

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

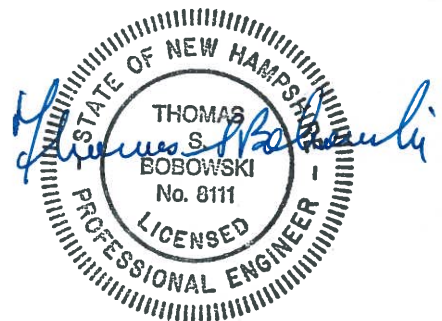
**GROUNDWATER MANAGEMENT PERMIT  
RENEWAL APPLICATION AND PERIODIC SUMMARY  
REPORT – 2015**

**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  
(603) 485-4276, Ext. 112  
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January 28, 2016  
Nobis File No. 76400.01

## Groundwater Monitoring Report Cover Sheet

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Site Name: *Allenstown Landfill*

Town: *Allenstown*

Permit No.: *199012032-A-002*

### **Type of Submittal** (Check all that apply)

- ☒ GMP Renewal Application and Periodic Summary Report (year) : 2015
- ☐ Data Submittal (month and year per Condition #7 of Permit)

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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.*) ***Reduce water quality sampling to once every two years with Periodic Reporting biennially in January 2018 and 2020 along with annual inquiry of any new water supply well on GMZ portion of Map 106, Lot 18.***

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.



January 28, 2016

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 Renewal Application and  
Periodic Summary Report - 2015**

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 Groundwater Management Permit (GMP) Renewal Application and Periodic Summary Report - 2015. This report documents water quality monitoring at the above-referenced site as described in GMP GWP-199012032-A-002 issued by the New Hampshire Department of Environmental Services (NHDES), as revised on March 13, 2014. The current GMP expires April 20, 2016. Please note the Town of Allenstown is exempt from the \$2000 GMP Renewal application fee.

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.

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

**TABLE OF CONTENTS**  
**GMP RENEWAL APPLICATION AND PERIODIC SUMMARY REPORT – 2015**  
**ALLENSTOWN LANDFILL**  
**ALLENSTOWN, NEW HAMPSHIRE**

<b><u>SECTION</u></b>	<b><u>PAGE</u></b>
<b>1.0 INTRODUCTION .....</b>	<b>1</b>
<b>2.0 GROUNDWATER LEVELS AND FLOW DIRECTION.....</b>	<b>2</b>
<b>3.0 SAMPLE COLLECTION AND ANALYSES .....</b>	<b>2</b>
3.1 Field Screening .....	2
3.2 Laboratory Analysis of Groundwater Samples.....	3
3.3 Laboratory Analysis of Surface Water Samples .....	4
3.4 Laboratory Analysis of Water Supply Samples .....	4
<b>4.0 SITE CONCEPTUAL MODEL .....</b>	<b>5</b>
4.1 Conceptual Hydrogeologic Model.....	5
4.2 Historical Groundwater Data Evaluation .....	7
4.3 Current Groundwater Management Zone and Ownership .....	7
<b>5.0 CONCLUSIONS AND RECOMMENDATIONS .....</b>	<b>8</b>
5.1 Conclusions .....	8
5.2 Recommendations .....	10

**TABLE**

**NUMBER**

- |   |   |
|---|---|
| 1 | Summary of Water Elevation Data                 |
| 2 | Summary of Metals Analyses and Other Parameters |
| 3 | Summary of VOC Analyses                         |

**CHART**

**NUMBER**

- |   |   |
|---|---|
| 1 | Inorganic Analytes and Groundwater Elevations over Time |
|---|---|

**TABLE OF CONTENTS (CONT)**  
**GMP RENEWAL APPLICATION AND PERIODIC SUMMARY REPORT – 2015**  
**ALLENSTOWN LANDFILL**  
**ALLENSTOWN, NEW HAMPSHIRE**

**FIGURES**

**NUMBER**

- 1 Locus Plan
- 2 Site Sketch with Groundwater Data

**APPENDIX**

- A Limitations
- B GMP Renewal Application Form, Site GMP and NHDES Correspondence
- C Field Procedures
- D Laboratory Data

## 1.0 INTRODUCTION

This report summarizes 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 March 13, 2014. 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	November each year	specific conductance, pH, temperature, chloride, sulfate, nitrate, TKN, iron, manganese, and static water elevations (in monitor wells)
Site Water Supply Well: DW-1	November each year	specific conductance, pH, temperature, chloride, sulfate, nitrate, TKN, iron, and manganese
Site Water Supply Well: DW-1	November 2015	volatile organic compounds and drinking water metals

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 2014 and 2015. 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 approved the submission of this GMP Renewal Application with the 2015 Periodic Summary Report in email correspondence dated March 13, 2015 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 Solinst™ electronic water level meter. During November 2014 and November 2015, water levels ranged from  $\pm 12.8$  feet (MW-4, 2014) to  $\pm 21.4$  feet (MW-1, 2014) below the well reference point (top of PVC). 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 2015 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**

Groundwater, surface water and drinking water samples were collected on November 18, 2014 and November 30, 2015. 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 2015 ranged from 6.1 to 7.1. The pH values are generally 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 2015 ranged from 74 microSiemens per centimeter ( $\mu\text{S}/\text{cm}$ ) to 2,280  $\mu\text{S}/\text{cm}$ . The specific conductance values measured are generally 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)<sup>1</sup>. Secondary Maximum Contaminant Levels<sup>2</sup> (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 2015 indicated the following:

#### **MW-1**

Where detected, inorganic analytes were present at concentrations not exceeding their applicable AGQS. Drinking water metals and VOCs were not tested for in 2014 or 2015.

#### **MW-2**

Where detected, inorganic analytes were present at concentrations not exceeding their applicable AGQS. Drinking water metals and VOCs were not tested for in 2014 or 2015.

#### **MW-3**

A sample could not be collected during the November 2014 sampling round as the well was dry. Where detected, inorganic analytes were present at concentrations not exceeding their applicable AGQS in 2015. Drinking water metals and VOCs were not tested for in 2015.

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<sup>1</sup> Chapter Env-Or 600 "Contaminated Site Management", revised June 1, 2015.

<sup>2</sup> Secondary Maximum Contaminant Levels (SMCLs) referenced in Env-Dw 706 Regulated Secondary Maximum Contaminant Levels (SMCLs), prepared by the New Hampshire Department of Environmental Services, last revision May 1, 2010.



#### MW-4

Where detected, inorganic analytes were present at concentrations not exceeding their applicable AGQS. Drinking water metals and VOCs were not tested for in 2014 or 2015.

#### MW-5

Manganese was present in the samples collected in November 2014 (1.5 parts per million [ppm]) and November 2015 (1.7 ppm) at concentrations exceeding the AGQS of 0.84 ppm. Drinking water metals and VOCs were not tested for in 2014 or 2015.

The analytical results for 2014 and 2015 are summarized along with historical data in Tables 2 and 3. The laboratory reports for 2015 are included in Appendix D.

### **3.3 Laboratory Analysis of Surface Water Samples**

Analytical results for surface water samples were compared to Env-Wq 1700 surface water standards<sup>3</sup> using the "Protection of Human Health Criteria - Water and Fish Ingestion" if established or the most conservative value for "Protection of Aquatic Life." During November 2014, the inorganic analytes iron and manganese were present at concentrations exceeding the applicable surface water standards but were not detected above laboratory detection limits in samples collected during November 2015. Drinking water metals and VOCs were not tested for in surface water samples in 2014 or 2015.

The analytical results for 2014 and 2015 are summarized along with historical data in Tables 2 and 3. The laboratory reports for 2015 are included in Appendix D.

### **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 during November 2015, did not exceed

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<sup>3</sup> "Surface Water Quality Regulations", Chapter Env-Wq 1700 of the New Hampshire Code of Administrative Rules, most recently revised on May 21, 2008.

their applicable AGQS. VOCs were not detected above laboratory detection limits in the water supply sample collected on November 30, 2015.

The 2014 and 2015 analytical results are summarized along with historical data in Tables 2 and 3. The laboratory reports for 2015 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<sup>4</sup>. The wells range in depth from  $\pm 13$  feet to  $\pm 26$  feet below site grade. Fill material was encountered at depths ranging from  $\pm 9$  feet to  $\pm 19$  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  $\pm 13$  feet. The general depth to groundwater across the site has ranged from  $\pm 6.4$  feet to  $\pm 21.6$  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

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<sup>4</sup> Phase II Hydrogeologic Investigation report prepared by Nobis Engineering, Inc. dated May 19, 2005.

calculated to range from  $\pm 0.59$  feet per day ( $\pm 220$  feet per year) to  $\pm 1.7$  feet per day ( $\pm 600$  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.

Annual groundwater monitoring is currently performed at the site during the month of 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  $\pm 1.37$  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 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.

During our November 30, 2015 sampling round, Nobis did not observe site development on the portion of the Map 106, Lot 18 property owned by Allenstown Aggregate, LLC within the GMZ that would suggest a new water supply well had likely been installed. Nobis inquired as to the existence of new water supply wells on the portion of the Map 106, Lot 18 property in multiple telephone calls to the Allenstown Aggregate, LLC owner beginning on January 13, 2016 but was not provided a verbal response returning the phone calls. As a result, Nobis sent a letter on January 19, 2016 (Appendix B) requesting a formal response of the owner which has not yet been provided. It is Nobis' opinion that the lack of observation of a water supply well development during sampling on November 30, 2015 satisfies the GMP Condition 14 for an annual inquiry since the property owner has not formally responded. Nobis will provide a response to NHDES

by email correspondence if one is provided by Allenstown Aggregate, LLC in the future to more formally satisfy GMP Condition 14. 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 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.

The historical groundwater quality data is consistent with a stable water quality condition on this landfill property based on sampling conducted over 10 years. Reduced GMP sampling to biennially will be sufficient to document the continuation of these stable conditions. Reduced sampling of monitoring points is justified and will be protective of human health and the environment. The proposed GMP monitoring program is provided in Section 5.2.

#### **4.3 Current Groundwater Management Zone and Ownership**

The current GMZ for the site is defined as the properties identified on Allenstown Assessors' Map 106 as Lots 19 and 18 as shown on Figure 2.

The following properties comprise the proposed Groundwater Management Zone:

Owner:	Town of Allenstown 16 School Street Allenstown, New Hampshire 03275 (603) 485-4276
Address:	161 Granite Street Allenstown, New Hampshire 03275
Tax Map and Lot	Map 106 / Lot 19
Deed Reference	Merrimack County 1812/560 and 1179/384-388
Owner:	Allenstown Aggregate, LLC P.O. Box 221 Auburn, New Hampshire 03032 (603) 669-6114
Address:	169 Granite Street Allenstown, New Hampshire 03275
Tax Map and Lot	Map 106 / Lot 18
Deed Reference	Merrimack County 2698/280

The portion of Lot 18 included in the permit 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.*

No modifications to the GMZ are recommended.

## **5.0 CONCLUSIONS AND RECOMMENDATIONS**

### **5.1 Conclusions**

Based on the water quality data collected during 2014 and 2015 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 tested for during 2014 and 2015 but have not been historically detected above laboratory detection limits in groundwater samples collected from the five monitoring wells.
- Where detected in groundwater samples collected from monitoring wells MW-1, MW-2, MW-3 and MW-4, inorganic analytes 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.
- During November 2014, the inorganic analytes iron and manganese were present at concentrations exceeding the applicable surface water standards but were not detected above laboratory detection limits in samples collected during November 2015.
- Where detected in DW-1 water supply samples, inorganic analyte concentrations, including drinking water metals during November 2015, did not exceed the applicable AGQS. VOCs were not detected above laboratory detection limits in the water supply sample collected during November 2015.
- 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 of 0.84 ppm in MW-5, it has not been detected in the site bedrock water supply well except once in April 2010 at a very low concentration (0.01 ppm). Sulfate has been below the AGQS of 500 ppm since November 2011 in monitoring wells and has only been detected in the site bedrock water supply well at concentrations two orders of magnitude below the AGQS.

- Manganese and sulfate in the MW-5 location appear to have 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.
- The historical groundwater quality data is consistent with a stable water quality condition on this landfill property based on sampling conducted over 10 years. Reduced GMP sampling to biennially will be sufficient to document the continuation of these stable conditions. Reduced sampling of monitoring points described in Section 5.2 is justified and will be protective of human health and the environment.
- The GMZ appears to be appropriate as currently defined.

## 5.2 Recommendations

Based on the above conclusions, Nobis recommends the following:

- The Groundwater Management Permit (GMP) should be modified to generally reduce water quality sampling to once every two years. During the five year permit sampling of the monitoring wells, surface water and water supply should include VOCs and drinking water metals as shown below:

Monitoring Location	Frequency	Parameters
MW-1, MW-2, MW-3, MW-4, MW-5, and SW-1	November 2017, November 2019	specific conductance, pH, temperature, chloride, sulfate, nitrate, TKN, iron, manganese, and static water elevations (in monitoring wells)
Site Water Supply Well: DW-1	November 2017, November 2019	specific conductance, pH, temperature, chloride, sulfate, nitrate, TKN, iron, manganese
MW-1, MW-2, MW-3, MW-4, MW-5, SW-1 and Site Water Supply Well	November 2019	volatile organic compounds and drinking water metals

Although it is Nobis' opinion that biennial sampling will be sufficient to establish the continuation of stable water quality conditions at this landfill property, if NHDES requires annual sampling from some monitoring points then monitoring wells MW-4, MW-5 and Site Water Supply Well DW-1 should be sampled for the more limited parameters in even-numbered years (2016, 2018, 2020) during the permit period based on historical concentrations, proximity to the GMZ and for protection of human health.

- In accordance with Env-Or 607.06 (d), an annual inquiry of the Allenstown Aggregate, LLC owner should be made to verify no new water supply wells have been installed on the undeveloped portion of Map 106, Lot 18 with the GMZ. The information collected should be provided to NHDES in short letter during the month of January or as part of the Periodic Summary Report provided biennially during the month of January in even-numbered years (2018, 2020).



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# TABLES

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TABLE 1  
SUMMARY OF WATER 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
	11/18/2014		21.40	298.40
	11/30/2015		21.32	298.48
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
	11/18/2014		18.55	298.30
	11/30/2015		18.44	298.41
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
	11/18/2014		Dry (>14.68)	<302.89
	11/30/2015		14.25	303.32

TABLE 1  
SUMMARY OF WATER ELEVATION DATA

Allentown Landfill  
161 Granite Street, Allentown, 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
	11/18/2014		12.77	302.03
	11/30/2015		12.83	301.97
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
	11/18/2014		18.61	298.39
	11/30/2015		18.54	298.46
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			302.97
	11/10/2010			302.87
	4/19/2011			303.02
	11/15/2011			302.86
	4/13/2012			302.82
	11/26/2012			302.74
	4/24/2013			302.58
	11/5/2013			302.36
	11/18/2014			302.33
	11/30/2015			302.14

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											Iron	Manganese	Sulfate	Chloride	Nitrate	TKN
		Temperature (°C)	pH	Specific Conductance (µS/cm)	Arsenic	Barium	Cadmium	Chromium	Lead	Mercury	Selenium	Silver						
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	<b>0.98</b>	120	490	1.7	3.9
	3/25/2005	10.3	6.8	1,330			0.005						0.05	<b>1</b>	120	610		1.9
	4/26/2006	13.0	6.9	1,000									<0.05	<b>3.8</b>	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	<b>2.1</b>	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	<b>1.4</b>	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	
11/18/2014	8.5	5.8	1,439									<0.05	0.23	110	410	<0.5	<0.5	
11/30/2015	8.7	6.1	1,156									0.08	0.18	87	300	<0.5	<0.5	
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	
11/18/2014	9.5	6.4	529									<0.05	<0.005	85	31	4.2	<0.5	
11/30/2015	10.1	6.8	655									<0.05	<0.005	57	130	3.5	<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											Iron	Manganese	Sulfate	Chloride	Nitrate	TKN
		Temperature (°C)	pH	Specific Conductance (µS/cm)	Arsenic	Barium	Cadmium	Chromium	Lead	Mercury	Selenium	Silver						
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	<b>3.4</b>	57	10	2.4	0.4
	3/25/2005	6.6	7.6	120									0.11	<b>1.6</b>	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
	11/18/2014	dry - no sample collected																
	11/30/2015	7.4	6.4	231									<0.05	<0.005	57	5	2.8	0.7
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	<b>1</b>	<b>580</b>	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	<b>800</b>	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	<b>510</b>	78	<0.5	1.4
	4/17/2008	10.6	6.0	1,324									2.9	0.40	<b>670</b>	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	<b>590</b>	150	<0.5	<0.5
	11/10/2009	13.5	6.3	1,124									5.8	0.48	<b>510</b>	45	<0.5	1.2
	4/30/2010	9.7	6.3	1,732									11	0.45	<b>650</b>	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	<b>620</b>	200	<0.5	0.9
	4/19/2011	6.6	6.3	2,370									1.8	0.30	<b>610</b>	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
	11/18/2014	9.7	6.0	501									7.2	0.19	130	19	<0.5	0.7
	11/30/2015	9.2	6.5	707									5.3	0.19	270	19	<0.5	0.6

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

NHDES Standards		PARAMETERS																
		DRINKING WATER METALS											Iron	Manganese	Sulfate	Chloride	Nitrate	TKN
		Temperature (°C)	pH	Specific Conductance (µS/cm)	Arsenic	Barium	Cadmium	Chromium	Lead	Mercury	Selenium	Silver						
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
	11/18/2014	8.3	6.3	1,137									2.7	1.5	200	170	<0.5	1.0
	11/30/2015	10.0	6.5	2,280									0.39	1.7	130	690	<0.5	0.6
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
	11/18/2014	10.6	7.1	77									0.68	<0.005	6	3	<0.5	<0.5
	11/30/2015	12.5	6.7	74	0.002	0.002	<0.001	<0.001	0.002	<0.0001	<0.001	<0.001	1.5	<0.005	6	3	<0.5	<0.5

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NHDES Standards		PARAMETERS																
		DRINKING WATER METALS											Iron	Manganese	Sulfate	Chloride	Nitrate	TKN
		Temperature (°C)	pH	Specific Conductance (µS/cm)	Arsenic	Barium	Cadmium	Chromium	Lead	Mercury	Selenium	Silver						
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					dry - no sample collected				0.13	0.03	140	5	1.3	<0.5
	11/20/2007																	
	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	<b>0.73</b>	<b>0.42</b>	6	8	<0.5	<0.5
	4/23/2009	13.0	6.8	344									<b>0.40</b>	<b>0.059</b>	110	10	<0.5	<0.5
	11/10/2009								dry - no sample collected									
	4/30/2010	11.5	7.1	193									<b>0.31</b>	<b>0.061</b>	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									<b>0.48</b>	<b>0.068</b>	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
	11/18/2014	4.0	6.8	236									<b>0.68</b>	<b>0.062</b>	55	23	<0.5	0.6
	11/30/2015	1.3	7.1	200									<0.05	<0.005	57	13	<0.5	<0.5

Notes

- 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.
- "<" indicates the parameter was not detected above the indicated detection limit.
- "NS" indicates no standard is established.
- Sampling was performed by Nobis Engineering, Inc. on the dates indicated.
- March 2005 analyses performed by Resource Laboratories, LLC of Portsmouth, N.H.; all other analyses performed by Eastern Analytical, Inc. of Concord, N.H.
- Drinking Water Metals are defined in the Safe Drinking Water Act of 1974, amended 1986 and 1996.
- Ambient Groundwater Quality Standards (AGQS) reference the New Hampshire Code of Administrative Rules, Chapter Env-Or 600, Table 600-1, effective June 1, 2015.
- SMCLs are referenced in the New Hampshire Code of Administrative Rules, Part Env-Dw 706, "Regulated Secondary Maximum Contaminant Levels (SMCLs)", May 1, 2010. SMCLs are included for reference only.
- Surface water standards are established by the NHDES's Env-Wq 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				MIBE	Naphthalene	1,4-Dioxane	Other 8260 VOCs
		Benzene	Toluene	Ethylbenzene	Xylenes (total)				
AGQS		5	1,000	700	10,000	13	20	3	
GW-2		2,900	50,000	1,500	17,000	2,600	1,700	NS	Varies
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
	11/30/2015	<0.5	<0.5	<0.5	<1	<0.5	<0.5		<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. Blank 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 June 1, 2015 and the GW-2 (vapor intrusion) standard referenced in the NHDES Vapor Intrusion Guidance, most recent revision February 2013.



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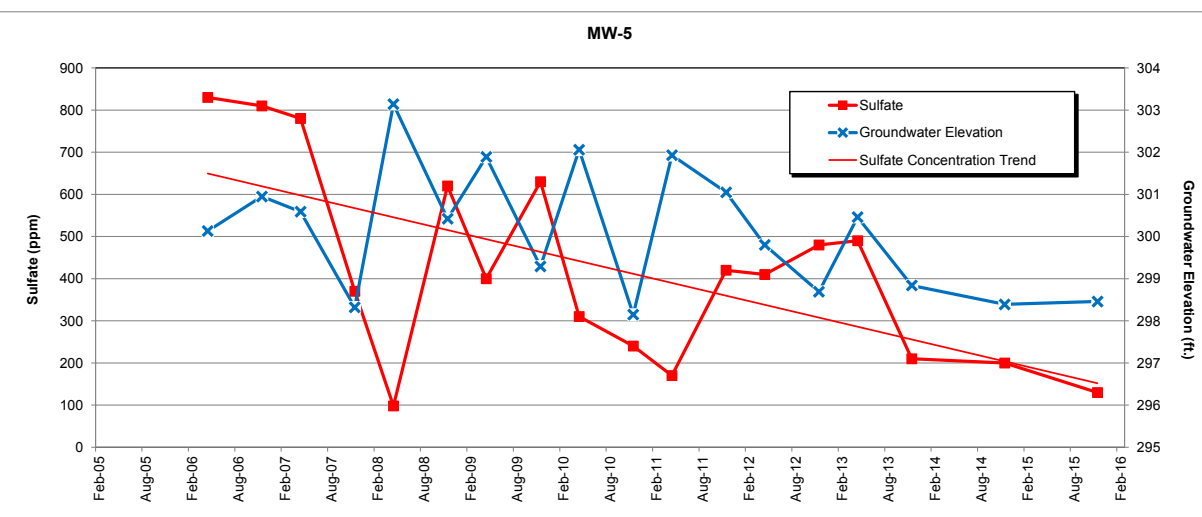
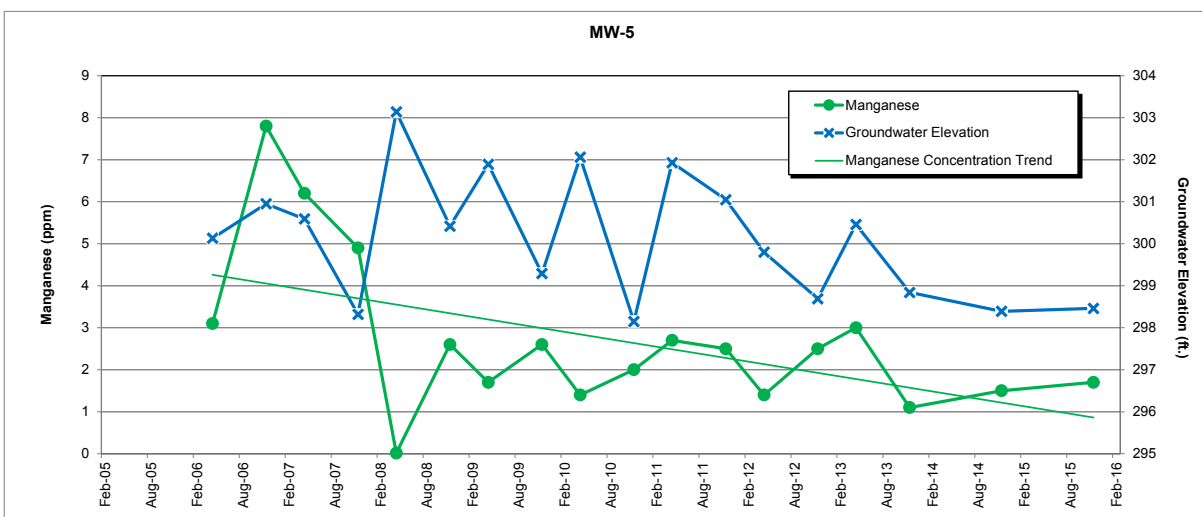
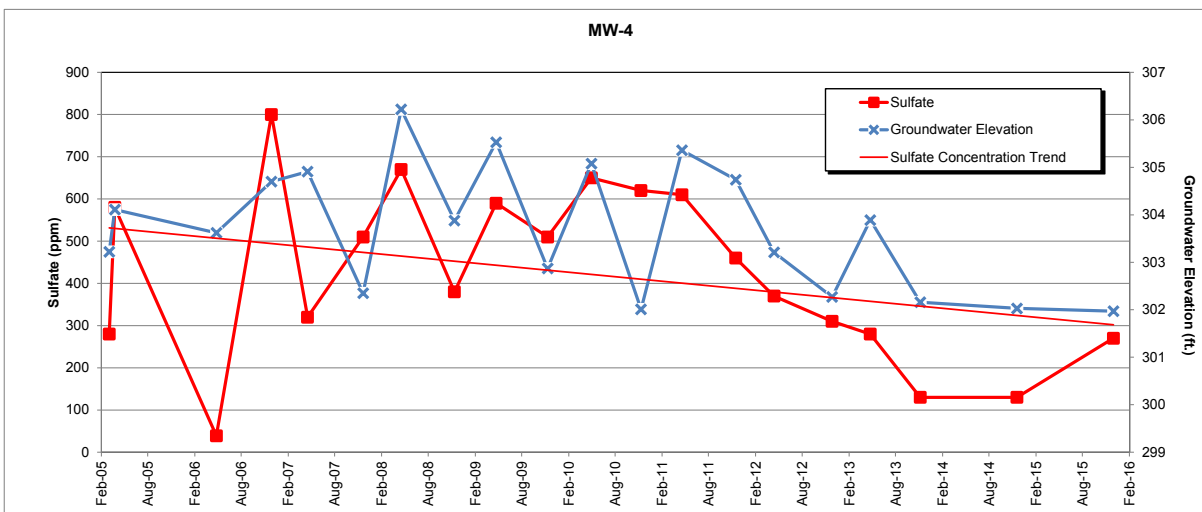
# CHARTS

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CHART 1  
INORGANIC ANALYTES AND GROUNDWATER ELEVATIONS OVER TIME

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



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

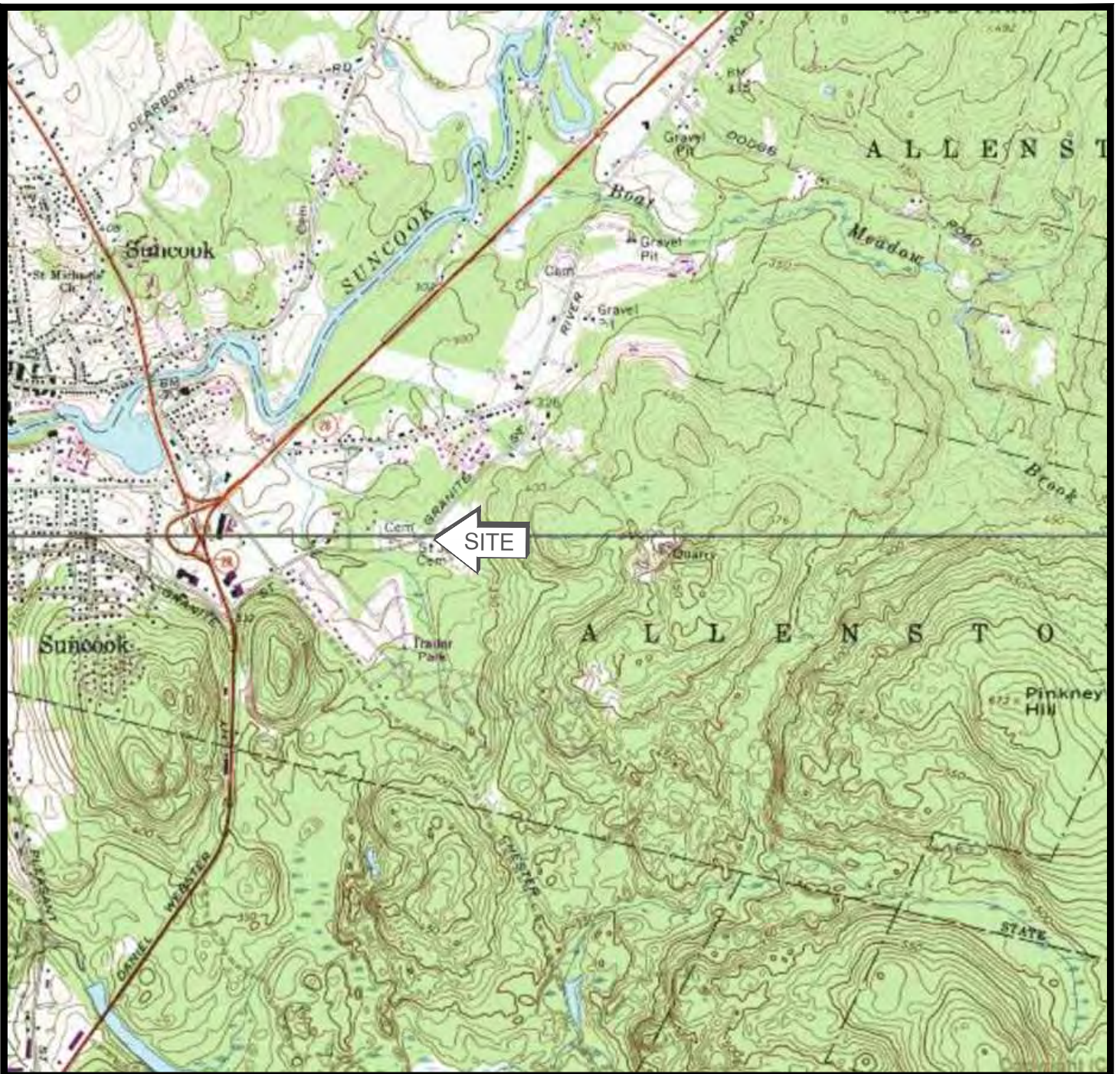
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## FIGURES

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NORTH

# USGS TOPOGRAPHIC MAP

SUNCOOK, NH  
1985

MANCHESTER NORTH, NH  
1985

APPROXIMATE SCALE  
1 INCH = 2,000 FEET



*Engineering a Sustainable Future*  
Nobis Engineering, Inc.  
18 Chenell Drive  
Concord, NH 03301  
T(603) 224-4182  
www.nobiseng.com

Client-Focused, Employee-Owned



QUADRANGLE LOCATION

## FIGURE 1

### LOCUS PLAN

ALLENSTOWN LANDFILL  
161 GRANITE STREET  
ALLENSTOWN, NEW HAMPSHIRE

PROJECT 76400.01

JANUARY 2016





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# APPENDIX A

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## **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 Hampshire Department of Environmental Services, in accordance with generally accepted hydrogeologic practices. No other warranty, express or implied, is made.

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# APPENDIX B

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**Application for *Renewal* of  
Groundwater Management Permit**  
Waste Management Division  
Site Remediation Programs



RSA 485-C:4, VIII and Env-Or 607

A GROUNDWATER MANAGEMENT PERMIT is issued under RSA 485-C:4, VIII and Env-Or 607 to a responsible party to remedy contamination associated with the past discharge of regulated contaminants, and to manage the use of the contaminated groundwater. (Examples include sites contaminated from leaking underground storage tanks, unlined landfills regulated pursuant to RSA 14-M, hazardous waste disposal, etc.)

**SUBMIT:**

- ONE SIGNED AND COMPLETED APPLICATION (Application shall be dated, signed and sealed by the professional of record licensed under RSA 310-A.)
- SUPPORTING INFORMATION
- \$2,000 APPLICATION FEE (In the form of a check payable to the "Treasurer – State of New Hampshire." State and local government, including counties and political subdivisions, are exempt unless eligible for funding under the Petroleum Reimbursement Fund Program.)

**TO:** NHDES/Waste Management Division  
Site Remediation Programs  
Groundwater Management Permit Coordinator  
P.O. Box 95, 29 Hazen Drive  
Concord, NH 03302-0095

**CERTIFICATION OF NOTICE TO LOCAL TOWN/CITY CLERK**

In order to meet the requirements of Env-Or 607.02 (b)(3), the applicant certifies that on January 28, 2016 a copy of this completed permit application was given to the Town/City Clerk of Allenstown (the town in which the facility requesting a permit is located).

**Date:** January 28, 2016

**Applicant Signature:**

**Applicant Name** (print or type): Shaun Mulholland, Town Administrator, Town of Allenstown, NH

**CERTIFICATION OF NOTICE TO OWNERS OF LOTS PROPOSED FOR INCLUSION IN THE GMZ**  
(As Applicable)

In order to meet the requirements of Env-Or 607.02 (b)(2), the applicant certifies that notification has been provided to all owners of lots proposed for inclusion in the Groundwater Management Zone (GMZ). **(PREVIOUSLY COMPLETED)**

**Date:** NA

**Applicant Signature:**

NA

**Applicant Name** (print or type):

NA

**I. SITE INFORMATION**

Site Name: Allenstown Landfill DES Site #: 199012032  
 Address: 161 Granite Street  
 City: Allenstown State: NH Zip: 03275  
 Tax Map: 106 Lot Number: 19  
 Deed Reference: County: Merrimack Book and Page: 1812/560 & 1179/384-388

**II. SITE OWNER INFORMATION**

Site Owner Name: Town of Allenstown Phone: (603) 485-4276  
 Mailing Address: 16 School Street  
 City: Allenstown State: NH Zip: 03275  
 Email: SMulholland@Allenstownnh.gov Fax: (Fax number no longer used)

**III. PERMIT APPLICANT INFORMATION** (complete only if different than site owner)

Permit Applicant Name: \_\_\_\_\_ Phone: \_\_\_\_\_  
 Mailing Address: \_\_\_\_\_  
 City: \_\_\_\_\_ State: \_\_\_\_\_ Zip: \_\_\_\_\_  
 Email: \_\_\_\_\_ Fax: \_\_\_\_\_

**IV. CONTACT PERSON INFORMATION** (complete only if different than site owner)

Contact Person Name: Shaun Mulholland Phone: \_\_\_\_\_  
 Mailing Address: \_\_\_\_\_  
 City: \_\_\_\_\_ State: \_\_\_\_\_ Zip: \_\_\_\_\_  
 Email: \_\_\_\_\_ Fax: \_\_\_\_\_

**V. SUPPORTING INFORMATION** (required)

- a) Tabular summary of all monitoring results for the 5 years immediately preceding the renewal application from existing monitoring points with an assessment of trends in the data;
- b) Narrative summary of the status of remedial measures performed (e.g., landfills: active, inactive w/no closure plan submitted, closed (as per approved closure plan); petroleum release and hazardous waste release sites: active remediation on-going, remedial action plan (RAP) completed w/on-going monitoring or monitoring-only RAP) and an update on the performance of measures conducted;
- c) Recommendations for any revisions to the existing Groundwater Management Permit, including an outline of proposed modifications to the monitoring program. Any proposed modifications to the monitoring program must be specific in terms of individual monitoring locations, sampling frequency and analytical parameters, and should be supported by reference to the monitoring summary;
- d) Updated site plan(s) scaled to fit onto an 8-1/2 inches by 11 inches or 11 inches by 17 inches sheet, using a tax map as a base, that identifies and locates the following:
  1. Proposed groundwater management zone boundary;
  2. Any properties, including tax map and lot numbers, within and abutting the lots on which the proposed groundwater management zone is located;
  3. All proposed sampling locations;

4. Current groundwater contours referenced to a table of current water level measurements obtained from piezometers and monitoring wells used to develop the contours;
  5. Water supply wells, including type of use, within 500 feet of the GMZ per Env-Or 607.03 (a) (7) f.; and
- e) A list of properties located within the groundwater management zone including owner's name, mailing address, telephone number, property address, and deed reference including county book and page and tax map and lot number.

## VI. CERTIFICATION

To the best of my knowledge, the data and information that I have submitted to renew the Groundwater Management Permit from the New Hampshire Department of Environmental Services are true and correct.

The undersigned certifies that application has been made for all required local, state, or federal permits. If an officer of the owner, I affirm that I have been duly authorized by the corporation, LLC, LLP, or other corporate entity to bind the corporation, LLC, LLP, or other corporate entity, and to make the above declarations. I also affirm that the corporation, LLC, LLP, or other corporate entity has made all filings and paid all fees required by the New Hampshire Secretary of State.

Date: January 28, 2016 Signature:   
Permit Applicant

Name (print or type): Shaun Mulholland, Town Administrator, Town of Allenstown, NH

## VII. PROFESSIONAL CERTIFICATION

Date: January 28, 2016 Signature: 

Name (print or type): Thomas S. Bobowski, PE, PG, CG Professional Engineer or Geologist

The New Hampshire licensed professional of record who prepared this permit application is required to apply their professional seal in the space provided below.



No liability is incurred by the State by reason of any approval for Groundwater Management Permits. Approval by the New Hampshire Department of Environmental Services is based on the information supplied by the applicant. No guarantee is intended or implied by reason of any advice given by NHDES or its staff.

# Signature Certificate



Document Reference: W7F4UDI7NLAX3544XYV8MS

**RightSignature**  
Easy Online Document Signing



Shaun Mulholland

Party ID: ZBZ36TJD92SZ5I7D9SBSZV

IP Address: 64.222.96.214

VERIFIED EMAIL: smulholland@allentownnh.gov

Electronic Signature:

Multi-Factor  
Digital Fingerprint Checksum

7d1521d5a06df4b239cdfc3a4e1a682592ad5f5c



## Timestamp

2016-01-28 07:19:16 -0800

2016-01-28 07:19:15 -0800

2016-01-28 07:19:06 -0800

2016-01-28 07:19:06 -0800

## Audit

All parties have signed document. Signed copies sent to: Shaun Mulholland and Shaun Mulholland.

Document signed by Shaun Mulholland (smulholland@allentownnh.gov) with drawn signature. - 64.222.96.214

Document viewed by Shaun Mulholland (smulholland@allentownnh.gov). - 64.222.96.214

Document created by Shaun Mulholland (smulholland@allentownnh.gov). - 64.222.96.214



This signature page provides a record of the online activity executing this contract.



The State of New Hampshire  
**DEPARTMENT OF ENVIRONMENTAL SERVICES**



**Thomas S. Burack, Commissioner**

March 13, 2014

Shaun Mulholland, Town Administrator  
Board of Selectmen  
Town of Allenstown  
16 School Street  
Allenstown, NH 03275

**Subject:** **Allenstown** – Town of Allenstown Landfill, 161 Granite Street,  
DES Site #199012032, Project #2574

**Periodic (Annual) Summary Report 2013 (Report)**, prepared by Nobis  
Engineering, Inc., dated January 28, 2014

Dear Mr. Mulholland:

Please find enclosed revised Groundwater Management Permit Number **GWP-199012032-A-002**, approved by the Department of Environmental Services (Department). This permit revision is made following a recommendation by your environmental consultant, Nobis Engineering, Inc. to remove low level 1,4-dioxane testing from the permit. Based on our review of the site data, we concur that this reduction is warranted.

Additionally, please note that Monitoring Condition #7 has been modified from the previous permit such that standard submission of permit monitoring data collected biannually (in April and November) each year has been changed to once a year in November. Also, **the annual summary report has been changed to a biennial summary report in even numbered years, with the next summary report due in January 2016**. Please note that standard submission of permit monitoring data collected in **November each odd numbered year** still need to be submitted within 45 days in accordance with standard permit conditions. It is anticipated that analysis for volatile organic compounds and metals will continue to be required at some reduced frequency in future permits.

All monitoring summaries and all required sampling results shall be submitted to the Groundwater Management Permits Coordinator at the address below. All correspondence must contain a cover letter that clearly shows the Department identification number for the site (DES #199012032).

Should you have any questions with this permit, please contact me at the Waste Management Division.

Sincerely,

Peter L. Beblowski, C. P.G.  
Hazardous Waste Remediation Bureau  
Groundwater Remediation & Permitting  
Tel: (603) 271-2999  
Fax: (603) 271-2181  
E-mail: [peter.bebowski@des.nh.gov](mailto:peter.bebowski@des.nh.gov)

cc: Michael Guilfoy, PE, Administrator SWMB  
Karee Kenison, PG, HWRB-GR&P, Supervisor  
Thomas Bobowski, PE, PG, CG, Nobis Engineering, Inc.



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  
(161 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 2014, 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 (1): May 10, 2011  
Date of Revision (2): March 13, 2014  
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 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	November each year	Specific Conductance @ 25° C, pH, Temperature, Chloride, Sulfate, Nitrate, TKN, Iron, Manganese, and Static Water Elevation (in monitor wells)
<b>Site Supply Well:</b> DW-1	November each year	Specific Conductance @ 25° C. pH, Temperature, Chloride, Sulfate, Nitrate, TKN, Iron, and Manganese.
DW-1	November 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 pursuant to Env-C 300.

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 **biennially in even numbered years** to the Department's Waste Management Division, starting in **January 2016**, using a format acceptable to the Department. The Biennial Summary Report shall include the information listed in Env-Or 607.04 (a), as applicable. The **Biennial 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.
10. All monitoring wells at the site shall be properly maintained and secured from unauthorized access or surface water infiltration

#### ADDITIONAL CONDITION FOR LANDFILLS

11. 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

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:

<b>Tax Map / Lot No.</b>	<b>Property Address</b>	<b>Owner Name and Address</b>	<b>Deed Reference (Book / Page)</b>
M106 / L19	Allenstown Landfill 161 Granite Street Allenstown, NH 03275	Town of Allenstown 16 School Street Allenstown, NH 03275	B1812 / P560 & B1179 / P384-388
M106 / L18*	Allenstown Aggregate 169 Granite Street Allenstown, NH 03275	Allenstown Aggregate, LLC PO Box 221 Auburn, NH 03032	B2698 / P0280



\*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

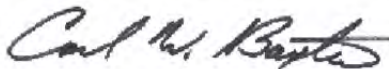
Consistent with Env-Or 607.06(d), for each undeveloped lot, or portion thereof, which is within the Groundwater Management Zone and lacks access to a public water supply, the permittee shall contact the property owner annually to determine if a water supply well has been installed. **The results of these inquiries shall be reported to the Department Annually.** Upon discovery of a new drinking water supply well within the Groundwater Management Zone, the permittee shall provide written notification to the Department and, to ensure compliance with Env-Or 607.06(a), submit a contingency plan to provide potable drinking water in the event the well is or becomes contaminated above the ambient groundwater quality 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.

The permittee shall sample the new supply well within 30 days of discovery. The well shall be sampled for all the analytical parameters included in Standard Condition # 7, unless otherwise specified in writing by the Department. The permittee shall forward all analytical results to the Department's Waste Management Division, the Department's Environmental Health Program, and the owner of the drinking water supply well within 7 days of receipt of the results.

If the results for the new well meet the ambient groundwater quality standards, the permittee shall continue to sample the new wells annually as part of the permit.

If the results for the new well indicate a violation of the ambient groundwater quality standards, the permittee shall notify the owner immediately and conduct confirmatory sampling within 14 days of receiving the original results.

Upon confirmation of a violation of the ambient groundwater quality standards in a new drinking water well, the permittee shall immediately implement the contingency plan to provide a potable drinking water supply that meets applicable federal and state water quality criteria.



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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.

GWP-199012032-A-002

## Tom Bobowski

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**From:** Beblowski, Peter <Peter.Bebowski@des.nh.gov>  
**Sent:** Friday, March 13, 2015 12:32 PM  
**To:** Tom Bobowski  
**Cc:** smulholland@allentownnh.gov  
**Subject:** RE: ALLENSTOWN - Allentown Landfill - NHDES No. 199012032, 2016 GMP Renewal Application Approach

Tom,  
As discussed, we concur with the approach to combine the Periodic (biennial) Summary Report with the Groundwater Management Permit Renewal Application for the above subject site. This email will be placed in the Department's electronic file as documentation of our agreement. Should you have any questions about this email please feel free to contact me at the Waste Management Division.  
Peter

Peter Beblowski, C.P.G.  
NHDES - WMD HWRB  
Groundwater Remediation & Permitting  
PO Box 95, 29 Hazen Drive  
Concord, NH 03302-0095  
Phone: (603) 271-2999 (w voicemail)  
email: [Peter.Bebowski@des.nh.gov](mailto:Peter.Bebowski@des.nh.gov)

*This email and any files transmitted with it are confidential and are intended solely for the use of the individual or entity to whom they are addressed. This communication may contain material protected by law or regulation. If you are not the intended recipient or the person responsible for delivering the Email for the intended recipient, be advised that you have received this Email in error and that any use, dissemination, forwarding, printing, or copying of this Email is strictly prohibited. If you have received this Email in error, please notify me at the Department of Environmental Services at (603) 271-2999.*

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**From:** Tom Bobowski [mailto:TBobowski@nobiseng.com]  
**Sent:** Friday, March 13, 2015 11:45 AM  
**To:** Beblowski, Peter  
**Cc:** Shaun Mulholland (smulholland@allentownnh.gov)  
**Subject:** ALLENSTOWN - Allentown Landfill - NHDES No. 199012032, 2016 GMP Renewal Application Approach

Dear Mr. Beblowski,

As we just discussed, on behalf of the Town of Allentown, Nobis is formally requesting NHDES approval to combine the required Groundwater Management Permit (GMP) biennial Periodic Summary Report that is due in January 2016 with the next GMP Renewal Application in the same submittal. The current GMP expires on April 20, 2016 and the GMP Renewal Application would be due on or about January 21, 2016. This approach will save the Town of Allentown some money by reducing production costs and would summarize identical sampling data up to and including the November 2015 round. It is Nobis' opinion this would still meet the GMP requirements and be most efficient for review by NHDES officials.

Please confirm that this approach is acceptable to NHDES.

Sincerely,

**Thomas S. Bobowski, PE, PG, CG**

January 19, 2016

File No. 76400.01

Mr. Ernest Thibeault  
Allenstown Aggregate, LLC  
c/o Thibeault Corp of New England  
603 Mammoth Road  
Londonderry, New Hampshire 03053-2146

**Re: Request for Acknowledgement of No New Water Supply Well(s)  
Groundwater Management Zone  
Portion of Tax Map 106, Lot 18  
Deed Reference – Merrimack County Registry Book 2698 Page 0280**

Dear Mr. Thibeault:

We have been unsuccessful in getting a response by telephone over the last two weeks about this matter so we are following up with this letter. As you are likely aware, a portion of the Allenstown Aggregate, LLC property located in Allenstown, New Hampshire, and identified on Tax Map 106 as Lot 18, is included in the Groundwater Management Zone (GMZ) described in Groundwater Management Permit (GMP) GWP-199012032-A-002 issued to the Town of Allenstown for the Allenstown Landfill site. The portion of the Allenstown Aggregate, LLC property within the GMZ is illustrated on the attached Figure 1. The current GMP was renewed by the New Hampshire Department of Environmental Services (NHDES) on April 21, 2011. As required under Condition 14 of the GMP, as excerpted below, the permittee (the Town of Allenstown) is required to inquire at least once per year as to whether any new drinking water supply wells have been installed on the Allenstown Aggregate, LLC property.

*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.*

On behalf of The Town of Allenstown, Nobis Engineering, Inc. (Nobis) requests that you return the attached acknowledgement stating whether any new water supply well(s) have been installed on the portion of the Allenstown Aggregate, LLC property within the GMZ. We request this to be sent in the enclosed self-addressed envelope to our office no later than January 28, 2016 so that we may complete our report to NHDES.

Please let me know if you have any questions.

Very truly yours,

**NOBIS ENGINEERING, INC.**



Thomas S. Bobowski, P.E., P.G., C.G.  
Senior Associate

cc: Mr. Shaun Mulholland, Town of Allenstown, 16 School Street, Allenstown, NH 03275

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**ACKNOWLEDGEMENT OF NO NEW WATER SUPPLY WELL(S)**

By signing this letter, I acknowledge that no new water supply wells have been installed on the portion of the property described on Town of Allenstown Tax Map 106 as Lot 18 that is included in the GMZ for the Allenstown Landfill site.

Signature \_\_\_\_\_  
for Allenstown Aggregate, LLC (property owner) \_\_\_\_\_ Date \_\_\_\_\_

If this does not accurately describe the current conditions on the portion of the Allenstown Aggregate, LLC property described, please indicate so in the space provided below and we will contact you regarding the steps required in the permit to monitor the new supply well(s) that may be present.

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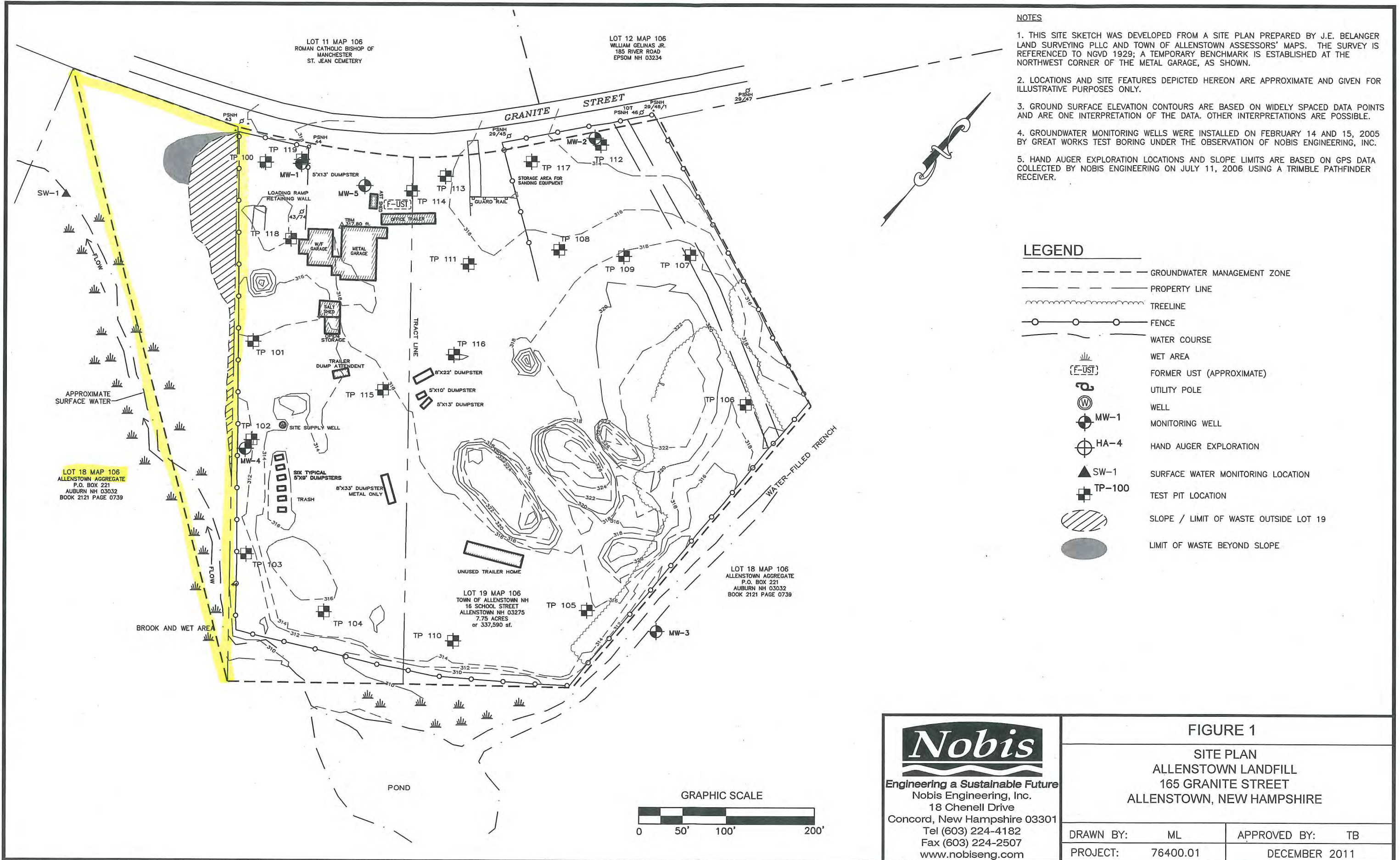
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J:\76400 Allenstown LF\Allenstown CAD\dwg\76400-SITE.dwg



**Nobis**  
Engineering a Sustainable Future  
Nobis Engineering, Inc.  
18 Chenell Drive  
Concord, New Hampshire 03301  
Tel (603) 224-4182  
Fax (603) 224-2507  
www.nobiseng.com

FIGURE 1  
SITE PLAN  
ALLENSTOWN LANDFILL  
165 GRANITE STREET  
ALLENSTOWN, NEW HAMPSHIRE

DRAWN BY:	ML	APPROVED BY:	TB
PROJECT:	76400.01		DECEMBER 2011

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# APPENDIX C

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## **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.

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## APPENDIX D

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Tom Bobowski  
Nobis Engineering  
18 Chenell Drive  
Concord, NH 03301



Subject: Laboratory Report

Eastern Analytical, Inc. ID: 150828  
Client Identification: Allenstown Landfill | 76400.01  
Date Received: 11/30/2015

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](http://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

12.14.15  
Date

7  
# of pages (excluding cover letter)



## SAMPLE CONDITIONS PAGE

EAI ID#: 150828

Client: **Nobis Engineering**

Client Designation: **Allenstown Landfill | 76400.01**

Temperature upon receipt (°C): **3.4**

Received on ice or cold packs (Yes/No): **Y**

Acceptable temperature range (°C): 0-6

Lab ID	Sample ID	Date	Date	Sample	% Dry	Exceptions/Comments (other than thermal preservation)
		Received	Sampled	Matrix	Weight	
150828.01	Trip Blank	11/30/15	11/30/15	aqueous		Adheres to Sample Acceptance Policy
150828.02	DW-1	11/30/15	11/30/15	aqueous		Adheres to Sample Acceptance Policy
150828.03	MW-5	11/30/15	11/30/15	aqueous		Adheres to Sample Acceptance Policy
150828.04	MW-1	11/30/15	11/30/15	aqueous		Adheres to Sample Acceptance Policy
150828.05	MW-4	11/30/15	11/30/15	aqueous		Adheres to Sample Acceptance Policy
150828.06	MW-2	11/30/15	11/30/15	aqueous		Adheres to Sample Acceptance Policy
150828.07	MW-3	11/30/15	11/30/15	aqueous		Adheres to Sample Acceptance Policy
150828.08	SW-1	11/30/15	11/30/15	aqueous		Adheres to Sample Acceptance Policy

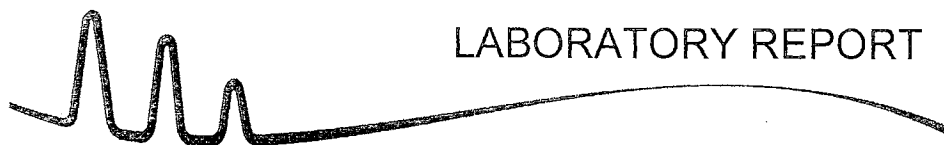
Samples were properly preserved and the pH measured when applicable unless otherwise noted. Analysis of solids for pH, Flashpoint, Ignitibility, Paint Filter, Corrosivity, Conductivity and Specific Gravity are reported on an "as received" basis.

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

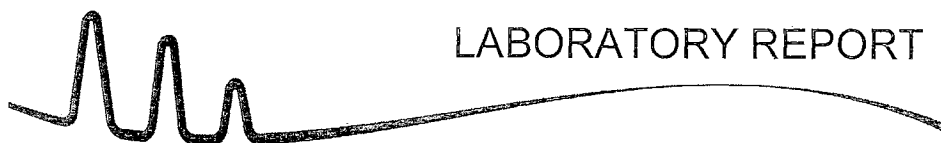
EAI ID#: 150828

Client: Nobis Engineering

Client Designation: Allenstown Landfill | 76400.01

Sample ID:	Trip Blank	DW-1
Lab Sample ID:	150828.01	150828.02
Matrix:	aqueous	aqueous
Date Sampled:	11/30/15	11/30/15
Date Received:	11/30/15	11/30/15
Units:	ug/l	ug/l
Date of Analysis:	12/3/15	12/3/15
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	< 0.5
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

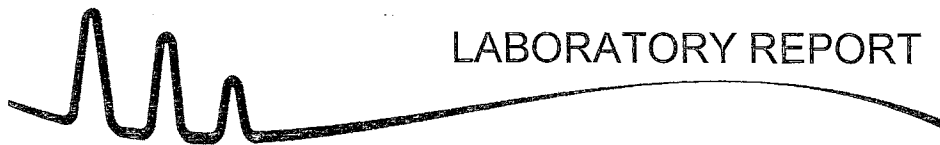
EAI ID#: 150828

Client: Nobis Engineering

Client Designation: Allenstown Landfill | 76400.01

Sample ID:	Trip Blank	DW-1
Lab Sample ID:	150828.01	150828.02
Matrix:	aqueous	aqueous
Date Sampled:	11/30/15	11/30/15
Date Received:	11/30/15	11/30/15
Units:	ug/l	ug/l
Date of Analysis:	12/3/15	12/3/15
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)	96 %R	96 %R
1,2-Dichlorobenzene-d4 (surr)	106 %R	108 %R

Dichlorodifluoromethane, Bromomethane, Acetone, and Vinyl acetate exhibited recovery outside acceptance limits in the Quality Control sample(s). The analyte(s) were not detected in the sample(s).



# LABORATORY REPORT

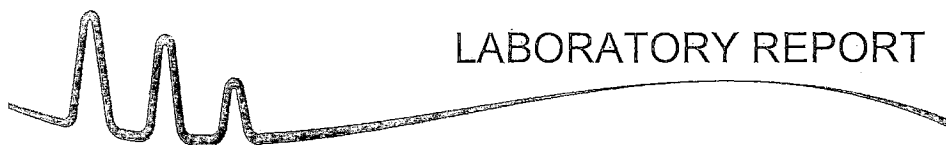
EAI ID#: 150828

Client: Nobis Engineering

Client Designation: Allenstown Landfill | 76400.01

Sample ID:	DW-1	MW-5	MW-1	MW-4					
Lab Sample ID:	150828.02	150828.03	150828.04	150828.05					
Matrix:	aqueous	aqueous	aqueous	aqueous					
Date Sampled:	11/30/15	11/30/15	11/30/15	11/30/15					
Date Received:	11/30/15	11/30/15	11/30/15	11/30/15					
					Analysis				
					Units	Date	Time	Method	Analyst
Sulfate	6	130	87	270	mg/L	12/09/15	0:57	300.0	KD
Chloride	3	690	300	19	mg/L	12/01/15	11:39	4500CIE-97	KD
Nitrate-N	< 0.5	< 0.5	< 0.5	< 0.5	mg/L	12/01/15	11:39	353.2	KD
TKN	< 0.5	0.6	< 0.5	0.6	mg/L	12/10/15	11:25	4500N <sub>org</sub> C/N	SEL

Sample ID:	MW-2	MW-3	SW-1						
Lab Sample ID:	150828.06	150828.07	150828.08						
Matrix:	aqueous	aqueous	aqueous						
Date Sampled:	11/30/15	11/30/15	11/30/15						
Date Received:	11/30/15	11/30/15	11/30/15						
				Analysis					
				Units	Date	Time	Method	Analyst	
Sulfate	57	57	57	mg/L	12/09/15	12:58	300.0	KD	
Chloride	130	5	13	mg/L	12/01/15	12:52	4500CIE-97	KD	
Nitrate-N	3.5	2.8	< 0.5	mg/L	12/01/15	11:56	353.2	KD	
TKN	< 0.5	0.7	< 0.5	mg/L	12/10/15	11:25	4500N <sub>org</sub> C/N	SEL	



# LABORATORY REPORT

EAI ID#: 150828

Client: **Nobis Engineering**

Client Designation: **Allenstown Landfill | 76400.01**

Sample ID: DW-1

Lab Sample ID: 150828.02

Matrix: aqueous

Date Sampled: 11/30/15

Date Received: 11/30/15

		Analytical Matrix	Units	Date of Analysis	Method	Analyst
Arsenic	0.002	AqTot	mg/L	12/2/15	200.8	DS
Barium	0.002	AqTot	mg/L	12/2/15	200.8	DS
Cadmium	< 0.001	AqTot	mg/L	12/2/15	200.8	DS
Chromium	< 0.001	AqTot	mg/L	12/2/15	200.8	DS
Iron	1.5	AqTot	mg/L	12/2/15	200.8	DS
Lead	0.002	AqTot	mg/L	12/2/15	200.8	DS
Manganese	< 0.005	AqTot	mg/L	12/2/15	200.8	DS
Mercury	< 0.0001	AqTot	mg/L	12/2/15	200.8	DS
Selenium	< 0.001	AqTot	mg/L	12/2/15	200.8	DS
Silver	< 0.001	AqTot	mg/L	12/2/15	200.8	DS

Sample ID: SW-1

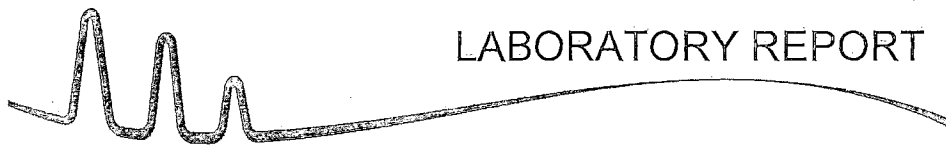
Lab Sample ID: 150828.08

Matrix: aqueous

Date Sampled: 11/30/15

Date Received: 11/30/15

		Analytical Matrix	Units	Date of Analysis	Method	Analyst
Iron	< 0.05	AqTot	mg/L	12/2/15	200.8	DS
Manganese	< 0.005	AqTot	mg/L	12/2/15	200.8	DS



# LABORATORY REPORT

EAI ID#: 150828

Client: **Nobis Engineering**

Client Designation: **Allenstown Landfill | 76400.01**

Sample ID:	MW-5	MW-1	MW-4	MW-2					
Lab Sample ID:	150828.03	150828.04	150828.05	150828.06					
Matrix:	aqueous	aqueous	aqueous	aqueous					
Date Sampled:	11/30/15	11/30/15	11/30/15	11/30/15	Analytical		Date of		
Date Received:	11/30/15	11/30/15	11/30/15	11/30/15	Matrix	Units	Analysis	Method	Analyst
Iron	0.39	0.08	5.3	< 0.05	AqDis	mg/L	12/2/15	200.8	DS
Manganese	1.7	0.18	0.19	< 0.005	AqDis	mg/L	12/2/15	200.8	DS

Sample ID: MW-3

Lab Sample ID:	150828.07								
Matrix:	aqueous								
Date Sampled:	11/30/15				Analytical		Date of		
Date Received:	11/30/15				Matrix	Units	Analysis	Method	Analyst
Iron	< 0.05				AqDis	mg/L	12/2/15	200.8	DS
Manganese	< 0.005				AqDis	mg/L	12/2/15	200.8	DS

(WHITE: ORIGINAL      GREEN: PROJECT MANAGER)