DES Waste Management Division
29 Hazen Drive; PO Box 95
Concord, NH 03302-0095

GROUNDWATER MANAGEMENT PERMIT
PERIODIC SUMMARY REPORT - 2013

ALLENSTOWN LANDFILL
161 Granite Street
Allenstown, New Hampshire 03275

NHDES Site No. 199012032
Existing Landfill or Landfill Closure
NHDES Project No. 2574

Prepared For:
Board of Selectmen
Town of Allenstown
16 School Street
Allenstown, New Hampshire 03275
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January 28, 2014
Nobis File No. 76400.01

Groundwater Monitoring Report Cover Sheet

Site Name: *Allenstown Landfill*

Town: *Allenstown*

Permit No.: *199012032-A-002*

Type of Submittal (Check all that apply)

- ☑ Periodic Summary Report (*year*) : 2013
- ❑ Data Submittal (*month and year per Condition #7 of Permit*)

Check each box where the answer to any of the following questions is "YES"

Sampling Results

- ❑ During the most recent monitoring event, were any new compounds detected at any sampling point?
  Well/Compound:
- ❑ Are there any detections of contamination in drinking water that is untreated prior to use?
  Well/Compound:
  - □ Do compounds detected exceed AGQS?
- ❑ Was free product detected for the first time in any monitoring point?
  - □ Surface Water (*visible sheen*)
  - □ Groundwater (*1/8" or greater thickness*)
    Location/Thickness:

Contaminant Trends

- ❑ Do sampling results show an increasing concentration trend in any source area monitoring well?
  Well/Compound:
- ☑ Do sampling results indicate an AGQS violation in any of the GMZ boundary wells?
  Well/Compound: ***MW-5, manganese***

Recommendations

- ☑ Does the report include any recommendations requiring DES action? (*Do not check this box if the only recommendation is to continue with existing permit conditions.*) ***Eliminate testing for 1,4-dioxane in all future sampling rounds. Change current address for facility on GMP to 161 Granite Street.***

This form is to be completed for groundwater monitoring data submittals and periodic summary reports submitted to the New Hampshire Department of Environmental Services Waste Management Division.

Engineering a Sustainable Future

January 28, 2014
File No. 76400.01

Groundwater Management Permit Coordinator
New Hampshire Department of Environmental Services
Waste Management Division
Site Remediation Programs
29 Hazen Drive - P.O. Box 95
Concord, New Hampshire 03302-0095

Re: Groundwater Management Permit – Periodic Summary Report 2013
Allenstown Landfill
161 Granite Street
Allenstown, New Hampshire 03275
NHDES No. 199012032
Existing Landfill or Landfill Closure
Project No. 2574

Dear Permit Coordinator:

On behalf of the Town of Allenstown (Town), Nobis Engineering, Inc. (Nobis) is pleased to provide this Periodic Summary Report documenting water quality monitoring at the above-referenced site as described in Groundwater Management Permit (GMP) GWP-199012032-A-002 issued by the New Hampshire Department of Environmental Services (NHDES), as revised on May 10, 2011. The current GMP expires April 20, 2016.

We trust that this submittal will satisfy current NHDES requirements for the site. If you have any questions or comments regarding the attached, please do not hesitate to contact the undersigned.

Sincerely,
NOBIS ENGINEERING, INC.

Nobis Engineering, Inc. Digitally signed by Nobis Engineering, Inc. DN: cn=Nobis Engineering, Inc., o=Nobis Engineering, Inc., ou, email=nbeaudet@nobisengineering.com, c=US Date: 2014.01.29 15:54:21 -05'00'

Thomas S. Bobowski, P.E., P.G., C.G.
Associate / Sr. Project Manager
Attachments

c: File No. 76400.01 (w/attach.)
Mr. Shaun Mulholland, Town Administrator, Town of Allenstown, 16 School Street, Allenstown, NH 03275

Nobis Engineering, Inc.
18 Chenell Drive
Concord, NH 03301
T (603) 224-4182

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1.0 INTRODUCTION

This report summarizes biannual water quality monitoring performed at the Allenstown Landfill located at 161 Granite Street in Allenstown, New Hampshire. The monitoring was performed by Nobis Engineering, Inc. (Nobis) as described in New Hampshire Department of Environmental Services (NHDES) Groundwater Management Permit (GMP) GWP-199012032-A-002, issued on April 21, 2011 and revised on May 10, 2011. The GMP expires April 20, 2016.

The GMP establishes the following groundwater monitoring schedule for the site:

Monitoring Location	Frequency	Parameters
MW-1, MW-2, MW-3, MW-4, MW-5, and SW-1	April and November each year	specific conductance, pH, temperature, chloride, sulfate, nitrate, TKN, iron, manganese, and static water elevations (in monitor wells)
Same as above	November 2013	Volatile organic compounds including 1,4-dioxane and drinking water metals
Site Water Supply Well: DW-1	April and November each year	specific conductance, pH, temperature, chloride, sulfate, nitrate, TKN, iron, and manganese
Same as above	November 2012, 2013, and 2015	volatile organic compounds and drinking water metals (see below for 1,4-dioxane)

Note: “drinking water metals” comprise arsenic, barium, cadmium, chromium, lead, mercury, selenium, and silver; TKN is total Kjeldahl nitrogen, defined as the sum of organic nitrogen, ammonia, and ammonium.

Analytical results for volatile organic compounds (VOCs) are reported for the NHDES Waste Management Division Full List of Volatile Organics, with the exceptions noted under Note 6 of the February 28, 2009 revision. This report summarizes groundwater quality monitoring during 2013. A Locus Plan and Site Sketch with Groundwater Contours are included as Figures 1 and 2, respectively.

A copy of the current GMP is included in Appendix B. It is noted that NHDES clarified that 1,4-dioxane analysis at the site supply well DW-1 was required in November 2013 in their email correspondence dated January 28, 2013 and provided in Appendix B. This report is subject to the limitations in Appendix A.

2.0 GROUNDWATER LEVELS AND FLOW DIRECTION

Prior to sample collection, static groundwater levels in the site monitoring wells were measured using a Solinist™ electronic water level meter. Water levels ranged from ±10.9 feet (MW-4, April) to ±21.0 feet (MW-1, November) below the well reference point (top of PVC) during 2013. Groundwater elevations were calculated based on survey data collected by J.E. Belanger Land Surveying during their January 2005 survey. The groundwater elevations are summarized in Table 1. Based on the current data, groundwater is inferred to flow in a general northwesterly direction, consistent with historic groundwater flow assessments. The November 2013 groundwater elevation contours are shown on Figure 2.

Fluctuations in groundwater levels and flow directions will occur due to variations in precipitation, surface runoff, temperature, seasonal fluctuations, and other factors not encountered during this study. Local groundwater flow anomalies may also exist due to the influence of paved areas, underground utilities, and localized topography. To date, no subsurface features influencing local groundwater flow are identified or suspected.

3.0 SAMPLE COLLECTION AND ANALYSES

3.1 Field Screening

Field screening results for pH and specific conductance are summarized in Table 2. The field screening procedures are outlined in Appendix C.

The pH of an aqueous solution is controlled by interrelated chemical reactions that produce or consume hydrogen. The pH of a solution is a measure of the effective hydrogen-ion concentration activity. Solutions having a pH less than 7.0 are described as acidic; solutions with a pH greater than 7.0 are described as basic or alkaline. The pH of the groundwater, surface water, and water supply samples during 2013 ranged from 5.8 to 7.2. The pH values are consistent with previous values measured at the landfill.

Specific conductance is a measure of the capacity of water to conduct an electrical current and is a function of the types and quantities of dissolved substances in water. As concentrations of dissolved ions increase, specific conductance of the water increases. The specific conductivity

of the water samples during this time period ranged from 84 microSiemens per centimeter (µS/cm) to 1,946 µS/cm. The specific conductance values measured are consistent with values previously measured at the landfill.

3.2 Laboratory Analysis of Groundwater Samples

The analytical results reported for groundwater samples were compared to Ambient Groundwater Quality Standards (AGQS)[1]. Secondary Maximum Contaminant Levels[2] (SMCLs) are aesthetic standards that apply to community and non-transient, non-community public water systems. The samples collected to monitor water quality at the site are not subject to compliance with SMCLs and are presented for reference only. The analytical results for groundwater quality monitoring in 2013 indicated the following:

MW-1

Where detected, inorganic analytes including drinking water metals were present at concentrations not exceeding the applicable AGQS. VOCs were not detected above laboratory detection limits. 1,4-dioxane was not detected above the laboratory detection limit of 0.25 parts per billion (ppb).

MW-2

Where detected, inorganic analytes including drinking water metals were present at concentrations not exceeding the applicable AGQS. VOCs were not detected above laboratory detection limits. 1,4-dioxane was not detected above the laboratory detection limit of 0.25 ppb.

MW-3

Where detected, inorganic analytes including drinking water metals were present at concentrations not exceeding the applicable AGQS. VOCs were not detected above laboratory detection limits. 1,4-dioxane was not detected above the laboratory detection limit of 0.25 ppb.

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[1] Chapter Env-Or 600 “Contaminated Site Management”, revised July 23, 2008.

[2] Secondary Maximum Contaminant Levels (SMCLs) referenced in Env-Ws 316 Regulated Secondary Maximum Contaminant Levels (SMCLs), prepared by the New Hampshire Department of Environmental Services, last revision November 30, 2005.

MW-4

Where detected, inorganic analytes including drinking water metals were present at concentrations not exceeding the applicable AGQS. Consistent with previous sampling rounds, iron was present in both samples at concentrations greater than the SMCL of 0.3 ppm. VOCs were not detected above laboratory detection limits. 1,4-dioxane was not detected above the laboratory detection limit of 0.25 ppb.

MW-5

Manganese was present in the samples collected in April (3.0 parts per million [ppm]) and November (1.1 ppm) at concentrations exceeding the AGQS of 0.84 ppm. Consistent with previous sampling rounds, iron was present in both samples at concentrations greater than the SMCL of 0.3 ppm. VOCs were not detected above laboratory detection limits. 1,4-dioxane was not detected above the laboratory detection limit of 0.25 ppb.

The analytical results for 2013 are summarized in along with historical data in Tables 2 and 3. The laboratory reports are included in Appendix D.

3.3 Laboratory Analysis of Surface Water Samples

Analytical results for surface water samples were compared to Env-Ws 1700 surface water standards[3] using the "Protection of Human Health Criteria - Water and Fish Ingestion" if established or the most conservative value for "Protection of Aquatic Life." Where detected, inorganic analytes including drinking water metals were present at concentrations not exceeding the applicable surface water standards during 2013. VOCs were not detected above laboratory detection limits. 1,4-dioxane was not detected above the laboratory detection limit of 0.25 ppb.

The analytical results for 2013 are summarized in along with historical data Tables 2 and 3. The laboratory reports are included in Appendix D.

[3] "Surface Water Quality Regulations", Chapter Env-Wq 1700 of the New Hampshire Code of Administrative Rules, effective most recently revised on May 21, 2008.

3.4 Laboratory Analysis of Water Supply Samples

The analytical results for water supply samples were compared to AGQS and SMCLs. The samples collected to monitor water quality at the site are not subject to compliance with SMCLs and are presented for reference only. The results indicated that, where detected, inorganic analyte concentrations including drinking water metals did not exceed the applicable AGQS.

During November 2013, one VOC (methylene chloride) was detected in the DW-1 water supply sample at a concentration of 0.6 ppb. A retest of the water supply sample indicated methylene chloride was not present above the laboratory detection limit of 0.5 ppb. Other VOCs were not detected above laboratory detection limits. Although methylene chloride is considered a common laboratory contaminant, available data from the laboratory could not confirm laboratory cross-contamination occurred during analysis. The AGQS for methylene chloride is 5 ppb. Since no VOCs have been detected in the water supply well since sampling began in 2005, it is Nobis' opinion the methylene chloride apparently detected in DW-1 during November 2013 is not likely present in the water supply well. 1,4-dioxane was not detected above the laboratory detection limit of 0.25 ppb.

The 2013 analytical results are summarized along with historical data in Tables 2 and 3. The laboratory reports are included in Appendix D.

4.0 SITE CONCEPTUAL MODEL

4.1 Conceptual Hydrogeologic Model

The Allenstown Landfill is situated on an approximately 7.7-acre parcel. Municipal water service is available in the area. Several area residents and businesses continue to be supplied by private water supplies as does the subject site. A bedrock water supply well is located on the southwest-central portion of the property. The landfilled waste reportedly consists primarily of ash from on-site burning that occurred between the 1920s to the 1970s. The landfill accepted solid wastes such as household refuse, miscellaneous construction debris, yard waste, and metal debris. Non-burnable items (refrigerators, stoves) were buried onsite. Waste burning was discontinued at the facility in the mid-1970s; brush is reportedly still burned. A solid waste transfer station has operated on the property since the mid-1970s. A salt storage shed, other smaller sheds, trailers and highway equipment storage and maintenance buildings are also located on the property.

Five overburden monitoring wells were installed as part of a Phase II Hydrogeologic Investigation[4]. The wells range in depth from ±13 feet to ±26 feet below site grade. Fill material was encountered at depths ranging from ±9 feet to ±19 feet. Materials underlying the waste fill comprised silt, sand, and gravel interpreted as outwash deposits. Auger refusal interpreted as bedrock was encountered in monitoring well MW-3 at a depth of ±13 feet. The general depth to groundwater across the site has ranged from ±6.4 feet to ±21.6 feet below the well reference point (top of PVC) since 2005. Groundwater beneath the site is interpreted to flow in a general northwesterly direction. The primary migration pathway and water bearing unit for the site groundwater is the stratified drift deposit (native material) underlying the fill on site. Single borehole permeability tests performed in monitoring wells MW-1 and MW-3 resulted in estimated hydraulic conductivity ranging from 24 feet per day to 45 feet per day. Using an estimated hydraulic gradient of 0.001 foot per foot, the transport velocity of groundwater across the site was calculated to range from ±0.59 feet per day (±220 feet per year) to ±1.7 feet per day (±600 feet per year) in the overburden aquifer.

The current contaminants of concern present in overburden groundwater at concentrations that have exceeded AGQS during one or more sampling rounds since 2005 are manganese and sulfate. Since April 2010, manganese has been detected above the AGQS of 0.840 ppm in only one monitoring well location, MW-5. With the exception of one sampling round in April 2010 when manganese was detected at 0.010 ppm, manganese has not been present above laboratory detection limits in the site bedrock water supply well. Sulfate has not been detected above the AGQS of 500 ppm in any sampling location since April 2011. Sulfate has only been detected in the site bedrock water supply well at concentrations two orders of magnitude below the AGQS of 500 ppm.

Biannual groundwater monitoring is currently performed at the site during the months of April and November as described in the GMP for the site. Based on observations made during an investigation during 2006 to determine the limits of waste beyond the boundaries of the property, the GMZ originally proposed was modified to include approximately ±1.37 acres of the Map 106, Lot 18 property. Potential overburden groundwater receptors include the property abutting the site to the northeast, east, southeast, and southwest identified on assessors' Map 106 as Lot 18 and properties identified to the north of Granite Street on assessors' Map 106 as Lot 12 and on

[4] Phase II Hydrogeologic Investigation report prepared by Nobis Engineering, Inc. dated May 19, 2005.

assessors' Map 106 as Lot 11. Lot 18 is served by a bedrock water supply well and Lot 12 is served by municipal water. No known water supply wells exist on Lot 11. The GMZ appears to be appropriate as currently defined.

Nobis inquired as to the existence of new water supply wells on the portion of the Map 106, Lot 18 property in a telephone call to the owner's representative on January 7, 2014. Nobis was informed that no new water supply wells had been installed in the portion of the Allenstown Aggregate, LLC property within the GMZ for the site. Documentation of the inquiry is provided in Appendix B.

4.2 Historical Groundwater Data Evaluation

The concentrations of sulfate in samples collected from MW-4 and MW-5 and the concentration of manganese in samples collected from MW-5 are plotted over time along with groundwater elevations in Chart 1. Sulfate at the MW-4 location appears to have a generally direct relationship to groundwater elevation. Concentrations increase with higher groundwater levels and decrease with lower levels. The statistical trend is towards decreasing sulfate concentrations and since November 2011 have been below the AGQS of 500 ppm. These observations suggest that groundwater in the MW-4 location is being impacted by buried waste materials present in the subsurface. Higher groundwater levels likely contact more buried material and result in higher concentrations.

Manganese and sulfate in the MW-5 location appear to have an an inconsistent relationship to groundwater elevation. Concentrations sometimes decrease with higher water levels and sometimes decrease with lower water levels. The statistical trend for both sulfate and manganese at MW-5 is towards decreasing concentrations. Sulfate concentrations at MW-5 have been below the AGQS of 500 ppm since April 2010. These observations suggest that groundwater in the MW-5 location is being impacted by contaminants migrating from an upgradient location.

5.0 CONCLUSIONS AND RECOMMENDATIONS

5.1 Conclusions

Based on the water quality data collected during 2013 as well as historical data, Nobis offers the following conclusions:

- Based on the current data, groundwater is inferred to flow in a general northwesterly direction, consistent with historic groundwater flow assessments.

- VOCs were not detected above laboratory detection limits in groundwater samples collected from five monitoring wells. 1,4-dioxane was not detected above the laboratory detection limit of 0.25 ppb at any location sampled.

- Where detected, in groundwater samples collected from monitoring wells MW-1, MW-2, MW-3 and MW-4, inorganic analytes including drinking water metals were present at concentrations not exceeding the applicable AGQS.

- Manganese was present in the groundwater samples collected from MW-5 at concentrations exceeding the AGQS.

- Where detected in surface water samples, inorganic analytes including drinking water metals were present at concentrations not exceeding the applicable surface water standards during 2013. VOCs were not detected above laboratory detection limits. 1,4-dioxane was not detected above the laboratory detection limit of 0.25 ppb.

- Where detected in DW-1 water supply samples, inorganic analyte concentrations and VOCs did not exceed the applicable AGQS. Based on a retest of the sample and because no VOCs have been detected in the water supply well since sampling began in 2005, it is Nobis' opinion the 0.6 ppb methylene chloride apparently detected in DW-1 during November 2013 is not likely present in the water supply well.

- The current contaminants of concern present in overburden groundwater at concentrations that have exceeded AGQS during one or more sampling rounds since 2005 are manganese and sulfate. Although manganese has historically been detected at concentrations above the AGQS in MW-5, it has generally not been present in the site bedrock water supply well. Sulfate has been below the AGQS of 500 ppm since November 2011 and has only been detected in the site bedrock water supply well at concentrations two orders of magnitude below the AGQS.

- The GMZ appears to be appropriate as currently defined.

- Manganese and sulfate in the MW-5 location appear to have an an inconsistent relationship to groundwater elevation. The statistical trend for both sulfate and manganese at MW-5 is towards decreasing concentrations. These observations suggest that groundwater in the MW-5 location is being impacted by contaminants migrating from an upgradient location.

5.2 Recommendations

Based on the above conclusions, Nobis recommends the following:

- The Groundwater Management Permit (GMP) should be modified to eliminate future testing for 1,4-dioxane since it has not been detected in the supply well nor any other monitoring locations on-site for at least two sampling rounds. This recommendation is consistent with the January 28, 2013 NHDES email correspondence included in Appendix B. The Allenstown Landfill address on the GMP should also be changed to its current address designation of 161 Granite Street.

TABLES

TABLE 1

SUMMARY OF GROUNDWATER ELEVATION DATA

Allenstown Landfill
161 Granite Street, Allenstown, NH
NHDES No. 199012032 / Project No. 2574

Location	Date	Reference Elevation (ft.)	Depth to Water (ft.)	Water Surface Elevation (ft.)
MW-1	3/3/2005	319.80	19.87	299.93
	3/25/2005		19.86	299.94
	4/26/2006		19.68	300.12
	11/27/2006		18.91	300.89
	4/17/2007		19.21	300.59
	11/20/2007		21.51	298.29
	4/17/2008		16.79	303.01
	11/11/2008		19.44	300.36
	4/23/2009		18.03	301.77
	11/10/2009		20.56	299.24
	4/30/2010		17.87	301.93
	11/10/2010		21.63	298.17
	4/19/2011		17.96	301.84
	11/15/2011		18.81	300.99
	4/13/2012		20.05	299.75
	11/26/2012		21.12	298.68
	4/24/2013		19.39	300.41
	11/5/2013		20.98	298.82
MW-2	3/3/2005	316.85	16.72	300.13
	3/25/2005		16.70	300.15
	4/26/2006		16.57	300.28
	11/27/2006		15.72	301.13
	4/17/2007		15.77	301.08
	11/20/2007		18.62	298.23
	4/17/2008		13.48	303.37
	11/11/2008		16.32	300.53
	4/23/2009		14.76	302.09
	11/10/2009		17.59	299.26
	4/30/2010		14.60	302.25
	11/10/2010		18.80	298.05
	4/19/2011		14.73	302.12
	11/15/2011		15.67	301.18
	4/13/2012		17.03	299.82
	11/26/2012		18.17	298.68
	4/24/2013		16.28	300.57
	11/5/2013		18.08	298.77
MW-3	3/3/2005	317.57	11.51	306.06
	3/25/2005		10.05	307.52
	4/26/2006		11.38	306.19
	11/27/2006		8.57	309.00
	4/17/2007		6.41	311.16
	11/20/2007		14.25	303.32
	4/17/2008		7.09	310.48
	11/11/2008		10.78	306.79
	4/23/2009		7.41	310.16
	11/10/2009		12.82	304.75
	4/30/2010		8.80	308.77
	11/10/2010		14.00	303.57
	4/19/2011		7.05	310.52
	11/15/2011		8.98	308.59
	4/13/2012		12.41	305.16
	11/26/2012		13.95	303.62
	4/24/2013		10.99	306.58
	11/5/2013		14.08	303.49

TABLE 1

SUMMARY OF GROUNDWATER ELEVATION DATA

Allenstown Landfill
161 Granite Street, Allenstown, NH
NHDES No. 199012032 / Project No. 2574

Location	Date	Reference Elevation (ft.)	Depth to Water (ft.)	Water Surface Elevation (ft.)
MW-4	3/3/2005	314.80	11.58	303.22
	3/25/2005		10.69	304.11
	4/26/2006		11.18	303.62
	11/27/2006		10.10	304.70
	4/17/2007		9.89	304.91
	11/20/2007		12.45	302.35
	4/17/2008		8.58	306.22
	11/11/2008		10.92	303.88
	4/23/2009		9.27	305.53
	11/10/2009		11.93	302.87
	4/30/2010		9.72	305.08
	11/10/2010		12.79	302.01
	4/19/2011		9.44	305.36
	11/15/2011		10.06	304.74
	4/13/2012		11.59	303.21
	11/26/2012		12.53	302.27
	4/24/2013		10.91	303.89
	11/5/2013		12.64	302.16
MW-5	3/3/2005	317.00	17.05	299.95
	3/25/2005		17.06	299.94
	4/26/2006		16.87	300.13
	11/27/2006		16.05	300.95
	4/17/2007		16.41	300.59
	11/20/2007		18.68	298.32
	4/17/2008		13.86	303.14
	11/11/2008		16.58	300.42
	4/23/2009		15.11	301.89
	11/10/2009		17.71	299.29
	4/30/2010		14.94	302.06
	11/10/2010		18.85	298.15
	4/19/2011		15.07	301.93
	11/15/2011		15.95	301.05
	4/13/2012		17.20	299.80
	11/26/2012		18.31	298.69
	4/24/2013		16.54	300.46
	11/5/2013		18.16	298.84
SW-1	4/18/2007	304.11	not recorded	
	11/20/2007		dry	
	4/18/2008		0.98	303.13
	11/11/2008		0.85	303.26
	4/23/2009		0.93	303.18
	11/10/2009		dry	
	4/30/2010		1.14	302.97
	11/10/2010		1.24	302.87
	4/19/2011		1.09	303.02
	11/15/2011		1.25	302.86
	4/13/2012		1.29	302.82
	11/26/2012		1.37	302.74
	4/24/2013		1.53	302.58
	11/5/2013		1.75	302.36

Notes:

1. All data were collected in the field by Nobis Engineering, Inc. Static water levels were measured using a Solinst electronic water level meter.

2. Reference elevations are the top of the PVC pipe and are based on NGVD of 1929. Elevations were determined by J.E. Belanger Land Surveying on January 11, 2005.

3. SW-1 elevations are measured from the top of a permanent marker, subject to field verification, located next to the sample location and are based on elevations determined by J.E. Belanger Land Surveying on May 2, 2007.

TABLE 2

SUMMARY OF METALS ANALYSES AND OTHER PARAMETERS

Allenstown Landfill
161 Granite Street, Allenstown, NH
NHDES No. 199012032/ Project No. 2574

NHDES Standards		PARAMETERS																
					DRINKING WATER METALS													
		Temperature (°C)	pH	Specific Conductance (µS/cm)	Arsenic	Barium	Cadmium	Chromium	Lead	Mercury	Selenium	Silver	Iron	Manganese	Sulfate	Chloride	Nitrate	TKN
AGQS		NS	NS	NS	0.01	2	0.005	0.1	0.015	0.002	0.05	0.1	NS	0.84	500	NS	10	NS
SMCLs		NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	0.1	0.3	0.05	250	250	NS	NS
Surface Water Standards		NS	NS	NS	0.000018	1	0.0008	0.1	0.000540	0.00005	0.17	0.105	0.3	0.05	NS	230	10	NS
Well	**Date**																	
MW-1	3/3/2005	7.7	6.2	1,080	<0.01	0.06	0.005	<0.05	<0.01	<0.0009	<0.05	<0.007	<0.05	**0.98**	120	490	1.7	3.9
	3/25/2005	10.3	6.8	1,330			0.005						0.05	**1**	120	610		1.9
	4/26/2006	13.0	6.9	1,000									<0.05	**3.8**	430	480	0.7	1.8
	11/27/2006	14.0	6.5	1,110	0.004	0.078	0.005	<0.001	<0.001	<0.0001	<0.001	<0.001	<0.05	**2.1**	340	530	3.9	1.1
	4/17/2007	8.9	6.5	1,410									<0.05	0.65	210	130	6.3	0.7
	11/20/2007	10.3	6.0	1,760									<0.05	0.69	240	550	0.9	<0.5
	4/17/2008	13.9	6.0	1,528									<0.05	0.12	380	260	<0.5	<0.5
	11/11/2008	11.9	6.4	3,344	0.005	0.059	0.001	0.003	<0.001	<0.0001	0.001	<0.001	<0.05	0.68	180	1200	2.3	<0.5
	4/23/2009	10.8	6.1	3,015									<0.05	0.47	320	540	0.7	<0.5
	11/10/2009	13.3	6.5	2,004									<0.05	**1.4**	330	550	0.9	0.8
	4/30/2010	10.4	6.4	1,221									<0.05	0.12	330	200	<0.5	<0.5
	11/10/2010	12.4	6.3	2,055	<0.001	0.027	0.001	<0.001	<0.001	<0.0001	<0.001	<0.001	<0.05	0.26	170	440	0.9	<0.5
	4/19/2011	9.6	6.4	2,558									<0.05	0.17	180	640	2.2	0.5
	11/15/2011	13.3	6.5	2,281									<0.05	0.056	140	380	8.4	<0.5
	4/13/2012	11.2	6.2	2,526									<0.05	0.025	110	780	1.8	<0.5
	11/26/2012	10.2	6.3	1,148									0.06	0.33	190	280	<0.5	<0.5
	4/24/2013	16.7	6.0	1,484									0.05	0.31	130	410	<0.5	0.7
	11/5/2013	10.7	6.0	1,038	<0.001	0.019	0.002	<0.001	<0.001	<0.0001	<0.001	<0.001	<0.05	0.30	100	270	<0.5	0.7
MW-2	3/3/2005	5.1	6.9	150	<0.01	<0.05	<0.005	<0.05	<0.01	<0.0009	<0.05	<0.007	<0.05	<0.03	41	5.7	0.7	1.1
	3/25/2005	8.1	7.7	120									<0.05	<0.05	51	5.5		0.6
	4/26/2006	10.6	7.6	170									<0.05	<0.005	52	3	1.1	<0.5
	11/27/2006	13.0	7.0	120	<0.001	0.041	<0.001	<0.001	<0.001	<0.0001	<0.001	<0.001	<0.05	<0.005	86	4	0.6	<0.5
	4/17/2007	6.3	6.6	160									<0.05	<0.005	45	<1	<0.5	<0.5
	11/20/2007	11.2	6.6	340									<0.05	<0.005	58	6	1.4	<0.5
	4/17/2008	11.9	6.5	513									<0.05	<0.005	160	4	1.8	<0.5
	11/11/2008	9.8	6.8	246	<0.001	0.031	<0.001	<0.001	<0.001	<0.0001	<0.001	<0.001	<0.05	<0.005	47	11	<0.5	<0.5
	4/23/2009	9.8	6.6	437									<0.05	<0.005	74	6	<0.5	<0.5
	11/10/2009	12.9	6.9	316									<0.05	<0.005	50	2	0.6	<0.5
	4/30/2010	10.4	6.8	401									<0.05	<0.005	96	2	0.5	<0.5
	11/10/2010	10.9	6.6	659	<0.001	0.064	<0.001	<0.001	<0.001	<0.0001	<0.001	<0.001	<0.05	<0.005	140	6	3.2	<0.5
	4/19/2011	6.8	7.3	166									<0.05	<0.005	9	4	<0.5	<0.5
	11/15/2011	12.8	6.8	383									<0.05	<0.005	80	8	0.7	<0.5
	4/13/2012	10.8	6.7	342									<0.05	<0.005	73	3	0.8	<0.5
	11/26/2012	9.4	6.9	271									<0.05	<0.005	53	3	0.8	<0.5
	4/24/2013	16.5	6.7	518									<0.05	<0.005	110	3	0.9	<0.5
	11/5/2013	12.9	6.6	366	<0.001	0.041	<0.001	<0.001	<0.001	<0.0001	<0.001	<0.001	<0.05	<0.005	36	7	<0.5	<0.5

TABLE 2

SUMMARY OF METALS ANALYSES AND OTHER PARAMETERS

Allenstown Landfill
161 Granite Street, Allenstown, NH
NHDES No. 199012032/ Project No. 2574

NHDES Standards		PARAMETERS																
					DRINKING WATER METALS													
		Temperature (°C)	pH	Specific Conductance (µS/cm)	Arsenic	Barium	Cadmium	Chromium	Lead	Mercury	Selenium	Silver	Iron	Manganese	Sulfate	Chloride	Nitrate	TKN
AGQS		NS	NS	NS	0.01	2	0.005	0.1	0.015	0.002	0.05	0.1	NS	0.84	500	NS	10	NS
SMCLs		NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	0.1	0.3	0.05	250	250	NS	NS
Surface Water Standards		NS	NS	NS	0.000018	1	0.0008	0.1	0.000540	0.00005	0.17	0.105	0.3	0.05	NS	230	10	NS
MW-3	3/3/2005	4.5	6.3	150	<0.01	0.06	<0.005	<0.05	<0.01	<0.0009	<0.05	<0.007	0.25	**3.4**	57	10	2.4	0.4
	3/25/2005	6.6	7.6	120									0.11	**1.6**	54	10		0.6
	4/26/2006	10.5	6.1	300									<0.05	0.024	97	23	4.1	<0.5
	11/27/2006	12.2	6.3	110	<0.001	0.061	<0.001	<0.001	<0.001	<0.0001	<0.001	<0.001	<0.05	0.010	10	9	3.7	<0.5
	4/17/2007	5.0	5.9	380									<0.05	0.008	130	18	3.0	<0.5
	11/20/2007	dry - no sample collected																
	4/17/2008	12.1	5.7	571									<0.05	<0.005	230	19	4.3	<0.5
	11/11/2008	9.2	6.0	460	<0.001	0.047	<0.001	<0.001	<0.001	<0.0001	<0.001	<0.001	<0.05	<0.005	130	12	4.2	<0.5
	4/23/2009	9.4	6.0	404									<0.05	<0.005	110	6	3.8	<0.5
	11/10/2009	13.9	6.1	346									<0.05	<0.005	94	5	3.7	<0.5
	4/30/2010	11.1	6.1	294									<0.05	<0.005	100	4	3.1	<0.5
	11/10/2010	11.9	6.2	414	<0.001	0.028	<0.001	<0.001	<0.001	<0.0001	<0.001	<0.001	<0.05	<0.005	97	7	5.4	<0.5
	4/19/2011	7.0	6.3	470									<0.05	<0.005	52	4	2.8	<0.5
	11/15/2011	12.2	6.0	402									<0.05	<0.005	78	19	4.9	<0.5
	4/13/2012	12.6	6.1	567									<0.05	<0.005	92	75	2.5	<0.5
	11/26/2012	10.1	6.3	477									<0.05	<0.005	410	72	2.4	0.6
	4/24/2013	16.3	6.0	405									<0.05	<0.005	71	35	3.4	<0.5
	11/5/2013	13.2	5.8	413	<0.001	0.036	<0.001	<0.001	<0.001	<0.0001	<0.001	<0.001	<0.05	0.007	83	40	2.3	0.5
MW-4	3/3/2005	3.9	6.3	710	<0.01	<0.05	<0.005	<0.05	<0.01	<0.0009	<0.05	<0.007	6.3	0.59	280	120	<0.1	2.4
	3/25/2005	6.4	6.7	1,090									13	**1**	**580**	310		1.9
	4/26/2006	9.7	6.7	1,490									8.7	0.77	39	110	<0.5	1.2
	11/27/2006	13.0	6.4	380	0.005	0.054	<0.001	<0.001	<0.001	<0.0001	<0.001	<0.001	5.3	0.68	**800**	29	<0.5	1.3
	4/17/2007	4.9	6.3	1,310									4.4	0.45	320	190	<0.5	0.6
	11/20/2007	12.3	6.2	880									6.6	0.50	**510**	78	<0.5	1.4
	4/17/2008	10.6	6.0	1,324									2.9	0.40	**670**	84	<0.5	1.0
	11/11/2008	11.4	6.2	1,191	0.001	0.025	<0.001	0.002	<0.001	<0.0001	<0.001	<0.001	1.4	0.37	380	59	<0.5	1.0
	4/23/2009	8.8	6.1	2,049									2.1	0.50	**590**	150	<0.5	<0.5
	11/10/2009	13.5	6.3	1,124									5.8	0.48	**510**	45	<0.5	1.2
	4/30/2010	9.7	6.3	1,732									11	0.45	**650**	540	<0.5	1.0
	11/10/2010	12.4	5.9	1,785	<0.001	0.044	<0.001	0.002	<0.001	<0.0001	<0.001	<0.001	7.3	0.53	**620**	200	<0.5	0.9
	4/19/2011	6.6	6.3	2,370									1.8	0.30	**610**	270	<0.5	0.8
	11/15/2011	13.4	6.2	1,703									5.5	0.48	460	160	<0.5	1.5
	4/13/2012	9.5	6.2	1,187									3.8	0.27	370	54	<0.5	0.8
	11/26/2012	10.4	6.2	920									3.7	0.26	310	82	<0.5	1.2
	4/24/2013	15.2	6.0	1,946									0.84	0.36	280	440	<0.5	1.2
	11/5/2013	11.2	6.1	734	<0.001	0.022	<0.001	<0.001	<0.001	<0.0001	<0.001	<0.001	7.1	0.19	130	100	<0.5	1.3

TABLE 2

SUMMARY OF METALS ANALYSES AND OTHER PARAMETERS

Allenstown Landfill
161 Granite Street, Allenstown, NH
NHDES No. 199012032/ Project No. 2574

NHDES Standards		PARAMETERS																
					DRINKING WATER METALS													
		Temperature (°C)	pH	Specific Conductance (µS/cm)	Arsenic	Barium	Cadmium	Chromium	Lead	Mercury	Selenium	Silver	Iron	Manganese	Sulfate	Chloride	Nitrate	TKN
AGQS		NS	NS	NS	0.01	2	0.005	0.1	0.015	0.002	0.05	0.1	NS	0.84	500	NS	10	NS
SMCLs		NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	0.1	0.3	0.05	250	250	NS	NS
Surface Water Standards		NS	NS	NS	0.000018	1	0.0008	0.1	0.000540	0.00005	0.17	0.105	0.3	0.05	NS	230	10	NS
MW-5	3/3/2005	7.2	6.9	820														
	3/25/2005	11.0	7.3	1,050														
	4/26/2006	11.1	6.9	1,410									0.86	**3.1**	**830**	20	<0.5	0.5
	11/27/2006	13.4	6.5	1,600	0.001	0.035	<0.001	<0.001	<0.001	<0.0001	<0.001	<0.001	0.40	**7.8**	**810**	79	<0.5	2.8
	4/17/2007	8.2	6.6	1,470									2.80	**6.2**	**780**	51	<0.5	2.6
	11/20/2007	10.5	5.7	1,900									3.20	**4.9**	370	540	<0.5	2.2
	4/17/2008	12.3	5.9	392									<0.05	0.015	98	39	1.9	<0.5
	11/11/2008	9.0	6.8	1,422	<0.001	0.017	<0.001	<0.001	<0.001	<0.0001	<0.001	<0.001	2.70	**2.6**	**620**	17	<0.5	1.4
	4/23/2009	11.6	6.5	1,176									2.60	**1.7**	400	30	<0.5	0.8
	11/10/2009	11.1	6.9	1,329									3.4	**2.6**	**630**	36	<0.5	1.2
	4/30/2010	12.5	6.8	782									2.3	**1.4**	310	15	<0.5	0.6
	11/10/2010	10.9	6.8	2,137	0.002	0.032	<0.001	<0.001	<0.001	<0.0001	0.002	<0.001	3.2	**2.0**	240	430	<0.5	1.9
	4/19/2011	9.8	6.5	1,048									2.1	**2.7**	170	58	0.9	0.5
	11/15/2011	12.7	6.8	1,376									6.1	**2.5**	420	44	0.7	2.0
	4/13/2012	11.6	6.7	1,198									4.6	**1.4**	410	29	<0.5	1.6
	11/26/2012	10.3	6.7	1,597									4.6	**2.5**	480	310	<0.5	1.5
	4/24/2013	18.1	6.5	1,274									2.4	**3.0**	490	48	<0.5	1.7
	11/5/2013	10.1	6.7	839	0.003	0.012	<0.001	<0.001	<0.001	<0.0001	<0.001	<0.001	1.7	**1.1**	210	110	<0.5	1.0
DW-1	3/3/2005	8.1	7.4	50	<0.01	<0.05	<0.005	<0.05	<0.01	<0.0009	<0.05	<0.007	0.28	<0.03	6.3	2.1	<0.1	<0.3
	3/25/2005	8.0	8.9	60	<0.01	<0.05	<0.005	<0.05	<0.01	<0.0009	<0.05	<0.007	0.46	<0.05	6.1	3.3		<0.3
	4/26/2006	11.1	8.0	30									0.63	<0.005	7	2	<0.5	<0.5
	11/27/2006	inadvertently omitted			0.002	0.002	<0.001	<0.001	0.002	<0.0001	<0.001	<0.001	0.81	<0.005	7	2	<0.5	<0.5
	4/17/2007	8.6	6.7	50									0.38	<0.005	7	2	<0.5	<0.5
	11/20/2007	12.3	6.8	60									1.4	<0.005	7	3	<0.5	<0.5
	4/17/2008	13.7	6.3	71									0.63	<0.005	7	2	<0.5	<0.5
	11/11/2008	12.0	6.6	71	0.002	0.002	<0.001	<0.001	0.002	<0.0001	<0.001	<0.001	1.3	<0.005	7	3	<0.5	<0.5
	4/23/2009	9.5	6.5	80									1.3	<0.005	7	2	<0.5	<0.5
	11/10/2009	11.4	7.0	87									0.7	<0.005	7	3	<0.5	<0.5
	4/30/2010	7.6	7.5	92									1.4	0.010	6	2	<0.5	<0.5
	11/10/2010	14.2	6.7	103	0.001	0.002	<0.001	<0.001	0.001	<0.0001	<0.001	<0.001	0.98	<0.005	8	3	<0.5	<0.5
	4/19/2011	8.1	6.6	86									1.6	<0.005	7	3	<0.5	<0.5
	11/15/2011	13.7	6.7	129									1.6	<0.005	7	4	<0.5	<0.5
	4/13/2012	5.0	6.6	75									0.49	<0.005	8	3	<0.5	<0.5
	11/26/2012	4.9	7.0	68	<0.001	0.002	<0.001	<0.001	0.001	<0.0001	<0.001	<0.001	0.25	<0.005	8	3	<0.5	<0.5
	4/24/2013	12.1	6.7	84									0.99	<0.005	6	3	<0.5	<0.5
	11/5/2013	10.3	6.5	88	0.001	0.002	<0.001	<0.001	<0.001	<0.0001	<0.001	<0.001	0.29	<0.005	6	3	<0.5	<0.5

TABLE 2

SUMMARY OF METALS ANALYSES AND OTHER PARAMETERS

Allenstown Landfill
161 Granite Street, Allenstown, NH
NHDES No. 199012032/ Project No. 2574

NHDES Standards		PARAMETERS																
					DRINKING WATER METALS													
		Temperature (°C)	pH	Specific Conductance (µS/cm)	Arsenic	Barium	Cadmium	Chromium	Lead	Mercury	Selenium	Silver	Iron	Manganese	Sulfate	Chloride	Nitrate	TKN
AGQS		NS	NS	NS	0.01	2	0.005	0.1	0.015	0.002	0.05	0.1	NS	0.84	500	NS	10	NS
SMCLs		NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	0.1	0.3	0.05	250	250	NS	NS
Surface Water Standards		NS	NS	NS	0.000018	1	0.0008	0.1	0.000540	0.00005	0.17	0.105	0.3	0.05	NS	230	10	NS
SW-1	4/18/2007	7.2	6.7	390									0.13	0.03	140	5	1.3	<0.5
	11/20/2007	dry - no sample collected																
	4/17/2008	18.7	6.6	334									<0.05	0.008	140	9	<0.5	<0.5
	11/11/2008	6.3	6.9	112	0.003	0.007	<0.001	<0.001	0.001	<0.0001	<0.001	<0.001	**0.73**	**0.42**	6	8	<0.5	<0.5
	4/23/2009	13.0	6.8	344									**0.40**	**0.059**	110	10	<0.5	<0.5
	11/10/2009	dry - no sample collected																
	4/30/2010	11.5	7.1	193									**0.31**	**0.061**	38	9	<0.5	<0.5
	11/10/2010	10.3	6.6	258	0.001	0.011	<0.001	<0.001	0.001	<0.0001	<0.001	<0.001	0.09	0.017	47	18	<0.5	<0.5
	4/19/2011	8.2	6.9	287									<0.05	<0.005	67	10	<0.5	<0.5
	11/15/2011	12.8	6.8	226									0.19	0.040	39	27	<0.5	<0.5
	4/13/2012	7.7	7.5	228									0.17	0.039	38	21	<0.5	<0.5
	11/26/2012	2.4	6.9	314									**0.48**	**0.068**	69	41	<0.5	<0.5
	4/24/2013	20.8	7.2	185									0.06	0.009	33	14	<0.5	<0.5
	11/5/2013	6.2	7.1	246	<0.001	0.009	<0.001	<0.001	<0.001	<0.0001	<0.001	<0.001	0.24	0.043	45	23	<0.5	<0.5

Notes

1. All concentrations are reported in parts per million (ppm). Values in **Bold** exceed the applicable standard. Where no value is presented the parameter was not analyzed.
2. "<" indicates the parameter was not detected above the indicated detection limit.
3. "NS" indicates no standard is established.
4. Sampling was performed by Nobis Engineering, Inc. on the dates indicated.
5. March 2005 analyses performed by Resource Laboratories, LLC of Portsmouth, N.H.; all other analyses performed by Eastern Analytical, Inc. of Concord, N.H.
6. Drinking Water Metals are defined in the Safe Drinking Water Act of 1974, amended 1986 and 1996.
7. Ambient Groundwater Quality Standards (AGQS) reference the New Hampshire Code of Administrative Rules, Chapter Env-Or 600, Table 600-1, effective July 23, 2008.
8. SMCLs are referenced in the New Hampshire Code of Administrative Rules, PART Env-Ws 316, "Regulated Secondary Maximum Contaminant Levels (SMCLs)", November 2005. SMCLs are included for reference only.
9. Surface water standards are established by the NHDES's Env-Ws 1700 "Surface Water Quality Regulations", effective May 21, 2008. Surface water criteria shown above were selected using the "Protection of Human Health Criteria - Water and Fish Ingestion" if established or the most conservative value for "Protection of Aquatic Life." The standard for dissolved chromium is established by the current USEPA Maximum Contaminant Limit (MCL).

TABLE 3

SUMMARY OF VOC ANALYSES

Allenstown Landfill
161 Granite Street, Allenstown, NH
NHDES No. 199012032 / Project No. 2574

		PARAMETERS							
		BTEX							
		Benzene	Toluene	Ethylbenzene	Xylenes (total)	MtBE	Naphthalene	1,4-Dioxane	Other 8260 VOCs
AGQS		5	1,000	700	10,000	13	20	3	Varies
GW-2		2,900	50,000	1,500	17,000	2,600	1,700	NS	
Well	**Date**								
MW-1	3/3/2005	<2	<2	<2	<4	<2	<5		--
	3/25/2005	<2	<2	<2	<4	<2	<5		--
	11/27/2006	<1	<1	<1	<2	<5	<5		--
	11/11/2008	<1	<1	<1	<2	<5	<5		--
	11/10/2010	<1	<1	<1	<2	<5	<5	<1	--
	11/5/2013	<1	<1	<1	<2	<5	<5	<0.25	
MW-2	3/3/2005	NA	NA	NA	NA	NA	NA		NA
	3/25/2005	<2	<2	<2	<4	<2	<5		--
	11/27/2006	<1	<1	<1	<2	<5	<5		--
	11/11/2008	<1	<1	<1	<2	<5	<5		--
	11/10/2010	<1	<1	<1	<2	<5	<5	<1	--
	11/5/2013	<1	<1	<1	<2	<5	<5	<0.25	
MW-3	3/3/2005	<2	<2	<2	<4	<2	<5		--
	3/25/2005	NA	NA	NA	NA	NA	NA		NA
	11/27/2006	<1	<1	<1	<2	<5	<5		--
	11/11/2008	<1	<1	<1	<2	<5	<5		--
	11/10/2010	<1	<1	<1	<2	<5	<5	<1	--
	11/5/2013	<1	<1	<1	<2	<5	<5	<0.25	
MW-4	3/3/2005	<2	<2	<2	<4	<2	<5		--
	3/25/2005	<2	<2	<2	<4	<2	<5		--
	11/27/2006	<1	<1	<1	<2	<5	<5		--
	11/11/2008	<1	<1	<1	<2	<5	<5		--
	11/10/2010	<1	<1	<1	<2	<5	<5	<1	--
	11/5/2013	<1	<1	<1	<2	<5	<5	<0.25	
MW-5	3/3/2005	<2	<2	<2	<4	7	<5		--
	3/25/2005	<2	<2	<2	<4	7	<5		--
	11/27/2006	<1	<1	<1	<2	<5	<5		--
	11/11/2008	<1	<1	<1	<2	<5	<5		--
	11/10/2010	<1	<1	<1	<2	<5	<5	<1	--
	11/5/2013	<1	<1	<1	<2	<5	<5	<0.25	
SW-1	11/11/2008	<1	<1	<1	<2	<5	<5		--
	11/10/2010	<1	<1	<1	<2	<5	<5	<1	--
	11/5/2013	<1	<1	<1	<2	<5	<5	<0.25	
DW-1	3/3/2005	<0.5	<0.5	<0.5	<1	<0.5	<0.5		--
	3/25/2005	<0.5	<0.5	<0.5	<1	<0.5	<0.5		--
	11/27/2006	<0.5	<0.5	<0.5	<1	<0.5	<0.5		--
	11/11/2008	<0.5	<0.5	<0.5	<1	<0.5	<0.5		--
	11/10/2009							<1	
	11/10/2010	<0.5	<0.5	<0.5	<1	<0.5	<0.5	<1	--
	11/26/2012	<0.5	<0.5	<0.5	<1	<0.5	<0.5		--
	11/5/2013	<0.5	<0.5	<0.5	<1	<0.5	<0.5	<0.25	0.6/<0.5

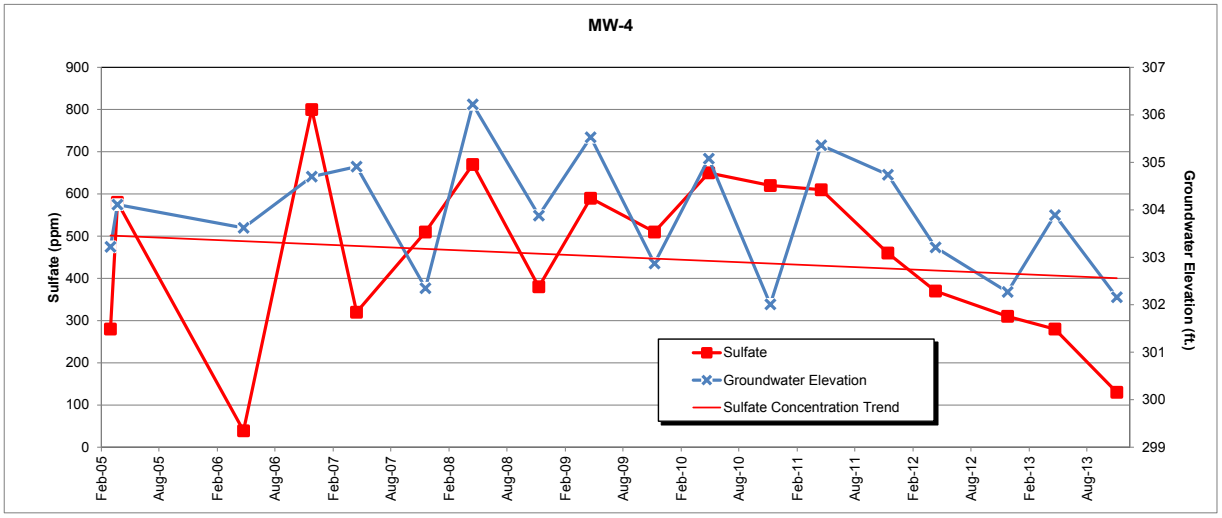
Notes:
1. All concentrations reported in parts per billion (ppb).
2. "<" indicates that parameter was not present above the indicated detection limit; "--" indicates non-detection. Blanks spaces indicate that the parameter was not analyzed.
3. "NS" indicates no standard is established.
4. Sample collection was performed by Nobis Engineering, Inc. on the dates indicated.
5. March 2005 analyses were performed by Resource Laboratories, LLC of Portsmouth, N.H.: later analyses performed by Eastern Analytical, Inc.
6. Methylene chloride was detected in November 5, 2013 DW-1 sample; sample retest did not confirm presence at or above the 0.5 ppb detection limit.
7. The groundwater standards refer to the Ambient Groundwater Quality Standards (AGQS) referenced in Chapter Env-Or 600 Contaminated Site Management revised July 23, 2008 and the GW-2 (vapor intrusion) standard referenced in the NHDES Vapor Intrusion Guidance, most recent revision February 2013.

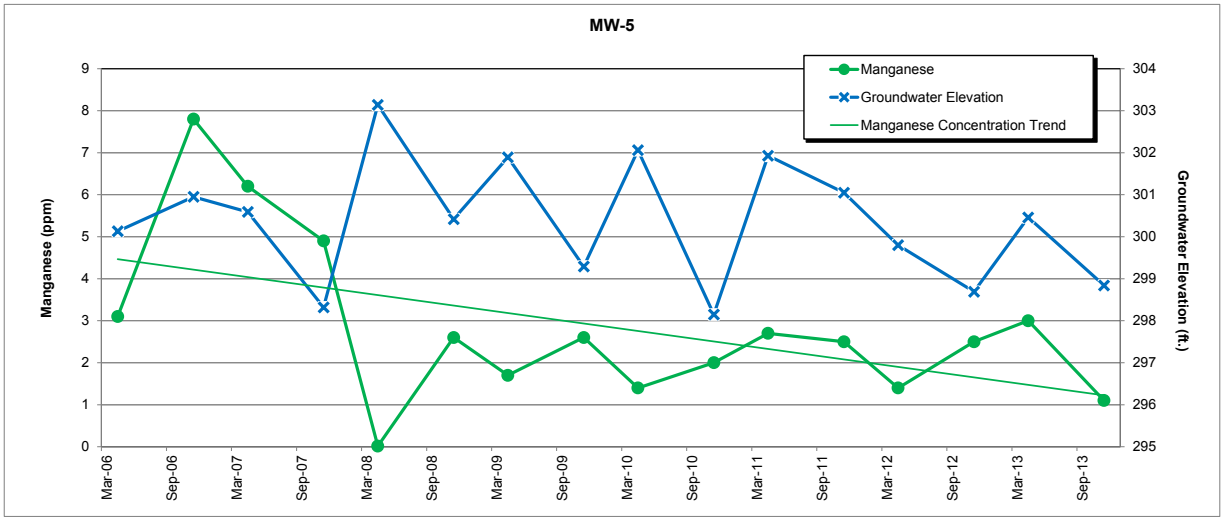
CHARTS

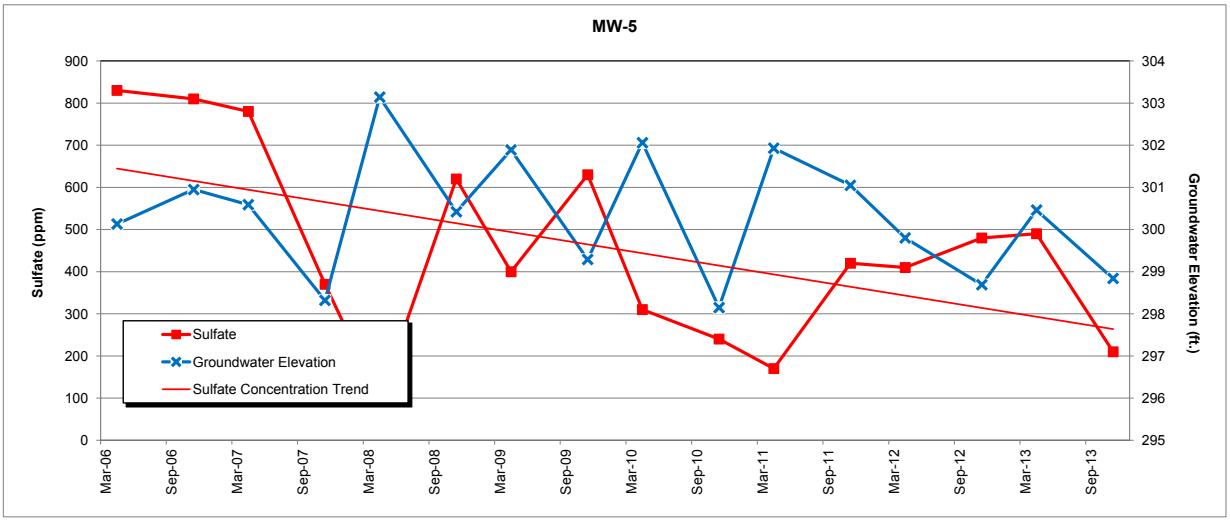
CHART 1

INORGANIC ANALYTES AND GROUNDWATER ELEVATIONS OVER TIME

Allenstown Landfill
161 Granite Street, Allenstown, NH
NHDES No. 199012032 / Project No. 2574

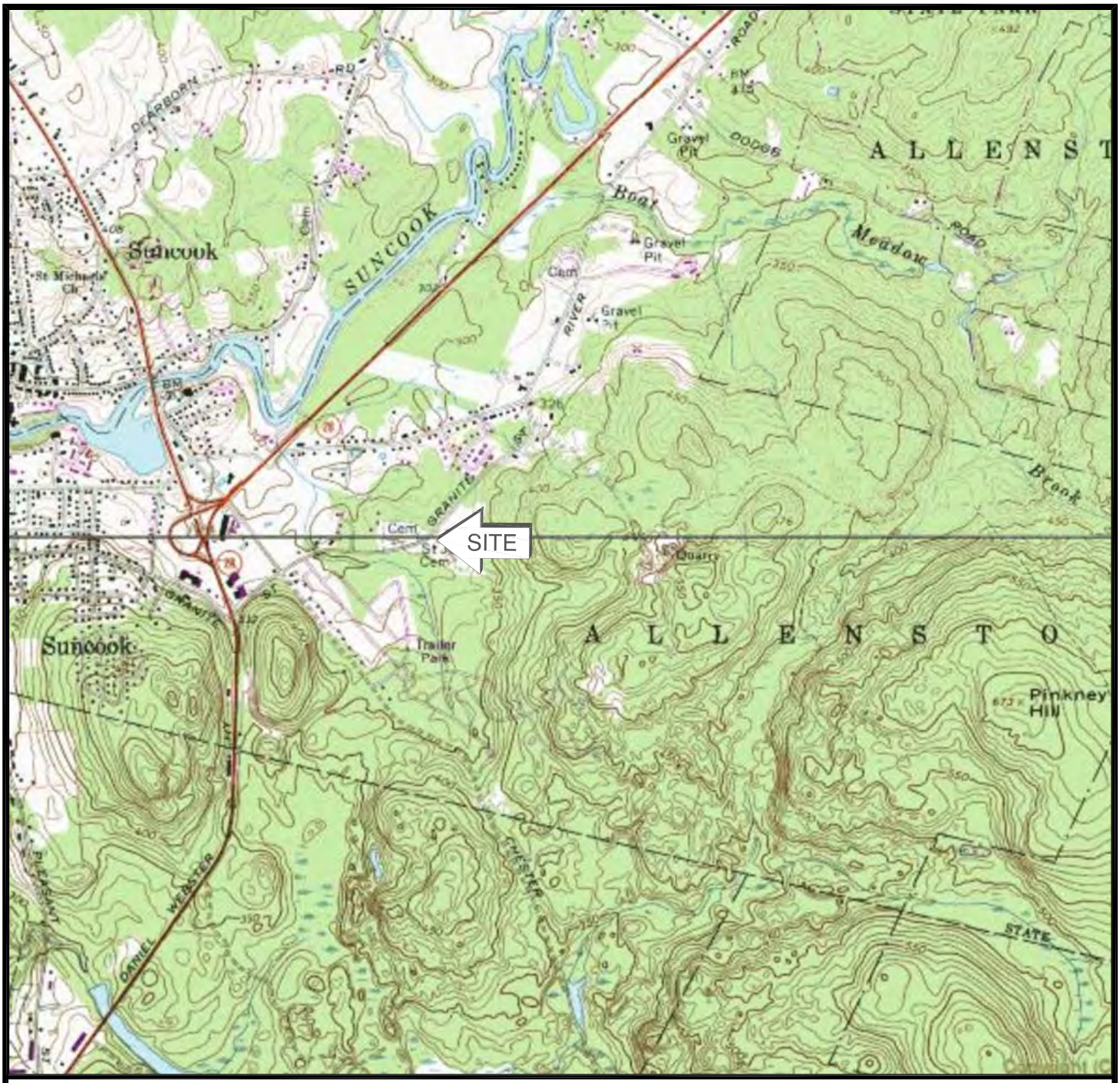






Refer to Tables 1 and 3 for groundwater elevation and inorganic analyte concentration data.

FIGURES



NORTH

USGS TOPOGRAPHIC MAP

SUNCOOK, NH
1985

MANCHESTER NORTH, NH
1985

APPROXIMATE SCALE
1 INCH = 2,000 FEET

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QUADRANGLE LOCATION

FIGURE 1

LOCUS PLAN

ALLENSTOWN LANDFILL
161 GRANITE STREET
ALLENSTOWN, NEW HAMPSHIRE

PROJECT 76400.01 | JANUARY 2014

J:\76400 Allenstown LF\Allenstown CAD\dwg\Locus_color.dwg

MW-1		
Date	4/24/13	11/5/13
GW EL.	300.41	298.82
MANGANESE	0.31	0.30
SULFATE	130	100
NITRATE	<0.5	<0.5
concentrations in ppm		

MW-5		
Date	4/24/13	11/5/13
GW EL.	300.46	298.84
MANGANESE	**3.0**	**1.1**
SULFATE	490	210
NITRATE	<0.5	<0.5
concentrations in ppm		
'bold' indicates exceedance		

MW-2		
Date	4/24/13	11/5/13
GW EL.	300.57	298.77
MANGANESE	<0.005	<0.005
SULFATE	110	36
NITRATE	0.9	<0.5
concentrations in ppm		

SW-1		
Date	4/24/13	11/5/13
GW EL.	302.58	302.36
MANGANESE	0.009	0.043
SULFATE	33	45
NITRATE	<0.5	<0.5
concentrations in ppm		

DW-1		
Date	4/24/13	11/5/13
MANGANESE	<0.005	<0.005
SULFATE	6	6
NITRATE	<0.5	<0.5
concentrations in ppm		

MW-4		
Date	4/24/13	11/5/13
GW EL.	303.89	302.16
MANGANESE	0.36	0.19
SULFATE	280	130
NITRATE	<0.5	<0.5
concentrations in ppm		

MW-3		
Date	4/24/13	11/5/13
GW EL.	306.58	303.49
MANGANESE	<0.005	0.007
SULFATE	71	83
NITRATE	3.4	2.3
concentrations in ppm		

GRANITE STREET

LOT 11 MAP 106
ROMAN CATHOLIC BISHOP OF MANCHESTER
ST. JEAN CEMETERY

LOT 12 MAP 106
WILLIAM GELINAS JR.
185 RIVER ROAD
EPSOM NH 03234

LOT 18 MAP 106
ALLENSTOWN AGGREGATE
P.O. BOX 221
AUBURN NH 03032
BOOK 2121 PAGE 0739

LOT 19 MAP 106
TOWN OF ALLENSTOWN NH
16 SCHOOL STREET
ALLENSTOWN NH 03275
7.75 ACRES
or 337,590 sf.

LOADING RAMP RETAINING WALL
5'X13' DUMPSTER
GUARD RAIL
STORAGE AREA FOR SANDING EQUIPMENT
OFFICE TRAILER
TBM A12.80 ft.
W/R GARAGE
METAL GARAGE
SALT SHED
OPEN STORAGE
TRACT LINE
TRAILER DUMP ATTENDENT
8'X22' DUMPSTER
5'X10' DUMPSTER
5'X13' DUMPSTER
SITE SUPPLY WELL
SIX TYPICAL 5'X9' DUMPSTERS
8'X33' DUMPSTER METAL ONLY
TRASH
UNUSED TRAILER HOME
WATER-FILLED TRENCH
APPROXIMATE SURFACE WATER
BROOK AND WET AREA
POND
FLOW

299
300
301
302
303

TP 100 TP 101 TP 102 TP 103 TP 104 TP 105 TP 106 TP 107 TP 108 TP 109 TP 110 TP 111 TP 112 TP 113 TP 114 TP 115 TP 116 TP 117 TP 118 TP 119

MW-1 MW-2 MW-3 MW-4 MW-5

SW-1

PSNH 43 PSNH 44 PSNH 29/45 PSNH 29/46 PSNH 29/46/1 PSNH 29/47

43/74

GRAPHIC SCALE
0 50' 100' 200'

NOTES

1. THIS SITE SKETCH WAS DEVELOPED FROM A SITE PLAN PREPARED BY J.E. BELANGER LAND SURVEYING PLLC AND TOWN OF ALLENSTOWN ASSESSORS' MAPS. THE SURVEY IS REFERENCED TO NGVD 1929; A TEMPORARY BENCHMARK IS ESTABLISHED AT THE NORTHWEST CORNER OF THE METAL GARAGE, AS SHOWN.

2. LOCATIONS AND SITE FEATURES DEPICTED HEREON ARE APPROXIMATE AND GIVEN FOR ILLUSTRATIVE PURPOSES ONLY.

3. GROUNDWATER MONITORING WELLS WERE INSTALLED ON FEBRUARY 14 AND 15, 2005 BY GREAT WORKS TEST BORING UNDER THE OBSERVATION OF NOBIS ENGINEERING, INC.

4. HAND AUGER EXPLORATION LOCATIONS AND SLOPE LIMITS ARE BASED ON GPS DATA COLLECTED BY NOBIS ENGINEERING ON JULY 11, 2006 USING A TRIMBLE PATHFINDER RECEIVER.

5. GROUNDWATER CONTOURS ARE INFERRED BASED ON DATA FROM MONITORING WELLS AND INTERPRETED USING THE NATURAL NEIGHBOR METHOD IN SURFER VERSION 10 SOFTWARE. OTHER INTERPRETATIONS ARE POSSIBLE.

LEGEND

- GROUNDWATER MANAGEMENT ZONE
- PROPERTY LINE
- TREELINE
- FENCE
- WATER COURSE
- WET AREA
- F-UST — FORMER UST (APPROXIMATE)
- UTILITY POLE
- W — WELL
- MW-1 — MONITORING WELL
- HA-4 — HAND AUGER EXPLORATION
- SW-1 — SURFACE WATER MONITORING LOCATION
- TP-100 — TEST PIT LOCATION
- SLOPE / LIMIT OF WASTE OUTSIDE LOT 19
- LIMIT OF WASTE BEYOND SLOPE
- 300 — GROUNDWATER CONTOUR (11/5/13)
- GROUNDWATER FLOW DIRECTION

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FIGURE 2

SITE SKETCH WITH GROUNDWATER DATA
ALLENSTOWN LANDFILL
161 GRANITE STREET
ALLENSTOWN, NEW HAMPSHIRE

DRAWN BY:	ML	APPROVED BY:	TB
PROJECT:	76400.01		JANUARY 2014

J:\76400 Allenstown LF\Allenstown LF\dwg\76400-Site.dwg

APPENDIX A

APPENDIX A

LIMITATIONS

1) These services were performed in accordance with generally accepted practices of other consultants undertaking similar assessments at the same time and in the same geographical area. The results of this assessment are based on our professional judgment and are not scientific certainties. No other warranty, express or implied, is made.

2) The observations and conclusions presented in this report were made solely on the basis of conditions described in the report and not on scientific tasks or procedures beyond the scope of described services or the budgetary and time constraints imposed by the client. The work described in this report was performed in accordance with the terms and conditions of our contract. No other warranty, express or implied, is made.

3) Water level readings have been made in the monitoring wells at the times and under the conditions stated in this report. Fluctuations in groundwater levels will occur due to variations in rainfall and other factors different from those prevailing at the time measurements were made.

4) Except as noted within the text of the report, no quantitative laboratory testing was performed as part of this assessment. Where such analyses have been conducted by an outside laboratory, an independent evaluation of the reliability of these data was not conducted.

5) Chemical analyses have been performed for specific parameters during this site assessment, as described in the text of the report. Additional chemical constituents not searched for during the current study may be present in soil and/or groundwater at the site.

6) This report has been prepared for the exclusive use of the Town of Allenstown, New Hampshire and the New Hamsphire Department of Environmental Services, in accordance with generally accepted hydrogeologic practices. No other warranty, express or implied, is made.

APPENDIX B

NEW HAMPSHIRE DEPARTMENT OF Environmental Services

The

NEW HAMPSHIRE DEPARTMENT OF ENVIRONMENTAL SERVICES

hereby issues

GROUNDWATER MANAGEMENT PERMIT NO. GWP-199012032-A-002

as revised

to the permittee

TOWN OF ALLENSTOWN

to monitor groundwater quality at the

ALLENSTOWN LANDFILL
(165 Granite Street)

in ALLENSTOWN, N.H.

via the groundwater monitoring system comprised of

5 monitoring wells, 1 surface water sampling location and 1 water supply well

as depicted on the Site Plan entitled

"Figure 2 – Site Sketch with Groundwater Data"

dated January 2011, prepared by Nobis Engineering, Inc.

TO: BOARD OF SELECTMEN
TOWN OF ALLENSTOWN
16 SCHOOL STREET
ALLENSTOWN, NH 03275

Date of Issuance: April 21, 2011
Date of Revision: May 10, 2011
Date of Expiration: April 20, 2016

Pursuant to authority in N.H. RSA 485-C:6-a, the New Hampshire Department of Environmental Services (Department), hereby grants this permit to monitor groundwater at the above described location for five years subject to the following conditions:

(continued)

STANDARD MANAGEMENT PERMIT CONDITIONS

1. The permittee shall not violate Ambient Groundwater Quality Standards adopted by the Department (N.H. Admin. Rules Env-Or 600) in groundwater outside the boundaries of the Groundwater Management Zone, as shown on the referenced site plan.

2. The permittee shall not cause groundwater degradation that result in a violation of surface water quality standards (N.H. Admin. Rules Env-Ws 1700) in any surface water body.

3. The permittee shall allow any authorized staff of the Department, or its agent, to enter the property covered by this permit for the purpose of collecting information, examining records, collecting samples, or undertaking other action associated with this permit.

4. The permittee shall apply for the renewal of this permit at least 90 days prior to its expiration date.

5. This permit is transferable only upon written request to, and approval of, the Department. Compliance with the existing Permit shall be established prior to permit transfer. Transfer requests shall include the name and address of the person to whom the permit transfer is requested, signature of the current and future permittee, and a summary of all monitoring results to date.

6. The Department reserves the right, under N.H. Admin. Rules Env-Or 600, to require additional hydrogeologic studies and/or remedial measures if the Department receives information indicating the need for such work.

7. The permittee shall maintain a water quality monitoring program and submit monitoring results to the Department's Waste Management Division no later than 45 days after sampling. Samples shall be taken from on-site monitoring wells and surface water sampling points as shown and labeled on the referenced site plan and other sampling points listed on the following table in accordance with the schedule outlined herein:

Monitoring Locations	Sampling Frequency	Parameters
MW-1, MW-2, MW-3, MW-4, MW-5, SW-1	April and November each year	Specific Conductance @ 25° C, pH, Temperature, Chloride, Sulfate, Nitrate, TKN, Iron, Manganese, and Static Water Elevation (in monitor wells)
Same as above	November 2013	NHDES Waste Management Division Full List of Analytes for Volatile Organics, including 1,4-Dioxane and Drinking Water Metals.
Site Supply Well: DW-1	April and November each year	Specific Conductance @ 25° C. pH, Temperature, Chloride, Sulfate, Nitrate, TKN, Iron, and Manganese.

(continued)

Monitoring Locations	Sampling Frequency	Parameters
DW-1	November 2012, 2013 & 2015	NHDES Waste Management Division Full List of Analytes for Volatile Organics and Drinking Water Metals.

Sampling shall be performed in accordance with the documents listed in Env-Or 610.02 (e). Samples shall be analyzed by a laboratory certified by the U.S. Environmental Protection Agency or the New Hampshire Department of Environmental Services. All overburden groundwater samples collected for metal analyses (iron, manganese, and Drinking Water Metals) shall be analyzed for dissolved metals; and thus must be field filtered (with a 0.45-micron filter) and acidified after filtration in the field. Surface water samples and samples collected from bedrock or water supply wells shall be analyzed for total metals, and shall not be filtered. As referred to herein, the term "Drinking Water Metals" refers to arsenic, barium, cadmium, chromium, lead, mercury, selenium and silver.

Summaries of water quality shall be submitted annually to the Department's Waste Management Division, in the month of **January**, using a format acceptable to the Department. The Summary Report shall include the information listed in Env-Or 607.04 (a), as applicable.

The Annual Summary Report shall be prepared and stamped by a professional engineer or professional geologist licensed in the State of New Hampshire.

8. Issuance of this permit is based on the Groundwater Management Permit Application dated December 17, 2010 and the historical documents found in the Department file DES #199012032. The Department may require additional hydrogeologic studies and/or remedial measures if invalid or inaccurate data are submitted.

9. Within 30 days of discovery of a violation of an ambient groundwater quality standard at or beyond the Groundwater Management Zone boundary, the permittee shall notify the Department in writing. Within 60 days of discovery, the permittee shall submit recommendations to correct the violation. The Department shall approve the recommendations if the Department determines that they will correct the violation.

ADDITIONAL CONDITION FOR LANDFILLS

10. The permittee shall maintain an adequate cover over the waste mass to prevent direct contact with potential receptors at the surface and to control movement of the waste material by wind or water.

SPECIAL CONDITIONS FOR THIS PERMIT

11. All monitoring wells at the site shall be properly maintained and secured from unauthorized access or surface water infiltration.

12. The permittee shall update ownership information required by Env-Or 607.03(a)(20) for all properties within the Groundwater Management Zone prior to renewal of the permit or upon a recommendation for site closure.

13. Recorded property within the Groundwater Management Zone includes the lots, or portions thereof, as listed and described in the following table:

Tax Map/ Lot #	Property Address	Owner Name and Address	Deed Reference (Book/Page)
Map 106/ Lot 19	Allenstown Landfill 161 Granite Street Allenstown, NH 03275	Town of Allenstown 16 School Street Allenstown, NH 03275	Book 1812/ Page 560 and Book 1179/ Pages 384-388
Map 106/ Lot 18*	Allenstown Aggregate 169 Granite Street Allenstown, NH 03275	Allenstown Aggregate, LLC PO Box 221 Auburn, NH 03032	Book 2698/ Page 0280

*Portion of the Allenstown Aggregate property included as part of the GMZ is described as follows:
Commencing at an iron pipe at the southwest corner of Town of Allenstown Map 106, Lot 19, said point being 629.37 feet S38° 19' 46" E of the northwest corner of Tax Map 106, Lot 19; thence S 70° 03' 28" W at a distance of 199.86 feet to an iron pin (#5 rebar) on to Map 106, Lot 18; thence S 53° 38' 51" E at a distance of 717.92 feet to an iron pipe as the point of origin as the southeast boundary point of the Town of Allenstown Map 106, Lot 19.

14. UNDEVELOPED LOTS WITHIN THE GROUNDWATER MANAGEMENT ZONE:

A) Consistent with Env-Or 607.06(d), for each undeveloped lot which is included (in whole or part) in the groundwater management zone and which lacks access to a public water system, the permittee shall inquire of the property owner at least once each year as to whether there are any new drinking water supply well(s) on the property. The permittee shall include a report on this inquiry in the Annual Summary Report required in Standard Permit Condition #7.

B) Upon discovery of a new drinking water supply well(s), whether as a result of the annual inquiry, upon notice from the lot owner or by any other means, the permittee shall provide written notification to the Department and, to ensure compliance with Env-Or 607.06(a), prepare a contingency plan to provide potable drinking water in the event a well is or becomes contaminated above the drinking water standards. The potable water supply shall meet applicable federal and state water quality criteria. This plan shall be submitted to the Department for approval within 15 days of the date of discovery.

C) Consistent with Env-Or 607.06(e), the permittee shall cause all new drinking water supply well(s) to be sampled within 30 days of discovery. The well(s) shall be sampled for all the parameters included in Standard Condition # 7, unless otherwise specified in writing by the Department. The permittee shall forward all analytical results to the Department and the owner of the drinking water supply well within 7 days of receipt of the results.

Based on the results:

i. If the new well is not contaminated as defined in Env-Or 603.01, the permittee shall continue to sample the new wells annually as part of the permit.

ii. If analytical results indicate the water is contaminated above applicable federal and state water quality criteria, the permittee shall:

a. Notify the owner immediately;

b. Obtain a confirmation set of analytical samples within 14 days of receipt the results indicating a groundwater quality standard exceedence; and

c. Following confirmation of groundwater quality standard exceedence, immediately implement the contingency plan submitted for approval pursuant to Special Permit Condition # 14B, above.

Carl W. Baxter, P.E., Administrator
Hazardous Waste Remediation Bureau
Waste Management Division

Under RSA 21-0:14 and 21-0:9-V, any person aggrieved by any terms or conditions of this permit may appeal to the Waste Management Council in accordance with RSA 541-A and N.H. Admin. Rules, Env-WMC 200. Such appeal must be made to the Council within 30 days and must be addressed to the Chairman of the Waste Management Council, c/o Appeals Clerk, Department of Environmental Services Legal Unit, 29 Hazen Drive, P.O. Box 95, Concord, NH 03302-0095.

Stan Bonis

From: Beblowski, Peter [Peter.Beblowski@des.nh.gov]
Sent: Monday, January 28, 2013 9:50 AM
To: Stan Bonis
Subject: RE: Allenstown Landfill 199012032

Stan,
It was good to talk with you this morning. Your email below documents the outcome of our discussion. Thank you.
This email will be placed in the Department's electronic file. Should you have any questions about this email, please feel free to contact me.
Peter

Peter L. Beblowski
Department of Environmental Services
Waste Management Division
Hazardous Waste Remediation Bureau
Groundwater Remediation & Permitting
29 Hazen Drive
P.O. Box 95
Concord, New Hampshire 03302-0095
Phone: 603-271-2999 (with voice mail)

-----Original Message-----
From: Stan Bonis [mailto:SBonis@nobiseng.com]
Sent: Monday, January 28, 2013 9:10 AM
To: Beblowski, Peter
Cc: tbobowski@nobisengineering.com
Subject: Allenstown Landfill 199012032

Hello Peter,

Thank you for discussing the GMP requirements for the Allenstown Landfill (NHDES 199012032) with me this morning. It is my understanding that we are not required to analyze a sample from the site water supply (DW-1) for the year 2012. You would like us to submit the water supply sample collected during November 2013 for analysis of 1,4-dioxane along with the VOCs and drinking water metals specified in the GMP. In recognition that the 2009 and 2010 water supply samples were non-detect for 1,4-dioxane at the then-current 1 ppb reporting limit, if 1,4-D is not detected in the Nov. 2013 sample at a reporting limit of 0.25 ppb, we may request that it not be required for future water supply samples at the site.

Thanks,

Stan Bonis, P.G.
Project Geologist

click on the Nobis logo to be directed to our new website

Tom Bobowski

From: Tom Bobowski
Sent: Tuesday, January 07, 2014 2:15 PM
To: Shaun Mulholland (smulholland@allenstownnh.gov)
Cc: Sharon Somers Esq. (SSomers@DTCLawyers.com)
Subject: RE: Allenstown Aggregate - Inquiry of New Water Supply Wells on GMP Portion of Tax Map 106, Lot 18

2014 ~~2013~~ EPB

Shaun – I spoke with Mr. Iacozzi on January 7, 2013 at 1:30 PM and he stated that some work was done on their existing water supply well to improve flow but the location of the supply well has not changed and no new drinking water supply wells were installed on the Allenstown Aggregate property. This email will be used in the Periodic Summary report to document the inquiry. No other discussion about the site status or project occurred.

Please let me know if you have questions.

Tom Bobowski

From: Tom Bobowski
Sent: Monday, January 06, 2014 9:45 AM
To: Shaun Mulholland (smulholland@allenstownnh.gov)
Cc: Sharon Somers Esq. (SSomers@DTCLawyers.com)
Subject: Allenstown Aggregate - Inquiry of New Water Supply Wells on GMP Portion of Tax Map 106, Lot 18

Happy New Year Shaun!

I wanted to give you advance notice that on Tuesday afternoon January 7, I will be reaching out by telephone to Vince Iacozzi at Thibeault Corp. (Allenstown Aggregate) to inquire whether any new water supply wells have been installed on the portion of the property located in the Groundwater Management Zone (GMZ). This will satisfy Condition 14 of Groundwater Management Permit (GMP) GWP-199012032-A-002. Attached is the email documentation from last year's inquiry that goes into our report. We don't see any issue with making this inquiry but wanted the Town of Allenstown to know in advance. We are working to get the 2014 Periodic Summary Report due to NHDES in January to you over the next couple of weeks.

Please let me know by 12 PM tomorrow, January 7 if you have any issue with this GMP-required inquiry.

Thanks!

Thomas S. Bobowski, PE, PG, CG
Corporate Health & Safety Officer
Associate / Sr. Project Manager

Nobis

Nobis Engineering, Inc.
18 Chenell Drive
Concord, NH 03301

Main: (603) 224-4182
Direct: (603) 724-6239
Cell: (603) 731-7993

APPENDIX C

FIELD PROCEDURES

Groundwater Sample Collection Procedures

Static water levels were measured in each well prior to sample collection using a Solinst electronic water level indicator. The wells were purged of at least three times the standing volume of water in the wells using a pre-cleaned high density polyethylene (HDPE) disposable bailer. After purging the wells, groundwater samples were collected using the same dedicated bailer. Separate bailers were used for each well to limit the potential for cross-contamination. The first bailer volume was observed for the possible presence of a floating product layer. The samples were placed in appropriate sample containers supplied by the laboratory and placed in an ice-filled cooler for delivery to the laboratory under chain-of custody control. Samples collected for dissolved metals analyses are filtered in the field to <0.45 microns at the time of sample collection. Surface water samples for metals analyses are not field filtered.

Supply Well Sample Collection Procedures

Water supply samples were collected from a faucet prior to any treatment or filtration. Water from the well was allowed to flow for sufficient time to purge the holding tank and supply lines of any standing water (about 10 minutes) and to ensure a representative sample was obtained. The samples were collected in appropriate sample containers supplied by the laboratory and placed in an ice-filled cooler for delivery to the laboratory. Supply well samples for metals analyses are not field filtered.

APPENDIX D

Eastern Analytical, Inc.

professional laboratory & drilling services

Tom Bobowski
Nobis Engineering
18 Chenell Drive
Concord , NH 03301

ACCREDITED IN ACCORDANCE WITH nelac

Subject: Laboratory Report

Eastern Analytical, Inc. ID: 120152
Client Identification: Allenstown Landfill | 76400.01
Date Received: 4/24/2013

Dear Mr. Bobowski:

Enclosed please find the laboratory report for the above identified project. All analyses were performed in accordance with our QA/QC Program. Unless otherwise stated, holding times, preservation techniques, container types, and sample conditions adhered to EPA Protocol. Samples which were collected by Eastern Analytical, Inc. (EAI) were collected in accordance with approved EPA procedures. Eastern Analytical, Inc. certifies that the enclosed test results meet all requirements of NELAP and other applicable state certifications. Please refer to our website at www.eailabs.com for a copy of our NELAP certificate and accredited parameters.

The following standard abbreviations and conventions apply to all EAI reports:

Solid samples are reported on a dry weight basis, unless otherwise noted
< : "less than" followed by the reporting limit
> : "greater than" followed by the reporting limit
%R : % Recovery

Eastern Analytical Inc. maintains certification in the following states: Connecticut (PH-0492), Maine (NH005), Massachusetts (M-NH005), New Hampshire/NELAP (1012), Rhode Island (269) and Vermont (VT1012).

The following information is contained within this report: Sample Conditions summary, Analytical Results/Data, Quality Control data (if requested) and copies of the Chain of Custody. This report may not be reproduced except in full, without the the written approval of the laboratory.

If you have any questions regarding the results contained within, please feel free to directly contact me or the chemist(s) who performed the testing in question. Unless otherwise requested, we will dispose of the sample(s) 30 days from the sample receipt date.

We appreciate this opportunity to be of service and look forward to your continued patronage.

Sincerely,

Lorraine Olashaw, Lab Director | 5-7-13 Date | 5 # of pages (excluding cover letter)

SAMPLE CONDITIONS PAGE

EAI ID#: **120152**

Client: **Nobis Engineering**

Client Designation: **Allenstown Landfill | 76400.01**

Temperature upon receipt (°C): 4 **Received on ice or cold packs (Yes/No): Y**

Acceptable temperature range (°C): 0-6

Lab ID	Sample ID	Date Received	Date Sampled	Sample Matrix	% Dry Weight	Exceptions/Comments (other than thermal preservation)
120152.01	DW-1	4/24/13	4/24/13	aqueous		Adheres to Sample Acceptance Policy
120152.02	MW-3	4/24/13	4/24/13	aqueous		Adheres to Sample Acceptance Policy
120152.03	MW-4	4/24/13	4/24/13	aqueous		Adheres to Sample Acceptance Policy
120152.04	MW-1	4/24/13	4/24/13	aqueous		Adheres to Sample Acceptance Policy
120152.05	MW-5	4/24/13	4/24/13	aqueous		Adheres to Sample Acceptance Policy
120152.06	MW-2	4/24/13	4/24/13	aqueous		Adheres to Sample Acceptance Policy
120152.07	SW-1	4/24/13	4/24/13	aqueous		Adheres to Sample Acceptance Policy

amples were properly preserved and the pH measured when applicable unless otherwise noted. Analysis of solids for pH, Flashpoint, nitibility, Paint Filter, Corrosivity, Conductivity and Specific Gravity are reported on an "as received" basis.

mediate analyses, pH, Total Residual Chlorine, Dissolved Oxygen and Sulfite, performed at the laboratory were run outside of the commended 15 minute hold time.

l results contained in this report relate only to the above listed samples.

eferences include:

EPA 600/4-79-020, 1983

Standard Methods for Examination of Water and Wastewater,20th Edition, 1998 and 22nd Edition, 2012

Test Methods for Evaluating Solid Waste SW 846 3rd Edition including updates IVA and IVB

Hach Water Analysis Handbook, 2nd edition, 1992

LABORATORY REPORT

EAI ID#: **120152**

Client: **Nobis Engineering**

Client Designation: **Allenstown Landfill | 76400.01**

Sample ID:	DW-1	MW-3	MW-4	MW-1					
Lab Sample ID:	120152.01	120152.02	120152.03	120152.04					
Matrix:	aqueous	aqueous	aqueous	aqueous					
Date Sampled:	4/24/13	4/24/13	4/24/13	4/24/13					
Date Received:	4/24/13	4/24/13	4/24/13	4/24/13					
					Units	Analysis Date	Time	Method	Analyst
Sulfate	6	71	280	130	mg/L	05/01/13	12:54	300.0	KL
Chloride	3	35	440	410	mg/L	04/25/13	15:30	4500CIE	KD
Nitrate-N	< 0.5	3.4	< 0.5	< 0.5	mg/L	04/25/13	15:30	353.2	KD
TKN	< 0.5	< 0.5	1.2	0.7	mg/L	05/06/13	11:45	$4500N_{org}C/N$	SEL

Sample ID:	MW-5	MW-2	SW-1						
Lab Sample ID:	120152.05	120152.06	120152.07						
Matrix:	aqueous	aqueous	aqueous						
Date Sampled:	4/24/13	4/24/13	4/24/13						
Date Received:	4/24/13	4/24/13	4/24/13						
					Units	Analysis Date	Time	Method	Analyst
Sulfate	490	110	33		mg/L	05/01/13	13:56	300.0	KL
Chloride	48	3	14		mg/L	04/25/13	16:10	4500CIE	KD
Nitrate-N	< 0.5	0.9	< 0.5		mg/L	04/25/13	15:47	353.2	KD
TKN	1.7	< 0.5	< 0.5		mg/L	05/06/13	11:45	$4500N_{org}C/$	SEL

LABORATORY REPORT

EAI ID#: **120152**

Client: **Nobis Engineering**

Client Designation: **Allenstown Landfill | 76400.01**

Sample ID:	DW-1	SW-1	Analytical Matrix	Units	Date of Analysis	Method	Analyst
Lab Sample ID:	120152.01	120152.07					
Matrix:	aqueous	aqueous					
Date Sampled:	4/24/13	4/24/13					
Date Received:	4/24/13	4/24/13					
Iron	**0.99**	**0.06**	AqTot	mg/L	4/25/13	200.7	DS
Manganese	< 0.005	**0.009**	AqTot	mg/L	4/25/13	200.7	DS

LABORATORY REPORT

EAI ID#: **120152**

Client: **Nobis Engineering**

Client Designation: **Allenstown Landfill | 76400.01**

Sample ID:	MW-3	MW-4	MW-1	MW-5					
Lab Sample ID:	120152.02	120152.03	120152.04	120152.05					
Matrix:	aqueous	aqueous	aqueous	aqueous					
Date Sampled:	4/24/13	4/24/13	4/24/13	4/24/13					
Date Received:	4/24/13	4/24/13	4/24/13	4/24/13	**Analytical Matrix**	**Units**	**Date of Analysis**	**Method**	**Analyst**
Iron	< 0.05	**0.84**	**0.05**	**2.4**	AqDis	mg/L	4/25/13	200.7	DS
Manganese	< 0.005	**0.36**	**0.31**	**3.0**	AqDis	mg/L	4/25/13	200.7	DS

Sample ID:	MW-2							
Lab Sample ID:	120152.06							
Matrix:	aqueous							
Date Sampled:	4/24/13							
Date Received:	4/24/13	**Analytical Matrix**	**Units**	**Date of Analysis**	**Method**	**Analyst**		
Iron	< 0.05	AqDis	mg/L	4/25/13	200.7	DS		
Manganese	< 0.005	AqDis	mg/L	4/25/13	200.7	DS		

Page 1 of 1

CHAIN-OF-CUSTODY RECORD

120152

BOLD FIELDS REQUIRED. PLEASE CIRCLE REQUESTED ANALYSIS.

SAMPLE I.D.	SAMPLING DATE/TIME *IF COMPOSITE, INDICATE BOTH START & FINISH DATE/TIME	MATRIX (SEE BELOW)	GRAB/*COMPOSITE	VOC: 524.2 BTEX; 524.2 MTBE ONLY; 8260B 624 1,4 DIOXANE; 8021B BTEX; 8015B GRO; MAVPH; SVOC: 8270D 625 ABN A; SVTICs EDB DBCP BN PAH; TPH8100 L1 L2; 8015B DRO; MAEPH; PEST 608 PCB 608 PEST 8081A PCB 8082; OIL & GREASE 1664; TPH 1664; TCLP: TCLP 1311 VOC; ABN METALS PEST HERB; METALS: DISSOLVED METALS (LIST BELOW); TOTAL METALS (LIST BELOW); INORGANICS: TS TSS; TDS SPEC. CON.; Br (Cl) F (SO4) NO2 NO3; BOD CBOD; T. ALK.; NH3 (TKN) T. PHOS. O. PHOS.; pH T. RES. CHLORINE; COD PHENOLS; TOC DOC; TOTAL CYANIDE; TOTAL SULFIDE; REACTIVE CYANIDE REACTIVE SULFIDE; FLASHPOINT IGNITABILITY; MICRO: TOTAL COLIFORM E. COLI; FECAL COLIFORM; ENTEROCOCCI HETEROTROPHIC PLATE COUNT; OTHER; # OF CONTAINERS	NOTES MEOH VIAL #
DW-1	4/24/13 1230	DW	G			3	
MW-3	4/24/13 1349	GW	G			3	
MW-4	4/24/13 1421	GW	G			3	
MW-1	4/24/13 1448	GW	G			3	
MW-5	4/24/13 1516	GW	G			3	
MW-2	4/24/13 1546	GW	G			3	
SW-1	4/24/13 1610	SW	G			3	

MATRIX: A-AIR; S-SOIL; GW-GROUND WATER; SW-SURFACE WATER; DW-DRINKING WATER; WW-WASTE WATER

PRESERVATIVE: H-HCL; N-HNO_3; S-H_2SO_4; Na-NaOH; M-MEOH

	DISSOLVED METALS (LIST BELOW)	TOTAL METALS (LIST BELOW)	Br (Cl) F (SO4) NO2 NO3	NH3 (TKN) T. PHOS. O. PHOS.
DW-1		✓	✓	✓
MW-3	✓		✓	✓
MW-4	✓		✓	✓
MW-1	✓		✓	✓
MW-5	✓		✓	✓
MW-2	✓		✓	✓
SW-1		✓	✓	✓
	N	N		5

PROJECT MANAGER: Tom Bobowski

COMPANY: Nobis

ADDRESS: 18 Chenell Drive

CITY: Concord STATE: NH ZIP: 03301

PHONE: 603-724-6239 EXT.:

FAX: 603-224-2507

E-MAIL: tbobowski@nobiseng.com

SITE NAME: Allenstown Land Fill

PROJECT #: 76400.01

STATE: (NH) MA ME VT OTHER:

REGULATORY PROGRAM: NPDES: RGP POTW STORMWATER OR (GWP); OIL FUND, BROWNFIELD OR OTHER:

QUOTE #: PO #:

DATE NEEDED:

QA/QC REPORTING LEVEL

A B C

OR

PRESUMPTIVE CERTAINTY

REPORTING OPTIONS

PRELIMS: YES OR NO

IF YES: FAX OR PDF

ELECTRONIC OPTIONS

NO FAX E-MAIL (PDF) EQUIS

TEMP. 4 °C

ICE? (YES) NO

SAMPLER(S): Andy Robichaud

RELINQUISHED BY:	DATE:	TIME:	RECEIVED BY:
Andy Robichaud	4/24/13	16:45	K. Zink-MacKay

METALS: 8 RCRA 13 PP (FE, MN) PB, CU

OTHER METALS:

SAMPLES FIELD FILTERED? ☑ YES ☐ NO

NOTES: (IE: SPECIAL DETECTION LIMITS, BILLING INFO, IF DIFFERENT)

DW-1 and ~~SW-1~~ MW-1 not field filtered.

SITE HISTORY:

SUSPECTED CONTAMINATION:

FIELD READINGS:

Eastern Analytical, Inc. services

25 CHENELL DRIVE | CONCORD, NH 03301 | TEL: 603.228.0525 | 1.800.287.0525 | FAX: 603.228.4591 | E-MAIL: CUSTOMERSERVICE@EAILABS.COM | WWW.EAILABS.COM

Eastern Analytical, Inc.

Professional laboratory & drilling services

Tom Bobowski
Nobis Engineering
18 Chenell Drive
Concord , NH 03301

ACCREDITED IN ACCORDANCE WITH nelac

Subject: Laboratory Report

Eastern Analytical, Inc. ID: 126137
Client Identification: Allenstown Landfill | 76400.01
Date Received: 11/5/2013

Dear Mr. Bobowski :

Enclosed please find the laboratory report for the above identified project. All analyses were performed in accordance with our QA/QC Program. Unless otherwise stated, holding times, preservation techniques, container types, and sample conditions adhered to EPA Protocol. Samples which were collected by Eastern Analytical, Inc. (EAI) were collected in accordance with approved EPA procedures. Eastern Analytical, Inc. certifies that the enclosed test results meet all requirements of NELAP and other applicable state certifications. Please refer to our website at www.eailabs.com for a copy of our NELAP certificate and accredited parameters.

The following standard abbreviations and conventions apply to all EAI reports:

Solid samples are reported on a dry weight basis, unless otherwise noted
< : "less than" followed by the reporting limit
> : "greater than" followed by the reporting limit
%R : % Recovery

Eastern Analytical Inc. maintains certification in the following states: Connecticut (PH-0492), Maine (NH005), Massachusetts (M-NH005), New Hampshire/NELAP (1012), Rhode Island (269) and Vermont (VT1012).

The following information is contained within this report: Sample Conditions summary, Analytical Results/Data, Quality Control data (if requested) and copies of the Chain of Custody. This report may not be reproduced except in full, without the the written approval of the laboratory.

If you have any questions regarding the results contained within, please feel free to directly contact me or the chemist(s) who performed the testing in question. Unless otherwise requested, we will dispose of the sample(s) 30 days from the sample receipt date.

We appreciate this opportunity to be of service and look forward to your continued patronage.

Sincerely,

Lorraine Olashaw, Lab Director | 11.25.13 Date | 13 # of pages (excluding cover letter)

SAMPLE CONDITIONS PAGE

EAI ID#: **126137**

Client: **Nobis Engineering**

Client Designation: **Allenstown Landfill | 76400.01**

Temperature upon receipt (°C): 4.3 **Received on ice or cold packs (Yes/No): Y**

Acceptable temperature range (°C): 0-6

Lab ID	Sample ID	Date Received	Date Sampled	Sample Matrix	% Dry Weight	Exceptions/Comments (other than thermal preservation)
126137.01	Trip Blank	11/5/13	11/5/13	aqueous		Adheres to Sample Acceptance Policy
126137.02	1,4-Dioxane Trip Blank	11/5/13	11/5/13	aqueous		Adheres to Sample Acceptance Policy
126137.03	DW-1	11/5/13	11/5/13	aqueous		Adheres to Sample Acceptance Policy
126137.04	MW-3	11/5/13	11/5/13	aqueous		Adheres to Sample Acceptance Policy
126137.05	MW-2	11/5/13	11/5/13	aqueous		Adheres to Sample Acceptance Policy
126137.06	MW-5	11/5/13	11/5/13	aqueous		Adheres to Sample Acceptance Policy
126137.07	MW-1	11/5/13	11/5/13	aqueous		Adheres to Sample Acceptance Policy
126137.08	MW-4	11/5/13	11/5/13	aqueous		Adheres to Sample Acceptance Policy
126137.09	SW-1	11/5/13	11/5/13	aqueous		Adheres to Sample Acceptance Policy
126137.1	DW-1 2nd Vial	11/5/13	11/5/13	aqueous		Adheres to Sample Acceptance Policy

Samples were properly preserved and the pH measured when applicable unless otherwise noted. Analysis of solids for pH, Flashpoint, Ignitibility, Paint Filter, Corrosivity, Conductivity and Specific Gravity are reported on an "as received" basis.
Immediate analyses, pH, Total Residual Chlorine, Dissolved Oxygen and Sulfite, performed at the laboratory were run outside of the recommended 15 minute hold time.

All results contained in this report relate only to the above listed samples.

References include:

1) EPA 600/4-79-020, 1983
2) Standard Methods for Examination of Water and Wastewater,20th Edition, 1998 and 22nd Edition, 2012
3) Test Methods for Evaluating Solid Waste SW 846 3rd Edition including updates IVA and IVB
4) Hach Water Analysis Handbook, 2nd edition, 1992

LABORATORY REPORT

EAI ID#: **126137**

Client: **Nobis Engineering**

Client Designation: **Allenstown Landfill | 76400.01**

Sample ID:	MW-3	MW-2	MW-5	MW-1	MW-4	SW-1
Lab Sample ID:	126137.04	126137.05	126137.06	126137.07	126137.08	126137.09
Matrix:	aqueous	aqueous	aqueous	aqueous	aqueous	aqueous
Date Sampled:	11/5/13	11/5/13	11/5/13	11/5/13	11/5/13	11/5/13
Date Received:	11/5/13	11/5/13	11/5/13	11/5/13	11/5/13	11/5/13
Units:	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l
Date of Analysis:	11/6/13	11/6/13	11/6/13	11/6/13	11/6/13	11/6/13
Analyst:	BAM	BAM	BAM	BAM	BAM	BAM
Method:	8260B	8260B	8260B	8260B	8260B	8260B
Dilution Factor:	1	1	1	1	1	1
Dichlorodifluoromethane	< 5	< 5	< 5	< 5	< 5	< 5
Chloromethane	< 2	< 2	< 2	< 2	< 2	< 2
Vinyl chloride	< 2	< 2	< 2	< 2	< 2	< 2
Bromomethane	< 2	< 2	< 2	< 2	< 2	< 2
Chloroethane	< 5	< 5	< 5	< 5	< 5	< 5
Trichlorofluoromethane	< 5	< 5	< 5	< 5	< 5	< 5
Diethyl Ether	< 5	< 5	< 5	< 5	< 5	< 5
Acetone	< 10	< 10	< 10	< 10	< 10	< 10
1,1-Dichloroethene	< 1	< 1	< 1	< 1	< 1	< 1
tert-Butyl Alcohol (TBA)	< 30	< 30	< 30	< 30	< 30	< 30
Methylene chloride	< 5	< 5	< 5	< 5	< 5	< 5
Carbon disulfide	< 5	< 5	< 5	< 5	< 5	< 5
Methyl-t-butyl ether(MTBE)	< 5	< 5	< 5	< 5	< 5	< 5
Ethyl-t-butyl ether(ETBE)	< 5	< 5	< 5	< 5	< 5	< 5
Isopropyl ether(DIPE)	< 5	< 5	< 5	< 5	< 5	< 5
tert-amyl methyl ether(TAME)	< 5	< 5	< 5	< 5	< 5	< 5
trans-1,2-Dichloroethene	< 2	< 2	< 2	< 2	< 2	< 2
1,1-Dichloroethane	< 2	< 2	< 2	< 2	< 2	< 2
2,2-Dichloropropane	< 2	< 2	< 2	< 2	< 2	< 2
cis-1,2-Dichloroethene	< 2	< 2	< 2	< 2	< 2	< 2
2-Butanone(MEK)	< 10	< 10	< 10	< 10	< 10	< 10
Bromochloromethane	< 2	< 2	< 2	< 2	< 2	< 2
Tetrahydrofuran(THF)	< 10	< 10	< 10	< 10	< 10	< 10
Chloroform	< 2	< 2	< 2	< 2	< 2	< 2
1,1,1-Trichloroethane	< 2	< 2	< 2	< 2	< 2	< 2
Carbon tetrachloride	< 2	< 2	< 2	< 2	< 2	< 2
1,1-Dichloropropene	< 2	< 2	< 2	< 2	< 2	< 2
Benzene	< 1	< 1	< 1	< 1	< 1	< 1
1,2-Dichloroethane	< 2	< 2	< 2	< 2	< 2	< 2
Trichloroethene	< 2	< 2	< 2	< 2	< 2	< 2
1,2-Dichloropropane	< 2	< 2	< 2	< 2	< 2	< 2
Dibromomethane	< 2	< 2	< 2	< 2	< 2	< 2
Bromodichloromethane	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
1,4-Dioxane	< 50	< 50	< 50	< 50	< 50	< 50
4-Methyl-2-pentanone(MIBK)	< 10	< 10	< 10	< 10	< 10	< 10
cis-1,3-Dichloropropene	< 2	< 2	< 2	< 2	< 2	< 2
Toluene	< 1	< 1	< 1	< 1	< 1	< 1
trans-1,3-Dichloropropene	< 2	< 2	< 2	< 2	< 2	< 2
1,1,2-Trichloroethane	< 2	< 2	< 2	< 2	< 2	< 2
2-Hexanone	< 10	< 10	< 10	< 10	< 10	< 10
Tetrachloroethene	< 2	< 2	< 2	< 2	< 2	< 2
1,3-Dichloropropane	< 2	< 2	< 2	< 2	< 2	< 2
Dibromochloromethane	< 2	< 2	< 2	< 2	< 2	< 2
1,2-Dibromoethane(EDB)	< 2	< 2	< 2	< 2	< 2	< 2
Chlorobenzene	< 2	< 2	< 2	< 2	< 2	< 2
1,1,1,2-Tetrachloroethane	< 2	< 2	< 2	< 2	< 2	< 2
Ethylbenzene	< 1	< 1	< 1	< 1	< 1	< 1

LABORATORY REPORT

EAI ID#: **126137**

Client: **Nobis Engineering**

Client Designation: **Allenstown Landfill | 76400.01**

Sample ID:	MW-3	MW-2	MW-5	MW-1	MW-4	SW-1
Lab Sample ID:	126137.04	126137.05	126137.06	126137.07	126137.08	126137.09
Matrix:	aqueous	aqueous	aqueous	aqueous	aqueous	aqueous
Date Sampled:	11/5/13	11/5/13	11/5/13	11/5/13	11/5/13	11/5/13
Date Received:	11/5/13	11/5/13	11/5/13	11/5/13	11/5/13	11/5/13
Units:	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l
Date of Analysis:	11/6/13	11/6/13	11/6/13	11/6/13	11/6/13	11/6/13
Analyst:	BAM	BAM	BAM	BAM	BAM	BAM
Method:	8260B	8260B	8260B	8260B	8260B	8260B
Dilution Factor:	1	1	1	1	1	1
mp-Xylene	< 1	< 1	< 1	< 1	< 1	< 1
o-Xylene	< 1	< 1	< 1	< 1	< 1	< 1
Styrene	< 1	< 1	< 1	< 1	< 1	< 1
Bromoform	< 2	< 2	< 2	< 2	< 2	< 2
IsoPropylbenzene	< 1	< 1	< 1	< 1	< 1	< 1
Bromobenzene	< 2	< 2	< 2	< 2	< 2	< 2
1,1,2,2-Tetrachloroethane	< 2	< 2	< 2	< 2	< 2	< 2
1,2,3-Trichloropropane	< 2	< 2	< 2	< 2	< 2	< 2
n-Propylbenzene	< 1	< 1	< 1	< 1	< 1	< 1
2-Chlorotoluene	< 2	< 2	< 2	< 2	< 2	< 2
4-Chlorotoluene	< 2	< 2	< 2	< 2	< 2	< 2
1,3,5-Trimethylbenzene	< 1	< 1	< 1	< 1	< 1	< 1
tert-Butylbenzene	< 1	< 1	< 1	< 1	< 1	< 1
1,2,4-Trimethylbenzene	< 1	< 1	< 1	< 1	< 1	< 1
sec-Butylbenzene	< 1	< 1	< 1	< 1	< 1	< 1
1,3-Dichlorobenzene	< 1	< 1	< 1	< 1	< 1	< 1
p-Isopropyltoluene	< 1	< 1	< 1	< 1	< 1	< 1
1,4-Dichlorobenzene	< 1	< 1	< 1	< 1	< 1	< 1
1,2-Dichlorobenzene	< 1	< 1	< 1	< 1	< 1	< 1
n-Butylbenzene	< 1	< 1	< 1	< 1	< 1	< 1
1,2-Dibromo-3-chloropropane	< 2	< 2	< 2	< 2	< 2	< 2
1,3,5-Trichlorobenzene	< 1	< 1	< 1	< 1	< 1	< 1
1,2,4-Trichlorobenzene	< 1	< 1	< 1	< 1	< 1	< 1
Hexachlorobutadiene	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Naphthalene	< 5	< 5	< 5	< 5	< 5	< 5
1,2,3-Trichlorobenzene	< 1	< 1	< 1	< 1	< 1	< 1
4-Bromofluorobenzene (surr)	**101 %R**	**99 %R**	**100 %R**	**101 %R**	**99 %R**	**100 %R**
1,2-Dichlorobenzene-d4 (surr)	**95 %R**	**96 %R**	**95 %R**	**96 %R**	**95 %R**	**97 %R**
Toluene-d8 (surr)	**96 %R**	**97 %R**	**97 %R**	**98 %R**	**97 %R**	**97 %R**

LABORATORY REPORT

EAI ID#: **126137**

Client: **Nobis Engineering**

Client Designation: **Allenstown Landfill | 76400.01**

Sample ID:	Trip Blank	DW-1
Lab Sample ID:	126137.01	126137.03
Matrix:	aqueous	aqueous
Date Sampled:	11/5/13	11/5/13
Date Received:	11/5/13	11/5/13
Units:	ug/l	ug/l
Date of Analysis:	11/11/13	11/11/13
Analyst:	BAM	BAM
Method:	524.2	524.2
Dilution Factor:	1	1
Dichlorodifluoromethane	< 0.5	< 0.5
Chloromethane	< 0.5	< 0.5
Vinyl chloride	< 0.5	< 0.5
Bromomethane	< 0.5	< 0.5
Chloroethane	< 0.5	< 0.5
Trichlorofluoromethane	< 0.5	< 0.5
Diethyl Ether	< 5	< 5
Acetone	< 10	< 10
1,1-Dichloroethene	< 0.5	< 0.5
tert-Butyl Alcohol (TBA)	< 30	< 30
Methylene chloride	< 0.5	**0.6**
Carbon disulfide	< 2	< 2
Methyl-t-butyl ether(MTBE)	< 0.5	< 0.5
Ethyl-t-butyl ether(ETBE)	< 0.5	< 0.5
Isopropyl ether(DIPE)	< 0.5	< 0.5
tert-amyl methyl ether(TAME)	< 0.5	< 0.5
trans-1,2-Dichloroethene	< 0.5	< 0.5
Vinyl acetate	< 10	< 10
1,1-Dichloroethane	< 0.5	< 0.5
2,2-Dichloropropane	< 0.5	< 0.5
cis-1,2-Dichloroethene	< 0.5	< 0.5
2-Butanone(MEK)	< 5	< 5
Bromochloromethane	< 0.5	< 0.5
Tetrahydrofuran(THF)	< 5	< 5
Chloroform	< 0.5	< 0.5
1,1,1-Trichloroethane	< 0.5	< 0.5
Carbon tetrachloride	< 0.5	< 0.5
1,1-Dichloropropene	< 0.5	< 0.5
Benzene	< 0.5	< 0.5
1,2-Dichloroethane	< 0.5	< 0.5
Trichloroethene	< 0.5	< 0.5
1,2-Dichloropropane	< 0.5	< 0.5
Dibromomethane	< 0.5	< 0.5
Bromodichloromethane	< 0.5	< 0.5
4-Methyl-2-pentanone(MIBK)	< 5	< 5
cis-1,3-Dichloropropene	< 0.3	< 0.3
Toluene	< 0.5	< 0.5
trans-1,3-Dichloropropene	< 0.3	< 0.3
1,1,2-Trichloroethane	< 0.5	< 0.5
2-Hexanone	< 5	< 5
Tetrachloroethene	< 0.5	< 0.5
1,3-Dichloropropane	< 0.5	< 0.5
Dibromochloromethane	< 0.5	< 0.5
1,2-Dibromoethane(EDB)	< 0.5	< 0.5
Chlorobenzene	< 0.5	< 0.5
1,1,1,2-Tetrachloroethane	< 0.5	< 0.5
Ethylbenzene	< 0.5	< 0.5

LABORATORY REPORT

EAI ID#: **126137**

Client: **Nobis Engineering**

Client Designation: **Allenstown Landfill | 76400.01**

Sample ID:	Trip Blank	DW-1
Lab Sample ID:	126137.01	126137.03
Matrix:	aqueous	aqueous
Date Sampled:	11/5/13	11/5/13
Date Received:	11/5/13	11/5/13
Units:	ug/l	ug/l
Date of Analysis:	11/11/13	11/11/13
Analyst:	BAM	BAM
Method:	524.2	524.2
Dilution Factor:	1	1
mp-Xylene	< 0.5	< 0.5
o-Xylene	< 0.5	< 0.5
Styrene	< 0.5	< 0.5
Bromoform	< 0.5	< 0.5
IsoPropylbenzene	< 0.5	< 0.5
Bromobenzene	< 0.5	< 0.5
1,1,2,2-Tetrachloroethane	< 0.5	< 0.5
1,2,3-Trichloropropane	< 0.5	< 0.5
n-Propylbenzene	< 0.5	< 0.5
2-Chlorotoluene	< 0.5	< 0.5
4-Chlorotoluene	< 0.5	< 0.5
1,3,5-Trimethylbenzene	< 0.5	< 0.5
tert-Butylbenzene	< 0.5	< 0.5
1,2,4-Trimethylbenzene	< 0.5	< 0.5
sec-Butylbenzene	< 0.5	< 0.5
1,3-Dichlorobenzene	< 0.5	< 0.5
p-Isopropyltoluene	< 0.5	< 0.5
1,4-Dichlorobenzene	< 0.5	< 0.5
1,2-Dichlorobenzene	< 0.5	< 0.5
n-Butylbenzene	< 0.5	< 0.5
1,2-Dibromo-3-chloropropane	< 0.5	< 0.5
1,3,5-Trichlorobenzene	< 0.5	< 0.5
1,2,4-Trichlorobenzene	< 0.5	< 0.5
Hexachlorobutadiene	< 0.5	< 0.5
Naphthalene	< 0.5	< 0.5
1,2,3-Trichlorobenzene	< 0.5	< 0.5
4-Bromofluorobenzene (surr)	**101 %R**	**101 %R**
1,2-Dichlorobenzene-d4 (surr)	**101 %R**	**103 %R**

Dichlorodifluoromethane, Chloromethane, Bromomethane, 2-Butanone(MEK), Tetrahydrofuran(THF), and 2-Hexanone exhibited recovery outside acceptance limits in the Quality Control sample(s). The analyte(s) were not detected in the sample(s).

The method blank associated with sample DW-1 showed methylene chloride at a level of <1/2 the reporting limit. The sample was analyzed immediately following the method blank.

LABORATORY REPORT

EAI ID#: **126137**

Client: **Nobis Engineering**

Client Designation: **Allenstown Landfill | 76400.01**

Sample ID:	DW-1 2nd Vial
Lab Sample ID:	126137.1
Matrix:	aqueous
Date Sampled:	11/5/13
Date Received:	11/5/13
Units:	ug/l
Date of Analysis:	11/18/13
Analyst:	BAM
Method:	524.2
Dilution Factor:	1

Dichlorodifluoromethane	< 0.5
Chloromethane	< 0.5
Vinyl chloride	< 0.5
Bromomethane	< 0.5
Chloroethane	< 0.5
Trichlorofluoromethane	< 0.5
Diethyl Ether	< 5
Acetone	< 10
1,1-Dichloroethene	< 0.5
tert-Butyl Alcohol (TBA)	< 30
Methylene chloride	< 0.5
Carbon disulfide	< 2
Methyl-t-butyl ether(MTBE)	< 0.5
Ethyl-t-butyl ether(ETBE)	< 0.5
Isopropyl ether(DIPE)	< 0.5
tert-amyl methyl ether(TAME)	< 0.5
trans-1,2-Dichloroethene	< 0.5
Vinyl acetate	< 10
1,1-Dichloroethane	< 0.5
2,2-Dichloropropane	< 0.5
cis-1,2-Dichloroethene	< 0.5
2-Butanone(MEK)	< 5
Bromochloromethane	< 0.5
Tetrahydrofuran(THF)	< 5
Chloroform	< 0.5
1,1,1-Trichloroethane	< 0.5
Carbon tetrachloride	< 0.5
1,1-Dichloropropene	< 0.5
Benzene	< 0.5
1,2-Dichloroethane	< 0.5
Trichloroethene	< 0.5
1,2-Dichloropropane	< 0.5
Dibromomethane	< 0.5
Bromodichloromethane	< 0.5
4-Methyl-2-pentanone(MIBK)	< 5
cis-1,3-Dichloropropene	< 0.3
Toluene	< 0.5
trans-1,3-Dichloropropene	< 0.3
1,1,2-Trichloroethane	< 0.5
2-Hexanone	< 5
Tetrachloroethene	< 0.5
1,3-Dichloropropane	< 0.5
Dibromochloromethane	< 0.5
1,2-Dibromoethane(EDB)	< 0.5
Chlorobenzene	< 0.5
1,1,1,2-Tetrachloroethane	< 0.5
Ethylbenzene	< 0.5

LABORATORY REPORT

EAI ID#: **126137**

Client: **Nobis Engineering**

Client Designation: **Allenstown Landfill | 76400.01**

Sample ID:	DW-1 2nd Vial
Lab Sample ID:	126137.1
Matrix:	aqueous
Date Sampled:	11/5/13
Date Received:	11/5/13
Units:	ug/l
Date of Analysis:	11/18/13
Analyst:	BAM
Method:	524.2
Dilution Factor:	1
mp-Xylene	< 0.5
o-Xylene	< 0.5
Styrene	< 0.5
Bromoform	< 0.5
IsoPropylbenzene	< 0.5
Bromobenzene	< 0.5
1,1,2,2-Tetrachloroethane	< 0.5
1,2,3-Trichloropropane	< 0.5
n-Propylbenzene	< 0.5
2-Chlorotoluene	< 0.5
4-Chlorotoluene	< 0.5
1,3,5-Trimethylbenzene	< 0.5
tert-Butylbenzene	< 0.5
1,2,4-Trimethylbenzene	< 0.5
sec-Butylbenzene	< 0.5
1,3-Dichlorobenzene	< 0.5
p-Isopropyltoluene	< 0.5
1,4-Dichlorobenzene	< 0.5
1,2-Dichlorobenzene	< 0.5
n-Butylbenzene	< 0.5
1,2-Dibromo-3-chloropropane	< 0.5
1,3,5-Trichlorobenzene	< 0.5
1,2,4-Trichlorobenzene	< 0.5
Hexachlorobutadiene	< 0.5
Naphthalene	< 0.5
1,2,3-Trichlorobenzene	< 0.5
4-Bromofluorobenzene (surr)	**103 %R**
1,2-Dichlorobenzene-d4 (surr)	**110 %R**

Vinyl chloride, Chloroethane, Trichlorofluoromethane, Diethyl Ether, tert-Butyl Alcohol(TBA), Tetrahydrofuran(THF) and Bromoform exhibited recovery outside acceptance limits in the Quality Control sample(s). The analyte(s) were not detected in the sample(s).

LABORATORY REPORT

EAI ID#: **126137**

Client: **Nobis Engineering**

Client Designation: **Allenstown Landfill | 76400.01**

Sample ID:	1,4-Dioxane Trip Blank	DW-1	MW-3	MW-2	MW-5	MW-1	MW-4
Lab Sample ID:	126137.02	126137.03	126137.04	126137.05	126137.06	126137.07	126137.08
Matrix:	aqueous	aqueous	aqueous	aqueous	aqueous	aqueous	aqueous
Date Sampled:	11/5/13	11/5/13	11/5/13	11/5/13	11/5/13	11/5/13	11/5/13
Date Received:	11/5/13	11/5/13	11/5/13	11/5/13	11/5/13	11/5/13	11/5/13
Units:	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l
Date of Analysis:	11/7/13	11/7/13	11/7/13	11/7/13	11/7/13	11/7/13	11/7/13
Analyst:	VG	VG	VG	VG	VG	VG	VG
Method:	8260B SIM	8260B SIM	8260B SIM	8260B SIM	8260B SIM	8260B SIM	8260B SIM
Dilution Factor:	1	1	1	1	1	1	1
1,4-Dioxane	< 0.25	< 0.25	< 0.25	< 0.25	< 0.25	< 0.25	< 0.25
4-Bromofluorobenzene (surr)	**102 %R**	**102 %R**	**104 %R**	**81 %R**	**103 %R**	**104 %R**	**92 %R**
Toluene-d8 (surr)	**100 %R**	**102 %R**	**101 %R**	**107 %R**	**100 %R**	**102 %R**	**95 %R**

LABORATORY REPORT

EAI ID#: **126137**

Client: **Nobis Engineering**

Client Designation: **Allenstown Landfill | 76400.01**

Sample ID:	SW-1
Lab Sample ID:	126137.09
Matrix:	aqueous
Date Sampled:	11/5/13
Date Received:	11/5/13
Units:	ug/l
Date of Analysis:	11/7/13
Analyst:	VG
Method:	8260B SIM
Dilution Factor:	1
1,4-Dioxane	< 0.25
4-Bromofluorobenzene (surr)	**101 %R**
Toluene-d8 (surr)	**104 %R**

LABORATORY REPORT

EAI ID#: **126137**

Client: **Nobis Engineering**

Client Designation: **Allenstown Landfill | 76400.01**

Sample ID:	DW-1	MW-3	MW-2	MW-5					
Lab Sample ID:	126137.03	126137.04	126137.05	126137.06					
Matrix:	aqueous	aqueous	aqueous	aqueous					
Date Sampled:	11/5/13	11/5/13	11/5/13	11/5/13		Analysis			
Date Received:	11/5/13	11/5/13	11/5/13	11/5/13	**Units**	**Date**	**Time**	**Method**	**Analyst**
Sulfate	**6**	**83**	**36**	**210**	mg/L	11/11/13	22:45	300.0	KL
Chloride	**3**	**40**	**7**	**110**	mg/L	11/06/13	9:48	4500CIE-90	KD
Nitrate-N	< 0.5	**2.3**	< 0.5	< 0.5	mg/L	11/06/13	9:48	353.2	KD
TKN	< 0.5	**0.5**	< 0.5	**1.0**	mg/L	11/07/13	12:00	$4500N_{org}C/N$	SEL

Sample ID:	MW-1	MW-4	SW-1					
Lab Sample ID:	126137.07	126137.08	126137.09					
Matrix:	aqueous	aqueous	aqueous					
Date Sampled:	11/5/13	11/5/13	11/5/13		Analysis			
Date Received:	11/5/13	11/5/13	11/5/13	**Units**	**Date**	**Time**	**Method**	**Analyst**
Sulfate	**100**	**130**	**45**	mg/L	11/12/13	0:18	300.0	KL
Chloride	**270**	**100**	**23**	mg/L	11/06/13	10:42	4500CIE-90	KD
Nitrate-N	< 0.5	< 0.5	< 0.5	mg/L	11/06/13	9:53	353.2	KD
TKN	**0.7**	**1.3**	< 0.5	mg/L	11/07/13	12:00	$4500N_{org}C/N$	SEL

LABORATORY REPORT

EAI ID#: **126137**

Client: **Nobis Engineering**

Client Designation: **Allenstown Landfill | 76400.01**

Sample ID:	DW-1	SW-1	Analytical Matrix	Units	Date of Analysis	Method	Analyst
Lab Sample ID:	126137.03	126137.09					
Matrix:	aqueous	aqueous					
Date Sampled:	11/5/13	11/5/13					
Date Received:	11/5/13	11/5/13					
Arsenic	**0.001**	< 0.001	AqTot	mg/L	11/6/13	200.8	DS
Barium	**0.002**	**0.009**	AqTot	mg/L	11/6/13	200.8	DS
Cadmium	< 0.001	< 0.001	AqTot	mg/L	11/6/13	200.8	DS
Chromium	< 0.001	< 0.001	AqTot	mg/L	11/6/13	200.8	DS
Iron	**0.29**	**0.24**	AqTot	mg/L	11/6/13	200.8	DS
Lead	< 0.001	< 0.001	AqTot	mg/L	11/6/13	200.8	DS
Manganese	< 0.005	**0.043**	AqTot	mg/L	11/6/13	200.8	DS
Mercury	< 0.0001	< 0.0001	AqTot	mg/L	11/6/13	200.8	DS
Selenium	< 0.001	< 0.001	AqTot	mg/L	11/6/13	200.8	DS
Silver	< 0.001	< 0.001	AqTot	mg/L	11/6/13	200.8	DS

LABORATORY REPORT

EAI ID#: **126137**

Client: **Nobis Engineering**

Client Designation: **Allenstown Landfill | 76400.01**

Sample ID:	MW-3	MW-2	MW-5	MW-1					
Lab Sample ID:	126137.04	126137.05	126137.06	126137.07					
Matrix:	aqueous	aqueous	aqueous	aqueous					
Date Sampled:	11/5/13	11/5/13	11/5/13	11/5/13	**Analytical Matrix**	**Units**	**Date of Analysis**	**Method**	**Analyst**
Date Received:	11/5/13	11/5/13	11/5/13	11/5/13					
Arsenic	< 0.001	< 0.001	**0.003**	< 0.001	AqDis	mg/L	11/6/13	200.8	DS
Barium	**0.036**	**0.041**	**0.012**	**0.019**	AqDis	mg/L	11/6/13	200.8	DS
Cadmium	< 0.001	< 0.001	< 0.001	**0.002**	AqDis	mg/L	11/6/13	200.8	DS
Chromium	< 0.001	< 0.001	< 0.001	< 0.001	AqDis	mg/L	11/6/13	200.8	DS
Iron	< 0.05	< 0.05	**1.7**	< 0.05	AqDis	mg/L	11/6/13	200.8	DS
Lead	< 0.001	< 0.001	< 0.001	< 0.001	AqDis	mg/L	11/6/13	200.8	DS
Manganese	**0.007**	< 0.005	**1.1**	**0.30**	AqDis	mg/L	11/6/13	200.8	DS
Mercury	< 0.0001	< 0.0001	< 0.0001	< 0.0001	AqDis	mg/L	11/6/13	200.8	DS
Selenium	< 0.001	< 0.001	< 0.001	< 0.001	AqDis	mg/L	11/6/13	200.8	DS
Silver	< 0.001	< 0.001	< 0.001	< 0.001	AqDis	mg/L	11/6/13	200.8	DS

Sample ID:	MW-4							
Lab Sample ID:	126137.08							
Matrix:	aqueous							
Date Sampled:	11/5/13	**Analytical Matrix**	**Units**	**Date of Analysis**	**Method**	**Analyst**		
Date Received:	11/5/13							
Arsenic	< 0.001	AqDis	mg/L	11/6/13	200.8	DS		
Barium	**0.022**	AqDis	mg/L	11/6/13	200.8	DS		
Cadmium	< 0.001	AqDis	mg/L	11/6/13	200.8	DS		
Chromium	< 0.001	AqDis	mg/L	11/6/13	200.8	DS		
Iron	**7.1**	AqDis	mg/L	11/6/13	200.8	DS		
Lead	< 0.001	AqDis	mg/L	11/6/13	200.8	DS		
Manganese	**0.19**	AqDis	mg/L	11/6/13	200.8	DS		
Mercury	< 0.0001	AqDis	mg/L	11/6/13	200.8	DS		
Selenium	< 0.001	AqDis	mg/L	11/6/13	200.8	DS		
Silver	< 0.001	AqDis	mg/L	11/6/13	200.8	DS		

CHAIN-OF-CUSTODY RECORD

Page _____ of _____

FOR LAB USE ONLY
126137

BOLD FIELDS REQUIRED. PLEASE CIRCLE REQUESTED ANALYSIS.

SAMPLE I.D.	SAMPLING DATE/TIME *IF COMPOSITE, INDICATE BOTH START & FINISH DATE/TIME	MATRIX (SEE BELOW)	GRAB/*COMPOSITE	VOC: 524.2 MTBE ONLY (524.2)	VOC: 524.2 BTEX	VOC: 8260B, 624 VTICs (1,4 DIOXANE)	VOC: 8021B BTEX HALOS	VOC: 8015B GRO MAVPH	SVOC: 8270D 625 SVTICs EDB DBCP ABN A BN PAH	SVOC: TPH8100 L1 L2	SVOC: 8015B DRO MAEPH	SVOC: PEST 608 PCB 608 PEST 8081A PCB 8082	SVOC: OIL & GREASE 1664 TPH 1664	TCLP: TCLP 1311 ABN METALS VOC PEST HERB	METALS: DISSOLVED METALS (LIST BELOW)	METALS: TOTAL METALS (LIST BELOW)	INORGANICS: TS TSS TDS SPEC. CON.	INORGANICS: Ba Cl F SO4 NO3-NO2	INORGANICS: BOD CBOD T. ALK.	INORGANICS: NH3 TKN T. PHOS. O. PHOS.	INORGANICS: pH T. RES. CHLORINE	INORGANICS: COD PHENOLS TOC DOC	INORGANICS: TOTAL CYANIDE TOTAL SULFIDE	INORGANICS: REACTIVE CYANIDE REACTIVE SULFIDE FLASHPOINT IGNITABILITY	MICRO/OTHER: TOTAL COLIFORM E. COLI FECAL COLIFORM	MICRO/OTHER: ENTEROCOCCI HETEROTROPHIC PLATE COUNT	# OF CONTAINERS	NOTES MEOH VIAL #
Trip Blank	11/5/13 0815	DW	G	✓		✓																						2	
1,4-Dioxane Trip Blank	11/5/13 0815	DW	G			✓																						2	
DW-1	11/5/13 0844	DW	G	✓	✓											✓		✓		✓								7	
MW-3	11/5/13 1035	GW	G		✓										✓			✓		✓								7	
MW-2	11/5/13 1114	GW	G		✓										✓			✓		✓								7	
MW-5	11/5/13 1147	GW	G		✓										✓			✓		✓								7	
MW-1	11/5/13 1220	GW	G		✓										✓			✓		✓								7	
MW-4	11/5/13 1250	GW	G		✓										✓			✓		✓								7	
SW-1	11/5/13 1322	SW	G		✓											✓		✓		✓								7	
				H	H/-										N	N				S									

MATRIX: A-AIR; S-SOIL; GW-GROUND WATER; SW-SURFACE WATER; DW-DRINKING WATER; WW-WASTE WATER
PRESERVATIVE: H-HCL; N-HNO_3; S-H_2SO_4; Na-NaOH; M-MEOH

PROJECT MANAGER: Tom Bobowski
COMPANY: Nobis
ADDRESS: 18 Chenell Dr
CITY: Concord **STATE:** NH **ZIP:** 03301
PHONE: 603-224-4182 **EXT.:**
FAX:
E-MAIL: tbobowski@nobiseng.com
SITE NAME: Allenstown Landfill
PROJECT #: 76400.01
STATE: (NH) MA ME VT **OTHER:**
REGULATORY PROGRAM: NPDES: RGP POTW STORMWATER OR (GWP) OIL FUND, BROWNFIELD OR OTHER:
QUOTE #: **PO #:**

DATE NEEDED:

QA/QC REPORTING LEVEL
A B C
OR
PRESUMPTIVE CERTAINTY

REPORTING OPTIONS
PRELIMS: YES OR NO
IF YES: FAX OR PDF

ELECTRONIC OPTIONS
NO FAX (E-MAIL) (PDF) EQUIS

TEMP. 4.3 °C
ICE? (YES) NO

SAMPLER(S): Andy Robichaud

RELINQUISHED BY:	DATE:	TIME:	RECEIVED BY:
Andy Robichaud	11/5/13	1400	
RELINQUISHED BY:	DATE:	TIME:	RECEIVED BY:
RELINQUISHED BY:	DATE:	TIME:	RECEIVED BY:

METALS: (8 RCRA) 13 PP (FE, MN) PB, CU
OTHER METALS:
SAMPLES FIELD FILTERED? ☑ YES ☐ NO
NOTES: (IE: SPECIAL DETECTION LIMITS, BILLING INFO, IF DIFFERENT)
DW-1 + SW-1 not filtered (total metals)
1,4-Dioxane vials are unpreserved

SITE HISTORY:
SUSPECTED CONTAMINATION:
FIELD READINGS:

Eastern Analytical, Inc.
Professional laboratory & drilling services
25 CHENELL DRIVE | CONCORD, NH 03301 | TEL: 603.228.0525 | 1.800.287.0525 | FAX: 603.228.4591 | E-MAIL: CUSTOMERSERVICE@EAILABS.COM | WWW.EAILABS.COM

(WHITE: ORIGINAL GREEN: PROJECT MANAGER)