentrations of arsenic above ICL criteria; two wells exceeded ICL criteria for manganese.

- Ten out of fifteen bedrock wells sampled in November 2011 exhibited concentrations of arsenic above ICL criteria; one well exceeded ICL criteria for manganese.

Manganese currently detected above the ICL within the immediate area of the wells used for the ISCO injections is likely an artifact of the permanganate injections. The elevated concentrations of manganese and arsenic outside of the injection area are likely due to natural conditions or may be related to increased solubilization of naturally occurring metals created by the reducing conditions at the Site. It is expected that arsenic and manganese concentrations will decline as redox conditions become more aerobic over time. The solubilized concentrations of

arsenic and manganese are not expected to migrate beyond the boundaries of reducing conditions.

3.2.2.3 Natural Attenuation Summary

Natural attenuation analytical results indicated nitrate, nitrite, and methane were detected at very low levels or not detected above laboratory MDLs. Ethene and ethane were not detected above the respective MDLs in any of the wells sampled in May or November 2011.

A detailed analysis of the current biochemical conditions and applicability of monitored natural attenuation to address the remaining impacts was performed in 2007. The report summarizing the evaluation was submitted by ARCADIS to the USEPA in December 2007. Results of the evaluation indicated the overall size of the impacted areas has decreased over time as a result of the ISCO injections and natural attenuation processes. Decreasing trends are present in monitoring wells within and outside the central portion of the remaining impacted areas, which indicates that additional reduction toward the respective ICLs will continue. Routine monitoring and evaluation of biochemical conditions will continue.

4. 2011 GROUNDWATER MONITORING CONCLUSIONS

Based on the results of the 2011 groundwater monitoring activities, ARCADIS offers the following conclusions:

- As shown on the regional groundwater flow map, Tibbetts Road Site is situated on a topographic high with apparent groundwater flow to the north-northeast toward Swains Lake and to the west-southwest toward headwaters of the Oyster River. Groundwater mounding beneath topographic highs is due to the low bulk hydraulic conductivity of the bedrock aquifer as well as the overlying dense, clay-rich glacial sediments.

- The results of the 2011 groundwater monitoring activities indicate that only one overburden well (EW-10S) has VOCs that exceed ICLs. This result, coupled with decreasing COC trends in overburden and bedrock wells within the ISCO area and across the Site, suggests limited ongoing COC flux between the overburden and bedrock aquifer.

- Of the 15 bedrock wells sampled in 2011, 12 exhibited ICL exceedances for at least one VOC parameter. In general, the concentration of COCs has generally remained stable or decreased in bedrock wells over time.

- 1,4-Dioxane, EDB, and 1,3,5-trichloroethylene were not detected in wells sampled for these parameters.

- Concentrations of arsenic and manganese were detected in both the overburden and bedrock monitoring wells in 2011. It is expected that concentrations will decline as redox conditions become more aerobic over time.

- As of the date of this report, 13 residential bedrock wells in the Cedar Creek development (south of the Site) have been sampled A total of eight wells were identified with VOCs. Residents with VOCs greater than 1 ug/L in wells are currently being provided with bottled water. A more permanent solution for providing clean drinking water in this development is currently being evaluated.

- Four new bedrock boreholes (MW-300, MW-301, MW-302, and MW-303) were installed and pump tested in 2011 to complete additional characterization of the bedrock and groundwater quality on-Site and on the Site perimeter. COCs were detected above ICLs throughout “source area” borehole MW-301. Lower levels of contamination were detected in boreholes MW-300 and MW-303. COCs in borehole MW-302 were detected below laboratory detection limits. Additional pumping tests were performed on historical open-bedrock monitoring wells (61R, 63R, 65R, 67R). The fracture zones observed within these wells appear to be in direct hydraulic communication with each other, which has eliminated stratification of the groundwater impacts.

- A pilot test of groundwater recirculation and oxidant addition will be proposed to the USEPA in 2012 to target the majority of the remaining source mass in the ISCO area of the Site. Based on the result of the pilot test, the recirculation cell can be expanded to target the heavily impacted “fracture zone” identified at the Site. Through the proposed oxidant injections, ARCADIS intends to reduce contaminant concentrations in the “source area” to levels more appropriate for monitored natural attenuation.

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Appendix A

Conceptual Site Model 2011

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Appendix B

Laboratory Analytical Reports

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Appendix C

Summary of Historical Groundwater Analytical Results, Volatile Organic Compounds, Arsenic and Manganese

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Appendix D

Summary of Historical Natural Attenuation Monitoring Results

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Appendix E

Concentration Trend Charts for Overburden Wells

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Appendix F

Concentration Trend Charts for Bedrock Wells

Table 1
Monitoring, Extraction, and Injection Wells Sampled During 2011
Tibbetts Road, Barrington, New Hampshire

Well Designation	Semiannual Sampling (Months Sampled)	Geologic Unit Screened by Well
Monitoring Wells		
35R	May, November	Bedrock
37D	May, November	Glacial Outwash/Lower Till
50S	November	Glacial Outwash
51S	May, November	Glacial Outwash
54S	November	Glacial Till
57S	May, November	Upper overburden
59R	May, November	Bedrock
61R	May, November	Bedrock
63R	May, November	Bedrock
65R	May, November	Bedrock
67R	May, November	Bedrock
69R	May, November	Bedrock
71S	November	Glacial Outwash
73S	May, November	Glacial Outwash
75D	May, November	Lower Till
79S	November	Glacial Till
80S	November	Glacial Outwash
103R	May, November	Bedrock
106R	May, November	Bedrock
169R	May, November	Bedrock
201R	May, November	Bedrock
202R	May, November	Bedrock
203R	May, November	Bedrock
204R	May, November	Bedrock
205R	May, November	Bedrock
Extraction Wells		
EW-2S	May, November	Upper Till/Glacial Outwash
EW-3S	May, November	Glacial Outwash
EW-10S	May, November	Upper Till/Glacial Outwash

Table 2. Summary of 2011 Groundwater Elevation Measurements, Tibbetts Road Site, Barrington, NH.

Well Designation	Measuring Point Elevation (feet above mean sea level)	May 6, 2011 Depth to Water (feet below measuring point)	May 6, 2011 Water-Level Elevation (feet above mean sea level)	November 11, 2011 Depth to Water (feet below measuring point)	November 11, 2011 Water-Level Elevation (feet above mean sea level)
Overburden Wells					
036D	326.06	NM	NM	6.89	319.17
037D	327.66	5.77	321.89	5.97	321.69
050S	322.45	3.31	319.14	4.43	318.02
051S	325.96	3.66	322.30	5.89	320.07
052S	328.19	4.51	323.68	6.02	322.17
053S	322.08	NM	NM	0.77	321.31
054S	326.81	0.79	326.02	2.60	324.21
057S	329.82	1.75	328.07	5.04	324.78
070S	327.48	1.58	325.90	4.50	322.98
071S	329.97	NM	NM	6.90	323.07
072S	328.72	1.08	327.64	4.70	324.02
073S	328.06	3.50	324.56	6.35	321.71
075D	326.27	1.75	324.52	4.81	321.46
079S	329.85	8.21	321.64	9.90	319.95
080S	329.32	NM	NM	5.01	324.31
084S	329.51	2.18	327.33	5.71	323.80
085S	329.72	1.71	328.01	5.53	324.19
087S	330.01	2.21	327.80	5.71	324.30
088S	330.1	2.42	327.68	6.10	324.00
105D	329.09	1.69	327.40	0.30	328.79
EW-01D	329.14	1.96	327.18	5.88	323.26
EW-01S	329.01	0.70	328.31	4.08	324.93
EW-02S	328.15	0.80	327.35	4.54	323.61
EW-03S	327.52	1.63	325.89	4.59	322.93
EW-04S	330	1.74	328.26	5.28	324.72
EW-05S	326.38	3.62	322.76	6.01	320.37
EW-06S	329.9	2.18	327.72	5.75	324.15
EW-07S	329.59	1.86	327.73	5.52	324.07
EW-08S	329.54	2.40	327.14	5.95	323.59
EW-09S	330.05	2.09	327.96	5.78	324.27
EW-10S	327.4	4.45	322.95	6.41	320.99
Bedrock Wells					
35R*	320.88	9.62	311.26	9.47	311.41
59R	327.98	21.46	306.52	21.90	306.08
61R	326.26	34.73	291.53	17.55	308.71
63R	324.47	14.27	310.20	15.40	309.07
65R	328.94	18.74	310.20	20.05	308.89
67R	330.46	19.00	311.46	19.88	310.58
69R	326.65	9.70	316.95	11.63	315.02
76R	314.96	30.00	284.96	30.41	284.55
103R	327.76	13.05	314.71	15.12	312.64
106R*	312.89	9.37	303.52	6.26	306.63
107R	322.49	7.16	315.33	7.60	314.89
108R	323.27	12.50	310.77	13.92	309.35
169R	326.17	12.62	313.55	14.75	311.42
201R*	320.32	8.15	312.17	10.04	310.28
202R*	326.82	12.78	314.04	12.93	313.89
203R*	327.47	13.38	314.09	15.38	312.09
204R*	324.37	10.60	313.77	12.03	312.34
205R*	326.47	0.70[1]	325.77	16.94	309.53

Notes:
Measuring point elevation for each well surveyed by Bay Colony Group, Inc. (1995, 1998, 2003, 2005, 2006).
NM - not measured
* - Measuring point is top of steel casing (not PVC)
[1] - High water level due to bedrock drilling occurring in the vicinity

Table 3. Summary of 2011 Vertical Gradients Between Overburden and Bedrock Wells, Tibbetts Road Site, Barrington, NH

Well Designation	Groundwater Elevation May 2011 (feet amsl)	Groundwater Elevation November 2011 (feet amsl)	Bottom of Screen (ft bg)	Top of Screen (ft bg)	Middle of Screen (ft bg)	Distance Between Screens (ft bg)	Vertical Gradient May 2011	Vertical Gradient November 2011
Overburden vs. Bedrock								
35R	311.26	311.41	82.0	29.0	55.5	47.2	**NM**	**0.21**
53S	NM	321.31	10.8	5.8	8.3			
69R	316.95	315.02	58.5	38.5	48.5	39.6	**0.17**	**0.18**
52S	323.68	322.17	11.5	6.5	9.0			
103R	314.71	312.64	62.0	44.0	53.0	42.5	**0.26**	**0.24**
70S	325.90	322.98	13.0	8.0	10.5			
67R	311.46	310.58	163.8	81.0	122.4	107.9	**NM**	**0.12**
71S	NM	323.07	17.0	12.0	14.5			
61R	291.53	308.71	203.5	71.0	137.3	123.5	**0.25**	**0.09**
51S	322.30	320.07	16.3	11.3	13.8			
Deep vs. Shallow Overburden Wells								
75D	324.52	321.46	26.0	21.0	23.5	13.0	**0.11**	**0.12**
70S	325.90	322.98	13.0	8.0	10.5			
37D	321.89	321.69	20.4	15.4	17.9	9.0	**0.20**	**0.05**
52S	323.68	322.17	11.5	6.5	9.0			

Note:

1. ft bg - feet below grade
2. NM - not measured
3. ft amsl - feet above mean sea level

Table 4. Summary of 2011 Groundwater Analytical Results, Tibbetts Road Site, Barrington, New Hampshire

		Location ID	035R	035R	037D	037D	050S	051S	051S	054S	057S	057S	059R	059R	061R	061R	063R	063R	065R	065R	067R	067R	069R	069R	071S	073S
		Sample Date	5/10/2011	11/14/2011	5/10/2011	11/16/2011	11/16/2011	5/9/2011	11/14/2011	11/18/2011	5/11/2011	11/16/2011	5/12/2011	11/17/2011	5/9/2011	11/14/2011	5/12/2011	11/18/2011	5/11/2011	11/18/2011	5/11/2011	11/15/2011	5/10/2011	11/16/2011	11/15/2011	5/9/2011
Chemical Name	**ICL**	**Unit**																								
VOCs																										
1,1,1,2-Tetrachloroethane	na	• g/l	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
1,1,1-Trichloroethane	200	ug/l	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
1,1,2-Trichloroethane	na	ug/l	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
1,1-Dichloroethane	na	ug/l	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
1,1-Dichloroethene	na	ug/l	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
1,1-Dichloropropene	na	ug/l	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
1,2-Dibromoethane	na	ug/l	NA	NA	NA	NA	NA	NA	NA	NA	< 0.02017	< 0.02011	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	< 0.02011	< 0.02011	NA	NA
1,2-Dichloroethane	na	ug/l	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
1,2-Dichloropropane	na	ug/l	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5 R	< 0.5	< 0.5	< 0.5 L1	< 0.5	< 0.5 L1	< 0.5	< 0.5	< 0.5	< 0.5 L1	< 0.5	< 0.5 L1	< 0.5	< 0.5 L1	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
1,3,5-Trichlorobenzene	na	ug/l	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
1,4-Dioxane	na	ug/l	NA	NA	NA	NA	NA	NA	NA	NA	< 1.6	< 1.6	NA	NA	NA	NA	NA	NA	< 1.6	< 1.6	NA	NA	NA	NA	NA	< 1.6
2-Hexanone	na	ug/l	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10
Acetone	na	ug/l	< 50	< 50	< 50	< 50 L1,U	< 50	< 50	< 50	< 50 L1,U	< 50	< 50 L1,U	< 50	< 50 L1,U	< 50	< 50	< 50	< 50 L1,U	< 50	< 50 L1,U	< 50	< 50	< 50	< 50 L1,U	< 50	< 50
Benzene	5	ug/l	**12**	**3.63**	< 0.5	< 0.5	< 0.5	**0.67 R**	**3.56**	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	**3.18**	< 0.5	**2.44**	**3.93**	**0.72**	**2.57**	**0.41 J**	**2.28**	**56.9**	**27.4**	< 0.5	< 0.5
Bromodichloromethane	na	ug/l	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5 R	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	**3.93**	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Bromoform	na	ug/l	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Bromomethane	na	ug/l	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Carbon disulfide	na	ug/l	< 0.5	< 0.5	< 0.5	< 0.5 UB	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5 UB	< 0.5	< 0.5 UB	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5 UB	< 0.5	< 0.5
Carbon tetrachloride	na	ug/l	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Chlorobenzene	na	ug/l	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Chlorodibromomethane	na	ug/l	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Chloroethane	na	ug/l	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Chloroform	na	ug/l	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	**0.62**	**79.6**	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Chloromethane	na	ug/l	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5 L1,U	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
cis-1,2-Dichloroethene	70	ug/l	**13.8**	**18.1**	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	**0.51**	**2.08**	< 0.5	< 0.5	**12.9**	< 0.5	**9.68**	**17**	**28.9**	**34.3**	**3.53**	**6.45**	**89**	**72.3**	< 0.5	**0.31 J**
cis-1,3-Dichloropropene	na	ug/l	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Dibromomethane	na	ug/l	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5 R	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Ethylbenzene	700	ug/l	**0.93**	< 0.5	< 0.5	< 0.5	< 0.5	**80.9**	**181 J**	< 0.5	**7.17**	**47.2**	< 0.5	< 0.5	**0.66**	< 0.5	< 0.5	< 0.5	< 0.5	**0.57**	< 0.5	< 0.5	**35.3**	**24.1**	< 0.5	< 0.5
m,p-Xylene	na	ug/l	**0.41 J**	< 0.5	< 0.5	< 0.5	< 0.5	**72.5**	**201 J**	< 0.5	**4.95**	**45.4**	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	**0.44 J**	< 0.5	< 0.5	**22.1**	**16.1**	< 0.5	< 0.5
Methyl Ethyl Ketone	na	ug/l	< 10	< 10	< 10	< 10 L1,U	< 10	< 10	< 10	< 10 L1,U	< 10	< 10 L1,U	< 10	< 10	< 10	< 10	< 10	< 10 L1,U	< 10	< 10 L1,U	< 10	< 10	< 10	< 10 L1,U	< 10	< 10
Methylene chloride	na	ug/l	< 5	< 5	< 5	< 5	< 5	< 5 M8	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
Methyl-isobutyl-ketone	1825	ug/l	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10
o-Xylene	na	ug/l	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	**6.59**	**71.4**	< 0.5	< 0.5	**8**	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	**1.29**	**0.47 J**	< 0.5	< 0.5
Styrene	100	ug/l	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	**0.4 J**	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Tetrachloroethene	5	ug/l	**2.45**	**2.36**	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Toluene	1000	ug/l	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	**58.2**	< 0.5	**0.37 J**	**4.66**	< 0.5	**0.97**	< 0.5	**0.39 J**	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	**2.8**	**0.62**	**0.46 J**	< 0.5	< 0.5
Total Xylenes	10000	ug/l	**0.41 J**	< 0.5	< 0.5	< 0.5	< 0.5	**79.1**	**273 J**	< 0.5	**4.95**	**53.4**	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	**0.44 J**	< 0.5	< 0.5	**23.4**	**16.5**	< 0.5	< 0.5
trans-1,2-Dichloroethene	100	ug/l	**2.28**	**2.98**	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	**10.8**	< 0.5	**3.65**	**6.88**	**2.78**	**1.95**	**0.27 J**	**1.22**	< 0.5	< 0.5	< 0.5	< 0.5
trans-1,3-Dichloropropene	na	ug/l	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Trichloroethene	5	ug/l	**8.48**	**7.54**	< 0.5	< 0.5	< 0.5	**0.32 J**	**0.47 J**	< 0.5	**0.41 J**	**1.54**	< 0.5	< 0.5	**8.55**	< 0.5	**13.2**	**12.5**	**6.05**	**4.61**	**14**	**19.3**	**0.38 J**	**0.45 J**	< 0.5	**0.57**
Vinyl chloride	2	ug/l	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	**0.27 J**	< 0.5	< 0.5
Dissolved Gases																										
Ethane	na	ug/l	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	**0.038**	NA	NA	NA
Ethylene	na	ug/l	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	**0.18**	NA	NA	NA
Methane	na	ug/l	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	**2500**	NA	NA	NA
Field Parameters																										
Carbon Dioxide	na	mg/L	**62**	NA	**141**	**164**	**210**	**100**	NA	**84**	**226**	**182**	**72**	**48**	**110**	NA		**54**	**36**	**48**	**34**	**44**	**140**	**124**	**192**	**90**
DO	na	mg/L	**1.04**	NA	**1.02**	**1.44**	**0.73**	**0.37**	**0.48**	**9.44**	**1.76**	**2.12**	**0.5**	**0.39**	**0.28**	NA	**0.87**	**1.89**	**0.82**	**1.7**	**0.98**	**0.59**	**0.3**	**1.04**	**0.6**	**1.96**
Ferrous Iron	na	mg/L	**0.8**	NA	**3.4**	**0.6**	**2**	**4.5**	**3.6**	**0.2**	0	**2.2**	0	**0.2**	**0.3**	NA		**0.2**	0	**0.2**	0	0	**2.8**	**0.2**	**3**	**1.6**
ORP	na	mV	**4.9**	NA	**41.3**	**18.9**	-177.3	**2.4**	-17.1	-97.8	**124.2**	-88.1	**112.6**	-279.4	-149.9	NA	-156.1	-271.8	-132.6	-114.8	-112	-19.5	-93	-129.6	-11.7	**200.8**
Metals																										
Arsenic	0.01	mg/l	**0.0163**	**0.0129**	**0.0501**	**0.0705**	NA	**0.105**	**0.165**	NA	**0.0058 J**	**0.0197**	**0.0055 J**	**0.0056 J**	**0.0275**	< 0.01	**0.0266**	**0.023**	**0.0124**	**0.0103**	**0.004 J**	< 0.01	**0.0835**	**0.0896**	NA	< 0.01
Manganese	3.65	mg/l	**1.43**	**1.7**	**4.92**	**5.03**	NA	**2.83 B**	**2.8 MHA**	NA	**0.196**	**1.51**	**0.0398**	**0.0344**	**0.258**	**0.0618**	**0.343**	**0.326**	**0.477**	**0.383**	**0.089**	**0.0932**	**3.32**	**2.77**	NA	**0.0338**
Miscellaneous																										
Nitrate (as nitrogen)	na	mg/l	**0.037 J**	< 0.1	< 0.1	< 0.1	NA	< 0.1	< 0.1 UJ	NA	**0.21**	**0.209**	< 0.1	< 0.1	< 0.1 J	< 0.1	**7.76**	< 0.1	**0.043 J**	< 0.1	**0.061 J**	< 0.1	< 0.1	< 0.1	NA	**0.024 J**
Nitrite	na	mg/l	< 0.1	< 0.1	< 0.1	< 0.1	NA	< 0.1	< 0.1 UJ	NA	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1 J	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	NA	< 0.1 J

Notes:
mV - millivolts
ICL - interim groundwater cleanup level
ug/L - micrograms per liter
VOCs - volatile organic compound
J - parameter detected at concentrations below the method detection limit
< - result less than indicated reporting limit
Bold - compound detected
Shaded value exceeds the established ICL for this compound.
na - ICL not established for this parameter
NA - not anlayzed

Table 4. Summary of 2011 Groundwater Analytical Results, Tibbetts Road Site, Barrington, New Hampshire

		Location ID	073S	075D	075D (DUP)	075D	075D (DUP)	079S	080S	103R	103R	106R	106R	169R	169R	201R	201R	202R	202R	203R	203R	204R	204R	205R	205R (DUP)
		Sample Date	11/15/2011	5/9/2011	5/9/2011	11/17/2011	11/17/2011	11/16/2011	11/16/2011	5/9/2011	11/17/2011	5/12/2011	11/18/2011	5/9/2011	11/17/2011	5/10/2011	11/14/2011	5/10/2011	11/15/2011	5/11/2011	11/15/2011	5/10/2011	11/14/2011	5/11/2011	5/11/2011
Chemical Name	**ICL**	**Unit**																							
VOCs																									
1,1,1,2-Tetrachloroethane	na	• g/l	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
1,1,1-Trichloroethane	200	ug/l	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
1,1,2-Trichloroethane	na	ug/l	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
1,1-Dichloroethane	na	ug/l	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
1,1-Dichloroethene	na	ug/l	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	**0.64**	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	**0.41 J**	**0.34 J**
1,1-Dichloropropene	na	ug/l	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
1,2-Dibromoethane	na	ug/l	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	< 0.01994	< 0.01944	< 0.01977	< 0.02017	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dichloroethane	na	ug/l	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
1,2-Dichloropropane	na	ug/l	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5 L1, R	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5 L1	< 0.5	< 0.5	< 0.5	< 0.5 L1	< 0.5 L1
1,3,5-Trichlorobenzene	na	ug/l	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
1,4-Dioxane	na	ug/l	< 1.6	< 1.6	< 1.6	< 1.6	< 1.6	NA	NA	NA	NA	NA	NA	< 1.6	< 1.6	< 1.6	< 1.6	NA	NA	NA	NA	NA	NA	NA	NA
2-Hexanone	na	ug/l	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10
Acetone	na	ug/l	< 50	< 50	< 50	< 50 L1,U	< 50 L1,U	< 50	< 50	< 50	< 50 L1,U	< 50	< 50 L1,U	< 50	< 50 L1,U	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	**5.76 J**
Benzene	5	ug/l	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	**6.84**	**25.3**	**3.06**	**10**	**119**	**113**	**0.59**	**93.5**	< 0.5	**0.87**	**528**	**310**	< 0.5	< 0.5	**453**	**496**
Bromodichloromethane	na	ug/l	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Bromoform	na	ug/l	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Bromomethane	na	ug/l	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Carbon disulfide	na	ug/l	< 0.5	< 0.5	< 0.5	< 0.5 UB	< 0.5 UB	< 0.5	< 0.5	< 0.5	< 0.5 UB	< 0.5	< 0.5	< 0.5	< 0.5 UB	< 0.5	**1.12**	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Carbon tetrachloride	na	ug/l	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Chlorobenzene	na	ug/l	< 0.5	**0.42 J**	**0.43 J**	**0.44 J**	**0.45 J**	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	**0.33 J**	**0.27 J**	< 0.5	< 0.5	< 0.5	< 0.5
Chlorodibromomethane	na	ug/l	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Chloroethane	na	ug/l	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Chloroform	na	ug/l	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Chloromethane	na	ug/l	< 0.5	< 0.5	< 0.5	< 0.5 L1,U	< 0.5 L1,U	< 0.5	< 0.5	< 0.5	< 0.5 L1,U	< 0.5	< 0.5	< 0.5	< 0.5 L1,U	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
cis-1,2-Dichloroethene	70	ug/l	< 0.5	**3.45**	**3.47**	**2.85**	**3.05**	< 0.5	< 0.5	**14.5**	**16.2**	**1.21**	**1.58**	**90.7**	**123**	**1.91**	**127**	**15.5**	**33.1**	**277**	**236**	< 0.5	< 0.5	**170**	**172**
cis-1,3-Dichloropropene	na	ug/l	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Dibromomethane	na	ug/l	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Ethylbenzene	700	ug/l	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	**0.25 J**	**2.15**	< 0.5	< 0.5	**92.3**	**54.2**	**0.31 J**	**2.97**	< 0.5	< 0.5	**20**	**34.9**	< 0.5	< 0.5	**107**	**106**
m,p-Xylene	na	ug/l	< 0.5	**0.5**	**0.54**	**0.99**	**1**	< 0.5	< 0.5	< 0.5	**1.07**	< 0.5	< 0.5	**108**	**59.6**	< 0.5	< 0.5	< 0.5	< 0.5	**21.9**	**28.2**	< 0.5	< 0.5	**163**	**163**
Methyl Ethyl Ketone	na	ug/l	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10 L1,U	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10
Methylene chloride	na	ug/l	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
Methyl-isobutyl-ketone	1825	ug/l	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	**2650**	**2670**
o-Xylene	na	ug/l	< 0.5	**0.98**	**0.98**	**2.09**	**2.12**	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	**3.4**	**1.32**	< 0.5	< 0.5	< 0.5	< 0.5	**9.74**	**2.65**	< 0.5	< 0.5	**45.7**	**46**
Styrene	100	ug/l	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Tetrachloroethene	5	ug/l	< 0.5	**0.43 J**	**0.39 J**	< 0.5	**0.26 J**	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Toluene	1000	ug/l	< 0.5	**0.32 J**	**0.36 J**	**0.43 J**	**0.44 J**	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	**2**	**1**	< 0.5	**0.5**	< 0.5	< 0.5	**2.76**	**1.62**	< 0.5	**0.46 J**	**54.5**	**54.6**
Total Xylenes	10000	ug/l	< 0.5	**1.48**	**1.52**	**3.08**	**3.12**	< 0.5	< 0.5	< 0.5	**1.07**	< 0.5	< 0.5	**111**	**61**	< 0.5	< 0.5	< 0.5	< 0.5	**31.7**	**30.8**	< 0.5	< 0.5	**208**	**209**
trans-1,2-Dichloroethene	100	ug/l	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	**0.84**	**1.22**	< 0.5	< 0.5	**0.3 J**	**0.41 J**	**0.5**	**10.8**	< 0.5	< 0.5	**0.71**	**0.93**	< 0.5	< 0.5	**7.53**	**7.26**
trans-1,3-Dichloropropene	na	ug/l	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Trichloroethene	5	ug/l	**0.53**	**0.25 J**	< 0.5	**0.3 J**	**0.29 J**	< 0.5	< 0.5	**0.67**	**0.97**	**1.24 R**	**1.22**	< 0.5	**0.52**	**1.19**	**1.87**	**0.49 J**	**0.86**	**0.42 J**	**1.03**	< 0.5	< 0.5	**3.77**	**3.77**
Vinyl chloride	2	ug/l	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	**0.39 J**	< 0.5	**1.09**	< 0.5	< 0.5	**1.01**	**0.99**	< 0.5	< 0.5	**0.52**	**0.53**
Dissolved Gases																									
Ethane	na	ug/l	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	**0.023 J**	NA	< 0.025	NA	NA	NA	NA	NA	NA	NA	**0.02 J**	**0.023 J**
Ethylene	na	ug/l	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	**0.12**	NA	**0.01 J**	NA	NA	NA	NA	NA	NA	NA	**0.2**	**0.2**
Methane	na	ug/l	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	**3600**	NA	**1.7**	NA	NA	NA	NA	NA	NA	NA	**1400**	**1300**
Field Parameters																									
Carbon Dioxide	na	mg/L	**106**	**164**	**164**	**200**	NA	**202**	**420**	**90**	**50**	**52**	**36**	**182**	**120**	**76**	NA	**74**	**30**	**104**	**84**	**26**	NA	**106**	**106**
DO	na	mg/L	**3.57**	**1.5**	**1.5**	**1.62**	NA	**1.28**	**0.95**	**0.78**	**1.14**	**1.27**	**1.05**	**1.38**	**0.95**	**1.07**	NA	**1.46**	**1.15**	**0.55**	**0.85**	**1.78**	NA	**0.47**	**0.47**
Ferrous Iron	na	mg/L	0	**2**	**2**	**1.8**	NA	0	**3.2**	**0.2**	**0.4**	0	0	**1.8**	**2.4**	0	NA	0	0	0	**0.2**	**0.1**	NA	0	0
ORP	na	mV	**16.6**	**84.2**	**84.2**	**49.9**	NA	-170.3	-193.4	**126.8**	-235.7	-11.4	**6.3**	-102.4	-125.6	-41.8	NA	**26.7**	**66.9**	**86.4**	**10.6**	**4.4**	NA	**42.6**	**42.6**
Metals																									
Arsenic	0.01	mg/l	< 0.01	**0.0044 J**	**0.0041 J**	**0.0085 J**	**0.0075 J**	NA	NA	**0.015**	**0.0173**	**0.0063 J**	**0.0076 J**	**0.0543**	**0.0413**	**0.0042 J**	**0.0113**	**0.0185**	**0.0149**	< 0.01	**0.0076 J**	**0.0089 J**	**0.0104**	**0.0252**	**0.0256**
Manganese	3.65	mg/l	**0.0375**	**2.22 B**	**2.23 B**	**1.84**	**1.81**	NA	NA	**0.708 B**	**1.17**	**0.113**	**0.0182**	**2.18 B**	**2.61**	**0.764**	**0.715**	**0.517**	**1.23**	**4.3**	**6.66**	**0.0125 J**	< 0.015	**2.56**	**2.55**
Miscellaneous																									
Nitrate (as nitrogen)	na	mg/l	**0.217**	**0.027 J**	< 0.1	< 0.1	< 0.1	NA	NA	< 0.1	< 0.1	**0.505**	**0.145**	< 0.1	< 0.1	< 0.1	< 0.1 UJ	**0.093 J**	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Nitrite	na	mg/l	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	NA	NA	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1 UJ	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1

Notes:
mV - millivolts
ICL - interim groundwater cleanup level
ug/L - micrograms per liter
VOCs - volatile organic compound
J - parameter detected at concentrations below the method detection limit
< - result less than indicated reporting limit
Bold - compound detected
Shaded value exceeds the established ICL for this compound.
na - ICL not established for this parameter
NA - not anlayzed

Table 4. Summary of 2011 Groundwater Analytical Results, Tibbetts Road Site, Barrington, New Hampshire

		Location ID	205R	205R (DUP)	EW-02S (DUP)	EW-02S	EW-02S	EW-02S (DUP)	EW-03S	EW-03S	EW-10S	EW-10S
		Sample Date	11/16/2011	11/16/2011	5/9/2011	5/9/2011	11/17/2011	11/17/2011	5/11/2011	11/17/2011	5/9/2011	11/14/2011
Chemical Name	**ICL**	**Unit**										
VOCs												
1,1,1,2-Tetrachloroethane	na	• g/l	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
1,1,1-Trichloroethane	200	ug/l	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
1,1,2-Trichloroethane	na	ug/l	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
1,1-Dichloroethane	na	ug/l	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
1,1-Dichloroethene	na	ug/l	**0.39 J**	**0.38 J**	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
1,1-Dichloropropene	na	ug/l	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
1,2-Dibromoethane	na	ug/l	< 0.02017	< 0.02	< 0.01989	< 0.01983	< 0.01934	< 0.01877	NA	NA	< 0.01989	< 0.02041
1,2-Dichloroethane	na	ug/l	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
1,2-Dichloropropane	na	ug/l	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5 L1	< 0.5	< 0.5	< 0.5
1,3,5-Trichlorobenzene	na	ug/l	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
1,4-Dioxane	na	ug/l	NA	NA	NA	NA	NA	NA	NA	NA	< 1.6	NA
2-Hexanone	na	ug/l	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10
Acetone	na	ug/l	< 50 L1,U	< 50 L1,U	< 50	< 50	< 50 L1,U	< 50 L1,U	< 50	< 50 L1,U	< 50	< 50
Benzene	5	ug/l	**385**	**384**	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	**1.64**
Bromodichloromethane	na	ug/l	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Bromoform	na	ug/l	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Bromomethane	na	ug/l	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Carbon disulfide	na	ug/l	< 0.5 UB	< 0.5 UB	< 0.5	< 0.5	< 0.5 UB	< 0.5 UB	< 0.5	< 0.5 UB	< 0.5	< 0.5
Carbon tetrachloride	na	ug/l	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Chlorobenzene	na	ug/l	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	**0.41 J**
Chlorodibromomethane	na	ug/l	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Chloroethane	na	ug/l	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Chloroform	na	ug/l	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Chloromethane	na	ug/l	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5 L1,U	< 0.5 L1,U	< 0.5	< 0.5 L1,U	< 0.5	< 0.5
cis-1,2-Dichloroethene	70	ug/l	**124**	**130**	< 0.5	< 0.5	**0.31 J**	**0.31 J**	< 0.5	< 0.5	< 0.5	**1.09**
cis-1,3-Dichloropropene	na	ug/l	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Dibromomethane	na	ug/l	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Ethylbenzene	700	ug/l	**80.9**	**92.4**	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	**706**
m,p-Xylene	na	ug/l	**135**	**156**	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	**0.99**	**2000**
Methyl Ethyl Ketone	na	ug/l	< 10 L1,U	< 10 L1,U	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10
Methylene chloride	na	ug/l	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
Methyl-isobutyl-ketone	1825	ug/l	**1730**	**1940**	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10
o-Xylene	na	ug/l	**47.4**	**50.4**	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	**0.72**	**1190**
Styrene	100	ug/l	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Tetrachloroethene	5	ug/l	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Toluene	1000	ug/l	**29.5**	**30.5**	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	**12400**
Total Xylenes	10000	ug/l	**183**	**206**	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	**1.71**	**3190**
trans-1,2-Dichloroethene	100	ug/l	**6.7**	**6.78**	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
trans-1,3-Dichloropropene	na	ug/l	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Trichloroethene	5	ug/l	**3.4**	**3.51**	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	**5.89**
Vinyl chloride	2	ug/l	**0.52**	**0.56**	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Dissolved Gases												
Ethane	na	ug/l	NA	NA	NA	NA	NA	NA	NA		NA	NA
Ethylene	na	ug/l	NA	NA	NA	NA	NA	NA	NA		NA	NA
Methane	na	ug/l	NA	NA	NA	NA	NA	NA	NA		NA	NA
Field Parameters												
Carbon Dioxide	na	mg/L	**44**	**44**	**108**	**108**	**124**	**124**		**148**	**122**	NA
DO	na	mg/L	**0.69**	**0.69**	**0.96**	**0.96**	**1.6**	**1.6**	**1.19**	**3.3**	**0.59**	NA
Ferrous Iron	na	mg/L	**1**	**1**	**1**	**1**	**1.2**	**1.2**		**2**	0	NA
ORP	na	mV	-168.3	-168.3	**118.7**	**118.7**	-183.7	-183.7	**26**	**202.7**	**193.2**	NA
Metals												
Arsenic	0.01	mg/l	**0.0315**	**0.0307**	**0.0042 J**	< 0.01	**0.0073 J**	**0.0068 J**	**0.0638**	< 0.01	**0.009 J**	**0.213**
Manganese	3.65	mg/l	**1.05**	**1.04**	**0.347 B**	**0.336 B**	**0.405**	**0.416**	**9.62**	**0.618**	**0.325**	**12.3**
Miscellaneous												
Nitrate (as nitrogen)	na	mg/l	< 0.1	< 0.1	**0.086 J**	**0.1**	**0.243**	**0.251**	**0.056 J**	**0.262**	**1.26 J**	< 0.1
Nitrite	na	mg/l	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1 J	< 0.1 UJ

Notes:
mV - millivolts
ICL - interim groundwater cleanup level
ug/L - micrograms per liter
VOCs - volatile organic compound
J - parameter detected at concentrations below the method detection limit
< - result less than indicated reporting limit
Bold - compound detected
Shaded value exceeds the established ICL for this compound.
na - ICL not established for this parameter
NA - not anlayzed

Table 5. Summary of Additional Compounds - NHDES list[1] - Tibbetts Road Site, Barrington, NH

		Chemical Name	1,2-Dibromoethane	1,4-Dioxane	1,3,5-Trichlorobenzene
		NHDES QL[2]:	0.05/0.05	3/3	5/0.5
		Unit	ug/l	ug/l	ug/l
Location ID	***Sample Name***	***Sample Date***			
035R	35R	5/10/2011	NA	NA	< 0.5
037D	37D	5/10/2011	NA	NA	< 0.5
051S	51S	5/9/2011	NA	NA	< 0.5
057S	57S	5/11/2011	< 0.02017	< 1.6	< 0.5
059R	59R	5/12/2011	NA	NA	< 0.5
061R	61R	5/9/2011	NA	NA	< 0.5
063R	63R	5/12/2011	NA	NA	< 0.5
065R	65R	5/11/2011	NA	< 1.6	< 0.5
067R	67R	5/11/2011	NA	NA	< 0.5
069R	69R	5/10/2011	< 0.02011	NA	< 0.5
073S	73S	5/9/2011	NA	< 1.6	< 0.5
075D	175D (75D DUP)	5/9/2011	NA	< 1.6	< 0.5
075D	75D	5/9/2011	NA	< 1.6	< 0.5
103R	103R	5/9/2011	NA	NA	< 0.5
106R	106R	5/12/2011	NA	NA	< 0.5
169R	169R	5/9/2011	< 0.01994	< 1.6	< 0.5
201R	201R	5/10/2011	< 0.01977	< 1.6	< 0.5
202R	202R	5/10/2011	NA	NA	< 0.5
203R	203R	5/11/2011	NA	NA	< 0.5
204R	204R	5/10/2011	NA	NA	< 0.5
205R	205R	5/11/2011	NA	NA	< 0.5
205R	305R (205R DUP)	5/11/2011	NA	NA	< 0.5
EW-02S	EW-2S	5/9/2011	< 0.01983	NA	< 0.5
EW-02S	EW-12S (EW-2S DUP)	5/9/2011	< 0.01989	NA	< 0.5
EW-03S	EW-3S	5/11/2011	NA	NA	< 0.5
EW-10S	EW-10S	5/9/2011	< 0.01989	< 1.6	< 0.5
035R	35R	11/14/2011	NA	NA	< 0.5
037D	37D	11/16/2011	NA	NA	< 0.5
050S	50S	11/16/2011	NA	NA	< 0.5
051S	51S	11/14/2011	NA	NA	< 0.5
054S	54S	11/18/2011	NA	NA	< 0.5
057S	57S	11/16/2011	< 0.02011	< 1.6	< 0.5
059R	59R	11/17/2011	NA	NA	< 0.5
061R	61R	11/14/2011	NA	NA	< 0.5
063R	63R	11/18/2011	NA	NA	< 0.5
065R	65R	11/18/2011	NA	< 1.6	< 0.5
067R	67R	11/15/2011	NA	NA	< 0.5
069R	69R	11/16/2011	< 0.02011	NA	< 0.5
071S	71S	11/15/2011	NA	NA	< 0.5
073S	73s	11/15/2011	NA	< 1.6	< 0.5
075D	75D	11/17/2011	NA	< 1.6	< 0.5
075D	175D (75D DUP)	11/17/2011	NA	< 1.6	< 0.5
079S	79S	11/16/2011	NA	NA	< 0.5
080S	80S	11/16/2011	NA	NA	< 0.5

Table 5. Summary of Additional Compounds - NHDES list[1] - Tibbetts Road Site, Barrington, NH

		Chemical Name	**1,2-Dibromoethane**	**1,4-Dioxane**	**1,3,5-Trichlorobenzene**
		NHDES QL[2]:	0.05/0.05	3/3	5/0.5
		Unit	ug/l	ug/l	ug/l
Location ID	***Sample Name***	***Sample Date***			
103R	103R	11/17/2011	NA	NA	< 0.5
106R	106R	11/18/2011	NA	NA	< 0.5
169R	169R	11/17/2011	< 0.01944	< 1.6	< 0.5
201R	201R	11/14/2011	< 0.02017	< 1.6	< 0.5
202R	202R	11/15/2011	NA	NA	< 0.5
203R	203R	11/15/2011	NA	NA	< 0.5
204R	204R	11/14/2011	NA	NA	< 0.5
205R	205R	11/16/2011	< 0.02017	NA	< 0.5
205R	305R (205R DUP)	11/16/2011	< 0.02	NA	< 0.5
EW-02S	EW-2S	11/17/2011	< 0.01934	NA	< 0.5
EW-02S	EW-12S (EW-2S DUP)	11/17/2011	< 0.01877	NA	< 0.5
EW-03S	EW-3S	11/17/2011	NA	NA	< 0.5
EW-10S	EW-10S	11/14/2011	< 0.02041	NA	< 0.5

Notes:

[1] - Compounds added and wells selected as per discussions with T. Andrews, NHDES and memorialized in 6/10/2009 Status Report

[2] - NHDES required Quantitation Limit for groundwater/drinking water

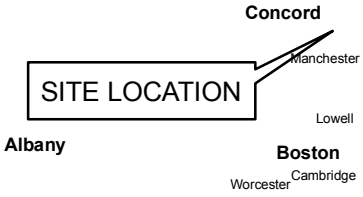
< XX - Compound not detected. The associated numerical value is the sample quantitation limit

NA - Not analyzed

ug/L - Micrograms per liter

0 0.7 1.4

SCALE IN MILES



TIBBETTS ROAD SITE
BARRINGTON, NEW HAMPSHIRE

SITE LOCATION MAP

ARCADIS

FIGURE

1

CITY: NOVI DIV/GROUP: ENV DB: KW PIC: EC PM: DS TM: PJC
Project (Project #) MA000725
G:\GIS\Project Files\Ford\TibbetsRoad\Documents\SiteLocation.mxd

LEGEND

- BEDROCK MONITORING WELL (ACTIVE, 2011)
- BEDROCK MONITORING WELL (ACTIVE)
- BEDROCK MONITORING WELL (ABANDONED)
- FORMER INJECTION WELL (ABANDONED, 2008-2009)
- OVERBURDEN MONITORING WELL (ACTIVE)
- OVERBURDEN MONITORING WELL (ABANDONED)
- RESIDENTIAL WELL (ABANDONED)
- APPROXIMATE TIBBETTS ROAD SITE PROPERTY BOUNDARY

0 100 200

SCALE IN FEET

TIBBETTS ROAD SITE
BARRINGTON, NEW HAMPSHIRE

SITE LAYOUT

ARCADIS

FIGURE
2

CITY: KNOXVILLE DIV: ENV DB: A.SMITH PIC: PM: TM: TR: PROJECT NUMBER: COORDINATE SYSTEM: NAD 1983 StatePlane New Hampshire FIPS 2800 Feet
G:\GIS\Ford\TibbetsRoad\Documents_AnnualReport_2011\02_Site Layout.mxd PLOTTED: 2/20/2012 2:47:00 PM BY: ASmith

TIBBETTS ROAD SITE
BARRINGTON, NEW HAMPSHIRE

SHALLOW GROUNDWATER ELEVATION
MAY 6, 2011

ARCADIS

FIGURE
3

CITY: NOVI DIV/GROUP: ENV DB: KW PIC: EC PM: DS TM: PJC
Project (Project #) MA000725
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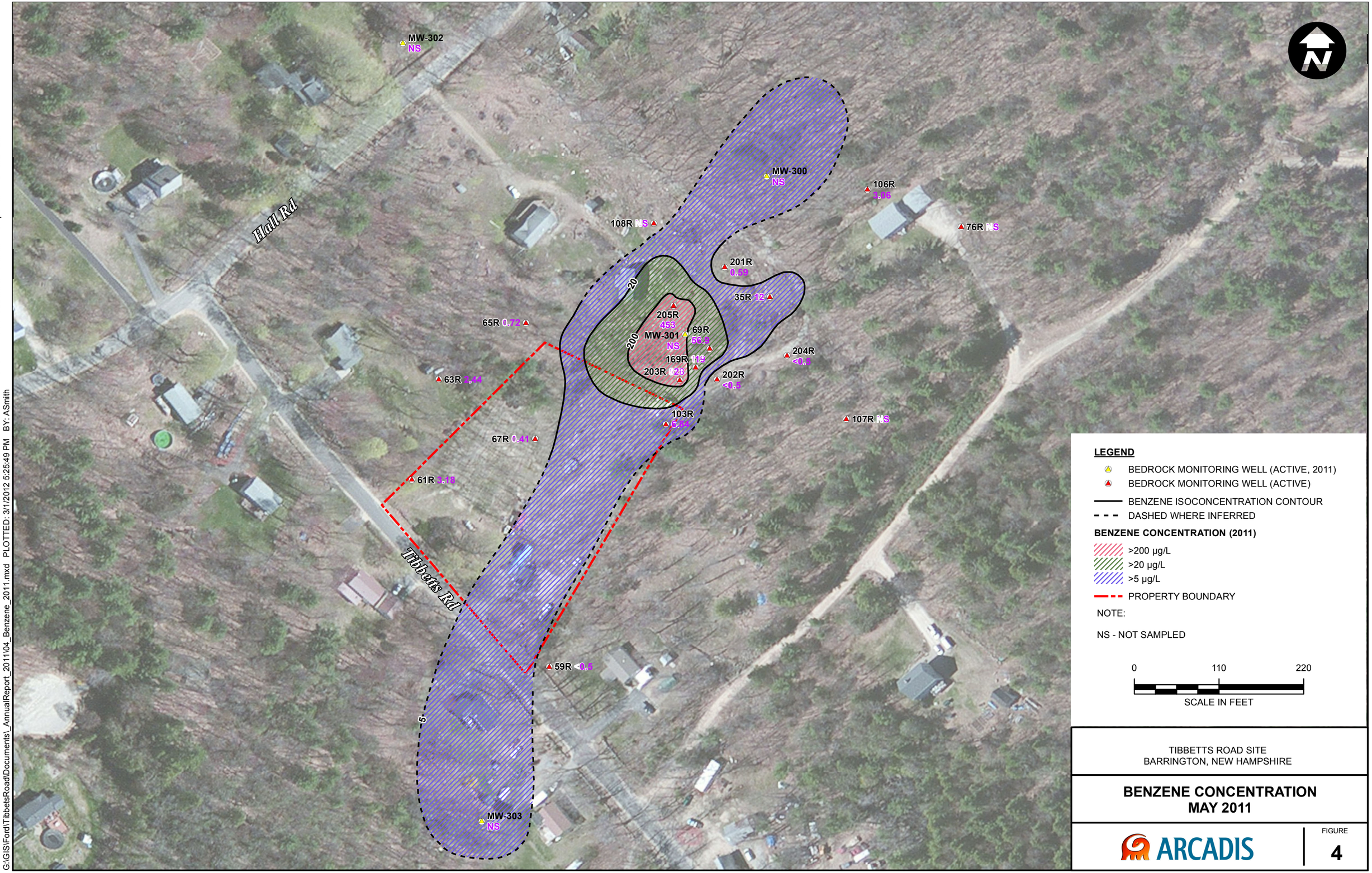

TIBBETTS ROAD SITE
BARRINGTON, NEW HAMPSHIRE

BENZENE CONCENTRATION
MAY 2011

ARCADIS

FIGURE
4

CITY: KNOXVILLE DIV: ENV DB: A.SMITH PIC: PM: TM: TR: PROJECT NUMBER: MA000725.0004.00104 COORDINATE SYSTEM: NAD 1983 StatePlane New Hampshire FIPS 2800 Feet
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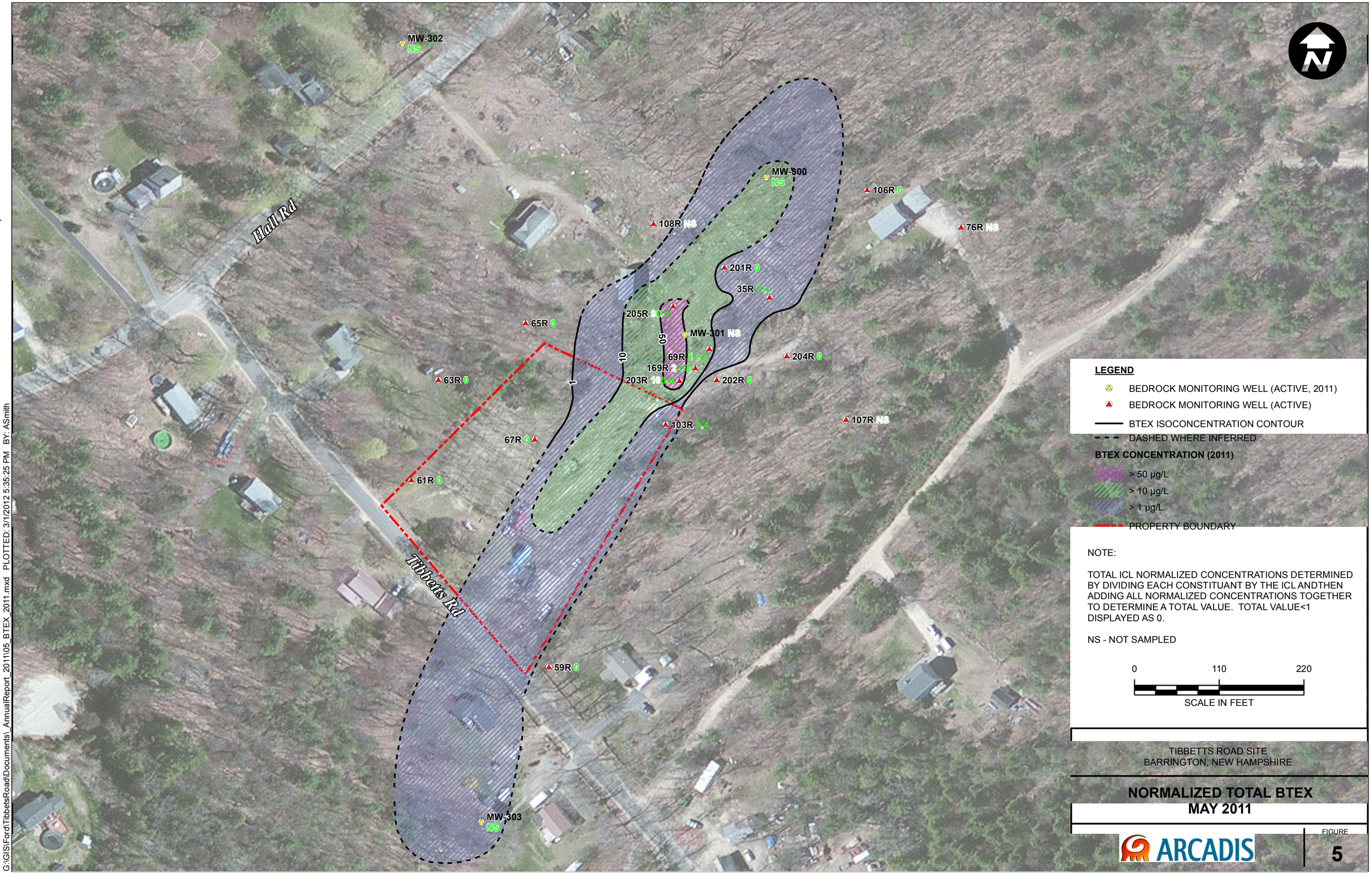

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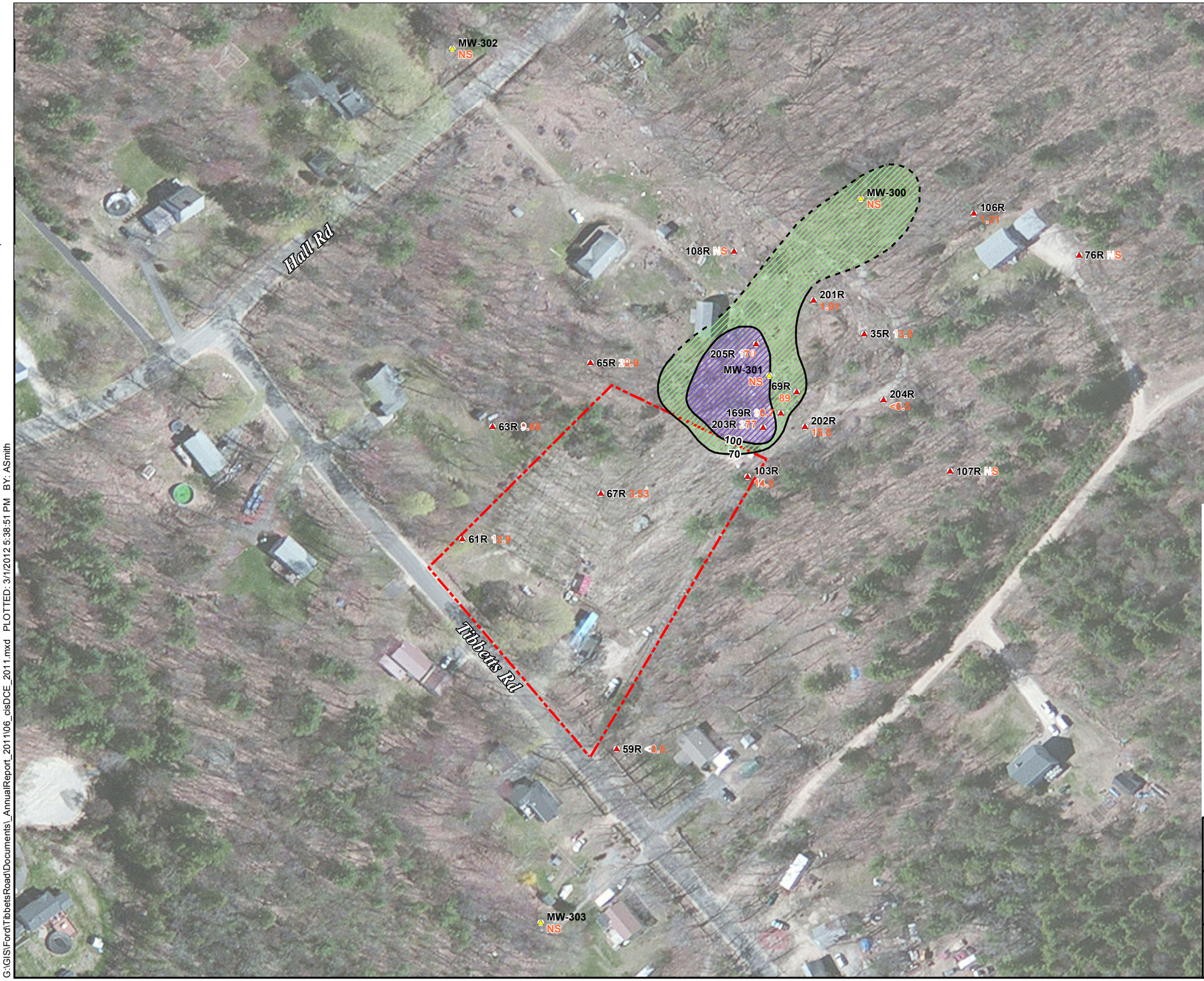

LEGEND

- BEDROCK MONITORING WELL (ACTIVE, 2011)
- BEDROCK MONITORING WELL (ACTIVE)
- cis-1,2-DCE ISOCONCENTRATION CONTOUR
- DASHED WHERE INFERRED

cis-1,2-DCE CONCENTRATION (2011)

- 70 µg/L
- 100 µg/L
- PROPERTY BOUNDARY

NOTE:

NS - NOT SAMPLED

0 110 220

SCALE IN FEET

TIBBETTS ROAD SITE
BARRINGTON, NEW HAMPSHIRE

CIS-1,2 DCE CONCENTRATION
MAY 2011

ARCADIS

FIGURE
6

CITY: KNOXVILLE DIV: ENV DB: A.SMITH PIC: PM: TM: TR: PROJECT NUMBER: MA00725.0004.00104 COORDINATE SYSTEM: NAD 1983 StatePlane New Hampshire FIPS 2800 Feet
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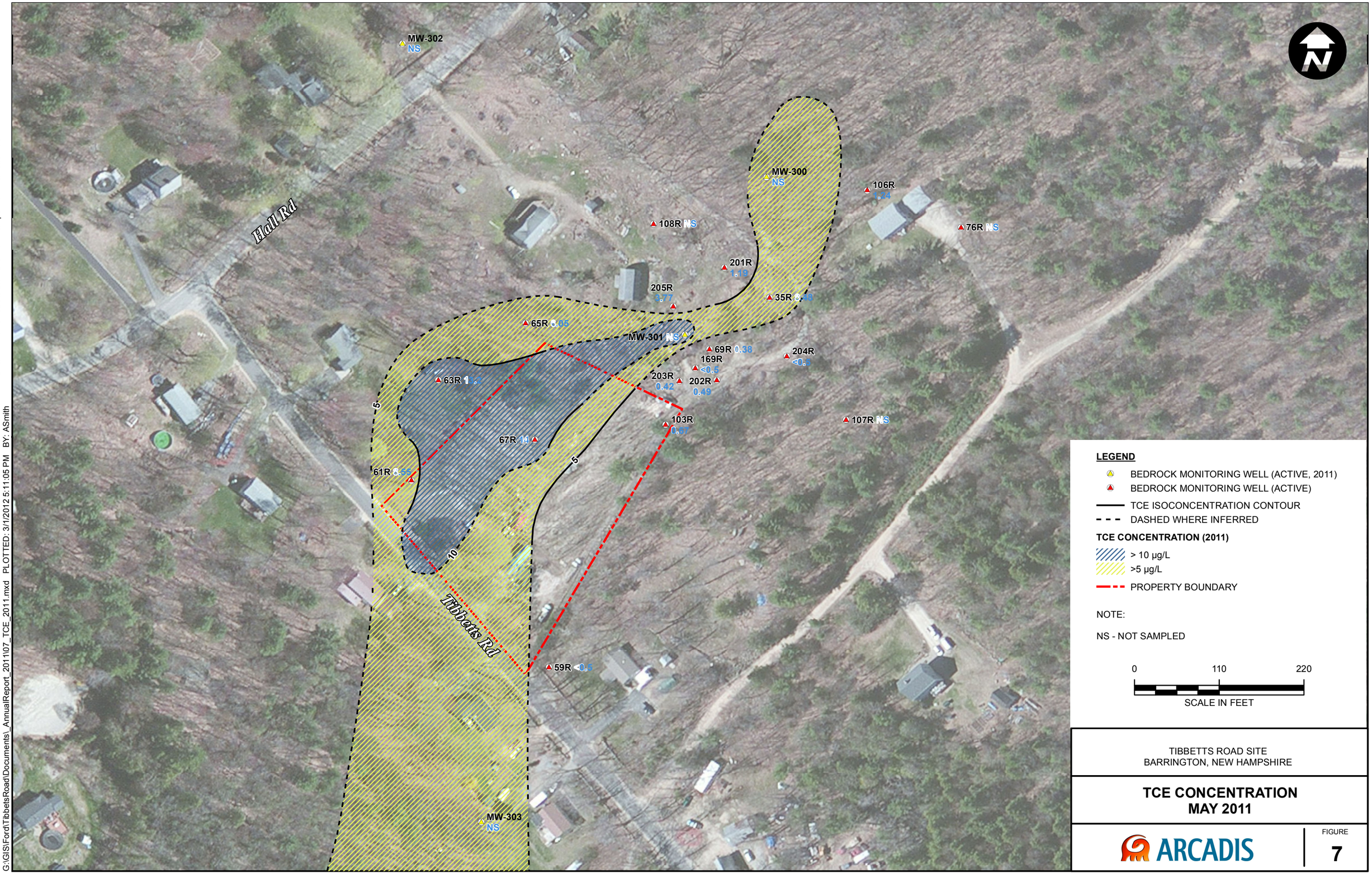

TIBBETTS ROAD SITE
BARRINGTON, NEW HAMPSHIRE

TCE CONCENTRATION
MAY 2011

ARCADIS

FIGURE
7

CITY: KNOXVILLE DIV: ENV DB: A.SMITH PIC: PM: TM: TR: PROJECT NUMBER: MA000725.0004.00104 COORDINATE SYSTEM: NAD 1983 StatePlane New Hampshire FIPS 2800 Feet
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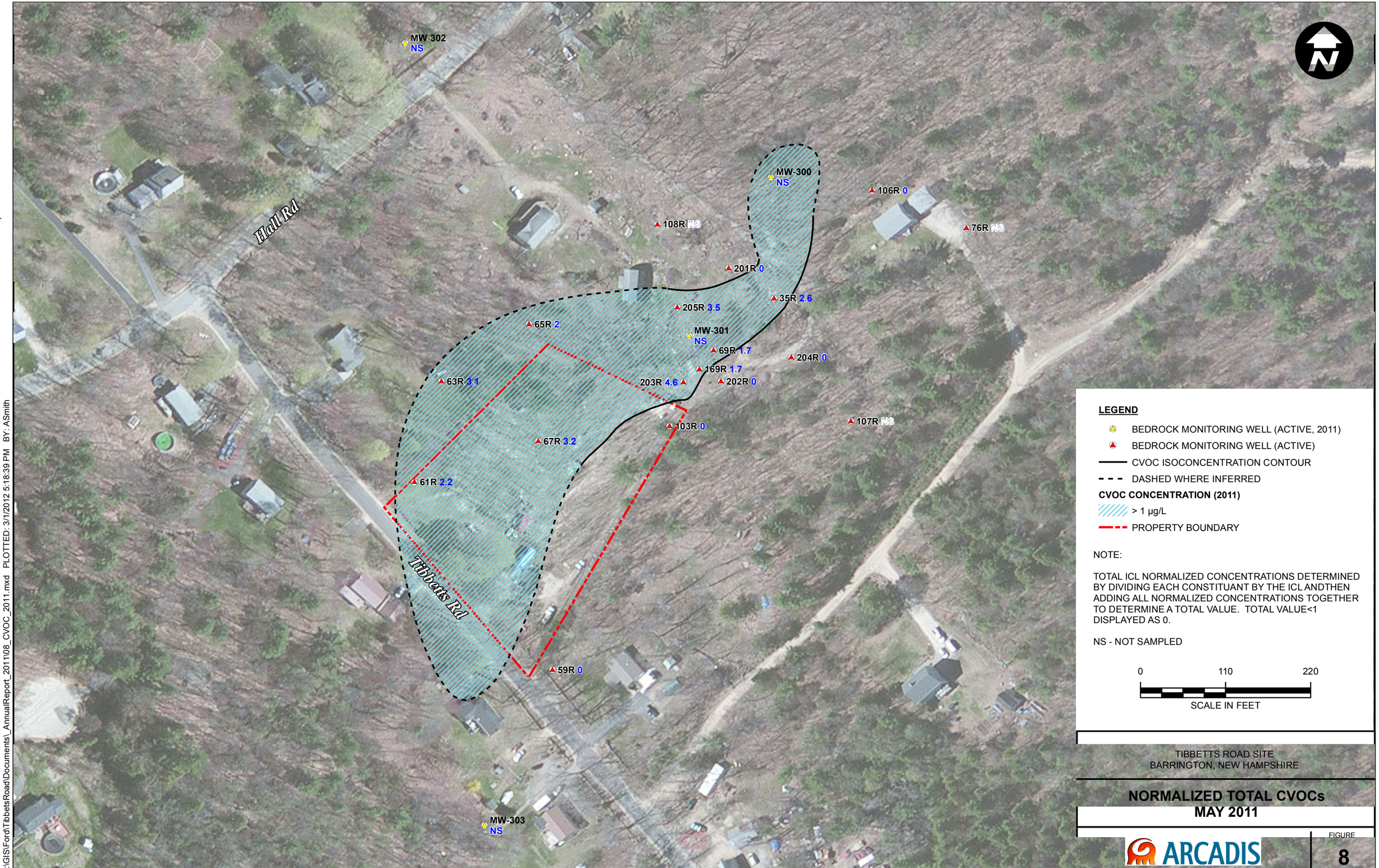

TIBBETTS ROAD SITE
BARRINGTON, NEW HAMPSHIRE

NORMALIZED TOTAL CVOCs
MAY 2011

ARCADIS

FIGURE
8

CITY: KNOXVILLE DIV: ENV DB: A.SMITH PIC: PM: TM: TR: PROJECT NUMBER: MA000725.0004.00104 COORDINATE SYSTEM: NAD 1983 StatePlane New Hampshire FIPS 2800 Feet
G:\GIS\Ford\TibbetsRoad\Documents_AnnualReport_2011\08_CVOC_2011.mxd PLOTTED: 3/1/2012 5:18:39 PM BY: ASmith

APPENDICES AND ANALYTICAL DATA AVAILABLE UPON REQUEST