STATE OF DELAWARE
DEPARTMENT OF NATURAL RESOURCES
AND ENVIRONMENTAL CONTROL
DIVISION OF WASTE AND HAZARDOUS SUBSTANCES
SOLID AND HAZARDOUS WASTE MANAGEMENT SECTION

89 KINGS HIGHWAY
DOVER, DELAWARE 19901

TELEPHONE: (302) 739-9403
FAX: (302) 739-5060

Certified Mail
Return Receipt Requested
7013 0600 0001 3232 5603
7013 0600 0001 2924 8014

September 26, 2013

Ms Robin Roddy
Senior Facility Manager
Delaware Solid Waste Authority
1128 S. Bradford Street
P.O. Box 455
Dover, Delaware 19903-0455

Mr. Cleon L. Cauley, Sr.
Commissioner
Department of Public Works
Louis L. Redding City/County Bldg.
800 French Street
Wilmington, Delaware 19801-3537

Subject: Minor Modification of the Post-Closure Permit for the Pigeon Point Landfill
Reference: Solid Waste Facility Permit SW-08/01, File Code 02-B

Dear Ms Roddy and Mr. Cauley:

We have attached Permit SW-08/01 which has been modified to incorporate Revision 3 of the DSWA's *Pigeon Point Landfill Monitoring Program for Groundwaters, Surfacewaters and Leachates, updated* on August 8, 2013 (the monitoring plan). The changes to the monitoring plan include correcting well/aquifer designations for wells 1A and 1R and removing stormwater monitoring language referencing the Cap Enhancement Project, a project that has been completed. The Department has also added monitoring well 40R to PPL Table 2 because it was inadvertently not included in the January 8, 2013 permit modification. We have also changed the permit language for leachate monitoring to reference the requirements of the revised monitoring plan, which specifies all monitoring parameters and monitoring frequencies for leachate at the closed landfill.

If you have any questions concerning this permit, please contact Robert Hartman or me at 739-9403.

Sincerely,

Scanned

Nancy C. Marker
Environmental Program Administrator
Solid & Hazardous Waste Management Section

NCM : RH:drb
RH13023

Enclosure
cc: Ting Guo, Engineer, SHWMS (electronic copy only)
Daniel Fluman, DSWA (electronic copy only)

STATE OF DELAWARE
DEPARTMENT OF NATURAL RESOURCES
AND ENVIRONMENTAL CONTROL
DIVISION OF WASTE AND HAZARDOUS SUBSTANCES
SOLID AND HAZARDOUS WASTE MANAGEMENT SECTION

89 KINGS HIGHWAY
DOVER, DELAWARE 19901

TELEPHONE: (302) 739-9403
FAX: (302) 739-5060

Post Closure Permit SW-08/01
Pigeon Point Landfill

Effective Date: November 19, 2008
Last Modified: September 26, 2013

Permittees: Delaware Solid Waste Authority
1128 South Bradford Street
P.O. Box 455
Dover, Delaware 19903-0455

City of Wilmington – Department of Public Works
Louis L. Redding City/County Building
800 French Street
Wilmington, Delaware 19801-3537

Pursuant to 7 Del. C., Chapter 60, Section 6003 and the Delaware *Regulations Governing Solid Waste*, the Delaware Department of Natural Resources and Environmental Control (the Department) hereby issues permit SW-08/01 to the City of Wilmington and to the Delaware Solid Waste Authority specifying post closure care and monitoring for the closed landfill known as the Pigeon Point Landfill. All terms and conditions of this permit are enforceable by the Department.

Scanned

Robert Hartman
Environmental Scientist IV
Solid & Hazardous Waste Management Section

9/26/2013
Date

Nancy C. Marker
Environmental Program Administrator
Solid & Hazardous Waste Management Section

9/26/13
Date

Table of Contents

Section		Page
I.	General Conditions	3
II.	Post-Closure Care	5
III.	Environmental Monitoring	10
IV.	Reporting	12
V.	Recordkeeping	16
VI.	Assessment of Corrective Measures	16
VII.	Evaluating, Optimizing, and Ending Post-Closure Care	18
Permit Synopsis		19

I. General Conditions

A. Pursuant to 7 Del. C., 6003(c) and Sections 4 and 5 of the Delaware *Regulations Governing Solid Waste* (DRGSW), the Department of Natural Resources and Environmental Control (Department) hereby issues Permit SW-08/01 to the City of Wilmington (the City) and the Delaware Solid Waste Authority (DSWA) collectively (Permittees) for the post-closure care of the Pigeon Point Landfill also known as the Northern Solid Waste Facility 1 (the Landfill). The Landfill is located southeast of the eastern terminus of Lambsons Lane in New Castle Delaware as shown on *Deed Composite and Topographic Overlay, Pigeon Point Landfill, Lambson's Lane Extended* as submitted in Permit Application Supplement 2 (reference condition I.C.5. of this permit). The Landfill closed on October 21, 1985 in accordance with the requirements of the now defunct *Delaware Solid Waste Disposal Regulation* (August 1974).

B. This permit applies to Post-closure care and monitoring of the closed Pigeon Point Landfill, including all landfill control systems (which include monitoring wells or instruments, gas collection systems, leachate collection systems, stormwater controls, and access controls). Lands used for solid waste disposal or which contain landfill control systems include the following Tax Parcels (reference *Deed Composite and Topographic Overlay, Pigeon Point Landfill, Lambson's Lane Extended,* included in Permit Application Supplement 2) :

1. 10-011.00-014
2. 10-011.00-033
3. 10-011.00-039
4. 10-011.00-040
5. Reserved
6. 10-016.00-004
7. 10-016.00-009

C. This permit was issued in accordance with the following documents:

1. Secretary's Order No. 2008-A-0036, issued by the Department on August 27, 2008.
2. *The Pigeon Point Landfill Interim Agreement, December 21, 2005*, referred to herein as the Interim Agreement.
3. The *Pigeon Point Landfill Post Closure Permit Application* (including Appendix 10, the *Post Closure Care Plan)* dated April 26, 2006 and submitted by the DSWA and the City. This document is referred to herein as the Permit Application.
4. Supplemental information package 1 titled, *Pigeon Point Landfill Post Closure Permit Application*, submitted January 8, 2007 by the DSWA and the City. This document is referred to herein as the Permit Application, Supplement 1.
5. Supplemental information package 2 titled, *Pigeon Point Landfill Post Closure Permit Application*, submitted April 25, 2007 by the DSWA and the City. This document is referred to herein as the Permit Application, Supplement 2.
6. Other plans, letters, procedures, and policy specifically referenced in this permit.

D. This permit is issued subject to the following general conditions:

1. The City and the DSWA (the Permittees) shall conduct activities at the Landfill in compliance with this permit, and all applicable federal, state, county, and municipal environmental statutes, ordinances, and regulations., including, but not limited to: Delaware *Regulations Governing Solid Waste* (DRGSW), *Delaware Regulations Governing Hazardous Waste,* Delaware's *Regulations Governing the Control of Water Pollution,* the Delaware *Surface Water Quality Standards*, *Delaware Sediment and Stormwater Regulations*, and the Delaware air quality regulations. This general condition shall apply to all persons or entities conducting any activity at the Landfill on behalf of the City or the DSWA, including contractors and subcontractors.

2. The Permittees shall maintain a readable copy of the most current version of this permit. At a minimum, the DSWA shall maintain a copy of this permit at their administrative office located at the Cherry Island Landfill, and the City shall maintain a copy of this permit at the Department of Public Works, Commissioner's Office.

3. Any transfer of this permit shall be done in compliance with the requirements of Section 4.1.8 of the Delaware *Regulations Governing Solid Waste* (DRGSW), including post-closure care financial assurance. Permittees shall not transfer this permit until they have established a valid Environmental Covenant in accordance with the requirements of Delaware Code Title 7, Chapter 79, Subchapter II. Until transfer of the permit has been completed, the Permittees shall continue to maintain control of, and responsibility for the Landfill in compliance with this permit and the DRGSW, including, but not limited to the requirements for financial assurance, post-closure care, recordkeeping, reporting, monitoring and corrective actions. Section 4.1.8.3.1 of the DRGSW (closing a facility prior to permit transfer) shall not apply to the closed Pigeon Point Landfill. Also, reference the DNREC letter dated May 8, 2009, *Pigeon Point Landfill Post-Closure Care Permit – Completed Resolution Table,* regarding the DSWA's draft Environmental Covenant.

4. Post-Closure Care Period

   a. Upon issuance, Permit SW-08/01 shall remain valid and enforceable throughout the post-closure care period of the Landfill. The Delaware Solid Waste Authority began post-closure care of the Landfill on January 1, 1986; however, the Department's regulation of post-closure care in accordance with the DRGSW commenced with the issuance of Permit SW-08/01.

   b. In accordance with the DRGSW, the owner or operator of the Landfill must continue post-closure care for 30 years after the completion of closure. For the Pigeon Point Landfill, closure was completed on January 1, 1986. In accordance with the DRGSW, at any time during the post-closure care period, the Department may remove one or more of the post-closure care requirements described in this permit if it determines that the requirement(s) is/are no longer necessary for the protection of human health and the

environment. At any time after the first five years of the post-closure care period, the Department may reduce the length of the post-closure care period or terminate post-closure care if it determines that such care is no longer necessary. Prior to the time that the post-closure care period is due to expire, (January 1, 2016), the Department may extend the post-closure care period if it determines that the extended period is necessary to protect human health and the environment. Additionally, the post-closure care period for the landfill shall not expire until the Environmental Covenants have been established for all parcels which have been used for waste disposal (reference DRGSW, Section 5.11.5. and 7 Del. C. Chapter 79, Subchapter II).

II. Post-Closure Care

A. General Post-Closure Care. The Permittees shall provide post-closure care of the Landfill in accordance with Section 5.11 of the Delaware *Regulations Governing Solid Waste* (DRGSW) and the conditions of this permit.

B. If at any time during the post-closure care period there is evidence of a contaminant release from the Landfill that presents a significant threat to human health or the environment, the Permittees shall take action to mitigate the threat.

C. The Permittees shall not allow the disposal of solid wastes at the Landfill during the post-closure care period. Disposal of solid waste at the Landfill is strictly prohibited.

D. Access Control. The Permittees shall ensure that access to the Landfill is effectively controlled at all times by the use of gates, security fence, or other means necessary to limit access to the Landfill to authorized persons engaging in activities compatible with this permit. Specific access-control requirements include:

1. In accordance with the requirements of 7 Del. C. Section 6024, neither Permittee shall impede the Department's right of entry to the Landfill.

2. The Permittees shall inspect access controls, including the fences and gates, at least once each month. During each inspection, the Permittees shall document observations and problems using a form acceptable to the Department and shall correct all deficiencies as required. Recordkeeping and shall be done in accordance with Section V. A.6 of this permit.

E. Activities. Unless approved in advance by the Department, or required by this permit, no activity shall be conducted on the Landfill. The Permittees may conduct the following activities in compliance with this permit and without further Department approval: grass mowing, seeding, planting, guided tours, surveying, road maintenance, traffic authorized by the permittees, environmental monitoring, inspections, and maintenance activities that do not disturb the cap or damage landfill control systems. Additional cap maintenance activities that the Permittees may undertake without further Department Approval are described in condition II.H.2. of this permit.

F. The Permittees shall prevent the accumulation of standing water on the Landfill. This Prohibition shall not apply to properly maintained erosion and sediment controls specified in the Contouring Plan Addendum and Final erosion and Sediment Control Plans, dated March 2001.

G. Stormwater Management. The Permittees shall manage stormwater and maintain stormwater controls to ensure the effectiveness of the capping system and prevent run-on and run-off from eroding or otherwise damaging the cap. Specific requirements include:

1. The Permittees shall take all reasonable steps to identify and prevent the discharge of pollutants from the Landfill into surface water, particularly the Delaware River.

2. The Permittees shall provide for, and maintain a permanent, long-lived vegetative cover on the final cover soils of the Landfill.

3. The Permittees shall repair disturbed areas of final cover to prevent erosion as soon as practical. During the growing season, repair shall include replacement of eroded final cover with clean soil capable of supporting the vegetative cover and reseeding of the disturbed areas. If final cover soil is disturbed during the non-growing season, the Permittees shall use temporary measures such as matting or anchored mulch to stabilize the area until vegetation has been established.

4. The Permittees shall properly operate, manage and maintain and the two stormwater management basins and all stormwater management structures and conveyances. The Permittees shall remove debris or blockages from basins, pipes and channels as soon as practical. The Permittees should coordinate stormwater basin cleanout or maintenance involving structural repair of the basins with the DNREC Sediment and Stormwater Program.

5. The Permittees shall inspect the Surface Water Management System at least once each month. During each inspection, the Permittees shall document observations and problems using a form acceptable to the Department and shall correct all deficiencies as required. Recordkeeping shall be done in accordance with Section V.A.6 of this permit.

H. Maintaining Integrity and Effectiveness of the Capping System

1. The Permittees shall maintain the integrity and effectiveness of the capping system, including making repairs as necessary to repair seeps, to prevent damage from run-on/run-off and to correct the effects of settling, subsidence and erosion.

2. Except for the following repairs, the Permittees shall not remove or alter any portion of the cap without the written approval of the Department's Solid & Hazardous Waste Management Section. The Permittees may make the following repairs to the cap as long as they do not damage landfill control systems or reduce the effectiveness of the cap.

a. Permittees may, without written approval, disturb the top six inches of the cap (the topsoil) for maintenance, regrading or seeding as long as sediment and erosion controls are properly employed, only clean topsoil is used, and the thickness of the cap and vegetative layer are not diminished upon completion of the work. For the purpose of this permit, clean topsoil means the natural, unconsolidated mineral and organic material on the immediate surface of the earth that serves as a natural medium for the growth of land plants , and which can perform as the vegetative layer on the landfill cap. Clean topsoil contains no trash, debris, or solid waste and cannot be from a state or federal cleanup site. Analytical testing of clean topsoil is not typically required unless its origins are unknown or there is reason to suspect contaminants may be present which may pose an increased risk to human health or the environment.

b. Permittees may repair leachate seeps by trenching into the cap if needed, as long as such repairs can be completed over the course of one business day. In order to complete such repairs, the permittees must cap the repair with at least 18 inches of clean, compacted soil, covered by 6 inches of clean topsoil and seed to establish vegetation. For the purpose of this permit, clean soil means the natural, unconsolidated mineral and organic material on the immediate surface of the earth that serves as a natural medium for the growth of land plants, and which can perform as the rooting layer on the landfill cap. Clean soil contains no trash, debris, or solid waste and cannot be from a state or federal cleanup site. Analytical testing of clean soil is not typically required unless its origins are unknown or there is reason to suspect contaminants may be present which may pose an increased risk to human health or the environment.

c. Permittees may also fill in erosion rills and gullies of any depth with clean soil and seed to establish vegetation.

3. The Permittees shall inspect the capping system at least once each month. During each inspection, the Permittees shall document observations and deficiencies using a form acceptable to the Department and shall correct all deficiencies as needed. Recordkeeping shall be done in accordance with Section V.A.6 of this permit.

I. Litter control.

1. The Permittees shall provide for litter removal and general cleanliness of the entire Landfill site and shall not allow any litter to migrate from the Landfill site. The Permittees shall collect and properly dispose of any off-site litter attributable to activities at the Landfill.

2. The Permittees shall inspect the Landfill, the haul roads and the Landfill's perimeter road and fence line for litter at least once each month. During each inspection, the Permittees shall document observations and deficiencies using a form acceptable to the Department. The Permittees shall maintain records of these inspections in accordance with Section V.A.6 of this permit.

J. Dust Control.

1. The Permittees shall conduct all activities at the Landfill in a manner to prevent dust emissions from causing a condition of air pollution (injurious to human, plant, or animal life or unreasonably interfering with the enjoyment of life and property). The Permittees shall inspect for visible dust leaving the Landfill site at least once each day during activities that may cause dust emissions of concern.

2. The Permittees shall implement controls to minimize tracking of soils or other materials onto public roads leading from the Landfill. During activities that may result in drag-out of material from the Landfill, the Permittees shall inspect public roads at least once each day to identify if materials are being tracked off the Landfill and to gauge the extent of the problem (e.g. how far is material is being tracked). In the event material is being tracked onto public roads leading from the Landfill, Permittees shall provide for street cleaning of that area on the day the problem is identified.

3. The Permittees shall document the observations and deficiencies found during these inspections using a form acceptable to the Department. The Permittees shall maintain records of these inspections in accordance with Section V.A.6 of this permit.

K. Maintenance and Preservation of Monitoring and Observation Wells.

1. The Permittees shall preserve and maintain all groundwater monitoring wells and leachate observation wells shown in Appendix 10 of the Permit Application, *Post Closure Care Plan,* Exhibit 12, Attachment 4. The Permittees shall implement controls to protect these monitoring wells from damage from site activities.

2. Permittees shall inspect each monitoring well at least once per quarter. The Permittees shall document the observations and deficiencies found during these inspections. The Permittees shall maintain records of these inspections in accordance with Section V.A.6 of this permit.

3. Permittees shall replace any well that can no longer be used to provide monitoring data required by this permit. Replacement and abandonment of groundwater monitoring wells shall be done in accordance with the Delaware *Regulations Governing the Construction and Use of Wells.*

L. Maintenance and Preservation of Geotechnical Monitoring Systems.

1. The Permittees shall preserve and maintain the geotechnical monitoring system consisting of IC-05-01, IC-05-02 and LOW-05-001 as shown in Appendix 10 of the Permit Application, *Post Closure Care Plan,* Exhibit 12, Attachment 3. The Permittees shall implement controls to protect the monitoring systems from damage from site activities.

2. Permittees shall inspect IC-05-01, IC-05-02, and LOW-05-001 at least semi-annually. The Permittees shall document the observations and deficiencies found during these inspections using a form acceptable to the Department. The Permittees shall maintain records of these inspections in accordance with Section V.A.6 of this permit.

3. The Permittees shall replace any instrument or well that can no longer be used to provide monitoring data required by this permit.

M. Maintenance and Preservation of Leachate Control Systems.

1. The Permittees shall maintain all necessary permits and approvals for leachate management and disposal.

2. The Permittees shall preserve and maintain leachate collection and transport systems (reference, *Pigeon Point Leachate Collection System and Sewer Connections,* Appendix 10, Exhibit 12, Attachment 1 of the Permit Application). The Permittees shall preserve and maintain the capability to sample leachate from the DRP Pump Station, the Northwest Lift Station and the West Leachate Collection Manhole Pump Station. The Permittees shall maintain the capability to measure leachate flow and quantity at the DRP Pump Station.

3. The Permittees shall maintain working alarm systems at the DRP Pump Station, the West Leachate Collection Manhole Pump Station, the East Leachate Collection Manhole Pump Station, the Northwest Lift station and the Southwest Lift Station.

4. The Permittees shall inspect the Leachate Control System at least once each week and shall document the observations and deficiencies found during these inspections using a form acceptable to the Department. In the event that the alarm system is not operating, Permittees shall inspect the affected pump or lift stations daily. Permittees shall maintain records of these inspections in accordance with Section V.A.6 of this permit.

N. Landfill Gas Collection.

1. The Permittees shall operate the landfill gas collection system in accordance with a permit from the Department's Air Quality Management Section.

O. Cap Enhancement Project

1. The cap enhancement project as specified in the drawings and specifications in Appendix 10 of the Permit Application, *Post Closure Care Plan,* Exhibit 12, Attachment 6 (*Contouring Plan*, by Camp Dresser & McKee, December 1999) and Attachment 5 (*Contouring Plan Addendum and Final Erosion and Sediment Control Plans*, by Schnabel Engineering, March 2001) has been completed (reference DSWA report dated 3/18/11 and titled, *Pigeon Point Landfill Cap Enhancement Report,* and *DNREC certification of completion letter,* dated 6/29/11).

P. Odor Control. The Permittees shall maintain the closed landfill to prevent odors from the facility being detectable at the facility property line in sufficient quantities to cause or create a condition of air pollution.

III. Environmental Monitoring

A. Surface Water Monitoring:

1. The Permittees shall monitor surface water at the Eastern Stormwater Basin (Basin #2) and the Southwestern Stormwater Basin (Basin #1) quarterly during March, June, September and December. The Permittees shall sample in accordance with the *Surfacewater Monitoring* section of the *Pigeon Point Landfill Monitoring Program for Groundwaters, Surfacewaters and Leachates (Revision 3)*, dated August 8, 2013 and include the analytes listed in PPL Table 1 below.

PPL Table 1 Minimum Surface Water Monitoring Requirements for PPL

Parameters	Parameters	Parameters	Parameters
Temperature (field)	Carbonate	Arsenic	Potassium
pH (field)	Dissolved Silica	Cadmium	Selenium
Specific Conductance (field)	Hardness (mg/L as $CaCO^3$)	Calcium	Sodium
REDOX (field)	COD	Chromium	Sulfate
D.O. (field)	BOD	Iron	Zinc
Turbidity (field)	Total Dissolved Solids	Lead	Chloride
pH (lab)	Total Organic Carbon	Magnesium	
Specific Conductance (lab)	Nitrate - N	Manganese	
Alkalinity (total)	Ammonia - N	Mercury	
Alkalinity (Phenolphthalein)	Total Phosphorus	Nickel	
Bicarbonate	Orthophosphate		

B. Ground Water Monitoring:

1. The Permittees shall monitor the groundwater monitoring wells shown in PPL Table 2 in accordance with the conditions of this permit.

PPL Table 2 Groundwater Monitoring Wells

Well Number	Well Number	Well Number	Well Number
1R	26R	32	1A
28A	28	42A	25R
29A	29	52A	27R
31A	31		
32A	41A		
39	45		
41			
40R			
42			
52			

2. Quarterly Groundwater Monitoring. The Permittees shall monitor groundwater at the Pigeon Point Landfill quarterly during March, June, September and December. During these monitoring events, the Permittees shall collect samples from the groundwater monitoring wells shown in PPL Table 2. The Permittees shall sample in accordance with the *Groundwater Monitoring* section of the *Pigeon Point Landfill Monitoring Program for Groundwaters, Surfacewaters and Leachates (Revision 3),* dated August 8, 2013 and include the following analytes and measurements as shown in PPL Table 3. The Permittees shall prepare Equi-potential maps for each water-bearing zone showing the location of each well, the contoured potentiometric surface and the directions of ground water flow in each zone. These maps shall include an outline of the site boundaries and area of waste placement.

PPL Table 3 Quarterly Groundwater Monitoring

Parameters	Parameters
Groundwater Elevation	Turbidity
Temperature (field)	pH (lab)
Specific Conductance (field),	Specific Conductance (lab)
pH (field)	
REDOX (field)	
Dissolved Oxygen (field)	

3. Annual Groundwater Monitoring: The Permittees shall monitor groundwater at the Pigeon Point Landfill annually during March, and shall collect samples from the groundwater monitoring wells shown in PPL Table 2. The Permittees shall sample in accordance with the *Groundwater Monitoring* section of the *Pigeon Point Landfill Monitoring Program for Groundwaters, Surfacewaters and Leachates (Revision 3)* dated August 8, 2013 and include the analytes and measurements as shown in PPL Table 4. The Permittees shall also complete the quarterly groundwater monitoring required for March (condition III.B.2 of the permit) during this sampling event.

PPL Table 4 Annual Groundwater Monitoring

Parameters	Parameters	Parameters
Alkalinity (total)	COD	Iron
Alkalinity (Phenolphthalein)	Dissolved Silica	Magnesium
Ammonia - N	Total Dissolved Solids	Manganese
Nitrate - N	Sulfate	Potassium
Bicarbonate	Total Organic Carbon	Selenium
Carbonate	Arsenic	Sodium
Chlorides	Calcium	Zinc

4. The Permittees shall collect all groundwater samples in a manner that minimizes sample turbidity and shall collect samples at low flow rates (<1 l/min). All wells to be sampled shall be maintained as necessary so that they will produce low turbidity samples.

C. Leachate Monitoring:

1. The Permittees shall measure and record the quantity of leachate pumped to the City of Wilmington's wastewater treatment plant (WWTP) on a weekly basis. The Permittees shall also record the amount of precipitation at the Landfill for comparison with leachate quantities pumped to the WWTP. Weather station data from the DSWA's Cherry Island Landfill may be used for this purpose The Permittees shall report leachate quantities and precipitation in accordance with the reporting requirements specified in conditions IV.D and IV.E of this permit.

2. The Permittees shall monitor leachate in accordance with the *Leachate Monitoring* section of the *Pigeon Point Landfill Monitoring Program for Groundwaters, Surfacewaters and Leachates (Revision 3)* dated August 8, 2013 and the conditions of this permit.

D. Analytical Procedures: The Permittees shall analyze all leachate, ground water and surface water samples required by this permit in accordance with the most current legal edition of EPA Publication Number SW 846. If SW 846 does not contain a test method for a required parameter, DSWA shall follow the sample collection and analysis methods described in the *General Provisions* section of *Pigeon Point Landfill Monitoring Program for Groundwaters, Surfacewaters and Leachates (Revision 3)* dated August 8, 2013.

E. Landfill Gas Migration Monitoring:

1. At least once per quarter, Permittees shall monitor for landfill gas in all buildings on the site in accordance with the Pigeon Point Landfill Gas Migration Monitoring Plan dated June 2, 2009. Permittees shall report the monitoring results in accordance with conditions IV.D and IV.E of this permit.

2. If any buildings are placed onto the Landfill site, the Permittees shall ensure that permanent landfill gas monitors are installed and operated continuously and effectively in each new building. Permittees shall place and maintain these alarms in areas most susceptible to methane gas intrusion and collection and shall report alarms in accordance with conditions IV.F of this permit.

IV. Reporting

A. Unless otherwise specified by this permit, Permittees shall submit all reports required in this section to the Department's Solid & Hazardous Waste Management Section.

B. Financial Assurance: No later than January 31st of each year, the Permittees shall update the cost estimates for post closure period, as defined in Section I.D.4. of this permit, of the closed Landfill and shall provide financial assurance for those remaining costs in accordance with Section 4.1.11 of the DRGSW. The Permittees shall provide a detailed listing of all projected costs used to estimate the post-closure care costs for the closed Pigeon Point Landfill. The Permittees shall adjust all cost estimates carried over from previous years for inflation.

C. Annual Post-Closure Care Report: No later than April 30th of each year, the Permittees shall submit an Annual Post-Closure Care Report. The permittees shall provide the document in one paper copy plus one copy on electronic storage media acceptable to the Department. The Annual Post-Closure Care report shall include the following information for the reporting period:

1. A post-closure care narrative addressing status of the site. The narrative shall include pending ownership changes described in Permit Application Supplement 2 as well as the status of the Use Agreement cited in Permit Appication Supplement 1. Permittees shall also provide an update as to their progress establishing the Environmental Covenant required by the Secretary's Order 2008-A-0036 (Reference DNREC letter dated May 8, 2009, *Pigeon Point Landfill Post-Closure Care Permit - Completed Resolution Table* regarding the DSWA's draft Environmental Covenant).
2. A listing and description of all construction or corrective work either pending completion or conducted on the site in accordance with approved plans or to achieve compliance with this permit.
3. Quantities, sources, and types of fill or other material placed on the Landfill.
4. A listing of complaints received from the public concerning activities at the Landfill and any actions taken by the Permittees to address each complaint. The Permittees shall include all complaints received from the public concerning nuisances, odors, vermin, dust, traffic, litter, noise, or general housekeeping problems at the Landfill.
5. A listing of notices, warnings, citations, fines, penalties or other enforcement actions involving the Landfill.
6. Deviations from the inspection, monitoring, or reporting requirements specified by this permit.

D. Annual Environmental Monitoring Report: No Later than April 30th of each year, the Permittees shall submit an Annual Environmental Monitoring Report on electronic storage media such as compact disc. The Permittees shall provide two copies of the full report (narrative and supporting data) via electronic storage media and two copies of the signed and sealed narrative, on paper.

1. Narrative: The Permittees shall provide the narrative portion of the Annual Environmental Monitoring Report in a format acceptable to the Department and include a discussion of findings, conclusions and recommendations based upon the environmental monitoring results The narrative portion of the report shall address:

   a. Groundwater monitoring results, including whether the results indicate a contaminant release from the Landfill to groundwater or surface water, and any corrective measures taken or anticipated
   b. Surface water monitoring results, including whether the results indicate a contaminant release from the Landfill to surface water, and any corrective measures taken or anticipated.
   c. Leachate monitoring results to include a discussion of the effectiveness of the collection system.

d. A discussion of the monitoring results for leachate pumped to the New Castle County wastewater treatment plant from the Landfill during the reporting period.
e. A discussion of the gas migration monitoring done at the Landfill including any corrective measures taken or anticipated.
f. Recommendations for future monitoring, maintenance and modifications needs for the groundwater monitoring wells, geotechnical instrumentation, the surface water/stormwater monitoring system, and the leachate collection system.

2. Supporting Data: The Permittees shall provide supporting data on electronic storage media, in a format acceptable to the Department. Supporting data shall include monitoring results in tabular, searchable format (such as excel spreadsheets), graphs; weather data; potentiometric maps; photographs and drawings. Field notes, lab data sheets and chain of custody sheets need not be provided as part of the submittal; however, the Permittees shall maintain copies of these documents and shall make them available to the Department within a reasonable time upon request. Supporting data shall include all data from the past year and all proceeding years, and shall include:

a. Tabulation of ground water elevations and quality data including field parameters.
b. Graphical presentations (quality versus time plots) of groundwater quality parameters.
c. Potentiometric maps for each water bearing zone for each quarter for the past year.
d. Tabulation of surface water flow rate, stormwater observations (odor, color), and quality data including field parameters.
e. Graphical presentations (quality versus time plots) of surface water quality parameters
f. Tabulation of leachate flow and quality including field parameters.
g. Graphical presentations (flow rate or volume versus time plots) of leachate collected. Rainfall data shall also be plotted on each graph.
h. Graphical presentations (quality versus time plots) of leachate quality parameters.
i. Tabulation of gas migration monitoring results.
j. Rainfall data from the site weather station or from the weather station at the DSWA's Cherry Island Landfill.
k. Drawings showing monitoring locations.
l. The most recent aerial photograph of the Landfill.

E. Additional Reports:

1. Periodic Environmental Monitoring Reports: Within 60 days after the periodic sampling events, Permittees shall submit the results of periodic monitoring, including groundwater, surface water, leachate, and gas migration. Permittees shall provide these reports on electronic storage media acceptable to the Department (i.e. compact disc) and in accordance with the following conditions:

   a. Each electronic media submittal shall be submitted with a cover letter (paper), signed by at least one of the Permittees. The cover letter shall state the monitoring reported in the submittal, report any concerns the Permittees have about the monitoring results, and provide a table of contents for the information provided via electronic storage media.
   b. The Permittees shall submit 2 copies of the periodic environmental monitoring report for the Department's review and file (an original plus one copy).
   c. The Permittees shall provide the periodic environmental monitoring data in a format acceptable to the Department and consistent with the requirements for Supporting Data specified in condition IV.D.2 of this permit.

2. Permittees shall document damage to geotechnical monitoring instruments, leachate collection systems, groundwater monitoring wells and stormwater control systems on operational inspection forms. These forms shall be submitted in the annual Post Closure Care Report.

3. Upon discovery, Permittees shall report to the Department any intentional or accidental deviation from any approved plan.

F. Emergency Reporting:

1. The Permittees shall notify the Department immediately in the event of:

   a. Fire or explosion involving the Landfill or its control systems.
   b. Damage to the cap that exposes waste.
   c. Leachate spills exceeding ten gallons.
   d. Gas levels of 25% LEL or greater detected within any structures at the Landfill.

2. If any event listed in Section IV.F.1 of this permit occurs during business hours, Permittees shall report it to the Department's Solid and Hazardous Management Section at 302-739-9403. At all other times, the Permittees shall report the event to the Department's TOLL-FREE 24-HOUR LINE 1-800-662-8802. When reporting an event to the toll-free line, the Permittees shall disclose that the reporting is required in accordance with Permit 08-SW/01 issued by the Department's Solid & Hazardous Waste Management Section.

3. The Permittees shall submit a written notification to the Department no later than five business days following any event requiring "Emergency Reporting". The notification shall include the following:

   a. Date and time of occurrence/discovery.
   b. Date and time of reporting.
   c. Agencies notified.
   d. Materials and quantities involved.
   e. Narrative describing how the incident occurred and the actions taken by the Permittees and other response personnel.
   f. Report of injuries/damage.
   g. Proposal for follow-up, repair, or remedial actions required and a schedule.

V. Recordkeeping

A. The following information must be recorded and maintained by the Permittees. This information must be available for inspection, with reasonable notice, by representatives of the Department:

1. All documents cited in condition I.C. of this permit.
2. Environmental monitoring records including sampling procedures, monitoring and analytical data, field notes, laboratory data sheets and chain of custody forms.
3. Reports, drawings, maps, photographs and surveys required by this permit.
4. Deeds, leases, covenants, and any landuse agreements in effect anytime during the post-closure care period.
5. Records of all complaints received by the Permittee concerning the Landfill.
6. Records of all periodic inspections of the Landfill required by this permit.
7. All environmental permits and approvals in effect for the Landfill property, including the Post-Closure Care Permit, and the Wastewater Discharge Permit.
8. Reports required by Item I.B.1 of the Interim Agreement.

VI. Assessment of Corrective Measures:

A. The Permittees shall notify the Department within seven (7) days after verified analytical data has confirmed that a release has taken place. Confirmation samples shall be collected from the appropriate monitoring points within 14 days of receipt of written approval by the Department. These samples shall be analyzed under a priority schedule for the indicator parameters and DRGSW Table 1 analytes and any other parameters deemed appropriate by the Permittees and the Department. The Permittees shall notify the Department of the results of the confirmation sampling within seven (7) days of receipt of the results.

DRGSW Table 1 Ground Water Supplemental Parameters

1)	Antimony	32)	trans-1,4-Dichloro-2-butene
2)	Arsenic	33)	1,1-Dichloroethane; Ethylidene chloride
3)	Barium	34)	1,2-Dichloroethane; Ethylene dichloride
4)	Beryllium	35)	1,1-Dichloroethylene; 1,1-Dichloroethene
5)	Cadmium	36)	cis-1,2-Dichloroethylene; cis-1,2-Dichloroethene
6)	Chromium	37)	trans-1,2-Dichloroethylene
7)	Cobalt	38)	1,2-Dichloropropane
8)	Copper	39)	cis-1,3-Dichloropropene
9)	Lead	40)	trans-1,3-Dichloropropene
10)	Nickel	41)	Ethylbenzene
11)	Selenium	42)	2-Hexanone; Methyl butyl ketone
12)	Silver	43)	Methyl bromide; Bromomethane
13)	Thallium	44)	Methyl chloride; Chloromethane
14)	Vanadium	45)	Methylene bromide; Dibromomethane
15)	Zinc	46)	Methylene chloride; Dichloromethane
16)	Acetone	47)	Methyl ethyl ketone; MEK
17)	Acrylonitrile	48)	Methyl iodide; Iodomethane
18)	Benzene	49)	4-Methyl-2-pentanone; Methyl isobutyl ketone
19)	Bromochloromethane	50)	Styrene
20)	Bromodichloromethane	51)	1,1,1,2-Tetrachloroethane
21)	Bromoform; Tribromomethane	52)	1,1,2,2-Tetrachloroethane
22)	Carbon disulfide	53)	Tetrachloroethylene; Tetrachloroethene
23)	Carbon tetrachloride	54)	Toluene
24)	Chlorobenzene	55)	1,1,1-Trichloroethane; Methylchloroform
25)	Chloroethane; Ethyl chloride	56)	1,1,2-Trichloroethane
26)	Chloroform; Trichloromethane	57)	Trichloroethylene
27)	Dibromochloromethane;Chlorodibromomethane	58)	Trichlorofluoromethane; CFC-11
28)	1,2-Dibromo-3-chloropropane; DBCP	59)	1,2,3-Trichloropropane
29)	1,2-Dibromoethane; Ethylene dibromide; EDB	60)	Vinyl acetate
30)	o-Dichlorobenzenze; 1,2-Dichlorobenzene	61)	Vinyl chloride
31)	p-Dichlorobenzenze; 1,4-Dichlorobenzene	62)	Xylenes

DRGSW Table 1 is found in Section 5.7 of the Delaware *Regulations Governing Solid Waste*

B. If confirmation sampling does not indicate that a release has taken place, another round of sampling shall take place to determine whether the results of analysis from the first or second sampling events were anomalous. This re-sampling sampling event shall take place within two (2) weeks of the Permittees sending written notification to the Department of their intent to re-sample. The samples shall be analyzed under a priority schedule. The Permittees shall notify the Department of the results of the re-sampling within seven (7) days of receipt of the results.

C. If the re-sampling indicates that no release has taken place, no further action shall be taken by the Department, and monitoring of the sampling location(s) shall be returned to its/their normal monitoring schedule. If the confirmation or re-sampling round of sampling does indicate that a release has taken place, the Permittees shall perform an assessment of corrective measures within ninety (90) days of confirmation of the release. This assessment shall include:

1. Identification of the nature and extent of the release (which may require construction and sampling of additional wells, geophysical surveys or other measures).
2. Re-assessment of contaminant fate and potential contaminant receptors (wells and/or receiving streams).
3. Evaluation of feasible corrective measures to:

    a. Prevent exposure to potentially harmful levels of contaminants (exceeding performance standards).
    b. Reduce, minimize or prevent further contaminant releases.
    c. Reduce, minimize or prevent the off-site migration of contaminants.

VII. Evaluating, Optimizing, or Ending Post-Closure Care

A. Duration of Permit: Once issued, this permit shall remain valid and enforceable throughout the post-closure care period as defined in Section I.D.4 of this permit.

B. At any time during the post-closure care period, the Department may reduce or eliminate any post-closure care permit requirements if it can be demonstrated that the requirement is no longer necessary for the protection of human health and the environment. The Permittees may request the reduction or elimination of specific permit requirements after completing a performance-based evaluation. Performance-based evaluations shall include data review, a discussion of the proposed change and the anticipated impacts, as well as a plan to evaluate the impacts resulting from the proposed change or termination.

C. Ending Post-Closure Care: In order to end the post-closure care period, the Permittees shall:

1. Establish a valid Environmental Covenant pursuant to 7 Del. C. Chapter 79, Subchapter II, Uniform Environmental Covenants Act. The Environmental Covenant must include all property at the Pigeon Point Landfill which has been used for solid waste disposal or which contains landfill monitoring or control systems. This property shall include the parcels cited in condition I.B of this permit. Reference DNREC letter dated May 8, 2009, *Pigeon Point Landfill Post-Closure Care Permit - Completed Resolution Table* regarding the DSWA's draft Environmental Covenant.

2. Provide performance-based evaluations of each landfill control system prior to termination of the 30-year post-closure care permit. Performance-based evaluations shall include data review, a discussion of the proposed change and the anticipated impacts, as well as a plan to evaluate the impacts resulting from the proposed change or termination. Landfill control systems include those systems that manage leachate and landfill gas; that protect and monitor groundwater, stormwater, and landfill stability; and that provide for cap protection and maintenance.

Permit Synopsis:

November 19, 2008: The Department issued this permit in accordance with Secretary's Order No. 2008-A-0036.

January 8, 2013: The Department modified this permit after a permit modification request dated 1/7/10 from the DSWA. After providing public notice and public hearing regarding the modification request, and after considering comments received as a result of that process, the Department modified permit SW-08/01. The modification incorporated the elimination of permit conditions for regulating the Cap Enhancement Project because that project has been concluded. Other modifications included changes to monitoring and inspection frequency and to monitoring locations. The Department considered this as a major modification of the permit in accordance with section 4.1.7 of the DRGSW. This modification institutes the findings of the Secretary's Order No. 2012-A-0010 dated April 13, 2012.

September 26, 2013: The Department modified Section III of this permit to reference Revision 3 of the DSWA's *Pigeon Point Landfill Monitoring Program for Groundwaters, Surfacewaters and Leachates,* updated August 8, 2013 (the monitoring plan). The changes to the monitoring plan include correcting well/aquifer designations for wells 1A and 1R and removing stormwater monitoring language referring to the Cap Enhancement Project, a project that has already been completed. The Department also added monitoring well 40R to PPL Table 2, which was inadvertently left off of the January 8, 2013 permit modification. The permit language for leachate monitoring has been changed to refer only to the *Pigeon Point Landfill Monitoring Program for Groundwaters, Surfacewaters and Leachates* dated August 8, 2013, which now specifies all monitoring parameters and monitoring frequency for leachate at the landfill. This modification is considered a minor modification in accordance with Section 4.1.7.4 of the DRGSW.