FACILITY MANUAL

Part 360 Series Permit Renewal/Modification Application

LOCKWOOD ASH DISPOSAL SITE

Prepared on behalf of:

Lockwood Hills LLC
590 Plant Road, PO Box 187
Dresden, New York 14441

Prepared by:

DAIGLER ENGINEERING, P.C.
CIVIL & GEO-ENVIRONMENTAL ENGINEERING
2620 Grand Island Blvd.
Grand Island, New York 14072-2131

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1 INTRODUCTION

1.1 FACILITY DESCRIPTION

Lockwood Hills LLC (Lockwood Hills) manages the Lockwood Ash Disposal Site (Lockwood or the Facility), an ash monofill located in the Town of Torrey, Yates County, New York on Swarthout Road (see Title Sheet of the Permit Drawing Set). The Facility is bounded by Swarthout Road to the east, and by Feagle Road to the south. The Keuka Outlet flows past the landfill to the west in an approximate 100 foot deep ravine, and NYS Route 14 bounds the site to the north of the landfill. The property also includes the inactive Greenidge Gravel Disposal Area (GGDA) to the north of the active landfill, as identified on permit drawing (PD)-1.

Lockwood Hills maintains a 6 NYCRR Part 360 Series Solid Waste Management Facility permit (Permit No. 8-5736-00005/00003-0) for the Facility. The permit issued by the New York State Department of Environmental Conservation (NYSDEC) allows Lockwood to accept fly ash, bottom ash, pulverizer mill rejects and wastewater treatment plant sludge from several specifically named power generation facilities including the Greenidge Power Generating Station. The Facility does not operate a residential drop off area for waste or recyclables and is not open to the general public.

Lockwood started accepting Coal Combustion Residual (CCR) waste in approximately 1979. Referring to Permit Drawing PD-1, the currently permitted extent of the Facility is 44.2 acres, of which, 29.8 acres has been constructed to date. The current Facility consists of the closed Original Ash Disposal Site (OADS) and two of four permitted stages of a geomembrane-lined expansion. Stage I includes a section of overfill liner above the OADS. Stage II extends the baseliner to the south. The remainder of the overfill liner and the baseliner for Stages III and IV are permitted, but not yet constructed.

The OADS is closed with final cover and the majority of Stage I and Stage II are covered with intermediate cover defined by the Facility's Operations and Maintenance Manual as six to nine inches of clayey/silty soils, sandy soils or gravelly soils, or other NYSDEC approved materials, overlain by three to four inches of soil suitable to sustain vegetative growth.

This Facility Manual addresses the requirements of paragraph 360.16(c)(4), section 363-4.6, applicable paragraphs found in Subpart 363-9, and applicable operating requirements of Parts 360 and 363. All references to New York State regulations in this document refer to Title 6 of the Official Compilation of Codes, Rules and Regulations of the State of New York (6 NYCRR). Table 1-1 lists the various Facility Manual requirements and the corresponding section in which the requirement is addressed.

TABLE 1-1: FACIITY MANUAL REQUIREMENTS

Requirement	Description	Manual Location[1]
6 NYCCR PART 360: GENERAL REQUIREMENTS		
360.16(c)(4)(i)	Waste control plan	5
360.16(c)(4)(ii)(*a*)	Description of facility operations	5.2.1, 5.2.2, 15.5.7
360.16(c)(4)(ii)(*b*)	Description of waste handling, storage, and processing equipment and structures	5.2, 5.3, 5.4, 5.5
360.16(c)(4)(ii)(*c*)	Waste process flow diagram	4.1
360.16(c)(4)(ii)(*d*)	Description of waste management machinery, equipment, and structures	4.2
360.16(c)(4)(ii)(*e*)	Description of leachate collection, storage, and disposal	11.3.2, 11.3.3, PD-5
360.16(c)(4)(ii)(*f*)	Monitoring, maintenance, and inspection procedures related to waste management	5.2.3
360.16(c)(4)(ii)(*g*)	Response to significant interruptions to normal operations	15
360.16(c)(4)(ii)(*h*)	Schedule of operation	5.2.1
360.16(c)(4)(ii)(*i*)	Equipment and instruments that require calibration	11.3.2.1
360.16(c)(4)(ii)(*j*)	Estimated traffic flow, vehicle description, and maximum onsite vehicle capacity	4.3
360.16(c)(4)(ii)(*k*)	Description of waste treatment	5.5
360.16(c)(4)(ii)(*l*)	Discussion of compliance with 360.19 and 363 operating requirements	Throughout Facility Manual
360.16(c)(4)(ii)(*m*)	Location of facility records related to the permit	14.1
360.16(c)(4)(ii)(*n*)	Description of residential drop-off area	1.3.4
360.16(c)(4)(iii)	Training plan	2.3, App.1 Att.3
360.16(c)(4)(iv)(*a*)	Description of emergency response actions and emergency contact information	15, App.6
360.16(c)(4)(iv)(*b*)	Ability of the Facility to respond to a disaster, including offering non-standard services	15.5.6
360.16(c)(4)(v)	Noise monitoring and control plan	1.3.1

Requirement	Description	Manual Location[1]
360.16(c)(4)(vi)	Closure plan	17.1
6 NYCCR PART 363: LANDFILLS		
363-4.6(a)	Sustainability plan	16
363-4.6(b)	Post-construction care plan	3
363-4.6(c)(1)	Placement of first five-foot lift of select waste	7.1
363-4.6(c)(2)	Description of fill progression	7.2, 7.3
363-4.6(c)(3)	Monitoring program for in-place waste density	7.4
363-4.6(c)(4)	Daily log of wastes	7.5, App.2 Att.1
363-4.6(c)(5)	Depiction of final grades described in approved closure plan	PD-6
363-4.6(c)(6)	Location of gas collection lines	N/A
363-4.6(d)(1)	Waste receiving and monitoring methods	5.2
363-4.6(d)(2)	Identification and handling of waste requiring special handling or treatment	5.4
363-4.6(d)(3)	Identification of low-permeability or low shear strength wastes	5.5
363-4.6(d)(4)	Detecting and preventing disposal of unauthorized wastes	5.2.3, 5.3, 15.5.5, App.2 Att.2
363-4.6(e)	Cover material management plan	6
363-4.6(f)(1)	Description of critical stratigraphic section	12.1
363-4.6(f)(2)	Description of all proposed monitoring points	12.2
363-4.6(f)(3)	Analyses to be performed	12.3
363-4.6(f)(4)	Description of statistical methods to be used	12.4
363-4.6(f)(5)	Reporting requirements	12.7, 14.2
363-4.6(f)(6)	Site plan with monitoring points	Fig.12-1
363-4.6(f)(7)	Implementation plan	12.6, 12.8
363-4.6(f)(8)(i)(*a*)	Horizontal well spacing	12.2.1
363-4.6(f)(8)(i)(*b*)	Well screen placement	12.2.1
363-4.6(f)(8)(i)(*c*)	Geophysical/Geochemical techniques for selecting well locations	12.8
363-4.6(f)(8)(i)(*d*)	Groundwater suppression system	12.2.2
363-4.6(f)(8)(ii)(*a*)	Standing surface water sampling point locations	12.2.2
363-4.6(f)(8)(ii)(*b*)	Stream sampling point locations	12.2.2
363-4.6(f)(8)(ii)(*c*)	Monitoring of on-site springs, seeps, or groundwater discharge zones	12.2.1, 12.2.2
363-4.6(f)(8)(ii)(*d*)	Iron floc deposit description and monitoring	N/A
363-4.6(f)(8)(iii)(*a*)	Leachate sampling point locations	12.2.3
363-4.6(f)(8)(iii)(*b*)	Primary leachate collection system monitoring in new cells	12.8

Requirement	Description	Manual Location[1]
363-4.6(f)(8)(iii)(*c*)	Secondary leachate collection system monitoring in new cells	12.8
363-4.6(f)(8)(iv)	Water supply well sampling	N/A
363-4.6(f)(9)(i)(*a*)	Preliminary evaluation of water quality	12.4
363-4.6(f)(9)(i)(*b*)(*1*)	Pre-operational sampling	12.8
363-4.6(f)(9)(i)(*b*)(*2*)	Establishment of existing water quality database	12.4
363-4.6(f)(9)(i)(*b*)(3)(*iii*)	Intrawell analysis	12.4
363-4.6(9)(i)(*b*)(*4*)	Existing water quality database requirements	12.4
363-4.6(f)(9)(ii)(*a*)	Routine and baseline sampling schedule	12.5
363-4.6(f)(9)(ii)(*b*)	Phased sampling of newly constructed cells	12.8
363-4.6(f)(9)(ii)(*c*)	Reduction in monitoring frequency	N/A
363-4.6(f)(9)(ii)(*d*)	Omission of winter monitoring	N/A
363-4.6(f)(9)(ii)(*e*)	Operational water quality analyses	12.3, 12.5
363-4.6(f)(9)(ii)(*f*)	Determination of significant increase in any parameter in any monitoring well	12.5
363-4.6(f)(9)(ii)(*g*)	Response to detection of a significant increase	12.5
363-4.6(f)(9)(ii)(*h*)	Response to a significant increase for two successive monitoring events	12.5
363-4.6(f)(9)(iii)	Contingency water quality monitoring	12.6
363-4.6(f)(10)	Reporting requirements	12.7, 14.2
363-4.6(g)	Site analytical plan components	13
363-4.6(g)(1)	Data quality objectives	13.2.2, 13.2.4
363-4.6(g)(2)	Analytic quality assurance/analytic quality control	13.3
363-4.6(g)(3)	Description of field sampling procedures	13.4, App.5 Att.3, App.5 Att.4, App.5 Att.7
363-4.6(g)(4)	Description of laboratory procedures	13.5, App.5 Att.6, App.5 Att.7, App.5 Att.8
363-4.6(g)(5)	Data quality assessment	13.3.3, 13.6, App.5 Att.1
363-4.6(h)	Water quality analysis tables	12.3
363-4.6(i)(1)	Leachate minimization and prevention of leachate migration to surface or groundwater	11.4
363-4.6(i)(2)	Operational measures to minimize perched leachate	11.3.1
363-4.6(i)(3)	Schedule for annual maintenance	11.3.2.1
363-4.6(i)(4)	Schedule for monitoring leachate flow data	11.3.2.2
363-4.6(i)(5)	Design and operational features of leachate collection and removal systems	11.2, 11.3.2
363-4.6(i)(6)	Regulations related to leachate recirculation	N/A
363-4.6(j)	Odor control plan	1.3.2

Requirement	Description	Manual Location[1]
363-4.6(k)	Gas monitoring and emission control plan	1.3.3
363-4.6(l)	Winter and inclement weather operation plan	9
363-4.6(m)	Residential drop-off operation plan	1.3.4
363-4.6(n)	Radioactive waste detection plan	1.3.5
363-4.6(o)(1)	Detection of uncontrolled explosive landfill gas	N/A
363-4.6(o)(2)	Unexpected events related to landfill gas management system	N/A
363-4.6(o)(3)	Unexpected events related to the leachate collection and removal system	15.5.3
363-4.6(p)(1)	Final site plan	PD-6
363-4.6(p)(2)	Final cover details	17.1.4, PD-8
363-4.6(p)(3)	Description of sequential closure in concert with fill progression plan	17.1
363-4.6(p)(4)	Estimate of greatest number of landfill cells, which at any point in the Facility's lifetime will have received waste but not undergone final closure	17.1.1
363-4.6(p)(5)	Estimate of maximum volume of waste and alternative operating cover contained within the landfill	17.1.2
363-4.6(p)(6)	Information used to develop closure, post-closure, and custodial care costs	17, Financial Assurance Plan
363-4.6(p)(7)	Conceptual end use	17.4

[1]Section number unless otherwise noted.

1.2 CONTACT INFORMATION

Name: Dale Irwin

Title: Lockwood Hills LLC President

Phone: (315) 536-2359

Address: 590 Plant Road, Dresden, NY 14441

1.3 NONAPPLICABLE PLANS

A number of plans required to be part of this Facility Manual are not applicable. These plans, and the reason they are nonapplicable, are listed below.

1.3.1 Noise Monitoring and Control Plan

A Noise Monitoring and Control Plan is required to be incorporated into the Facility Manual by subparagraph 360.16(c)(3)(ii), if leq energy equivalent sound levels are expected to be exceeded. The Facility is in a remote location and has relatively low levels of activity and noise. Noise complaints are not known to have occurred at the existing Facility. Current conditions are not expected to change in a manner that would create a nuisance noise condition. Therefore, a formal noise monitoring and control plan is not deemed necessary at this time.

1.3.2 Odor Control Plan

Lockwood does not accept putrescible or odiferous waste and, therefore, an Odor Control Plan as required by subdivision 363-4.6(j), is not applicable.

1.3.3 Gas Monitoring and Emission Control Plan

A Gas Monitoring and Emission Control Plan, as required by subdivision 363-4.6(k), is not applicable to this Facility since putrescible waste is not accepted for disposal.

1.3.4 Residential Drop-off Operation Plan

This Facility is not open to the public and there is no residential drop-off area. A Residential Drop-off Operation Plan, as required by subdivision 363-4.6(m), is not applicable.

1.3.5 Radioactive Waste Detection Plan

This Facility does not accept municipal solid waste or drilling wastes and, therefore, a Radioactive Waste Detection Plan, as required by subdivision 363-4.6(n), is not applicable.

2 PERSONNEL REQUIREMENTS

2.1 STAFFING PLAN

The Facility staff will consist of a Project Manager, an Environmental Specialist, and an Operations Contractor.

2.2 PERSONNEL RESPONSIBILITIES

2.2.1 Project Manager

Hauling and placement of approved wastes is conducted by the Operations Contractor under the supervision of the Project Manager, who will be designated by the Lockwood Hills President. The Project Manager's primary responsibilities include the following:

- Assuring proper performance by the Operations Contractor in accordance with any contracts and Part 360 permit conditions;
- Administration of any active contracts;
- Conduct and record results of monthly site inspections (see Monthly Site Inspection form in Appendix 1, Attachment 1);
- Monthly manual secondary leachate flow measurements and downloading\uploading the leachate flow meter file;
- Maintenance of records;
- Coordination and documentation of leachate collection pipe cleaning activities;
- Managing required recordkeeping and ensuring all reporting is submitted in a complete and timely manner; and
- Communication of pertinent information to other Lockwood personnel.

2.2.2 Environmental Specialist

An Environmental Specialist is responsible for matters associated with the sampling and monitoring activities related to environmental compliance requirements. The Environmental Specialist is responsible for the following:

- Leachate, groundwater, and surface water sampling;

- Management and documentation associated with sedimentation pond monitoring, treatment and SPDES Permit discharge events; and
- Measurement of leachate and groundwater depression drain flow rates.

Currently the Contracted Laboratory provides these services as detailed in Section 13 of this Facility Manual.

2.2.3 Operations Contractor

The Operations Contractor is responsible to furnish all equipment, labor, materials (unless designated by others) and supervision to operate the Facility. In general, these duties include primarily:

- Load and transport authorized waste from the source to Lockwood, when necessary;
- Spread and compact authorized waste at the disposal site;
- Haul and place wastewater treatment sludge in the sludge dewatering basin, then haul and place dewatered sludge at the disposal site;
- Conduct a routine inspection in accordance with 360.19(d) at a minimum of once per day when the Facility is open (see Daily Self Inspection Form in Appendix 1, Attachment 2);
- General cleaning of work areas at Greenidge Station;
- General cleaning and maintenance at the disposal site;
- Load recovered fly ash and bottom ash onto purchaser's vehicles as required; and
- Perform other site work as directed by the Lockwood Project Manager.

The Operations Contractor will be responsible for completing additional activities summarized throughout this Manual that are not referenced specifically above.

2.3 PERSONNEL TRAINING PROGRAM

When hired, personnel, including the Operations Contractor staff, will be given a tour of the Site and familiarized with facility operations. Equipment operators will receive the training needed to safely operate equipment used at the site. A formal training and orientation program will be mandatory for new employees. The training program will include the following:

- Site features and equipment;
- Facility orientation;
- Review of the Facility's health and safety policy;
- Review of the Facility Manual;
- Review of the Facility's permits;
- Handling of unauthorized waste; and
- Training for the employee's specific work duties.

A Personnel Training Program Outline and Training Documentation Form are included in Appendix 1, Attachment 3. Employees will be required to affirm that they have received the Facility Manual and understand its contents. The Facility Manual will be available to employees at the Project Manager's office at Greenidge Station.

In addition to the Personnel Training Program outlined in Appendix 1, the Operations Contractor will attend and successfully complete a NYSDEC-approved, landfill operations training course as required by paragraph 363-7.1(q)(1). This training shall be renewed no less than every five years and records of the training shall be maintained at Project Manager's office at Greenidge Station.

3 POST-CONSTRUCTION CARE PLAN

A post-construction care plan is needed at the landfill to ensure that following construction, appropriate actions are taken by facility personnel to protect monitoring wells; the leachate conveyance, storage, and treatment system; the cover system; the liner; and the leachate collection and removal systems.

Upon completion of geomembrane seaming, patching, or reconstruction post-construction care shall require, at a minimum, the placement of sandbags on top of the liner to prevent damage from wind, construction, or other sources. Technical specifications for the proper handling of high-density polyethylene (HDPE) and linear low-density polyethylene (LLDPE) geomembrane materials prior to the initial placement of wastes, including use of sandbags, vehicle operation, and smoking are found in Appendix A of the Construction Quality Assurance/Construction Quality Control (CQA/CQC) Plan, (Daigler Engineering, PC, 2020).

In areas where an exposed geomembrane cover (EGC) is installed, anchoring products may be used in combination with anchor trenches, stormwater drainage features and access road placement to prevent wind uplift damage to the EGC.

Post-construction care actions will also protect soil drainage, geosynthetic drainage and geosynthetic filter layers from fines related to water and wind-borne sedimentation. Overland stormwater flows will be diverted away from newly constructed areas to ensure waterborne sediment does not damage the soil drainage layer. Onsite dust shall be controlled through the use of a licensed water truck, placement of operating cover, and by the methods described in the Fill Progression and Placement Plan in Section 7 of this document.

To protect geosynthetic drainage layers from fines, the exposed ends of installed geosynthetic drainage layers shall be wrapped with geotextile, after installation, to prevent intrusion of sediment prior to cover placement. Furthermore, damage to geosynthetic filters and drainage layers shall be minimized by ensuring all seams have been properly sewn or thermally bonded, that no smoking occurs on the geocomposite, and vehicles are operated in accordance with the technical specifications found in Appendix A of the CQA/CQC Plan. Technical specifications require that this layer be covered within 30 days of installation. If this timeframe is exceeded,

the geosynthetics contractor must replace the geosynthetic drainage layer or demonstrate that the material has not been adversely affected.

The termination of geosynthetics along the limit of waste will be protected through the placement of low-permeability backfill, as described in 5.5.7 and Appendix A of the Construction Quality Assurance/Construction Quality Control (CQA/CQC) Plan, (Daigler Engineering, PC, 2020).

Following the installation of monitoring wells, the well shall be properly sealed and covered with a protective casing in accordance with the procedures described in Appendix F of the CQA/CQQC Plan (Daigler Engineering, PC, 2020). The surface seal will be designed to protect against frost damage to and surface runoff intrusion into the well casing. The protective casing on the well will be locked at to prevent unauthorized access. The casing will be visible at all times, even during high snow cover to prevent accidental human-caused damage. Additionally, the areas around the wells will be mowed at the same frequency as the landfill to ensure visibility.

Following the installation of PVC pipes for the leachate collection and removal system in future landfill stages all excavations containing pipes will be backfilled according to Section 5.7.1 and Appendix A of the Construction Quality Assurance/Construction Quality Control (CQA/CQC) Plan, (Daigler Engineering, PC, 2020). In addition, vehicles will not be operated over pipe-containing trenches unless approved by the project engineer.

The CQA/CQC report for any construction activities shall include a certification from a professional engineer, licensed in the State of New York, verifying that post-construction care procedures were carried out immediately following construction. Until such time that placement of the first lift is completed in accordance with Section 7.1, the Facility must continue to be operated in a manner that prevents damage to monitoring wells; the leachate conveyance, storage, and treatment system; the cover system; the liner; and the leachate collection and removal systems. Operation measures must also be taken to protect soil and geosynthetic drainage layers, as well as, geosynthetic filters from fines related to water and wind-borne sedimentation.

4 OPERATIONS AND MAINTENANCE PLAN

4.1 PROCESS FLOW DIAGRAM AND WASTE QUANTITIES

A simplified process flow diagram and a table of the maximum permitted and average waste quantities accepted at Lockwood over the five-year period between 2014 and 2018 are provided below.

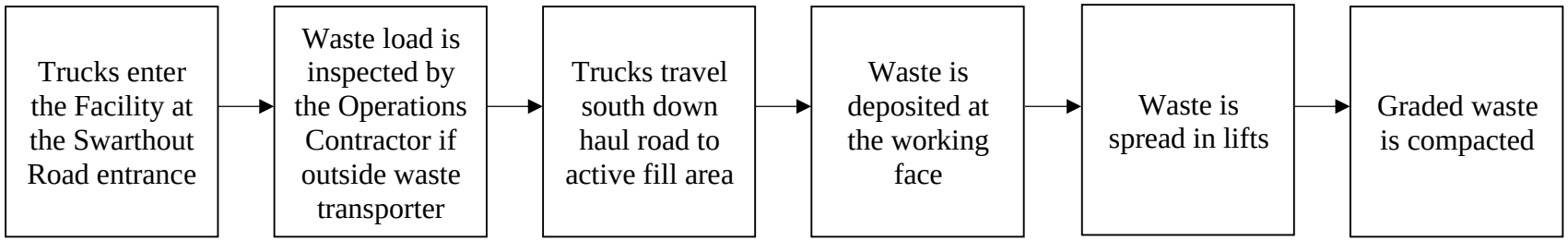


FIGURE 4-1: LOCKWOOD ASH DISPOSAL SITE PROCESS FLOW DIAGRAM

TABLE 4-1: WASTE QUANTITIES

	Daily		Annual	
	Tons	**Cubic Yards**	**Tons**	**Cubic Yards**
Maximum Permitted	1,729	1,330	631,085	485,450
Average*	4.3	3.31	1,569	1,207

* Average of wastes received from 2014 - 2018

4.2 LANDFILL EQUIPMENT

By Contract with Lockwood Hills, the Operations Contractor must always have the necessary machinery and equipment operational with sufficient operators to fulfill the requirements of landfill operation. All equipment must be in place and in operation on the first day of the Contract. Any piece of equipment not available on the first day or that is removed from the site during the Contract duration will be replaced by the Operations Contractor.

All equipment will be properly equipped with safety devices, which meet Occupational Safety and Health Administration and Lockwood's standards and will be properly equipped with exhaust mufflers to limit the noise associated with this work. For the purpose of landfill operation, the Operations Contractor will have at a minimum the following equipment:

- Sufficient number of licensed and permitted (see 6 NYCRR Part 364) transport vehicles;
- Bulldozer – track type adequately sized to handle maximum daily waste disposal rate (Cat D5 or approved equal);
- Compactor – vibratory, self-propelled, and smooth steel drum (minimum 66" wide drum);
- Licensed water truck – equipped with a front mounted pressure spray distribution bar for washing fines off the asphalt road surface and applying water to fly ash area for dust control and compaction control;
- Snowplowing vehicle – as required for maintaining access to the active disposal area; and
- The Contractor will have access to and shall provide equipment to replace any units which may be out of service within sufficient time to prevent any default in the performance of their Contract.

4.3 ACCESS AND TRAFFIC FLOW CONTROL

A chain link fence and/or perimeter drainage channels surround the site, which controls vehicle access to the Facility. A chain link double gate at the entrance roadway is locked when the site is closed, preventing unauthorized vehicle access to the site via the main roadway. Personnel

employed by the Operations Contractor or Lockwood staff will unlock the gate to begin disposal operations. At the end of the day, the last staff member leaving the site will lock the gate.

The existing site access roadways provide a significant amount of space for the queuing of incoming and exiting vehicles. Traffic flow is not expected to pose problems at the site given the relatively low volume of traffic, the long access roads and the availability of staging areas within the site. Given these conditions, the possibility that site related vehicles will need to queue or stage on the public roads is extremely low.

Typical on-road dump trucks will be utilized to dispose of approved wastes at Lockwood. The maximum daily traffic flow to and from the Facility is approximately 110 trucks with a 12 cubic yard capacity per day based on the waste acceptance rate of 1,729 tons per day.

4.4 CROSS-REFERENCES

Paragraph 360.16(c)(4) contains requirements for certain activities that are to be included in an operations and maintenance plan which can be found elsewhere in this document. For ease of reference, these activities include:

- Waste monitoring, maintenance, and inspection procedures related to waste management are discussed in the Waste Control Plan in Section 5. The schedule of operation including the days and hours when the Facility will be open to accept and transfer waste, and the days that operations will occur within the Facility is also discussed in this section;
- A description of the sludge dewatering basin is included in Section 5.5;
- Stormwater management system details are discussed in Section 10;
- Leachate collection system details are found in Section 11.3.2;
- The calibration information for the Open Channel Flow Sensor is included in Section 11.3.2.1;
- A description of the Treatment Pond where leachate treatment occurs is contained in Section 11.3.3;
- The environmental monitoring program is presented in Section 12;

- Calibration references for field and laboratory equipment are included in Section 13;
- The location of facility records is discussed in Section 14.1;
- Facility operation interruption is described in Section 15; and
- Discussion of the Part 360 and 363 operating requirements are discussed throughout this manual.

5 WASTE CONTROL PLAN

5.1 GENERAL

5.1.1 Authorized Wastes

Wastes authorized for disposal at the Lockwood Ash Disposal Site include fly ash, bottom ash, pulverizer mill rejects, and wastewater treatment plant sludge from Greenidge Station, as well as, a number of former electrical generating facilities that were all owned by AES Eastern Energy, L.P. of Arlington, Virginia. Coal bottom ash from Garlock, Inc. and coal fly ash from Eastman Kodak Company are also authorized wastes, although they have not been disposed of in the landfill in recent years.

Historically, coal combustion residuals (CCRs) and their admixtures produced almost exclusively at Greenidge Station during its coal burning years were disposed at Lockwood. The principal constituents of CCRs are oxides of silica, aluminum and iron. The material will also include unburned carbon, oxides of calcium, magnesium, phosphorous, potassium, sulfur, sodium and small amounts of titanium. During the layup period, the wastes disposed consisted of authorized waste (primarily ash and mill rejects with occasional unprocessed coal) contaminated soil from routine cleaning and maintenance of the stormwater management system basins and channels onsite and cleanup activities at the Greenidge Station from the former coal pile storage area. In the future, the primary waste stream is anticipated to be fly ash and bottom ash from Greenidge associated with the up to 19% biomass that the Station is authorized to co-fire. Sludge or soils from routine maintenance or remediation activities also have the potential to be disposed at Lockwood.

The biomass can include untreated wood and resonated wood. Ash handling operations at Greenidge Station convey boiler fly ash associated with the use of biomass pneumatically to a fly ash storage silo. The ash is then processed for proper disposal. This wood ash waste primarily derives its chemical composition from the parent wood.

The wastewater treatment plant sludge is a mixture of calcium sulfate and metal hydroxides resulting from the lime precipitation of the former coal pile drainage, maintenance cleaning

wastewaters and miscellaneous wastewater collected and treated at Greenidge Station's wastewater treatment facility.

In the event Lockwood Hills seeks to dispose of approved wastes from other facilities, Lockwood Hills must determine whether the candidate solid waste stream meets the definition of an authorized waste, subject to the requirements and procedures of the waste approval program. The waste approval program must establish and document the characteristics of the waste stream to:

1. Confirm the material is authorized for disposal; and
2. Determine the waste is compatible with other wastes disposed at the site.

This process can be accomplished through the review and assessment of a completed Generator Waste Profile and supporting documentation, as included in a complete waste disposal application. Lockwood Hills must confirm the material properties and establish that the waste is not prohibited from disposal. Any such wastes will be subject to the approval of the NYSDEC prior to disposal. If the knowledge of the Generator is insufficient to support the characterization of the material, material sampling and laboratory analysis to quantify contaminant concentrations will be required, and the resulting information will be submitted to the NYSDEC for approval.

5.1.2 Waste Disposal Rate

Consistent with the previous permits for this site, the approved design capacity for this Facility is 1,729 tons per day. As evidenced by the remaining site life for the permitted facility however, it is noted that the landfill provides a significant amount of permitted airspace, and Lockwood may accept approved wastes from other combustion facilities should approval by the NYSDEC be granted as described in Section 5.1.

Daily disposal rates are expected to be between zero to as high as 1,729 tons per day (1,330 cubic yards per day) on a 30-day rolling average. The average annual disposal rate for all wastes received between 2014 and 2018 was 1,569 tons per year (1,207 cubic yards per year) with an upper limit of 631,085 tons per year (485,450 cubic yards per year).

5.1.3 Service Area

Lockwood is by-in-large a captive landfill with a practical service area consisting only of property managed by Lockwood Hills LLC or Greenidge Generation LLC. However, the service area for other candidate solid waste streams, as discussed above, is New York State and the nearby northeastern states of Pennsylvania, New Jersey, Massachusetts, Connecticut, and Vermont.

This Facility shall not accept wastes from any municipality within the State that is not included in a department-approved local solid waste management plan or comprehensive recycling analysis. Local Solid Waste Management Planning Units that can currently be served by Lockwood are identified in the following table.

TABLE 5-1: LOCAL PLANNING UNITS

Generator	Local Planning Unit
Greenidge Station	Yates County, NY
AES Hickling, LLC	Steuben County, NY
AES Westover, LLC	Broome County, NY
AES Cayuga, LLC	Tompkins County, NY
AES Jennison, LLC	Chenango County, NY
Garlock, Inc.	Wayne County, NY
Eastman Kodak Company	Monroe County, NY

5.2 Receipt and Monitoring of Incoming Waste

5.2.1 Hours of Operation

The Facility will generally be open for operation up to seven days per week for the disposal of ash and/or other authorized wastes from Greenidge Station, from 6:00 am to 6:00 pm, 365 days per year. In the event storage capacity for ash at the Greenidge plant is exceeded, it may be necessary to temporarily open the ash disposal site for a short time during other hours. In that case, the NYSDEC will be notified on the first business day after this emergency event occurs.

The Facility will be open for operation for wastes from other authorized facilities up to six days per week, from 6:00 am to 6:00 pm, and will be closed for disposal of offsite wastes on New Year's Day, Memorial Day, Independence Day, Labor Day, Thanksgiving, and Christmas.

If a shutdown of facility operations is scheduled, all facility staff will be informed of the scheduled shutdown prior to the shutdown commencing. To help ensure environmental protection and safety is upheld during the shutdown operating or intermediate cover shall be placed as appropriate, equipment shall be properly stored, and access to the property secured.

5.2.2 Waste Receipt and Landfill Access

A chain link fence and/or perimeter drainage channels surround the site, which controls vehicle access to the Facility. A chain link double gate at the entrance roadway is locked when the site is closed, preventing unauthorized vehicle access to the site via the main roadway. Personnel employed by the Operations Contractor or Lockwood staff will unlock the gate to begin disposal operations. At the end of the day, the last staff member leaving the site must lock the gate.

The existing site access roadways provide a significant amount of space for the queuing of incoming and exiting vehicles. Traffic flow is not expected to pose problems at the site given the relatively low volume of traffic, the long access roads and the availability of staging areas within the site. Given these conditions, the possibility that site related vehicles will need to queue or stage on the public roads is extremely low.

Typical on-road dump trucks will be utilized to dispose of approved wastes at Lockwood. The maximum daily traffic flow to and from the Facility is approximately 110 trucks per day based on the waste acceptance rate of 1,729 tons per day; however, based on current and expected future operations, this level of site associated traffic is unlikely.

The Facility shall only accept waste from transporting vehicles when waste is adequately covered or containerized. If an incoming truck is rerouted to a different facility because it contains an unauthorized waste, the truck shall, at a minimum, be covered by mesh or fabric acceptable to the NYSDEC. All incoming trucks shall be properly placarded and truck transportation must be in accordance with the conditions of the effective permits and the requirements of the applicable regulations for transportation of waste in New York State.

All loads will be weighed on a truck scale at Greenidge Station, or other location, prior to receipt at Lockwood. This practice will remain in effect as long as the daily waste receipt rate, averaged over all operating days during one calendar year, remains below 20 tons per day. Should the 20

tons per day limit be exceeded, Lockwood will either install a scale onsite, in accordance with Part 363.7.1(n), or apply for a variance to continue using the scale at Greenidge Station.

5.2.3 Waste Monitoring Program

The Operations Contractor will monitor receipt of incoming waste loads. The transporter, if not the Operations Contractor, shall furnish a scale receipt and remove tarps or other waste coverings so the waste can be visually screened. The quantity, type, origin, and placement location of waste received will be recorded on Daily Waste Receipt Logs (Appendix 2, Attachment 1). Recordkeeping protocols for these logs are described in Section14.1. The Operations Contractor shall ensure that acceptance of waste shall not result in the remaining storage capacity being exceeded. The remaining storage capacity of the landfill, based on the fill progression plan detailed in Section 7, is updated annually and submitted to the NYSDEC in the annual report. If acceptance of an incoming waste load will cause this remaining storage capacity or approved design capacity for the landfill (1,729 tons per day) to be exceeded, the load shall be diverted to a facility approved to accept such waste streams.

Routine waste inspection activities include visual screening before waste is deposited at the working face, and after the waste has been discharged from the truck. At a frequency of no less than once per week (when the waste acceptance rate permits), the Operations Contractor will choose one incoming waste transporting vehicle at random, unload the wastes, and perform a detailed inspection for the purpose of identifying any unauthorized wastes. Additionally, suspicious loads or drums of waste shall be inspected upon arrival at the Facility. The results of inspections shall be recorded on a Daily Waste Receipt Log and, if necessary, the Unauthorized Waste Receipt Log (Appendix 2, Attachment 2) as detailed in Section 5.3. Records of all inspections shall be kept at the Project Manager's office at Greenidge Station and can be furnished for review by the NYSDEC upon request.

5.3 Unauthorized Waste Handling

In the event unauthorized waste is received at the landfill and the hauler has not yet deposited the material, the truck will be stopped and instructed to leave the site. The waste material description, hauling company name and contact information, generator name and contact information, driver name as well as date and time of the occurrence will be recorded on an

Unauthorized Waste Receipt Log (Appendix 2, Attachment 2). In the event the material is not discovered until it has been deposited on the ground, the Operations Contractor will take steps to either reload the waste back onto the truck or segregate the material and begin arrangements for proper offsite disposal. Again, waste description, hauler and generator name, and contact information and date and time of the incident will be recorded on an Unauthorized Waste Receipt Log. Additionally, a description of Lockwood's response to the unauthorized waste and the final disposition of the waste shall be included. In accordance with paragraph 360.19(c)(4) unauthorized waste shall be removed within seven days of receipt unless an alternative schedule is approved by the NYSDEC. At the end of the reporting year, any unauthorized solid waste received at the landfill will be reported on Section 9 of the NYSDEC *MSW, Industrial or Ash Landfill Annual/Quarterly Report* form.

Refer to the Emergency Response Action Plan in Section 15.5.5 of this Facility Manual for additional instructions related to handling of unauthorized wastes.

5.4 Special Waste Handling

Lockwood does not accept special wastes such as friable asbestos, nor does it accept non-friable asbestos containing waste, source-separated recyclables, yard waste, food scraps, electronic waste or other wastes listed in 6 NYCRR 363-7.1(o) and (p). The Facility is not open to the public so the likelihood of encountering these materials is very small. Should any special waste materials be encountered, the procedures described for Unauthorized Waste Handling will be followed.

5.5 Low Permeability or Low Shear Strength Waste Handling

The list of approved wastes for Lockwood does not include any low permeability wastes. For this reason, no low permeability waste handling methods are deemed necessary at this time. From time to time, low-shear strength waste, such as sludge from routine leachate line cleaning and the Greenidge Station wastewater treatment plant, will be delivered to Lockwood for disposal. In addition, routine maintenance of the Treatment Pond and/or stormwater system may generate ash-containing soils with a sludge like consistency, which will be managed at the site. Whenever wastes containing less than 20% solids content are identified in incoming waste loads the Operations Contractor will check the appropriate box on the Daily Waste Receipt Log and

confirm that the low shear strength waste was deposited appropriately in the sludge dewatering basin. At no time will wastes with visible free liquids and/or a solids content of less than 20% be directly deposited in the landfill.

When sludge disposal is required, it is initially deposited in the geosynthetic-lined sludge dewatering basin using vacuum trucks. Vacuum trucks are not rinsed into the basin due to a lack of water at the site. Deposition of waste into the sludge dewatering basin will be managed to always maintain, at a minimum, one foot of freeboard. This basin has an area of approximately 6,740 square feet and a maximum capacity of around 143,000 gallons. The operating capacity of the basin would be nearly 93,000 gallons of waste while maintaining at least one foot of freeboard. Disposal of sludge in this basin allows free liquids to either evaporate or drain through the waste and into the underdrain system that discharges to the leachate Treatment Pond. No other materials are mixed with sludge in the dewatering basin to enhance the dewatering process. Dewatered sludges (defined as having 20 percent or more solids and exhibit no free liquid as defined by SW-846 Method 9095 - Paint Filter Liquids Test) will be removed from the basin whenever the Operations Contractor determines there has been a substantial accumulation of waste (i.e., prior to having less than one foot of freeboard) placed/buried not less than 50 feet from the boundaries of the landfill. Consistent with paragraph 363-7.1(a)(4), efforts will be made to blend fly ash with the dewatered sludge so that acceptable shear strengths are achieved, and the waste can be compacted.

5.6 Periodic Waste Characterization Survey

Due to the limited nature of the types of waste materials accepted at Lockwood and the very limited number of potential customers, no periodic waste characterization study, as required under subclause 360.16(4)(i)(*h*)(*2*), is proposed.

5.7 Authorized Locations for Offsite Residue Disposal

No materials are generated at Lockwood that require offsite disposal at this time.

5.8 Confinement of Waste Onsite

Facility staff and permitted waste transport vehicles shall utilize the following methods to ensure that soil, waste, leachate and other materials are not tracked offsite onto Swarthout Road. The

wearing course of unpaved, onsite access roads shall be maintained to prevent excessive rutting, muddy, or other unstable conditions. The paved access road shall be cleaned as necessary to prevent ash and soils from being tracked offsite. Facility staff shall ensure that trucks are completely emptied of waste prior to departure to help ensure that waste is not tracked offsite.

The waste streams accepted by the Facility do not include wastes that would result in the need for a plan to control blowing litter. Any incidental litter produced by facility personnel during the operation of the landfill shall be removed by facility personnel and properly disposed offsite in suitable containers.

5.9 CUSTOMER AND TRANSPORTER OUTREACH

Lockwood has a limited number of customers that are approved to bring specified wastes into the Facility. The specified acceptable wastes can be reiterated when arrangements for transportation and disposal are made. This Facility is not open to the public, so no public outreach is necessary to deter the unauthorized disposal of wastes listed in 6 NYCRR 363-4.6(d)(4)(v). The Facility does not have public access points, so signs providing the hours of operation and types of waste accepted at the Facility are not necessary.

6 COVER MATERIAL MANAGEMENT PLAN

6.1 GENERAL

Currently, the entire landfill is under intermediate cover as defined below. As new waste is placed, the intermediate cover layer is stripped, temporarily stockpiled adjacent to the active area and then replaced in order to conserve soil and to minimize the potential for perched leachate within the waste mass. For this reason, additional quantities of operating and intermediate cover soils over the landfill's current footprint are not anticipated and no such materials are currently being stored onsite. When new waste is added to the landfill, it is the Operating Contractor's responsibility to import additional cover soil if sufficient soils were not reclaimed. Soils and geosynthetic materials will be stored onsite in the Equipment and Materials Staging area shown on PD-1.

6.2 OPERATING COVER

Since the landfilled materials are not putrescible, do not attract scavengers and are not likely to ignite, the purpose of operating cover is primarily related to the control of blowing and dusting. In accordance with paragraph 363-7.1(b)(2) operating cover will be placed on all exposed waste at the end of each operating day, at a minimum, to prevent offsite migration of blowing ash from the Facility. When placed, operating cover will consist of a minimum of three to six inches of soil or alternate materials as approved by NYSDEC, consistent with the Facility's long established cover material management plan. Assuming 5% of the available airspace will be consumed by operating cover soils, the maximum quantity of operating cover soils to achieve the final grades in PD-6 is approximately 117,000 cy.

Operating cover soil material can consist of a wide range of soil textures including clayey and silty soils, sandy soils, or gravelly soils. In the event fine gained (clayey, silty) soils are used, the Operations Contractor must take notice of and remedy any potential for the fine-grained soils themselves to create a dusting problem.

The anticipated permeability of this layer is estimated to range from approximately 1×10^{-4} to 1×10^{-5} cm/sec. To enhance the permeability of the waste fill overall, operating cover soils will be removed from the working face prior to the placement of additional waste when practicable. The

operating cover soil will be tracked in by a bulldozer and is estimated to achieve a dry density of approximately 80 to 85% of the material's maximum dry density as determined by the Modified Proctor Test. No quality control testing of the operating cover is required.

Operating cover will be spread in one lift to the required three to six-inch thickness by a bulldozer and compacted with a vibrating smooth-drummed roller. The bulldozer may grade the material down from the top of the working face or up from the toe of the slope, depending on where the trucks hauling the cover material can best deposit their loads.

6.3 INTERMEDIATE COVER

Intermediate cover will be placed on all areas that are not expected to be covered with additional waste for a prolonged period (within 30 calendar days of the last placement of waste). Intermediate cover will consist of a minimum of six to nine inches of clayey/silty soils, sandy soils, or gravelly soils, or other NYSDEC approved materials, overlain by three to four inches of soil suitable to sustain vegetative growth, consistent with the Facility's long-established cover material management plan. Intermediate cover will be seeded and vegetated as appropriate to control fugitive dust and erosion by surface water runoff.

Typical locations for placement of intermediate cover include interim or temporary slopes between stages and all external slopes for every 20 feet of vertical rise. PD-10 illustrates the areas that would require intermediate cover under the landfill phasing and development plan (see Section 7.3). The maximum quantity of intermediate cover soils required to cover the areas as indicated is estimated at approximately 16,500 cy overlain by approximately 7,300 cy of topsoil.

The anticipated permeability of the intermediate soil layer is estimated to be in the range of approximately 1×10^{-4} to 1×10^{-5} cm/sec or slightly lower. The intermediate cover soil will be tracked in by a bulldozer and is estimated to achieve a dry density approximately 80 to 85% of the material's maximum dry density as determined by the Modified Proctor Test. Testing of the intermediate cover soil is not required.

This soil layer will spread in two lifts by a bulldozer. The bulldozer can push the cover material down from the top, or up from the toe of the slope, depending on where the trucks hauling the cover material can deposit their loads. The first lift will be the minimum six-inch layer of

clayey/silty soils, sandy soils, or gravelly soils. This lift will be and compacted with a vibrating smooth-drummed roller. The second lift will be the minimum three-inch layer of topsoil. The topsoil layer will be seeded and mulched.

6.4 EXPOSED GEOMEMBRANE COVER

An exposed geomembrane cover (EGC) that is physically and chemically resistant to the materials it contacts and can accommodate stresses caused by waste settlement and wind uplift will be installed and used as intermediate cover as allowed by section 363-6.14. The Phasing and Development Plan for Lockwood, as discussed in Section 7.3 of this Facility Manual and illustrated in PD-10, includes an exposed geomembrane cover (EGC). PD-8 includes a detail of the EGC. The proposed EGC system would consist of the following components in ascending order:

- Six-inch thick minimum prepared subgrade soil layer after stripping existing topsoil;
- 36-mil green Dura-Skrim or similar reinforced geomembrane; and
- An anchoring system.

Up to approximately 19.3 acres of the landfill are currently slated to receive EGC as shown in PD-10, resulting in a total estimated quantity of Dura-Skrim geomembrane of approximately 871,000 square feet. The EGC is to be installed in stages. The geosynthetic materials required per stage would be delivered to the site at the beginning of the construction season and stored in the onsite staging area until used. Materials will be installed in a manner consistent with the site-specific construction quality assurance/construction quality control plan.

In the future, a variance or variances may be submitted to consider the EGC system an element of final closure. To improve the EGC system's expected equivalency in environmental performance to a Part 363 traditional final cover and therefore strengthen their variance application, Lockwood Hills may decide to place a geosynthetic clay liner under the 36-mil Dura-Skrim reinforced geomembrane on slopes of less than 25%.

6.5 FINAL COVER

Final cover will be placed in landfill cells where final waste grades have been achieved, and no additional waste will be placed, in accordance with 6 NYCRR sections 363-6.16, 6.17, and 6.18. For areas with a ground slope less than 25%, the final cover consists of the following layers in ascending order, listed with the estimated maximum quantity needed based on the conceptual final cover grading shown on PD-6 and the final cover details shown in PD-8:

- minimum six-inch thick subgrade soil layer (38,000 cubic yards);
- Geosynthetic clay liner (GCL; 211,000 square feet);
- Nominal 40-mil textured LLDPE geomembrane liner (2,053,000 square feet);
- Geocomposite drainage (GCD) layer (2,053,000 square feet);
- 12 inches (minimum) of barrier protection soil (76,000 cubic yards); and
- 6 inches (minimum) of soil suitable to sustain cool season vegetation (38,000 cubic yards).

For areas where the slopes are greater than or equal to 25%, the GCL is eliminated from the design.

Upon attaining final elevation and contours per the approved engineering design, the active area of the site will be covered with a minimum six-inch thick subgrade soil layer. On slopes less than 25%, a GCL will be placed atop of the soil layer. A geomembrane liner of a minimum thickness of 40-mil will be placed above either the GCL or the six-inch thick subgrade soil layer. A GCD will be placed to control infiltration of surface water and promote stability.

A barrier protection layer of soil at least 12 inches thick will then be placed over the GDL. The barrier protection soil layer has no permeability specification; however, the anticipated permeability of this layer is estimated to range from approximately 1×10^{-4} to 1×10^{-5} cm/sec, or slightly lower. The barrier protection soil layer will be placed in one lift with a maximum compacted thickness of 12 inches by mechanical spreaders and compacted with a kneading type compactor to effectively break soil clods, and to achieve a minimum dry density as determined

by the Project Engineer. Field soil moisture and density measurements shall be performed if required by the Project Engineer.

A 6-inch thick layer of topsoil will be placed over the barrier protection layer. This layer has no permeability or density specifications. The anticipated permeability of this layer is estimated to range from approximately 1×10^{-4} to 1×10^{-5} cm/sec. This layer will be tracked in by a bulldozer, and no testing of this soil layer for density or permeability is required. The soil suitable to sustain vegetative growth will be spread in one lift to the required six-inch thickness by a bulldozer. The bulldozer can push the soil down from the top or up from the toe of the slope, depending on where the trucks hauling the soil can deposit their loads. Upon placement, the topsoil layer will be seeded with a cool season vegetation mix to provide a protective vegetative cover. All final cover construction shall be certified in accordance with 6 NYCRR 360.16(j) and 363-9.4.

7 FILL PROGRESSION AND PLACEMENT PLAN

7.1 FIRST LIFT PLACEMENT

To protect the constructed baseliner system, a policy will be adopted which will restrict uncontrolled access to unfilled areas of the baseliner and overfill liner coupled with a maintenance and inspection program. The maintenance and inspection program will include requirements that traffic shall not be allowed directly above the drainage soil portion of the liner system. All movement of construction or landfill equipment (including pickup trucks or smaller vehicles) on the exposed liner system shall be only as absolutely required, and in a most careful and restricted fashion.

Any work on the liner system should be carried out in a manner consistent with that required for initial construction activities, and this will include oversight by a spotter to reduce the potential for overstressing the liner system. Inspection of the liner system in the unfilled areas shall be a routine part of landfill operations. This will include visual inspections and observations during the placement of the initial five-foot lift to preclude objects that may damage the liner system.

The placement of the first lift over a newly constructed baseliner system will be in a single layer with a minimum of five feet in compacted thickness and shall consist of select materials. The material shall be free of: fine grained wastes that may contribute to clogging of the drainage layer, oversized clods, cemented inclusions, sharp or angular gravel, or any other material capable of damaging the baseliner system.. The Operations Contractor will ensure that field personnel are observant for any materials that may affect the integrity of the liner system. A steel drum vibratory compactor will be used to compact the first lift and shall be operated in a manner that prevents damage to the liner system. Typically, this means low speeds and avoidance of sharp skid turns in favor or broad sweeping turns.

7.2 TYPICAL DAILY CELL PROGRESSION AND WASTE PLACEMENT

Typical daily cell progression describes a direction and sequence of filling, including access, screening, and surface water drainage schemes, which will promote efficient landfill development and reduce fugitive dust emissions.

The planned fill progression incorporates the following important features of the operation:

- Access to the working face will be obtained by sequential construction of the final landfill access roadway;
- Wind breaks in the form of waste berms will be constructed during good weather days along the windward limits of the fill area in any stage of landfilling;
- Landfilling during windy or poor weather operating days will be completed in protected areas below the elevation of the windward berms and interior to the landfill;
- Lift height will be a maximum of ten feet;
- All waste and cover materials will be graded and sloped to promote surface water drainage away from active landfilling areas and access ways, toward the drainage channel associated with the final access road;
- All surface water will be directed to sediment basins prior to discharge from the site;
- Filling operations are intended to achieve interim and final waste grades as soon as is practical in any given area;
- Final drainage swales and channels will be constructed as soon as practical after landfill areas achieve final grade; and,
- A minimum of six inches of intermediate cover will be placed on all slopes achieving final grade and all slopes where landfilling operations will not occur within 30 days.

As subsequent landfilling operations advance, the protective soil cover will be stripped and used for intermediate and final cover on completed sections of the landfill or stockpiled for later use. The working face will be restricted to the smallest practicable area. The working face slope shall be maintained at 3H:1V slope or less.

An important feature of planned fill progression is to bring as much of the fill area to final grade as soon as is reasonable to do so. In this manner, the amount of leachate and fugitive dust from unprotected areas exposed to precipitation and wind will be minimized.

Another important feature of fill progression planning is to reduce the impacts of wind and poor weather conditions on the waste disposal operation. The prevailing winds are out of the west or southwest. Berming of the waste to final grade along the windward side during calm weather

days will provide sheltered, interior areas of the landfill that can be utilized during high wind periods.

7.3 LANDFILL PHASING AND DEVELOPMENT

The current and future phases of Lockwood's development are shown on PD-10, Fill Progression Plan.

Lockwood's fill progression plan is composed of six main phases with the first stage split into two (Phase 1a and Phase 1b). The current Phase (1a) is focused on grading efforts aimed at flattening sides slopes to be no steeper than 33% grade and bringing the plateau portion of Stage I and II to a four percent minimum grade. The amount of fill needed to regrade the plateau area is 18,000 cubic yards (cy). The amount of regrading of the east slope needed to reduce it to no more than 3:1 is 19,000 cy. Therefore, sufficient volume is already in place to fill to the maximum fill height of Phase 1a of 706.2 feet (Site vertical datum). Installation of EGC will follow regrading efforts in stages over a five-year period until Phase 1a is fully realized. Phase 1b shows grading in the current footprint that maximizes the use of the permitted airspace without construction of new overfill or baseliner. Filling will begin in the area not under exposed geomembrane starting in the northern portion and progressing south. As the grades are realized, EGC will be installed and tied into the previously covered areas on the north slope and the plateau area in three 2.0 – 2.5-acre sections. Upon completion, all 19.2 acres of Stages I and II including the Stage I overfill will have an EGC cover. The disposal capacity to reach this point in the progression is approximately 115,000 cy.

The Phase 1b filling plan also realizes an additional disposal capacity of 276,000 cy by systematically removing and replacing portions of the EGC installed on the plateau area as filling progresses. Sideslopes are not proposed to be disturbed. Filling on the plateau will move from the northwestern portion of Stages I and II and progress in quadrants to the southwestern portion, then the southeastern portion and finally ending at the northeastern quadrant. EGC will be removed in around one-acre increments and replaced in two-acre portions, as a practical approach to minimize open area. The total acreage of EGC removal/replacement required to realize the grades in Phase 1b is approximately 4.2 acres. The maximum fill height of Phase 1b

is 752.2 feet (Site vertical datum), which is below the Final Grading Plan height of 759 feet (Site vertical datum).

As filling in Phase 1b nears capacity, an overfill liner system above the remaining Original Ash Disposal Site (OADS) which is now closed with soil cover, will be constructed, and landfilling operations will continue as illustrated in Phase 2. Once waste grades near elevation 640 feet (Site vertical datum) in the OADS overfill liner area, the baseliner system in Stage III will be constructed, and landfilling operations will continue above Stages III and the OADS overfill liner. The maximum landfill height for Phase 2 does not increase over Phase 1b. The maximum of 752.2 feet (Site vertical datum) for Phase 2 is associated with Stages I and II and will be under EGC.

The priority for Phase 3 will be to fill in Stage III against the Stage II waste, bringing the waste in Stage III to final grade on the sideslopes and blending into Stage II grades. When waste grades near the EGC on the southern slope of the existing Stage II baseliner, it will be removed up to approximately 710 feet (Site vertical datum). The maximum landfill height for Phase 3 still remains under EGC at 752.2 feet (Site vertical datum).

At a time when waste elevations in Stage III are approaching 690 to 700 feet (Site vertical datum), Phase 4 will begin. Filling will continue to focus on reaching final grades in Stages II and III. The remainder of the EGC on the northern slope of Stage I will be removed. Access to the landfilling activities in the OADS overfill would continue by ramping off the permanent access road along the eastern side of the landfill to the point where waste in the OADS overfill obtained approximate elevation 630 to 650 feet (Site vertical datum).

After that point in time, the grade change between the permanent access road and the waste in the OADS overfill would exceed practical limits, and an alternate means of access will be required. As such, a second, northern access point can be constructed along with the Stage IV baseliner system to allow efficient access to the landfill. As design grades depicted in Phase 4 of permit drawing PD-10 are achieved, final cover will be placed over all of Stages II and III and portions of Stage I. The maximum fill height for Phase 4 and subsequent phases is approximately 759.4 feet (Site vertical datum).

Construction of Stage IV will encroach on the approximate limit of the GGDA. As a result, construction of Stage IV may unearth waste from the GGDA. Based on the site history and waste characterization during the installation of the nearby natural gas pipeline, there is no evidence that the GGDA includes any hazardous waste.

Prior to construction of Stage IV, Lockwood Hills will conduct an investigation of the GGDA in the vicinity of the new liner to characterize the limits, thickness, and content of the waste. Updated drawings and specifications will be submitted for review and approval by the NYSDEC before construction commences. The design shall include any special considerations for constructing Stage IV deemed necessary by the investigation.

The Stage IV construction contractor will use practices to minimize potential of waste material cross-contaminating backfill material and being tracked around the site. This may include broom cleaning equipment before leaving an excavation, covering stockpiles prior to rain events, and stockpiling waste in areas that minimize potential for cross-contamination with backfill. Additionally, efforts will be made to minimize the extent of disturbance to the two-foot soil cap over the GGDA. Any portion of the cap outside of the Stage IV footprint that is disturbed during construction will be repaired.

During Phase 5, filling will be completed in the OADS overfill and over the newly constructed Stage IV baseliner system. A priority during this phase will be to place final cover over the remaining portions of the Phase I overfill/baseliner as well as portions of the OADS overfill and to ensure that intermediate cover is placed over parts of the OADS overfill liner not receiving final cover. When waste elevations in the Stage IV baseliner reach approximately 580 feet (Site vertical datum), Phase 6, the final landfill phase will begin and the remaining sections of the landfill that have not already received final cover will be brought to final grades and the entire landfill will have final cover placed..

A depiction of the final grades as described in the conceptual Closure Plan (see Section 17.1) are shown in PD-6.

7.4 IN-PLACE WASTE DENSITY MONITORING PROGRAM

The density of wastes placed in the landfill is controlled by compacting waste with two to four passes of a drum vibratory roller. This has resulted in a historic and consistent in-place waste density of 1.3 tons per cubic yard (96 pounds per cubic foot). Historically, in-place waste density has been determined by use of the sand cone method. If the type of waste accepted or operational methods at the landfill change, the sand cone method (ASTM D1556/D1556M – 15e1) will be used following the placement and compaction of this waste on a minimum monthly basis to ensure the in-place density established in this application will not be exceeded.

7.5 DAILY WASTE RECEIPT LOG

As discussed in Section 5.2.3, the quantity, type, origin, and placement location of waste received will be recorded on Daily Waste Receipt Logs (Appendix 2, Attachment 1). The Project Manager shall monitor the placement of the waste as recorded on these logs to ensure the general fill progression is being followed. Recordkeeping protocols for these logs are described in Section 14.1.

8 VECTOR CONTROL PLAN

Lockwood does not accept waste that is consumable by vector organisms (e.g., birds, rats, etc…) and, therefore, it is unlikely to attract populations of such vectors. If populations of these organisms do become a nuisance, the operating, intermediate, and final cover systems will reduce the chances of any vector organisms encountering and damaging the liner system. Additionally, as a result of onsite stormwater management actions, ponding at the Facility shall be minimized. This will serve to control vector populations that rely on standing water for reproduction (e.g., mosquitoes).

As discussed in Section 6.4, EGC lacks a protective soil layer between the geomembrane and the surrounding environment (e.g., barrier protection layer) and as such is susceptible to damage by vectors. While the EGC is in place, it should be inspected regularly. If damage occurs, it will be easily recognizable and shall be fixed as soon as it is reasonable to do so.

9 WINTER AND INCLEMENT WEATHER OPERATION PLAN

Receipt and disposal of waste may take place despite inclement weather. Various inclement weather conditions have the potential to affect the operation of the Facility and must be addressed. Some of these possible climatic conditions and appropriate measures to be taken are described below. Should any damage be observed following inclement weather, refer to Section 15.5.6 of this Facility Manual.

9.1 FREEZING CONDITIONS

If icy or freezing conditions create potentially dangerous operating conditions, the Operations Contractor will determine if it is necessary to either temporarily stop or modify operations. Icy roadways will be sanded as required to promote safe working conditions.

Under normal circumstances, waste placement will begin immediately over newly constructed and certified liner. If waste will not be placed on a newly constructed part of the liner system within one year of construction certification, subdivision 363-4.6(l) requires the identification of specific actions to be taken to prevent frost action on the liner system. The primary concern over frost action on the liner system is the potential for degradation of soil properties in the geosynthetic clay liner leading to an increase in permeability. No special actions are recommended for the following reasons:

- The bentonite clay in a GCL is considered "self-healing" and multiple independent laboratory tests have shown little to no increases in permeability due to repeated freeze/thaw cycles (GRI, 2013)[1];
- Installation of the GCL immediately under the geomembrane will help keep the fugitive soil particles from contaminating the bentonite, thereby, helping to maintain the self-healing properties of the bentonite (GRI, 2013)[1];
- The primary drainage layer provides for a minimum of 24 inches of unsaturated, granular soil thickness above the GCL; and

[1] Geosynthetic Research Institute. (2013). Design Considerations for Geosynthetic Clay Liners (GCLs) in Various Applications. Folsom, PA. Revision 1 (Editorial): January 9, 2013.

- Severity of winters in the Northeastern United States has been decreasing and the frost penetration depth does not exceed two feet until about the 50-year return interval (DeGaetano et al, 1996)[2] indicating that the potential for frost action on the GCL in a certified liner system is low in any given year.

That said, construction of new liner should be timed and phased to limit the extent of newly constructed liner to that which can be covered with, at a minimum, the first lift of select waste within a reasonable amount of time.

9.2 HEAVY RAINS

Control of surface water drainage through drainage channels, culverts and the like, along with the use of gravel for operational haul roads, will provide continued access to the site during heavy rains, by promoting runoff away from the trafficking and disposal areas.

In the case of excessively heavy rains, the Operations Contractor may determine that it is necessary to either modify operations or temporarily suspend work until improved weather conditions allow re-establishment of operations. During operating hours and an excessively heavy rainfall event, the Operations Contractor will regularly check drainage channels, containment berms and basins to ensure runoff from the landfill is contained within the surface water management systems.

9.3 SNOWFALL

If snowfall occurs overnight, the first personnel to arrive at the site are responsible for snow removal. Snow removal activities will start immediately upon arrival. During operational hours, the available onsite equipment is adequate to remove accumulated snow from access roads and operational areas. In the event of extremely heavy snow, the Operations Contractor will decide if it is necessary to modify or temporarily suspend work until snow removal on access roads and the disposal areas permit continued operation.

If snowfall should become more severe, and it is determined by the Operations Contractor that operations cannot proceed in an acceptable manner, waste disposal activities would be

[2] DeGaetano, T., Wilks, D., and McKay, M. (1996). Atlas of Soil Freezing Depth Extremes for the Northeastern United States. Northeast Regional Climate Center, Ithaca, New York. Publication No. RR 96-1. March 1996.

temporarily suspended until an improvement in the weather conditions or site equipment can allow re-instatement of disposal activities. Following cessation of the severe storm event, appropriate site-based equipment would be utilized to remove accumulated snow from access roads and operational areas. Snowbanks would be arranged in a manner to promote adequate drainage when melting occurs.

9.4 ELECTRIC STORMS

The open area of the landfill is particularly susceptible to the hazards of an electric storm. If necessary, disposal activities will be temporarily suspended by the Operations Contractor to guard the safety of all field personnel. Refuge should be taken in rubber-tired vehicles.

10 STORMWATER MANAGEMENT PLAN

10.1 GENERAL

The stormwater management system is designed to control surface water runoff from the Facility prior to discharging offsite. Proper operation and maintenance of the system helps prevent erosion and ponding within the landfill area, as well as, flooding downstream. Discharge from the site is primarily via Keuka Outlet to Seneca Lake. A much smaller drainageshed on the east of the Facility drains through an onsite swale on the east side of the main site access road or is collected by the roadside channel along Swarthout Road. Both channels are north flowing and pass offsite via a culvert under Route 14 in the northeast corner of the Site. This drainageshed includes drainage from the secondary containment area for the temporary leachate storage and transfer area.

The current stormwater management system includes a network of drainage channels and two sediment basins. Sediment Basins 1 and 2 as well as pertinent drainage system details are illustrated in PD-9. In the future, as landfill development progresses, Sediment Basin 1 will be relocated for Stage IV baseliner construction. A conceptual drainage design for the final grading plan is presented on PD-6.

10.2 CURRENT DESIGN

Recent modifications to the Facility's stormwater management system were required to separate stormwater from landfill leachate. The design of the stormwater management system is based on limiting peak stormwater discharges. The sediment basins were designed in general accordance with the NYS Stormwater Management Design Manual, January 2015. Each basin is equipped with a concrete square outlet structure, retrofitted with the appropriate openings to control the discharge rate of accumulated stormwater.

Sediment Basin 1 is located north of the landfill and manages stormwater originating in the north, east, and southeast portion of the landfill, in addition to the area north of the disposal site. Sediment Basin 2 is located west of the landfill and collects stormwater originating beyond the limit of waste to the west in addition to the west and southwest portion of the disposal site. Swales, perimeter channels, and downchutes are utilized to convey stormwater away from active

landfilling areas to one of the sediment basins. Modifications in 2016 and 2017 included increasing the size of Sediment Basin 1 and Sediment Basin 2, constructing forebays, and replacing discharge structures. The Junction Area northeast of the landfill was modified to divert stormwater away from the leachate management system to Sediment Basin 1 and the North Channel was widened to accommodate the additional diverted flow.

10.3 INSPECTION

Inspection of the stormwater management system is conducted monthly during Lockwood's routine site inspections and memorialized on Monthly Site Inspection Forms (see Appendix 1, Attachment 1), copies of which are maintained as described in Section 14.1. Inspections include visual observation that solid waste is not entering surface water, drainage ditches are sufficiently clear to allow freely flowing water, that the basins are free of damaging vegetation, and damage to basins is not occurring due to erosion or wildlife.

11 LEACHATE MANAGEMENT PLAN

11.1 GENERAL

Leachate is defined as liquid contained and collected by the basal liner systems. The leachate management system contains, collects, conveys, and treats liquid that drains from the active portions of the landfill or which has come in contact with waste. Leachate management at the site focuses on gravity conveyance of collected leachate to the Treatment Pond, for aeration and settling, and subsequent discharge though a State Pollution Discharge Elimination System (SPDES) permitted outfall. Leachate is funneled through a meter pit before being piped into the pond along the east bank. Discharges via the gravity drainpipe on the west side of the Treatment Pond are controlled with a gate valve.

11.2 BASELINER SYSTEM

11.2.1 Design

The permitted footprint of the landfill is 44.2 acres and includes five individual baseliner cells (the Original Ash Disposal Site (OADS), and Stages I, II, III (future), and IV (future)), plus overfill liner. To date, 29.8 acres of the landfill have been constructed. PD-1 illustrates the landfill stages and infrastructure of the site.

11.2.1.1 Original Ash Disposal Site

The 14.08-acre OADS was constructed in two phases, the first in 1979 and the second in 1981. The OADS containment liner system is constructed above a series of groundwater drain trenches and consists of a two-foot thick compacted soil barrier and overlying two-foot thick layer of bottom ash which acts as the leachate drainage layer. An eight-inch diameter perforated polyvinyl chloride (PVC) leachate collection pipe network is installed in the drainage layer. A 12-inch diameter PVC header conveys leachate to the treatment system.

Approximately, 10.56 acres of the OADS is closed and has a soil based final cover system. The remaining portion of the OADS is overlain by the Stage I overfill liner.

11.2.1.2 Stage I

Stage I was constructed in 1989 and 1990 and includes a basal area double liner with underlying groundwater drainage trenches above natural soil deposits, and a single geomembrane overfill

liner atop the wastes in the southern portion of the OADS. The total area of Stage I is 10.70 acres. The 7.18-acre basal liner in Stage I consists of the following components in ascending order:

- A two-foot thick compacted soil liner;
- A secondary leachate collection and removal system composed of a four-inch thick sand layer, with embedded band drains (six-inch strips of geocomposite drainage material) and a six-inch diameter PVC header;
- A geotextile cushion layer;
- A 50-mil (PVC) geomembrane liner;
- A geotextile cushion layer; and
- A two-foot thick drainage layer of bottom ash with an embedded six-inch perforated PVC leachate collection pipe network and a six-inch diameter PVC header.

The 3.52-acre Stage I Overfill Liner installed atop the southern portion of the OADS consists of the following components, in ascending order:

- A geotextile cushion layer;
- A 50-mil PVC geomembrane liner;
- A geotextile cushion layer; and
- A one-foot thick drainage layer of bottom ash including a six-inch diameter perforated PVC leachate collection pipe network and a six-inch PVC header.

Stage I has up to 80 feet of ash above its liner and is covered by intermediate cover as described in Section 6.3.

11.2.1.3 Stage II

Stage II was completed in 1992 as a double-lined cell with a groundwater drainage trench system and basal liner consistent with the liner system in Stage I constructed on natural soil deposits. Stage II is 8.58 acres in size and is covered by intermediate cover.

11.2.1.4 OADS Overfill (Future)

The next planned phase of landfill construction, as discussed in Section 7.3, includes an approximate 10.5-acre extension of the Stage I overfill liner to be constructed above the northern soil covered slope of the OADS once Stage I/II achieves its interim capacity. This overfill liner is a single liner system, consisting of the following components:

- A minimum six-inch thick prepared subgrade soil layer;
- A geomembrane liner; and
- A 12-inch thick bottom ash drainage layer with embedded leachate collection pipe.

11.2.1.5 Stage III (Future)

Stage III is a future 7.0-acre cell to be constructed to the south of Stage II during Phase 2 of the Fill Progression Plan (see PD-10).

11.2.1.6 Stage IV (Future)

Stage IV is a future 7.2-acre cell to be constructed in the area north of the OADS during Phase 4 of the Fill Progression Plan (see PD-10).

11.2.2 Leachate Generation Rates

Historically, leachate from the OADS and combined leachate from Stage I, including the overfill liner, Stage II, and the Leak Detection System entered a soil-lined leachate pond through two separate leachate collection systems. Instantaneous leachate flow rate was measured quarterly through the environmental monitoring program at both pertinent locations. The readily available record of instantaneous leachate flow rates between March 2003 and April 2014 was analyzed. An average rate of 440 gallons per acre per day (gpad) was computed as the sum of the geometric means for leachate inlets. The peak design rate of 620 gpad was computed as the 80th percentile of the total discharge rates from the two discharge pipes.

In 2016, modifications to the onsite leachate sewer system were completed to combine all leachate and route the flow through a meter pit prior to discharging to the pond. A large 60-degree V-trapezoidal flume (Flume), manufactured by Virtual Polymer Compounds Inc., is positioned within the meter pit in-line with the leachate sewer pipe. A Greyline Instruments, Inc. Open Channel Flow Monitor (OCF Meter), comprised of an ultrasonic level sensor (OCF

Sensor) mounted above the flume and display monitor (OCF Monitor) with solar power unit was installed. The dataset from the new leachate monitoring system between July 1st, 2016 and November 30, 2017 was analyzed. The average daily flow rate was 13,958 gallons per day (gpd), with a wide range of 4,164 gpd to 34,228 gpd. The average, 470 gpad, and 80th percentile, 625 gpad, leachate generation rates closely matched historic rates.

11.3 OPERATIONS AND MAINTENANCE

11.3.1 Minimization of Perched Leachate

Due to the uniform nature of the waste, the potential for perched leachate conditions are limited to the interface between waste material and cover soils. Prior to waste placement activity in any area where operating or intermediate cover soil has been placed, this cover material will be stripped from the waste surface and stockpiled adjacent to the working face for reuse as appropriate. The removal of operating or intermediate cover soils before placement will help maintain the uniform permeability of the waste fill, which in turn, will contribute to minimize surface leachate seeps and perched leachate conditions.

11.3.2 Leachate Collection and Removal System

11.3.2.1 System Maintenance

PD-5 illustrates the location of primary leachate collection and removal system. The secondary leachate collection system lies directly underneath the primary leachate collection system, except for the closed OADS and the overfill liners. The leachate collection and removal system at Lockwood operates entirely by gravity. Alarm systems and backup equipment are not necessary. The primary leachate collection system piping in Stages I and II, including the Stage I overfill liner, is equipped with cleanout risers on the upstream end of each lateral consisting of six-inch diameter PVC pipe that are vertically installed, extending through to the ground surface. These cleanouts allow for periodic flushing and/or jetting (annually as a minimum) of the leachate collection pipe to help assure compliance with paragraph 363-7.1(f)(2), specifically that leachate collection pipes are free and clear of any obstructions that may hinder the free-draining conditions and increase the potential for leachate head build up above the liner system. Sediment removal using a vacuum truck will be utilized as necessary.

In addition to the laterals, the primary leachate collection and removal system also includes headers, a series of manholes and downstream sewer lines to carry the leachate from the landfill to the treatment system. Annual cleaning must include the entire system to maintain efficiency. The six-inch diameter laterals connect to a six-inch header in Stage I and the Stage I overfill liner. These headers are accessible through vertically installed six-inch diameter cleanout risers that are attached to the header at regular intervals using saddle wyes. The six-inch laterals in Stage II connect to a greatly oversized 21-inch diameter header. While six-inch diameter cleanout risers are attached to the 21-inch diameter header as well, a more effective cleaning can be performed using the manholes for access to this header. The downstream sewer system and 12-inch leachate headers in the OADS can also be accessed for cleaning through manholes.

The annual leachate system maintenance activity is documented on Daily Line Cleaning Record forms, included in Appendix 3, Attachment 1. A maintenance log is to be kept in accordance with paragraph 363-7.1(g)(4). A simple Leachate Collection System Maintenance Log was created for this purpose and is included in Appendix 3, Attachment 2C. The start date, end date, and a description of every maintenance activity on the leachate collection system is to be recorded. These forms, which will be kept in accordance with the recordkeeping protocols in Section 14.1, will also be included in the annual report. Video inspection of the leachate collection system at Lockwood is not required at this time since the system was constructed well before the advent of the paragraph 363-7.1(g)(2) requirement. However, future leachate collection systems, designed in accordance with section 363-6.11, will be subject to biennial video inspection.

Calibration of the OCF Sensor may be required when deficiencies in the system are noted in the system. Deficiencies may include the range readout or flow rate being outside of their expected, respective ranges. For the range readout the displayed sensor range should be within $\pm$ 0.1 inches of the measured range using a rule or $\pm$ 0.01 feet if the staff gauge is used. Flow rate is expected to be $\pm$ 3.0% of the field measurement described in section 3.1.2 of the Operation and Maintenance Manual Leachate Flow Metering System (Daigler Engineering, 2016). If deficiencies are identified the procedures described in section 3.1.3.1 of the Operation and Maintenance Manual Leachate Flow Metering System (Daigler Engineering, 2016) shall be followed to determine if any equipment needs recalibration or replacement. If recalibration is

required the equipment will be recalibrated using methods found in the User's Guide for the Open Channel Flow Monitor Model OCF 5.0 Manual Series A.1.6 (Greyline Instruments Inc.).

11.3.2.2 Leachate Monitoring

The total volume of leachate generated at the site is calculated using instantaneous and totalized flow recorded by the flow meter. The instrument log file is downloaded and processed monthly by Lockwood Hills personnel. The month end total volumes will be logged on a Monthly Leachate Generation Totals form that will be maintained in the Project Manager's office at Greenidge Station. The form is included in Appendix 3, Attachment 2B. Completed log forms shall be submitted with the annual report.

The Stage I and Stage II liner systems include a secondary leachate collection and removal system to monitor the performance of the primary geomembrane liner in these areas. Per paragraph 363-7.1(g)(3), the flow rate from the leak detection system is measured manually and recorded on a daily basis when the Facility is operating or monthly at a minimum during periods when the Facility is inactive. The leak detection system flow rate measurements will be documented on Daily Operating Record Secondary Leachate Flow Measurements forms included in Appendix 3, Attachment 2A, which will be kept in the Project Manager's office at Greenidge Station. Primary and secondary leachate volumes are reported in the annual report as well.

When operating regularly, daily flow rate measurements in the leak detection system will be used to compute a 30-day rolling average leakage rate in terms of gallons per acre per day. At a minimum, regardless of operating status, monthly measurements will be recorded. Measurements will also be recorded on any day in which the Facility is operational (i.e., days when Lockwood disposes of waste). The rolling average will be updated with each new measurement and compared to the allowable leakage rate of 20 gallons per acre per day per paragraph 363-7.1(f)(7). Should this allowable leakage rate be exceeded, the emergency procedures detailed in the Emergency Response Plan (Section 15.5.3.4 of the Facility Manual) must be followed beginning with notification of the Department within 72 hours of the exceedance.

Primary leachate is sampled at five separate locations, and leachate from the secondary system is sampled at the leak detection manhole as described in detail in the Environmental Monitoring

Plan (EMP – Section 12 of the Facility Manual). Samples of leachate from the primary and secondary leachate collection systems are analyzed for the parameters identified for groundwater monitoring as described in the EMP. All leachate quality data is presented and discussed in a report provided to the NYSDEC each calendar quarter.

11.3.3 Leachate Treatment Pond

11.3.3.1 Treatment System Description

The leachate Treatment Pond treats primary and secondary leachate which subsequently is discharged pursuant to SPDES Permit No. NY-0107069 Outfall 001 as a controlled release, batch discharge to the Keuka Outlet. The inlet structure to the Treatment Pond is a four-foot by four-foot square concrete structure with formed-in-place steps to create a cascade aerator. The cascade aerator increases the dissolved oxygen concentration of the leachate to promote the oxidation of ferrous iron to iron hydroxide precipitate. Turbulent flow created in the cascade aerator allows for increased surface area between the liquid and air, which allows diffusion of oxygen into the leachate. V-notched weirs were employed to promote more efficient nappe flow conditions and thus, improved aeration efficiency. The Treatment Pond itself will provide adequate detention time for the precipitation of iron hydroxide and settlement of suspended solids in the leachate. As certified, the Treatment Pond is 155 feet wide by 576 feet long by 6 feet deep, including the one-foot burial depth of the containment liner system. Actual working depth, or the elevation difference between the invert of the pond drain and the top of the containment system is only 3.8 feet. The 2.025-acre Pond will have an operating capacity of 1,116,000 gallons with 1.5 feet of freeboard. Under current landfill conditions, the Treatment Pond will have a maximum detention time of around 80 days at a steady average leachate flow rate (approximately 14,000 gpd) and a minimum detention time of around 32 days at a sustained maximum leachate flow rate of approximately 34,200 gpd.

11.3.3.2 Treatment System Operation

The SPDES Permit restricts the Treatment Pond discharge rate as a function of stream flow rate in the Outlet, as measured and recorded through a data logger at the USGS Gauging Station in the Village of Dresden. The permit requires that the Treatment Pond discharge be limited to no more than 140,000 gallons per day when the stream flow rate in the Outlet is less than 27 cubic feet per second (cfs). When the stream flow rate in the Outlet is greater than 27 cfs, the permit

allows that the Treatment Pond discharge rate to be increased to no more than 250,000 gallons per day.

Prior to any discharge, the treated water is sampled and analyzed to confirm the SPDES Permit discharge water quality requirements will be met. Steps to be taken in the rare event the pre-discharge water quality sample analyses indicate that the water is not acceptable quality for discharge are outlined in Section 15.5.3.1. Once water quality is deemed acceptable, a portable composite sampler is set up on the western (outlet) side of the Treatment Pond. The gate valve on the discharge pipe is opened and 24-hour composite samples are obtained from the discharge to ensure an adequate record of the quality of the water discharged is collected.

Discharge volumes will be calculated for each batch release based on the depth/volume relationship for the pond geometry, and these volumes are used to estimate the rate of discharge as reported in the SPDES discharge monitoring report. A Stage Storage Curve is included in Appendix 3, Attachment 3. Pond discharge events are recorded on a Leachate Treatment Pond Discharge Report form. This form, included as Appendix 3, Attachment 4, documents the entire event, including the date and results of the pre-discharge sample, the date, time, pond level, pond volume, and pH at the start and end of the discharge event, and the calculated discharge rate.

11.3.3.3 Treatment System Maintenance

Routine maintenance includes addressing any corrective actions noted during monthly visual inspections. Rodent activity shall be controlled through the use of locally appropriate means. Erosion, burrowing, or other defects shall be addressed and repaired promptly, as appropriate to ensure the stability and performance of the system. The Treatment Pond drain grate shall be kept free and clear of debris such as twigs and leaves that could hinder flow.

Annual cleaning of the leachate sewer system as described in Section 11.3.2.1 will include the entire sewer system all the way to the Treatment Pond to remove accumulated solids. The leachate meter pit including the flume, as well as, the cascade aerator, will require special attention as these units are prone to accumulate sediment. The v-notched weirs in the cascade aerator are removable such that the plates can be slid out during the annual flushing to facilitate a more thorough cleaning. The cleanout installed on the 8-inch sewer pipe downstream of the step aerator will be utilized to flush accumulated sediment into the Treatment Pond.

The Treatment Pond will be gauged periodically using a "sludge judge" or similar gauging device to determine the amount of settled solids. Calculations show that approximately 90% of the solids should settle out within 25 to 26 feet of the inlet under average flow conditions. Therefore, gauging should be performed near the inlet. If the depth of solids exceeds two feet as measured at several locations across the Treatment Pond, then sediment removal should be performed. Based on the design calculations, sediment removal is estimated to be required about every 15 years, depending on the solids loading and removal efficiency. When it is determined the sediment is to be removed, Lockwood will notify the NYSDEC of the planned schedule to clean the Treatment Pond and the emergency response actions described in Section 15.5.3 will be followed.

Gauging should also be performed in the Treatment Pond drain and in the sump of the round HDPE Pond overflow structure. Should significant sediment accumulation be observed, these areas can be maintained with a vacuum truck.

The gate valve on the outlet side of the Treatment Pond will be used during every discharge event, a minimum of roughly three times per year which should keep the valve properly operating. The gate valve to the temporary leachate storage and transfer area is only expected to be used during pond cleaning events or for other emergencies and, thus, should be periodically exercised to ensure operability. The temporary leachate storage area is described in greater detail in Section 15.5.3.

11.4 LEACHATE MINIMIZATION MEASURES

11.4.1 Operational Measures

One objective of site operations is to minimize leachate production. To achieve this goal, Lockwood, to the extent practicable, operates the landfill in a way minimizes leachate generation by preventing the ponding of water on the fill area and the erosion of soil covers. In this manner, the site operation promotes a reduction in the infiltration of water into the solid waste, thereby reducing leachate generation.

Runoff control features minimize erosion and convey surface water to Sediment Basin 1 or Sediment Basin 2 in an efficient manner. These structures may include straw bales, silt fences,

erosion control mats, and channel linings. In the period following new liner construction, the amount of leachate generated by an open liner condition is minimized using geomembrane flaps. Geomembrane flaps are placed to temporarily divert surface water around the open liner to the stormwater system. At no time will the amount of open liner tributary to the leachate system exceed one-acre in area. Run-on control structures are used to help prevent surface water from entering the active landfill area, and direct surface water away from active landfilling. The perimeter berm serves to restrict run-on to the active area. Other features include the perimeter channels outside the landfill perimeter berm, and may also include berms, channels and swales to direct surface water away from active areas.

In addition, good operational practices are utilized to minimize leachate generation. These good operational practices include maintaining a minimal working face area to reduce leachate generation and erosion, and re-establishing soil cover material and vegetation in areas where cover soil may have eroded.

Groundwater underneath the Facility is maintained at a level below the liner system through the effects of the liner itself (limits infiltration of precipitation into the groundwater system) and the use of groundwater depression drains installed below the liner system. When flowing, the groundwater depression systems from the existing Stages I and II, and future Stage IV, which are or will be installed below the liner system and do not come in contact with waste, discharge into the surface water perimeter channels around the site.

11.4.2 Landfill Cover Systems

Sequential closure per the Facility's Conceptual Closure Plan (Section 17.1 of the Facility Manual) will minimize leachate. Installation of the final cover system on each landfill cell as it achieves final grades, along with the use of exposed geomembrane as deemed necessary and practicable, will cut off precipitation from infiltrating into the waste mass thereby significantly reducing the volume of leachate generated. The exposed geomembrane and final cover systems to be used at Lockwood are defined in Section 6 of this Facility Manual.

Approximately 12.3 acres have been identified by Lockwood for covering with an EGC before the end of the current phase, Phase 1a, of the Lockwood Fill Progression Plan. Upon completion

of the EGC on the proposed areas, the impact on the average leachate generation rate from areas not already under final cover is nearly a 60% reduction.

12 ENVIRONMENTAL MONITORING PLAN

This Environmental Monitoring Plan (EMP) has been prepared in accordance with the New York State Department of Environmental Conservation (NYSDEC) regulation 6 NYCRR subdivision 363-4.6(f). The EMP addresses the groundwater, surface water, and leachate monitoring activities for Lockwood, including the location of all environmental monitoring points, the sampling schedule, analyses to be performed, statistical methods, and reporting requirements. The plan also includes a contingency water quality monitoring plan that specifies trigger mechanisms for its initiation.

Previous owners had developed a ten-character, alphanumeric code to identify monitoring locations. The current owner has opted to use more common descriptors for the sampling points. Since much of the site's historic documentation and data uses the ten-character code, a key relating the old coding system with the new names is included in Appendix 4.

12.1 HYDROGEOLOGY

The original ground surface at the site can be characterized as gently to moderately sloping, primarily to the north-northwest, except in the vicinity of the Keuka Outlet, where the ground surface slopes away to a deeply cut ravine that is the outlet itself. Surface water run-on to the site is minor, with the roadside channels for Feagle Road diverting runoff from the area upgradient and south of the site to the drainage way along the west side of Swarthout Road. A swale and old farm road along the western margin of the landfill drains surface water runoff from the southwestern portion of the site away from the landfill to the Keuka Outlet. The primary surface water drainage pathway from the landfill site is a deep swale that conveys stormwater and treated runoff to the Keuka Outlet, just to the northwest of the landfill.

12.1.1 Geology

A series of geotechnical investigations have been completed at the site to provide a significant amount of information regarding the subsurface conditions. Borehole, piezometer, and groundwater monitoring wells advanced and installed during these previous investigations are shown on Sheet PD-2.

The site lies within the Allegheny Plateau subprovince of the Appalachian Plateau physiographic province. Glacially scoured ridges and valleys characterize the region, and ground elevations in this area are generally less than 800 feet above mean sea level (MSL). The southern boundary of the Lockwood site is located on the north side of the Tully Escarpment, west of Seneca Lake.

The overburden is comprised of a continuous unit of unstratified glacial till. Overall, the till is a poorly sorted, dense, non-plastic silt, sand, and gravel unit. The till unit ranges in thickness from about five feet in the southern, upgradient end of the site, to as much as 75 feet or more at the northern or downgradient edge. The weathered, uppermost 10 to 15 feet of the till is poorly stratified with occasional thin, discontinuous sandy lenses. The density of the till increases with depth. Sieve analyses indicate a range of particle sizes from coarse gravel to silt and clay. Based on a limited number of particle size distribution test results, a substantial percentage of the till, up to 45% or more, is fine grained material that passes through the No. 200 sieve.

In the southern portion of the site, the Geneseo shale and underlying Tully limestone bedrock units are near the surface and are covered by a thin layer of loose, weathered rock and glacial till. These two rock units are absent below the original ash disposal site, the Treatment Pond, and the two sediment ponds, where the Moscow shale is in direct contact with the glacial till.

The uppermost bedrock unit, the Geneseo shale, is a dark gray to black, fissile and weathered rock, with thin, “poker chip” features. The Tully limestone underlies the Geneseo shale and is a dark gray fossiliferous rock of fair to good quality, with horizontal to sub-horizontal, relatively tight fractures. The Tully limestone is encountered upgradient and to the southerly edge of the OADS.

The lowest of the three bedrock units encountered in the explorations completed at the site is the Moscow shale. The Moscow is a black shale reportedly containing abundant crinoidal, coral, and shelly fossils, usually occurring in well preserved horizontal beds. The Moscow shale also contains pyretic veins, inclusions, and fossil replacements. It is reported that although the orientation of the bedding planes in the Moscow shale are nearly horizontal, the rock obtained from coring has a strongly developed, high angle (60 to 70 degrees) fracture set, which are filled with clay and silt.

12.1.2 Groundwater

Two water bearing units have previously been identified at the site; including a water table in the unconsolidated glacial till unit; and groundwater in the fractures of the underlying consolidated bedrock units.

Physical site characteristics, soil, and bedrock properties, help establish the groundwater flow patterns. For example, the original ground surface at the site and the immediately surrounding areas slope down to the north between about one to six percent, promoting some lateral groundwater flow to the north in the overburden. The Keuka Outlet presents a deep cut through the till and bedrock units, with a water surface elevation in the range of 470 to 460 feet above MSL, lower than the well screen intervals for any of the site monitoring wells, tending to promote lateral groundwater drainage in both the overburden and bedrock along the western margin of the site. Seneca Lake's western shore is approximately 4,000 feet northeast of the landfill with a surface water elevation of approximately 445 feet above MSL; and together with the Keuka Outlet, constitutes the likely groundwater discharge area for groundwater found below the landfill.

Groundwater movement through the unconsolidated soils is influenced by the relatively fine grained and poorly sorted nature of the till, where smaller particles fill the voids between the larger particles, effectively reducing porosity and hydraulic conductivity. In-situ (horizontal) permeability tests in the 1989-series water table monitoring wells produced results in the range of 1.2×10^{-7} to 6.4×10^{-7} cm/sec.

Typical of fractured bedrock, the permeabilities measured by single-well slug tests and packer tests have a relatively wide range between 2.0×10^{-4} and 3.5×10^{-7} cm/sec. It is probable that the higher permeability results are realized in well screen intervals that intersect larger, or a greater number of fracture sets.

Historically, the vertical gradients across the site are slightly to strongly downward, with the strongest measured gradient in the vicinity of the Keuka Outlet (e.g. 8909 well couplet), where the notable downward gradient reveals the influence of this deep rock cut channel on bedrock groundwater flow.

Historical data suggests that to the south of the landfill, groundwater flow is laterally to the north in the overburden, and that as the till thickens, groundwater flow in the till appears to take on a more vertically downward direction toward the bedrock units. Flow in the bedrock fractures is then expected to be generally northward, with a westward tendency in the vicinity of the Keuka Outlet, and ultimately discharges to the Keuka Outlet and Seneca Lake. Based on this discussion, the critical stratigraphic zone at Lockwood is comprised of both the water table in the glacial till and flow in the deeper bedrock.

12.2 MONITORING POINT DESCRIPTION

Figure 12-1 locates the current and proposed additions to the environmental monitoring points for the Facility. Proposed well locations are to be installed upon the issuance of the modified permits, whereas Future well locations are not to be installed until approximately one year prior to construction of the Phase IV baseliner.

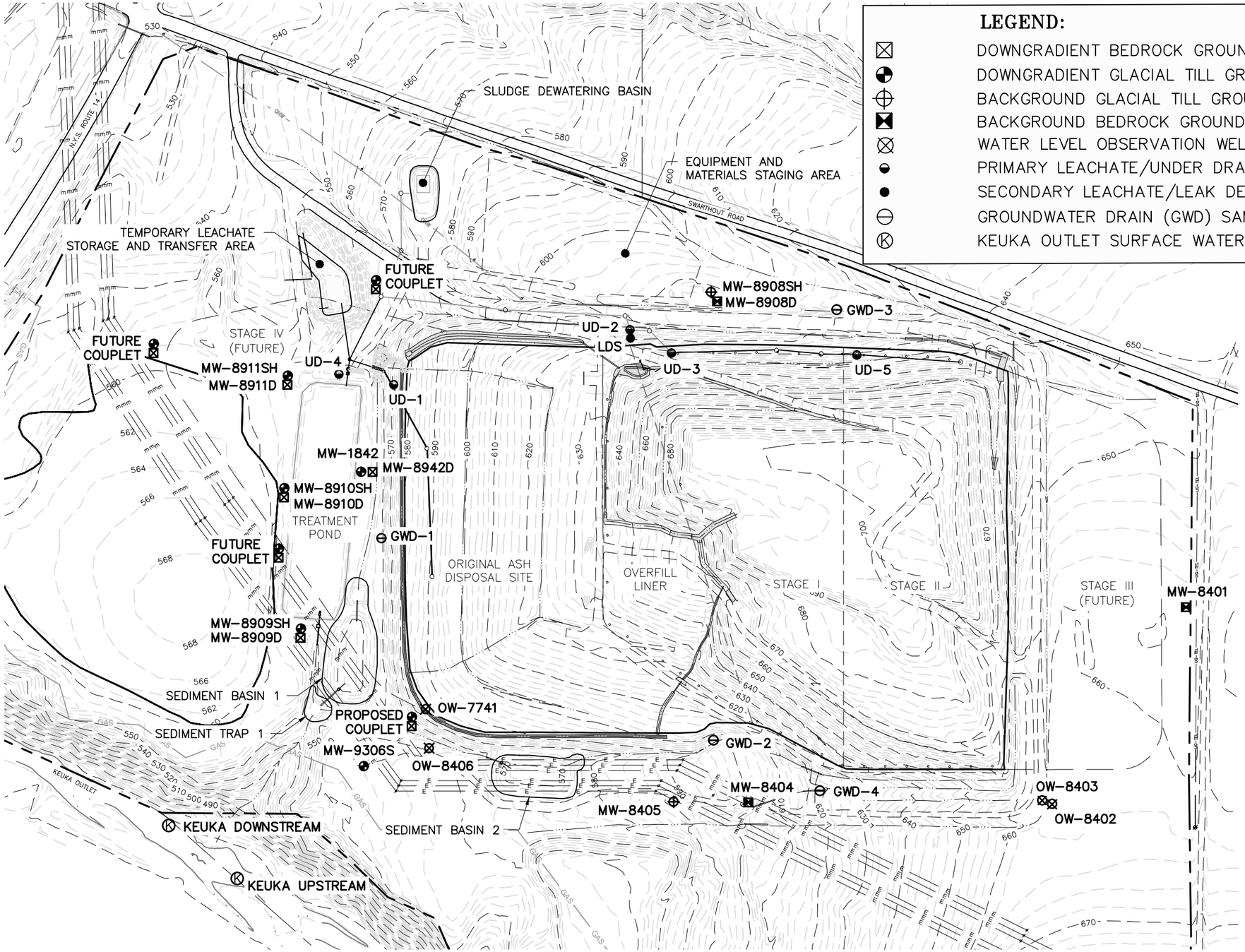
12.2.1 Groundwater

Several wells have been installed at the Facility to monitor groundwater quality in the vicinity of the landfill. The wells were installed in accordance with current technologies and regulations in effect at the time of construction. The monitoring wells are installed as single and couplet installations, allowing for the evaluation of vertical and horizontal groundwater gradients across the site.

Table 12-1 summarizes the observation wells that will be monitored for static water level only.

TABLE 12-1: WELLS TO BE MONITORED FOR STATIC WATER LEVEL ONLY

Background	Downgradient
OW-8402	OW-7741
OW-8403	OW-8406



LEGEND:

- DOWNGRADIENT BEDROCK GROUNDWATER MONITORING WELL
- DOWNGRADIENT GLACIAL TILL GROUNDWATER MONITORING WELL
- BACKGROUND GLACIAL TILL GROUNDWATER MONITORING WELL
- BACKGROUND BEDROCK GROUNDWATER MONITORING WELL
- WATER LEVEL OBSERVATION WELL
- PRIMARY LEACHATE/UNDER DRAIN (UD) SAMPLE LOCATION
- SECONDARY LEACHATE/LEAK DETECTION SYSTEM (LDS) SAMPLE COLLECTION
- GROUNDWATER DRAIN (GWD) SAMPLE LOCATION
- KEUKA OUTLET SURFACE WATER SAMPLE LOCATION

NOTES:

1. MONITORING WELLS LOCATED WITHIN LIMIT OF WASTE WILL BE REPLACED BY FUTURE WELL COUPLETS.
2. MW-8910SHR WILL REPLACE MW-8910SH BUT WILL BE DECOMMISSIONED PRIOR TO FINAL CLOSURE.
3. THE PROPOSED WELL COUPLET IS TO BE INSTALLED UPON ISSUANCE OF THE MODIFIED PERMIT.

NO.	REVISION	BY	DATE

DAIGLER ENGINEERING, P.C.
CIVIL & GEO-ENVIRONMENTAL ENGINEERING
2620 GRAND ISLAND BLVD. GRAND ISLAND, NEW YORK 14072
(716) 773-6872 (716) 773-6873 FAX
JAMES A. DAIGLER, P.E.
NYSPE NO. 061689

DATE: August 2020

SCALE: 1"=250'

PRELIMINARY NOT FOR CONSTRUCTION

PREPARED FOR: LOCKWOOD HILLS LLC			MONITORING POINT LOCATIONS FACILITY MANUAL
DES. BY:	DRW. BY:	CHK. BY:	
DWG: Figure 12-1 Monitoring Point Location Plan2020.dwg	TOWN OF TORREY	YATES COUNTY	NEW YORK

FIGURE 12-1

Q:\Lockwood Hills LLC\31-1619 Consent Order 2019\ACAD\Lockwood Facility Manual\Figure 12-1 Monitoring Point Location Plan2020.dwg 8/3/2020 3:02 PM

Table 12-2 provides a summary of operational and proposed (in bold italics) wells that will be monitored for static water level and ground water quality.

TABLE 12-2: WELLS TO BE MONITORED FOR WATER QUALITY AND STATIC WATER LEVEL

Background		Downgradient	
Glacial Till	**Bedrock**	**Glacial Till**	**Bedrock**
MW-8908SH	MW-8908D	MW-8909SH	MW-8909D
MW-8405	MW-8401	***MW-8910SHR***	MW-8910D
	MW-8404	MW-8911SH	MW-8911D
		MW-9306	
		MW-1842	MW-8942D
		MW-2001SH	***MW-2001D***

The combination of glacial till and bedrock monitoring wells helps ensure that the entire critical stratigraphic section is being monitored.

As required per item 363-4.6(f)(8)(i)(*a*)(*2*)(*ii*), the horizontal spacing of the upgradient and crossgradient bedrock groundwater monitoring wells MW-8401, MW-8404, and MW-8908D does not exceed 1,500 feet, at approximately 1,440 feet apart. Horizontal spacing for the two upgradient glacial till wells, MW-8405 and MW-8908SH exceeds 1,500 feet. Due to insufficient thickness and unsaturated conditions of the overburden along the southern end of the site, it is not possible to install additional wells in the glacial till that will be monitorable for groundwater. All upgradient wells are located outside the footprint of the current and future landfill cells.

As required per item 363-4.6(f)(8)(i)(*a*)(*2*)(*i*), the horizontal spacing of the downgradient wells does not exceed 500 feet. Downgradient well couplets MW-1842/8942D, MW-8909SH/D, MW-8910SHR/D, MW-8911SH/D, and MW-2001SH/D, and single glacial till well MW-9306 are, or will be, spaced between 270 and 400 apart.

The current downgradient wells are between 110 to 310 feet from the current OADS limit of waste. The proposed new well cluster MW-2001SH/D will be installed near the northwest corner of the OADS, within 60-70 feet of the limit of waste. Stormwater drainage features and a perimeter berm preclude installing newer wells within 50 feet of the current limit of waste as is preferred by subclause 363-4.6(f)(8)(i)(*a*)(*5*).

All current monitoring wells with the exception of MW-1842 were installed prior to the advent of the new section 363-4.6 regulations in November 2017. The specifications for MW-1842 were approved on December 22, 2017. The current glacial till monitoring wells at the Facility are not screened to ensure that the water table surface is always within the screened interval as required by subclause 363-4.6(f)(8)(i)(*b*)(*1*). Generally, the water table surface remains wholly above the screened interval. The well screen length of MW-9306 is unknown, but no known water quality monitoring well screen length exceeds the required maximum value per subclause 363-4.6(f)(8)(i)(*b*)(*3*) of 20 feet. Two wells in the monitoring program, OW-8403 and OW-8406, do have screen lengths of 24 feet. For this reason, these wells are relegated to water level observation wells only.

Future development will require abandonment of downgradient wells and siting and installation of new monitoring wells. These changes are discussed in the Implementation Plan presented in Section 12.8 of this Facility Manual.

12.2.2 Surface Water

Representative surface water samples are collected from two locations within the Keuka Outlet; one approximately 100 feet upstream of the Treatment Pond outfall discharge location (Keuka Upstream), and one approximately 100 feet downstream of the Treatment Pond outfall discharge location (Keuka Downstream). The upstream and downstream data will be compared directly, parameter by parameter, and to a grab sample taken from the Treatment Pond (Pond Grab) to determine whether the discharges from the site are impacting surface water quality.

There are no known natural springs, seeps, or groundwater discharge zones onsite, however, there is a network of groundwater depression drains under the landfill from which there are four groundwater discharge locations designated Groundwater Depression Drains (GWDs) 1 through 4. GWD-1 drains the area under the OADS and discharges north of the OADS into the north stormwater drainage channel. GWD-2 drains the area under the Stage I baseliner and discharges to a stormwater drainage channel on the west of Stage I. GWD-3 and 4 were constructed with Stage II under the approximate boundary between Stage I and Stage II. GWD-3 discharges to a stormwater drainage channel east of Stage I while GWD-4 discharges to a stormwater drainage channel to the west of Stage I. The GWDs are shown on Figure 12-1.

To summarize, the surface water monitoring points included this EMP are listed in Table 12-3.

TABLE 12-3: SURFACE WATER MONITORING POINTS

Surface Water	Groundwater Discharge
Keuka Upstream	GWD-1
Keuka Downstream	GWD-2
Pond Grab	GWD-3
	GWD-4

12.2.3 Leachate

Leachate will be sampled from the Facility at the locations indicated on Table 12-4 and as found on Figure 12-1. The primary and secondary leachate collection and removal systems operate entirely by gravity, therefore the effect of pumping on sample quality is not a concern and did not need to be factored into location of the leachate sampling points as required by clause 363-4.6(f)(8)(iii)(*a*).

TABLE 12-4: LEACHATE MONITORING POINTS

Sample Point	Description
Under Drain 1 (UD-1)	Discharge from the leachate collection system under the Original Ash Disposal Site
Under Drain 2 (UD-2)	Discharge from the leachate collection system in the Stage I Overfill Liner
Under Drain 3 (UD-3)	Discharge from the primary leachate collection system under the southern portion of the Stage I baseliner
Under Drain 5 (UD-5)	Discharge from the primary leachate collection system under the Stage II baseliner
Inlet to Pond (UD-4)	Combined leachate from inlet to the Treatment Pond
Leak Detection System (LDS)	Liquid from the secondary leachate collection and removal system under the basal liner in Stage I and Stage II

Access to the LDS is limited such that there is no way to separately monitor the secondary leachate collection system under Stage I and Stage II. Future design of the leachate collection system will ensure that leachate from the new Stages can be discretely monitored.

12.3 WATER QUALITY PARAMETERS

Historic groundwater monitoring has not required sampling and analysis for baseline or expanded organic parameters, as well as, certain leachate indicator parameters and some metals. Other metals were added to the existing routine monitoring program, tailoring that program to the specific type of waste the landfill accepted. The Facility has been and will continue to be a monofill landfill. Hence, groundwater monitoring for the enhanced routine and baseline parameters included in Table 12-5 will continue. In the future, should there be a change in the types of waste received at the Facility, this EMP will be modified to reflect any changes in the suite of parameters as appropriate.

The Lockwood routine and baseline water quality parameters are provided below. Common names and CAS number, if available, are provided.

Table 12-5: Routine and Baseline Water Quality Monitoring Parameters

Routine Parameters	Baseline Parameters
Field Parameters	*Field Parameters*
Static Water Level (wells)	Static Water Level (wells)
Flow Rate*	Flow Rate*
Temperature	Temperature
Turbidity	Turbidity
pH	pH
Dissolved Oxygen**	Dissolved Oxygen**
Wet Chemistry Parameters	*Wet Chemistry Parameters*
Alkalinity	Alkalinity
Ammonia (7664-41-7)	Ammonia (7664-41-7)
Chloride (16887-00-6)	Chloride (16887-00-6)
Hardness	Color
Specific Conductivity	Hardness
Sulfate (14808-79-8)	Specific Conductivity
Total Dissolved Solids (TDS)	Sulfate (14808-79-8)
	Total Dissolved Solids (TDS)
	Total Organic Carbon (TOC)
Total Metals	*Total Metals*
Aluminum (7429-90-5)	Aluminum (7429-90-5)
Arsenic (7440-38-2)	Antimony (7440-36-0)
Boron (7440-42-8)	Arsenic (7440-38-2)
Cadmium (7440-43-9)	Barium (7440-39-3)
Calcium (7440-70-2)	Boron (7440-42-8)

Copper (7440-50-8)	Cadmium (7440-43-9)
Iron (7439-89-6)	Calcium (7440-70-2)
Magnesium (7439-95-4)	Chromium (7440-47-3)
Manganese (7439-96-5)	Copper (7440-50-8)
Mercury (7439-97-6)	Iron (7439-89-6)
Potassium (7440-09-7)	Magnesium (7439-95-4)
Selenium (7782-49-2)	Manganese (7439-96-5)
Sodium (7440-23-5)	Mercury (7439-97-6)
	Nickel (7440-02-0)
	Potassium (7440-09-7)
	Selenium (7782-49-2)
	Sodium (7440-23-5)
	Zinc (7440-66-6)

*Leachate and groundwater depression drain locations only
**Surface water sample locations only

12.4 EXISTING WATER QUALITY DATABASE

Groundwater in the vicinity of the existing landfill has been sampled and analyzed for several decades and an extensive body of data is available to characterize the groundwater quality. Characterization of the quality of groundwater onsite has been documented quarterly in environmental monitoring and annual reports during this time. However, it should be noted that all groundwater monitoring wells in the current monitoring well array were installed after at least some waste was in place. Waste disposal in the OADS began in 1979. The oldest monitoring wells in the current monitoring well array were installed five years later. Intrawell (i.e., comparing compliance data to baseline data from the same well) statistics, were determined to be the most appropriate statistical approach for monitoring groundwater for the purpose of detecting potential impacts at Lockwood for several reasons. First, the critical stratigraphic zone includes two water bearing units, as discussed in Section 12.1.2, which in turn exhibit differences in water quality within each unit. Significant differences in water quality exist between the glacial till wells due to its heterogeneous nature. Intrawell statistical comparisons remove such spatial variability. Also, due to the differing stratigraphic zones screened by the bedrock monitoring wells, significant differences exist between the bedrock wells, and background data cannot be pooled for a background versus downgradient comparison. Intrawell comparisons will eliminate the known geochemical differences between the three bedrock formations.

Second, the historic dataset is relatively large for most parameters in most wells. Some monitoring wells in the monitoring well array were installed as early as 1984 and have been

sampled on a nearly continuous quarterly basis since installation. In most instances the optimal dataset size of 20 points is met or exceeded. Periodic updates to the baseline statistics have allowed for a robust intrawell statistical framework.

Finally, the current monitoring well array includes wells with existing impacts which have been attributed to the Facility's leachate management system. Remedial action is currently underway. Intrawell statistics allows for the analysis of these impacted wells to be isolated from that of other non-impacted downgradient wells and for the more direct tracking of their expected future improvement.

The existing water quality database for each parameter/well combination has been or will be analyzed using the initial eight to ten rounds of water quality sampling[3] and the required methodology mandated by subclause 363-4.6(f)(9)(i)(*b*)(*4*) which is largely consistent with the methodology presented in the United States Environmental Protection Agency's (USEPA's) Unified Guidance (2009). In brief, the dataset is scanned for the percentage of data reported as less than the detection limit. In cases where the number of non-detects is greater than 50% but less than 90% the statistical trigger value is calculated as the 90th percentile of the dataset. When the percentage of non-detects is 90% or greater any detection of the parameter above the reportable practical quantitation limit will be used as a trigger value.

For data sets with less than 15% non-detects, the arithmetic mean, standard deviation, and coefficient of variation are calculated. For datasets with greater than 15% non-detects, but less than 50%, appropriate statistical methods will be applied first to correct for the left-censored data. In instances where the coefficient of variation is 0.5 or less and less than 15% of the data are non-detects, the statistical trigger value is calculated as the arithmetic mean plus three standard deviations. When the coefficient of variation is greater than 0.5 and transformation of the data cannot reduce the variation below this threshold or there are other indications the data is not normally distributed, the statistical trigger again is calculated as the 90th percentile of the data set.

[3] For the three monitoring wells planned for installation in the near future, intrawell statistics will not be employed until a minimum of eight data points have been collected.

Per subitem 363-4.6(f)(9)(i)(*b*)(*4*)(*iii*)(*C*), non-detects with associated detection limits higher than applicable standards or detected values within the same data set shall not be used to determine existing water quality. In cases where detection limits associated with non-detects are below applicable standards and detected values in the same data set, non-detects shall have a designated value of one half of the detection limit. All laboratory methods used to analyze water samples for routine and baseline parameters have associated method detection limits (MDL) below the applicable New York State ground and surface water standards provided in Table 13-1, except antimony. The current MDL for antimony (6.7 µg/L) exceeds the applicable standard found in the NYSDEC memorandum, Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations; Division of Water Technical and Operational Guidance Series (TOGS) 1.1.1; re-issued June 1998 of (3.0 µg/L). However, the MDL for antimony reported by the contracted laboratory was above the referenced standard in 15 of 21 water samples, providing enough data to develop existing water quality for this parameter after unusable non-detect data points are removed.

USEPA's Unified Guidance is or will be followed in areas that are either not specified or ill-defined in the New York State regulations; including handling of non-detect data, transformation of data using the ladder of powers and re-evaluation of the coefficient of variation in an attempt to achieve a more normal distribution, outlier analysis, trend analysis, and periodic updating of the baseline statistics. Periodic updating of the baseline statistics will occur after the collection of eight to ten new data points.

12.5 OPERATIONAL WATER QUALITY MONITORING PLAN

Based on the Operational Water Quality requirements of clause 363-4.6(f)(9)(*ii*)(*a*), all groundwater and surface water points are to be sampled at least quarterly; once a year for baseline parameters and three times for routine parameters. Leachate monitoring points for the primary and secondary leachate collection and treatment systems shall be conducted semi-annually, during the first and third quarters of each year. Baseline and routine parameters identified for Lockwood are identified in Section 12.3 of this Facility Manual. The baseline sampling shall occur in the third quarter each year. This quarter was chosen because it is typically the time of year when groundwater levels and therefore, dilution potential, are at their lowest point.

Within 90 days of each Operational Water Quality sampling event, the Project Manager must determine if a significant increase has occurred in any parameter for any well. A significant increase in this context is a parameter concentration in exceedance of the applicable trigger value determined as described in Section 12.4. If a parameter/well combination does not have a statistical trigger value because pre-operational data contain greater than 90% non-detects, any detection of the parameter shall be considered a significant increase.

If a significant increase in any parameter/well combination has occurred, the Project Manager must notify the NYSDEC within 14 days of this finding, explaining which parameters/wells exhibited significant increases. In the following quarter all wells, or an approved subset, must be sampled for baseline parameters. Baseline sampling shall continue in all wells, or the approved subset, semi-annually until the significant increase is determined not to be facility derived or the NYSDEC determines monitoring is not required to protect public health or the environment. After at least one verification sample is collected and analyzed from the affected monitoring point, Lockwood Hills may make a written demonstration that the significant increase was either from a source other than the Facility, the result of sampling or analytical error, or from natural variation in groundwater quality.

Graphical methods, such as Stiff and Piper diagrams, can be used to visually represent water quality and aid in determining the source of contamination. A Stiff diagram is a graphical representation of the concentration of major cations and anions in a water sample. The resulting shape allows a visual comparison between samples to easily identify similarities in general chemistry. The stiff diagrams constructed using the water quality of downgradient monitoring wells can be compared to those from background water quality and landfill leachate or other potential sources of contamination. If downgradient samples are influenced by landfill leachate, their Stiff diagrams will display similar shapes. Piper diagrams are triaxial graphs that allow for the plotting of general chemistry parameters from multiple sources onto one plot. Water quality that results from the mixing of different sources can be demonstrated graphically on a Piper diagram. For example, if a downgradient groundwater sample plots in between an upgradient groundwater sample and a landfill leachate sample, then it supports the notion that the downgradient groundwater is a mixture of upgradient groundwater and leachate. If the samples do not line up in this manner, then any suspected contamination is likely from another source.

If two successive monitoring events result in the detection of significant increases in one or more parameters, the Project Manager must notify the NYSDEC within 14 days of the discovery explaining which parameters/wells have shown significant increases. Additionally, the Contingency Water Quality Monitoring Plan provided in Section 12.6 shall be implemented within 90 days of the discovery.

12.6 CONTINGENCY WATER QUALITY MONITORING PLAN

A contingency water quality monitoring plan is required to ensure that adequate sampling efforts are conducted in the event that a significant increase over the existing water quality trigger value is detected for one or more routine or baseline parameter/well combinations through the operational monitoring program discussed in Section 12.5.

If the contingency water quality monitoring program is triggered Lockwood Hills shall, within 90 days, collect and analyze a minimum of one sample from each monitoring well (upgradient and downgradient), or a selected subset, for the baseline parameters included in Section 12.3 on a quarterly basis.

If any parameters in downgradient monitoring wells are detected at concentrations greater than the applicable trigger values, at least two independent samples, collected within two weeks of each other, will be taken from each of the sample wells and analyzed for the detected parameters within 30 days of receiving the results of the initial contingency sampling event. Following analysis of these samples, the results will be compared to the existing water quality database for the Facility. If this comparison shows an increase in existing water quality values for upgradient wells, the existing water quality values will be updated to reflect the contingency monitoring data within each hydrogeologic flow regime.

Following receipt of initial or subsequent sampling results the Project Manager shall, within 14 days, inform the NYSDEC of which, if any, baseline parameters/wells showed significant increases from the applicable existing water quality value. Within 90 days, and on a quarterly basis thereafter, all wells will be resampled for baseline parameters that exhibit significant increases with a minimum of one sample collected from each well. Groundwater protection standards will be established in accordance with clause 363-4.6(f)(9)(iii)(*c*) for all routine and baseline parameter/well combinations that exceed their trigger values.

If the results of two consecutive sampling events indicate that any baseline parameters are at or below applicable trigger values, Lockwood Hills will petition the NYSDEC to have these parameters removed from contingency water quality sampling. Any such parameters would still be monitored annually under the operational water quality program. If baseline parameter concentrations are above applicable trigger values, but below groundwater protection standards, then contingency monitoring will continue. If all parameters are shown to be below their applicable trigger value then Lockwood Hills will, with approval from the NYSDEC, return to operational water quality monitoring.

If the concentration of one or more parameters exceeds the groundwater protection standards in any sampling event, Lockwood Hills will notify the NYSDEC and applicable local officials within 24 hours and seven days of detection, respectively, to identify the parameters that exceeded groundwater protection standards. Lockwood Hills shall characterize the nature and extent of the release by installing any necessary additional monitoring wells. At least one additional well will be placed at the facility boundary in the direction of contaminant migration. Existing water quality will be established for this well in accordance with subparagraph 363-4.6(f)(9)(i), as discussed in Section 12.4.

If sampling of the new well(s) indicates that contaminants have moved offsite, Lockwood Hills shall notify all persons who own or reside on land that is directly over or within 500 ft downgradient of any part of the plume of contamination.

Additionally, evidence shall be gathered to demonstrate that the significant increase was the result of one of the following scenarios; the significant increase was caused by a source other than the Facility; was due to a sampling or analytical error; or occurred due to natural variations in groundwater quality. If a successful demonstration is made, contingency water quality monitoring must still continue until baseline parameters are at or below applicable trigger values. If it cannot be successfully demonstrated that any of these scenarios occurred, then Lockwood Hills shall begin a corrective measures assessment in accordance with section 363-10.1 within 30 days of detecting a parameter at a level which exceeds its respective groundwater protection standard.

12.7 REPORTING REQUIREMENTS

The results of the environmental monitoring program are to be reported quarterly as detailed in Section 14.2 of this Facility Manual.

12.8 IMPLEMENTATION PLAN

The environmental monitoring system for the current Facility is in full operation. This plan covers future additions to the system which will be required as the Facility develops. All new monitoring wells will be sited, constructed, and installed in accordance with subparagraph 363-4.6(f)(8)(i).

Three new monitoring wells, 8910-SHR, 2001-D, and 2001-S, are proposed for immediate installation. Actual installation dates for the proposed wells shall be scheduled following acceptance of this 6 NYCRR Part 360 Series permit renewal/modification application. Upon installation and development, these new wells will be sampled quarterly at the same time as the existing monitoring well array. To accelerate establishment of the existing water quality database for these wells, quarterly sampling will be for baseline parameters for the first eight quarters. This will allow for the establishment of intrawell trigger values for all water quality parameters two years after installation. After the establishment of existing water quality, the sampling protocol of the new wells will follow operational water quality monitoring.

Future new monitoring points will follow the general sequence of landfill construction at Lockwood as provided in the Fill Progression and Placement Plan in Section 7 of this Facility Manual, which includes the future OADS overfill, Stage III, and Stage IV. Each new cell will include a primary and secondary leachate collection system that can be discretely monitored. Additionally, a groundwater depression system is expected to be required under the Stage IV baseliner system. Groundwater drainage from this system will be added to the environmental monitoring system as well.

Future landfill cell construction will require semi-annual sampling for baseline parameters in the primary and secondary leachate collection and removal systems from the new cell for at least the first five years of operation. The first round of samples for a newly constructed cell will occur immediately prior to the first deposition of waste in that cell. The second semi-annual sample will occur six months thereafter.

Finally, during Phase 4, when planning for the construction of the Stage IV liner is initiated, three monitoring well couplets, MW-8910SHR/D, MW-8911SH/D, and MW-8942/MW-1842, will require decommissioning and replacement. This activity will be scheduled to occur a minimum of one year before the placement of waste in Stage IV. Stage IV construction overlaps a portion of the Greenidge Gravel Disposal Area, a listed N-site on the Non-Registry list of inactive hazardous waste sites. Geophysical and/or geochemical techniques may, at the request of the Department, be used in this area to properly site the new monitoring wells and well screens. The new wells must be sampled initially for baseline parameters beginning one year prior to the placement of waste in Stage IV or as approved by the NYSDEC. Following this initial sampling these monitoring points will be sampled quarterly at the same time as the existing monitoring well array. To accelerate establishment of the existing water quality database for these wells, quarterly sampling will be for baseline parameters for the first eight quarters. This will allow for the establishment of intrawell trigger values for all water quality parameters two years after installation. After the establishment of existing water quality, the sampling protocol of the new wells will follow operational water quality monitoring.

13 SITE ANALYTICAL PLAN

13.1 INTRODUCTION

This Section of the Facility Manual constitutes the Site Analytical Plan (SAP) and was prepared in accordance with subdivision 363-4.6(g) and the New York State Department of Environmental Conservation (NYSDEC) Technical and Administrative Guidance Memorandum (TAGM) SW-96-09 (*Development and Review of Site Analytical Plans*) effective May 3, 2001.

This SAP provides a description of the sampling, analysis, and data review procedures that will be performed to fulfill the requirements established in the site's Environmental Monitoring Plan (EMP) found in Section 12 of this Facility Manual. The SAP provides an orderly set of standard operating procedures for the collection of samples, the field and laboratory analysis of the samples, and the review of the analytical results. These standard operating procedures are intended to ensure consistent, comparable data for all sampling events occurring throughout the life of the Facility.

The SAP begins by establishing data quality objectives (DQOs) for the sampling analysis program with the ultimate objective being protection of human health and the environment. The discussion of DQOs includes the identification of data types (groundwater, surface water, and leachate) to be collected as part of the environmental monitoring program and an examination of the intended uses of the data. The data quality needed to meet the intended use is then assessed, and appropriate sampling and analytical procedures are established to achieve the data quality needs. Analytical quality assurance (AQA) and analytical quality control (AQC) measures also are established to ensure that the laboratory analytical data are precise, accurate, representative, complete, comparable, (sometimes referred to as PARCC parameters) and defensible.

Finally, the SAP describes the procedures for assessing the environmental monitoring data. These procedures include the validation of laboratory analytical data and a data usability assessment.

This SAP provides the guidance for future sampling and analytical activities at Lockwood. It is expected that the personnel, methods, and procedures specified in this SAP may change over

time, which may require modifications to the SAP. Any proposed modifications to this SAP will be reported to the Region 8 office of the NYSDEC.

Attachments referenced in the SAP are found in Appendix 5 of the Facility Manual.

13.2 DATA QUALITY OBJECTIVES

13.2.1 Data Users

Data users are categorized into three groups: 1) the decision maker, 2) primary data users, and 3) secondary data users.

13.2.1.1 The Decision Maker

The decision maker is identified as the Project Manager. The decision maker will identify the appropriate staff and contractors needed to acquire the quantity and quality of data required by the SAP, and will be responsible for the reporting of data to appropriate agencies. All communications regarding data acquisition and reporting for Lockwood will be coordinated through the decision maker.

13.2.1.2 Primary Data Users

Primary data users are those individuals or agencies directly involved with the collection and analysis of environmental samples, and the review and interpretation of analytical data. At a minimum, primary data users include the decision maker. For Lockwood, primary data users include:

- Project Manager;
- Analytical Quality Assurance Officer, as designated in Section13.3.3;
- Contracted Laboratory and Field Staff;
- Independent Data Validator; and
- Contractor(s) responsible for the preparation of quarterly and annual environmental monitoring reports.

13.2.1.3 Secondary Data Users

Secondary data users are defined as those that are not directly involved with data acquisition, review, and interpretation, but may rely on the results of the sampling and analysis program to

support their activities. Such data users may include county health agencies or interested citizen groups, for example. As the permitting authority and regulatory agency in charge of Lockwood, the New State Department of Environmental Conservation is considered a secondary data user. With the advent of the federal CCR rule (effective October 14, 2015 and amended effective August 29, 2018), the USEPA is now considered to be a secondary data user as well.

13.2.2 Objectives of the Monitoring Programs

The environmental monitoring plan for Lockwood is separated into three distinct phases; existing, operational, and contingency water quality monitoring programs. Though each phase has its own specific goal, there are several overarching objectives which apply to all three phases. Overarching objectives of the monitoring program are to:

- Conduct a sampling and analysis program consistent with the regulatory requirements of 6 NYCRR Part 360, 363, and the procedures described in this SAP for the purpose of protecting the quality of surface water and groundwater resources during operational, closure, post-closure, and custodial care periods;
- Achieve the quality assurance objectives for precision, accuracy, representativeness, completeness, comparability, and defensibility as set forth in Section 13.3.2 of this Facility Manual; and
- Provide the reporting of monitoring results to all primary data users.

The goal of the existing water quality monitoring program is to collect and analyze representative groundwater samples to establish an existing water quality database in accordance with subparagraph 363-4.6(f)(9)(i) and this SAP. This database will be used to develop trigger values with which future groundwater samples obtained through the operational or contingency water quality monitoring programs can be compared. As noted in the EMP, several decades of data have been collected in accordance with 6 NYCRR Part 360 regulations. This data will be updated in accordance with the procedures outlined in Section 12.4.

The goal of the operational water quality monitoring program is to sample various environmental media at up, cross, and downgradient monitoring wells to detect potential facility-derived contamination to help determine the potential for exposure of receptors and protect public health

and the environment. Distinguishing facility-derived contamination from offsite, upgradient changes in water quality will be usedto assess the need for initiation of the contingency water quality monitoring program.

The goal of the contingency water quality monitoring program is similar to the operational water quality monitoring program, but is initiated if a significant increase over the existing water quality value is observed, as described in the EMP. Under this program more frequent sampling of baseline parameters will occur and groundwater protection standards will be established for those parameters which exceeded their trigger values. If any parameter is above their respective groundwater protection standard this will indicate that a corrective measures assessment is required.

In addition to the three phases discussed above and in the EMP, a corrective measures groundwater monitoring program may be deemed necessary if any parameters exceed their respective groundwater protection standards developed for the contingency monitoring program. The goals of this program will be to meet the requirements of 6 NYCRR 363-4.6 in addition to any conditions imposed by the NYSDEC; demonstrate the effectiveness of the approved corrective measure; and to evaluate compliance with the groundwater protection standard(s) developed as part of the contingency water quality monitoring program. Testing required will be dependent on the corrective measure chosen.

13.2.3 Media Types

The types of sampling media to which this SAP applies include:

- Groundwater;
- Surface water; and
- Leachate.

Groundwater will be sampled from the monitoring wells specified in the EMP and from four groundwater depression systems that underlie the OADS and the Stage I and Stage II areas of the active disposal areas.

Surface water samples will be taken from the Treatment Pond located north of the OADS and from Keuka Outlet at points upstream and downstream of the pond discharge point. Specific sampling locations are identified in the EMP.

Leachate generated from the OADS and the Stage I and Stage II areas of the landfill is managed with the use of several leachate collection systems. Leachate will be sampled at each of the collection systems and at the inlet to the Treatment Pond. In addition, leachate will be sampled at the leak detection system, which is designed to detect leakage from the Stage I and Stage II liner systems. Specific sampling locations are identified in the EMP.

13.2.4 Contaminants of Concern

Lockwood is permitted to accept fly ash, bottom ash, pyrites, pulverized mill rejects, and wastewater treatment plant sludge from all former AES power plants, namely the Greenidge, Hickling, Westover, Cayuga, and Jennison Stations. Coal bottom ash from Garlock, Inc. and coal fly ash from the Eastman Kodak Company may also be accepted for disposal according to the Facility's active Part 360 Permit. In the future, the primary waste stream is anticipated to be fly ash and bottom ash from Greenidge associated with the up to 19% biomass that the Station is authorized to co-fire. Sludge or soils from routine maintenance or remediation activities also have the potential to be disposed at Lockwood.

The ash, pyrites, and rejects contain the non-combustible components of the coal that is burned. The principle components include metallic oxides and sulfides as well as other mineral matter. Past analyses of the previously disposed bottom and fly ash show detectable quantities of aluminum, arsenic, barium, calcium, cadmium, chromium, magnesium, and selenium. Future biomass can include untreated wood and resonated wood. This wood ash waste primarily derives its chemical composition from the parent wood.

The treatment plant sludge is a mixture of calcium sulfate and metal hydroxides formed by the lime precipitation of coal pile drainage, maintenance cleaning wastewater, and miscellaneous waste water collected and treated at the plant's treatment facility.

The contaminants of concern are mainly metals. However, additional chemical parameters that are useful for defining the general geochemistry of groundwater and surface water environments,

such as pH, turbidity, total organic carbon (TOC), total dissolved solids (TDS), specific conductivity, hardness, alkalinity, ammonia, chloride, and sulfate are also included in the monitoring program.

The regulatory standards and/or guidance values applicable to the various media being sampled and analyzed as part of the environmental monitoring program are listed in Table 13-1.

TABLE 13-1: APPLICABLE REGULATORY STANDARDS AND GUIDANCE VALUES

Media Type	Regulatory Standards and Guidance Criteria
Groundwater and Surface Water	6 NYCRR Part 703, Surface Water and Groundwater Quality Standards and Groundwater Effluent Limitations; amended August 1999. NYSDEC, Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations; Division of Water Technical and Operational Guidance Series (TOGS) 1.1.1; re-issued June 1998.
Leachate	No applicable standards; Data are used to characterize leachate chemical composition.

Comparisons of the monitoring results to the standards and guidance values provided in these documents will be one method for determining potential or actual impacts to groundwater and surface water surrounding the Facility.

13.2.5 Data Types and Uses

Environmental monitoring at Lockwood requires the collection and documentation of two types of data; 1) field data and 2) laboratory analytical data. Each data type is collected for a specified use and requires a certain quality for proper decision making, as will be discussed later.

The responsibility for obtaining the data is distributed between field and laboratory personnel from the Contracted Laboratory. The field services personnel are responsible for performing the required field measurements, which include measurements of turbidity, temperature, pH, dissolved oxygen in surface waters, water elevations in the monitoring wells, and flows from the leachate drains and groundwater depression systems. Turbidity, pH, and dissolved oxygen in surface waters have associated standards and guidance values. Flow rate in the leak detection system is used to compare to the allowable leakage rate for the primary liner system as

established by the construction requirements in subdivision 360-2.13(u). Water elevations are used to track groundwater flow patterns across the site.

The laboratory analytical data will be used for comparison to numerical decision-making criteria (i.e., standards, guidance values, and trigger values). These data must be generated in accordance with the quality control criteria established for each analytical method to ensure the highest accuracy and precision.

13.2.6 Data Quality Needs

For field measurements, data quality is determined mainly by the quality of the field instrument used, the skill of the field technician using the instrument, the frequency of calibration, and other factors. It is important that the measurements be taken as accurately and precisely as possible, and that the procedures for taking the measurements be consistently applied from one sampling event to another.

Laboratory analytical data will be generated in accordance with established analytical protocols and will include appropriate quality control documentation for use in validating the analytical results and assessing its usability. Quality assurance is discussed in Section 13.3.

13.2.7 Data Quantity Needs

Sampling will be conducted quarterly and will include each groundwater monitoring well, surface water sampling point, and leachate collection point identified in the EMP. During three of the quarterly events, samples will be collected for the analysis of the routine chemical parameters listed in the EMP (Table 12-5). Samples will be collected for baseline chemical parameters annually during the third quarter sampling event.

In the event that contingency groundwater monitoring is initiated by the guidelines outlined in the EMP, the monitoring wells will be sampled and analyzed for baseline chemical parameters on a quarterly basis until the cause(s) for triggering contingency monitoring have been adequately addressed.

In addition to the water and leachate samples, appropriate quality control (QC) samples will also be taken during each sampling event. The types of QC samples required for each sampling event and their uses are discussed in Section 13.3.

13.3 ANALYTIC QUALITY ASSURANCE/ANALYTIC QUALITY CONTROL (AQA/AQC)

13.3.1 General

This section describes the management and technical activities that will be performed to achieve the data quality objectives discussed in Section 13.2 of this Facility Manual. Analytic quality assurance (AQA) is addressed by defining the objectives for sample collection and analysis in terms of precision, accuracy, representativeness, completeness, comparability, and defensibility, and by defining the key personnel involved in the sampling and analysis program, and their responsibilities.

Analytic quality control (AQC) is addressed by ensuring that the analytical laboratory is approved by the New York State Department of Health's (NYSDOH's) Environmental Laboratory Accreditation Program (ELAP) in categories of analysis required by this SAP and by requiring that field and laboratory measurements are performed in strict accordance with the methodologies described in this SAP. Additional AQC measures are described in the following sections.

13.3.2 Quality Assurance Objectives

Quality assurance objectives are summarized in Table 13-2 and are discussed in the following sections.

13.3.2.1 Precision

Precision is defined as the measure of closeness of agreement among individual measurements, or reproducibility. Precision will be determined by the analyses of field duplicate samples collected at the same sampling location, and by laboratory duplicate analyses of the same sample, performed at a frequency of one per sample group. Acceptable limits of precision will be those established by the USEPA data validation guidance. For analytes that have no established guidance limits (e.g., wet chemistry parameters), the limits will be those established internally by the laboratory.

TABLE 13-2: SUMMARY OF DATA QUALITY CHARACTERISTICS AND REVIEW OBJECTIVES

Characteristic	Description	QC/QA Indicators	Objective
Precision	Measure of closeness of agreement among individual measurements; Reproducibility	Field duplicates Laboratory duplicates Matrix spike duplicates	RPD < 20% for aqueous samples
Accuracy	Measure of closeness of measurements to a true value	Standardized methodologies Holding times Instrument calibration Standard/surrogate recoveries Blank contamination Matrix spike recoveries Laboratory control samples Other lab QC criteria	Results should meet validation control limits established for each QC criterion
Representativeness	Reflects the degree which sample data accurately and precisely represent a characteristic of a population, parameter variations at a sampling point, or an environmental condition	Horizontal and vertical locations of monitoring wells Sampling techniques	Adherence to established field sampling and laboratory analytical protocols
Comparability	Qualitative measure of confidence with which one data set can be compared to another	Adherence to requirements for other PARCC characteristics	Adherence to established field sampling and laboratory analytical protocols
Completeness	Percentage of measurements determined to be valid	Completeness of sampling and analytical results	85% for sample collection and field measurements; 85% for laboratory analyses
Defensibility	Adherence to QA procedures and completion of chain-of-custody forms	Conformance of field and analytical methodologies with SAP requirements Chain-of-custody forms	Completion of chain-of-custody forms for all sample collection and delivery; Compliance of methodologies with SAP

13.3.2.2 Accuracy

Accuracy is defined as the measure of closeness of an analytical result to a true value. The sampling effects on accuracy will be controlled by the use of standardized field and sampling procedures (see Section 13.4). The analytical effects on accuracy will be controlled by adherence to the NYSDEC Analytical Services Protocols (ASPs). Accuracy will be assessed by validation of the analytical results.

13.3.2.3 Representativeness

Representativeness is the degree to which sample data accurately and precisely represent a characteristic of a population, parameter variations at a sampling point, or an environmental condition. Representativeness is a qualitative parameter that is primarily concerned with the proper design of the sampling program. For each sampling medium, the number of samples selected for analysis, the frequency of sampling, and the locations selected for sampling are chosen to provide representative samples. The sampling procedures to be followed in the field to obtain representative samples are described in Section 13.4 of this SAP.

Groundwater data representative of water-bearing zones upgradient and downgradient of the site will be obtained from wells known to be screened within specific overburden and bedrock units as discussed in the EMP. Seasonal variations in groundwater quality will be characterized by means of quarterly monitoring.

Representative samples of the Keuka Outlet will be taken at points upstream and downstream of the Treatment Pond discharge point. Efforts will be made to collect the samples during a Treatment Pond discharge event, by scheduling the sampling and SPDES discharge events to occur simultaneously. The samples will be taken as grab samples.

Leachate will be sampled from the leachate collection systems that underlie the OADS, the Stage I area, and the Stage II area. In addition, leachate will be sampled from the system that collects leachate from the Phase I extension (i.e., Stage I overfill liner), from the combined leachate sewer system prior to treatment, and from the leak detection system that detects leachate from the Stage I and Stage II liner systems. The number of samples collected at various locations throughout the Facility will provide adequate representation of the leachate quality.

13.3.2.4 Completeness

Completeness refers to the success in collecting samples and obtaining valid analytical results. The completeness goals established allow for possible sampling and analytical contingencies that might arise during sampling events.

For sample collection and field measurements, the goal for completeness is established at 85%. This goal assumes that there will be occasions when samples cannot be collected due to low water table conditions, inclement weather (frozen conditions), damage to monitoring wells, etc.

Completeness of the laboratory analyses is defined here as the percentage of parameters within a specified list of analytes (i.e., the routine or baseline parameter lists) that have been successfully analyzed by the laboratory and that have not been rejected as a result of data validation. On this basis, the goal for completeness is set at 85%.

13.3.2.5 Comparability

Comparability is a qualitative parameter expressing the confidence with which one data set can be compared to another. Comparability will be controlled by adherence to field and laboratory analytical protocols described in this SAP and by adherence to the requirements for precision, accuracy, representativeness, and completeness of the data.

13.3.2.6 Defensibility

Defensibility of the data generated by the sampling and analysis program will be assured by following the quality assurance (QA) procedures described in this SAP including proper completion of Chain of Custody (COC) records during sampling and sample delivery to the laboratory, and by requiring that appropriate certifications are maintained by the laboratory (i.e., NYSDOH ELAP certifications).

13.3.3 Project Organization

The key personnel required to manage and administer the SAP along with the roles and responsibilities assigned to each project participant are outlined below in Table 13-3.

TABLE 13-3: PROJECT PARTICIPANTS AND RESPONSIBILITIES

Project Participant	Responsibilities
Project Manager	• Authorizes and coordinates quarterly sampling events • Authorizes and coordinates Treatment Pond discharge events
AQA Officer/Independent Data Validator	• Oversees the sampling and environmental reporting program • Ensures adherence to policies and procedures provided in this SAP • Ensures the timely submission of environmental reports • Alerts the Project Manager, Field Services Manager, Laboratory Manager, and/or Data Analysis and Reporting Services Contractor of deficiencies or necessary changes in protocol • Keeps this SAP up to date by documenting changes and verifying the Laboratory's yearly NYSDOH ELAP re-certification • Validates analytical results in accordance with the guidelines set forth in this document • Assesses data usability in terms of PARCC parameter goals established in this SAP • Provides data validation and usability reports to the contractor responsible for data analysis and reporting
Contracted Laboratory	• Provides laboratory services and field services • Employ the Field Services Manager and Laboratory Manager
Field Services Manager	• Prepares and updates the site specific groundwater sampling SOP • Supervises and provides technical direction and expertise to the field services team • Schedules field sampling • Ensures that field sampling techniques and procedures comply with accepted industry practices and regulatory guidelines • Ensures performance of assigned sampling and field testing • Reviews field data prior to submission to Laboratory Manager
Laboratory Manager/ QA Manager	• Oversees day to day laboratory operations, test methods, and assessment of results • Ensures adherence to policies and procedures with laboratory standard operating procedures • Oversees training of new chemists • Provides guidance for good laboratory practice to chemists • Ensures performance of required analytical analyses • Provides case narrative and analytical data report to AQA Officer and Project Manager
Data Analysis & Reporting Services Contractor	• Organizes and maintains database of environmental analytical data • Analyzes data per the Environmental Monitoring Plan • Identifies data issues to the AQA Officer • Submits quarterly and annual reports to the NYSDEC

SAP participants will have the appropriate training and certification requirements to meet their assigned responsibilities. The laboratory will be certified to complete the analyses required by this SAP under the NYSDOH's ELAP program.

An independent contractor will serve as the AQA Officer. The AQA Officer has the main responsibility to ensure this SAP and its referenced procedural documents are being followed with minimal deviation. For the annual baseline sampling and analysis events, data validation and usability will be performed by the AQA Officer. Per clause 363-4.6(g)(5)(i)(*b*) the AQA officer must not be affiliated with the laboratory that performed the analyses, must have experience with similar validation projects, and found to be acceptable by the NYSDEC. For the latter reason, the AQA Officer's resume is included in Appendix 5, Attachment 1.

The Field Services Manager will be responsible for the training of field technicians in the field sampling protocols described in this SAP including the proper calibration and use of field equipment, sampling procedures, and sample handling.

The Laboratory Manager and QA Manager will ensure that the lab technicians are trained properly in the methods used to perform the analyses identified in this SAP and in the preparation of data deliverables. For the quarterly routine sampling events, data usability will be assessed by the laboratory.

13.3.4 *Sampling Procedures*

The procedures for sample collection, handling, preservation, and analysis are provided in Section 13.4 of this SAP. The Field Services Manager will be responsible for ensuring that field procedures are consistently applied from one sampling event to another. The Field Services Manager will report any necessary deviations from the established field procedures to the AQA Officer.

13.3.5 *AQA/AQC Sample Requirements*

AQA/AQC samples, which include blanks, duplicates, and spiked samples, will be included with each sampling event. AQA/AQC samples will be taken only from matrices where detection monitoring is performed (i.e., groundwater and surface water samples). No AQA/AQC samples will be required for the leachate samples. However, the Laboratory Manager may elect to

include additional AQA/AQC samples (e.g., duplicates) with the leachate samples at his/her discretion.

The types of AQA/AQC samples, the frequency of analysis, and the purpose of each are discussed in Section 13.4.5 of this SAP. The analytical results for the AQA/AQC samples will be used to assess possible field and laboratory contamination, interferences to the analytical results due to matrix effects, and the precisions (reproducibility) of the laboratory analyses. The results for each sampling event will be evaluated as part of the data usability assessment.

Other methods of assessing laboratory analytical accuracy and precision, such as method blanks, spiked sample recoveries, calibration standards, and others will be assessed as part of the data validation review.

13.3.6 Sample Custody

All sample containers will be labeled with information that clearly indicates the site, date, sample location, media type (groundwater, surface water, etc.), the chemical components to be analyzed, and other relevant information. Sample labels will be pre-printed or completed in the field and secured to sample bottles. All sample information will be recorded on field sampling worksheets (Appendix 5, Attachment 2), as well as, the sample containers.

All samples will be recorded and tracked under strict COC protocols. In the field, each sample will be sealed and checked for proper labeling. The samples will then be securely packed with ice in coolers, which will be locked and sealed with tamper-proof bindings, and transported to the laboratory. The COC form (Appendix 5, Attachment 3) will be signed and dated by the person who collects the samples, the person the samples are relinquished to for transport to the lab, and the custodian who receives the samples at the lab.

Sample labeling, shipping, and custody procedures are described in more detail in Section 13.4.6.

13.3.7 Calibration Procedures and Frequency

Sample turbidity, pH, and dissolved oxygen (DO) content (surface waters only) will be measured in the field during sample collection. The field instruments recommended for measuring these parameters will be determined by the Field Services Manager based on the required accuracy of measurement. Field instruments will be calibrated and maintained by the laboratory in

accordance with the manufacturer's specifications. The procedures for performing the measurements in the field are provided in the Lockwood Hills LLC Field Sampling Standard Operating Procedure (SOP) included as Appendix 5, Attachment 4. Field instrument calibration data will be recorded on the Field Meter Calibration Data Log (see Appendix 5, Attachment 5) each morning of sampling at the Site at a minimum.

13.3.8 Analytical Procedures

The SOPs for sample handling and analysis, including a laboratory-specific QA/QC SOP, are listed in Appendix 5, Attachment 6, the Contracted Laboratory's Master List of Laboratory SOPs. The specific analytical methods that will be used for determining the concentrations of Lockwood's routine and baseline parameters are provided in Appendix 5, Attachment 7.

13.3.9 Data Management

Sample data obtained from each quarterly sampling event, including field measurements and laboratory analytical results, are managed by the Data Analysis and Reporting Services Contractor. The field and laboratory data are managed using computer software. Data are stored on a RAID 5 array with nightly backup to an external hard drive. Laboratory QC data, such as laboratory control sample (LCS) and matrix spike/matrix spike duplicate (MS/MSD) data, are managed using a hard copy filing system.

An assessment of the environmental monitoring data collected from each quarterly sampling event will be provided to the NYSDEC Region 8 Office in the form of a quarterly report as discussed in Section 14.2.1. The report will include a listing of field measurements and analytical results, comparison of the analytical results to NYSDEC standards and guidance values, intrawell comparisons of groundwater monitoring data, a comparison of the data obtained from surface water monitoring points located upstream and downstream of Lockwood, and a data validation report (annual baseline events).

13.4 FIELD SAMPLING PROCEDURES

13.4.1 Scope and Objective

This section of the SAP describes the procedures to be followed for the collection of environmental samples included in the EMP (See Section 12). Specific protocols established by

the field services team for performing the required field measurements and collecting samples from each environmental medium (groundwater, surface water, and leachate) are provided in the Field Sampling SOP (Appendix 5, Attachment 4). This section does not contain procedures for checking headspace in wells for explosive or organic vapors; sampling and analysis of non-aqueous phase liquids; nor water supply well sampling because no volatile organic samples nor non-aqueous phase liquid contamination have been observed at and no water supply wells have been installed at the Facility.

The objective of this section is to establish a systematic and comprehensive set of procedures for collecting samples that will be consistently applied from one sampling event to the next for the purpose of achieving the AQA/AQC objectives described in Section 13.3 of this Facility Manual.

13.4.2 Sampling Team Responsibilities

The field services team will be responsible for performing field measurements and collecting samples in accordance with the procedures described in this SAP. The sampling team will consist of the Field Services Manager and Field Service Specialists. The responsibilities assigned to the Field Services Manager and the Field Services Specialists are described below.

13.4.2.1 Field Services Manager

The Field Services Manager has overall responsibility for the day to day operations of the field services team. The Field Services Manager directs and provides technical expertise to the Field Service Specialists. In addition, the Field Services Manager is responsible for:

- Assuring the availability and good working order of sampling equipment and materials;
- Maintaining field instruments, and
- Assuring that the sampling techniques and procedures are performed in accordance with accepted industry practices and regulatory guidelines.

During each sampling event, the Field Services Manager will notify the AQA Officer of any deviations from the protocols established for the sampling program.

13.4.2.2 Field Services Specialists

The Field Services Specialists will be responsible for:

- Calibrating field instruments;
- Performing field measurements in accordance with established sampling protocols;
- Collecting and preserving samples, and preparing samples for transport to the laboratory;
- Decontaminating sampling equipment as directed by the Field Services Manager, and
- Completing field data sheets, calibration logs, and COC records.

The Field Services Specialists will report directly to the Field Services Manager. The Field Service Specialists will seek the advice and assistance of the Field Services Manager regarding any problems encountered with sample collection and handling.

13.4.3 Sampling Equipment

The sampling equipment, including the sampling devices to be used for collecting groundwater, surface water, and leachate samples, and the type and operation of field instruments used for measuring field parameters are described in detail in the Field Sampling SOP (Appendix 5, Attachment 4). The sampling equipment used is chemically inert and suitable for sampling groundwater in the wells. The compressed gas system installed in most monitoring wells is constructed of Teflon tubing and uses inert compressed nitrogen gas. The remaining wells are sampled using either a submersible pump made of stainless steel which is inserted into dedicated low-density polyethylene (LDPE) tubing or dedicated HDPE bailers.

13.4.4 Sampling Procedures

Sampling will be conducted at the environmental monitoring points and at the frequencies identified in the EMP. Pre-sampling and sampling procedures to be followed are described in the Field Sampling SOP (Appendix 5, Attachment 4). Though the pumping rates for wells using the compressed gas system are not known, the use of dedicated equipment allows for a consistent pressure and depth of pump intake to be obtained between sampling events.

13.4.5 Quality Control

Quality Control objectives for field sampling will be achieved by performing the following:

- Collection of field (rinsate) blanks;
- Collection of duplicate field samples, and

- Collection of matrix spike/matrix spike duplicate samples for use in laboratory QC procedures.

The general requirements for the field QC samples are discussed in the following sections. Additional discussion of the QC parameters is provided in Section 13.3 of this Facility Manual.

13.4.5.1 Field Blanks

Field (rinsate) blanks will not be required where dedicated sampling equipment is used. For non-dedicated sampling equipment (e.g., bailers or peristaltic pumps), one field blank will be prepared during each sampling event for one representative piece of sampling equipment used in the collection of samples from each matrix.

The field blanks will be prepared using deionized water supplied by the laboratory. The blank will be prepared in the field between using the equipment for sampling and after the cleaning protocol by rinsing the sampling equipment with the deionized water and collecting the rinse water directly into a labeled sample container.

13.4.5.2 Duplicate Samples

A duplicate sample will be collected for analysis at a frequency of one per sampling event for each matrix.

13.4.5.3 Matrix Spike/Matrix Spike Duplicate

Matrix spike/matrix spike duplicate (MS/MSD) samples will be collected from each sampling matrix at a minimum frequency of one per 20 original samples. MS/MSD samples may not be collected in the field as separate samples, but may be prepared in the lab from sample containers having adequate sample volumes for the MS/MSD analyses.

13.4.5.4 Analysis

Field QC samples will be analyzed using the same methods and levels of laboratory QC applied to the environmental samples collected during the sampling event. Results for the field QC samples will be provided in the same format as for the environmental samples.

13.4.6 Sample Identification and Labeling

13.4.6.1 Sample Identification System

The former owners of the Lockwood Ash Disposal Site had utilized a 10-character alphanumeric code for identifying and labeling samples. The current owner has abandoned this system in lieu of more easily recognizable, common names. A schedule of sampling locations which relates the abandoned alphanumeric code to the common names currently in use is included in Appendix 4.

13.4.6.2 Sample Labeling

Sample labels will be affixed to each sample container at the time of sampling. At a minimum, each sample label will contain the following information:

- Project title (Client or Facility);
- Sampling location (Client Sample ID);
- Date and Time sample was taken;
- Sample matrix; and
- Analytes (e.g., total metals, TDS).

Sample labels will be made of high quality sticker material and applied to bottles in the laboratory, which will be packaged in resealable plastic bags to ensure that the sample information remains legible during transport to and from the field.

13.4.7 Sample Containers & Preservation

The type (e.g., glass or plastic) and size of sample containers and sample preservation requirements will be determined based on the analytical method used. Containers will be provided by the laboratory and will pre-loaded with appropriate preservatives. All samples will be stored in coolers maintained at a temperature of <4°C until delivered to the laboratory.

13.4.8 Sample Transport

All samples collected for laboratory analysis will be transported to the Contracted Laboratory within 48 hours following collection or at least in time to meet the minimum holding time. Color, analyzed only on baseline sampling events, has a minimum holding time of 48 hours. For

routine sampling events total dissolved solids has the shortest minimum holding time of seven days. If samples cannot be hand delivered, an overnight mail service will be used.

Samples will be transported in coolers containing sufficient ice to maintain sample temperatures at <4°C. Sample bottles will be wrapped in packing materials (e.g., bubble wrap or Styrofoam), if necessary, to prevent possible breakage. Prior to transport, a Field Services Specialist will check that all sample containers are securely sealed. The cooler will be locked or sealed with a tamper-proof binding prior to transport, unless hand delivered. Signed COC sheets will be attached. A blank COC form is included in Appendix 5, Attachment 3.

13.4.9 Documentation

13.4.9.1 Field Sampling Forms

For each sampling event, the field services team will complete a field sampling worksheet and a field meter calibration data log. The field sampling worksheet documents the time each sample was taken, the results of the field measurements, and field observations made at the time of sampling. Sample locations used for the groundwater and surface water duplicate samples are indicated on the field sampling worksheet. If samples cannot be collected for any required location, the reason for not sampling must also be indicated on the field sampling worksheet. A field meter calibration data log should be completed every morning of the sampling event. If required by the manufacturer's instructions, the field services team will check and recalibrate the equipment while in the field.

Blank copies of the field sampling worksheet and field meter calibration data log used by the Contracted Laboratory are provided in Appendix 5, Attachment 5.

13.4.9.2 Chain of Custody

A COC form will be completed for each set of samples collected and transported from the landfill site as a group. COC procedures serve to minimize loss or misidentification of samples and ensure that unauthorized persons do not tamper with the samples during storage and transport. In addition, COC records are essential for the presentation of sample analytical results as evidence in litigation or at administrative hearings held by regulatory agencies.

The COC will contain the sample identification number, the date and time of collection, the sample matrix and type, the number, size, and type of containers for each sample, and the analyses to be performed. The COC will be completed in the field and signed by the Field Services Manager or a Field Services Specialist. The COC will accompany each sample cooler, itemizing the contents of the cooler. All transfers of the samples will be documented both by a signature of the person relinquishing and a signature of the person receiving the samples, and by noting the date and time of the transfer on the COC.

A sample COC form is provided in Appendix 5, Attachment 3.

13.4.10 Decontamination Procedures

All re-usable, non-dedicated sampling equipment will be decontaminated prior to use and in between sampling locations. The procedures to be followed are provided in the Field Sampling SOP (Appendix 5, Attachment 4). Non-dedicated purge or sample bailers will be decontaminated at the laboratory by Field Services or laboratory personnel prior to each sampling event. The sampling equipment will be disassembled prior to cleaning. Equipment will be washed with a laboratory-grade detergent, rinsed with tap water, and then triple rinsed with laboratory deionized water. The equipment will be allowed to dry in a contaminant-free area and then placed in a protective wrapping (e.g., plastic) for storage.

Composite sampler bottles will be washed in the field after each use and dedicated to one sampling location. All tubing used for sample collection will be discarded on an as-needed basis and dedicated to one sampling location.

13.4.11 Field Sampling Corrective Action

The Contracted Laboratory maintains a Corrective Action Policy (see Master Document List of SOPs in Appendix 5, Attachment 6). Corrective action measures are outlined in the Contracted Laboratory's Quality Manual, as well. In brief, these measures include a process for identifying deficiencies, and implementing corrective actions with appropriate documentation. Responsible parties are identified for every step of the process. Lockwood Hills, as the customer, is to be notified should a corrective action affect their results and/or standard procedures. The Laboratory is responsible for providing Lockwood Hills and the AQA Officer with a copy of their Corrective Action Response Form, including "a description of the deficiency, the corrective

action taken, and the person responsible for implementing the corrective action" as is required by subparagraph 363-4.6(g)(3)(ix). This information will be reported by the Data Analysis & Reporting Services Contractor to the NYSDEC with the quarterly reporting of the affected data. Should the final corrective action include alterations to the field sampling procedures, the updated Master Document List of SOPs showing the recent revision date, must replace the January 17, 2020 version currently in Appendix 5, Attachment 6.

13.5 LABORATORY PROCEDURES

13.5.1 Analytical Laboratory

Laboratory analytical services for Lockwood will be provided by a certified laboratory that is currently approved to perform all chemical analyses required by this SAP under the NYSDOH's ELAP. Copies of the Contracted Laboratory's current NYSDOH certificates of approval are provided in Appendix 5, Attachment 8.

13.5.2 Laboratory Standard Operating Procedures

The Contracted Laboratory's Master Document List of SOPs is presented in Appendix 5, Attachment 6. All SOPs listed in this master document list are incorporated by reference. The laboratory's SOPs are considered proprietary information. The complete text of any individual SOP can be provided to the NYSDEC directly from the laboratory upon request. Any revisions to the Master Document List of SOPs will be recorded, and an updated copy of the list will replace the January 17, 2020 version currently in Appendix 5, Attachment 6.

Standard procedures for receipt, storage, and handling of samples are covered in the SOP for Sample Login, as well as the Contracted Laboratory's Quality Manual. General laboratory techniques such as, glassware cleaning procedures, operation of analytical balances, pipetting techniques, and use of volumetric glassware, etc., are to be consistent with industry standards. Standard protocols for reagent/standard preparation and laboratory equipment calibration and maintenance are outlined in the individual SOPs for each analytical method in which a specific reagent/standard or piece of equipment is used. For more information on the Contracted Laboratory's standard procedures, the Laboratory can be contacted directly for the SOP of the analytical method of interest.

13.5.3 Quality Assurance

The Contracted Laboratory maintains a Quality Assurance/Quality Control SOP as listed in the Laboratory's Master Document List of SOPs included in Appendix 5, Attachment 6. It is expected that this SOP will be adhered to during all sampling, analysis, and data reporting completed as part of the monitoring program for the Lockwood Ash Disposal Site.

13.5.4 Analytical Methods

The routine and baseline parameters that will be analyzed as part of the monitoring program for Lockwood are listed in Table 12-5. Additional information including, analytical methods, detection limits, holding times, and water quality standards/guidance values are provided for each analyte in Appendix 5, Attachment 7.

The standards and guidance values for groundwater and surface water were taken from 6 NYCRR Part 703 and NYSDEC's Division of Water Technical and Operational Guidance Series (TOGS) 1.1.1, dated June 1998 and last amended June 2004. The surface water standards are for Class C(T) streams, which is the NYSDEC's official designation for the Keuka Outlet. The groundwater standards are for Class GA groundwaters, which are promulgated for the protection of groundwater as a drinking water source.

All reagents and standards shall be prepared for each type of analysis conducted in accordance with the appropriate analytical method included in Appendix 5, Attachment 7.

13.5.5 Sampling Coordination

Field sampling efforts will be coordinated with the laboratory to ensure holding time requirements can be met prior to the actual collection and shipment of samples for analysis.

13.5.6 Deliverables

The reporting requirements for each analyte, including concentration units, significant figures, and method detection limits, are defined by each analytical method.

Analytical results for the environmental samples collected at Lockwood will be provided by the Contracted Laboratory in electronic format only, unless otherwise requested. A PDF report of each sample event's data will be accompanied by a case narrative. The data will also be provided in a standard spreadsheet format (e.g. MS Excel) for incorporation into the data

management software maintained by the Data Analysis & Reporting Services Contractor. If required, electronic data deliverables (EDDs) can be submitted using an appropriate EDD template for upload to the NYSDEC's environmental management system, EQuIS. This deliverable will be prepared only if specifically required to do so by the NYSDEC.

Analytical results requiring validation by an independent data validator (i.e., annual baseline sampling events) will be provided with appropriate QC and raw data. Annual baseline analytical results will be provided in compliance with the NYSDEC ASP Category B data deliverables.

13.5.7 Laboratory Corrective Action

The Contracted Laboratory's SOP for laboratory corrective action is the same SOP referenced in Section 13.4.11 for field sampling corrective action. Should the final corrective action include alterations to the laboratory procedures, the updated Master Document List of SOPs showing the recent revision date, must replace the January 17, 2020 version currently in Appendix 5, Attachment 6.

13.6 DATA QUALITY ASSESSMENT

The assessment of the laboratory analytical data will be performed in two phases. The first phase will consist of reviewing and determining the validity of the analytical data. The second phase will consist of interpreting the data to determine its usability for assessing environmental quality at Lockwood. Each phase of data review is discussed in the following sections.

13.6.1 Data Validation

Data validation is the process by which the quality of the laboratory analytical data is determined with respect to data quality criteria defined by laboratory quality control and by referenced analytical methods. Data validation will be performed internally by the laboratory on the data generated from the quarterly routine sampling events. Data generated from the annual baseline sampling events (about 25% of the total annual data) will be validated by an independent data validator. This exceeds the 5% requirement stated in part 363-4.6(g)(5)(i)(*c*). The AQA Officer will perform the independent data validation.

13.6.1.1 Data Review and Validation Procedures

For all data generated from each sampling event, data review will be performed by the laboratory following standard procedures. Results of the internal data review will be provided within the PDF data report. Standard data qualifiers will be used to identify results flagged by the laboratory's data review. The laboratory case narrative included with the analytical results will discuss flagged data when further information is warranted and appropriate.

For all data generated from the annual baseline sampling events, data validation will be performed by an independent data validator who has the proper training and experience in evaluating data packages for NYSDEC ASP or USEPA Contract Laboratory Program (CLP) compliance.

For total metals data, the data validation procedures will generally follow the SOPs provided in the following USEPA guidance documents:

- USEPA Region 2 SOP #HW-3a, ICP-AES Data Validation (Revision 1, September 2016); and
- USEPA Region 2 SOP #HW-3c, Mercury and Cyanide Data Validation (Revision 1, September 2016).

Current revisions of the above referenced SOPs will be substituted, if available. Some aspects of USEPA SOPs #HW-3a and HW-3c, will be not be followed in lieu of the procedures identified in the actual methods followed, namely the ICP-AES initial calibration. For analytes that have no QC criteria established by the USEPA (e.g., wet chemistry parameters), the validator will use the QC limits established by the laboratory for determining the validity of the analytical results. A checklist prepared for data validation of the data packages from Lockwood is provided in Appendix 5, Attachment 9.

The data validator will review the data package for 1) completeness of the required deliverables and 2) compliance with relevant portions of the SAP, especially the data quality objectives. The tasks involved in validating the data completeness and compliance are listed below.

13.6.1.1.1 Completeness

A complete data package should contain the following components:

- All sample chain of custody forms;
- Case narratives including sample analysis summaries for each sample delivery group and internal data validation results;
- AQA/AQC summary forms and supporting documentation;
- Instrument and method performance data;
- Documentation showing the laboratory's ability to attain the method detection limits for analytes in the required matrices;
- Data report forms, including sample preparation logs, analytical run logs, and examples of calculations used in determining final concentrations, and;
- Raw data used in the identification and quantification of the contract-specified analytes.

Deficiencies in completeness will be reported to the AQA Officer.

13.6.1.1.2 Compliance

The data validator will review all Category B data packages to determine compliance with those portions of the SAP that pertain to the production of laboratory data. Compliance is defined on the basis of the following review criteria:

- The data package is complete (as defined above);
- The data have been generated and reported in a manner consistent with the requirements of the SAP;
- All SAP-defined AQA/AQC criteria have been met;
- Instrument calibration requirements have been met for the timeframe during which the analyses were performed;
- Initial and continuing calibration data are present and documented;
- Data reporting forms are complete for all samples submitted for analysis, including sample dilution and concentration factors, and;

- Problems encountered during analysis have been reported in the case narrative.

In addition to the data review, the validator will qualify all analytical results that fail to meet the performance criteria established in the USEPA guidance document cited above or the individual methods themselves as presented in the checklist in Appendix 5, Attachment 9, using professional judgment where appropriate. The qualification of data will involve the use of standard letter qualifiers (e.g., J, R, U, etc.) established in the guidance documents. The data validator shall also review and include a discussion of any corrective actions taken during the sampling event. The validator will sign and date appropriate data summary forms containing any data that were qualified.

13.6.2 Data Validation Report

For each baseline data package, the data validator will prepare and submit a report to the NYSDEC along with the quarter's environmental monitoring report as discussed in Section 14.2.1 of this Facility Manual. The data validation report will also be submitted to the laboratory. The data validation report summarizes the results of the data review and validation. The report format will consist of:

- A chart, consisting of the site name, sample numbers, laboratory delivery date, sample matrix, and analyte types (e.g., wet chemistry parameters, metals);
- A general assessment of the data package that summarizes the results of the data review and validation including an assessment of data completeness and compliance, and descriptions of any deviations from required analytical protocols;
- A table of qualified results and an explanation of the specific deviations from analytical protocols or performance criteria that resulted in the qualification;
- Copies of all data summary forms with appropriate qualifiers noted and initialed by the data validator, and
- Copies of telephone logs, facsimiles, memos, etc. that document attempts to correct discrepancies in the data packages.

13.6.3 Data Usability Analysis

The data usability assessment is a process that evaluates the validated data in the context of the original data quality objectives. The usability assessment will include the following:

- Determination of whether the data quality objectives were met, including a comparison of precision, accuracy, representativeness, comparability, completeness, and defensibility of the data generated with that required to meet the data quality objectives provided in Table 13-2;
- Consistency of the data with respect to previous rounds of sampling and analysis and the site history (i.e., determination of outliers);
- Evaluation of blank data for contamination;
- Evaluation of duplicates for overall sampling and analytical precision, as well as representativeness;
- Evaluation of laboratory QC matrix interference or for possible low or high biases in the analytical results, and
- Justification for the integration of both compliant and non-compliant data to provide information about the extent of contamination, if it occurs.

For each sampling event, the results of the data usability assessment will be summarized within the quarterly Environmental Monitoring Reports submitted to the NYSDEC (see Section 14.2.1).

13.7 DATA REDUCTION

Data reduction is a process that reduces the amount of collected data by eliminating redundancies and producing more meaningful summaries of the data. After data packages are received from the Contracted Laboratory and the data quality assessment procedures described in Section 13.6 are completed the raw data is uploaded to a ChemPoint database (Starpoint Software). ChemPoint automatically averages the results of the field duplicate and the original sample from the well or surface water location for which a duplicate sample was collected. This reduces the total number of data points used in statistical analysis. No other data reduction procedures are utilized.

14 RECORDKEEPING AND REPORTING

14.1 FACILITY RECORDS

The maintenance of complete and accurate records is essential for efficient and orderly facility operation. The operator will keep the following types of records in the Project Manager's office at Greenidge Station to document the operation and management of the Facility:

- Daily Waste Receipt Logs (see Section 5.2.3) documenting the date, quantity, origin, type, and placement of material received;
- Unauthorized Waste Receipt Log (See Section 5.3) and other records of handling of unauthorized waste;
- Monthly Site Inspection forms (see Section 2.2.1), including the date and time of inspection, name of inspector, weather conditions, results of the inspection, including observations of required documentation, dust control, condition of landfill features and equipment, the stormwater management system, access roads and controls, waste handling procedures, monitoring wells, and that necessary tasks have been completed. The date and nature of corrective actions taken or repairs made as a result of the inspection are also included;
- Daily Self Inspection Forms (see Section 2.2.3);
- Leachate Collection System Maintenance Log (see Section 11.3.2.1);
- Daily Line Cleaning Record forms (see Section 11.3.2.1);
- Monthly Leachate Generation Totals log (see Section 11.3.2.2);
- Daily Operating Record Secondary Leachate Flow Measurements forms (see Section 11.3.2.2);
- Leachate Treatment Pond Discharge Report Form (see Section 11.3.3);
- Monitoring well installation and decommissioning logs;
- Laboratory and Field Services Data packages for water quality analysis and groundwater level measurements as required by the Environmental Monitoring Plan (see Section 12);

- Maintenance and equipment checklists, schedules, and performance records;
- Emergency incident reports;
- Safety and accident reports;
- Spill incident reports (see Section 15.5.4);
- Copies of all application materials, plans, and reports used to develop or support the Solid Waste Facility Permit Application,
- Copies of all applicable and current permits for operation of the Facility, including any supplemental information required to comply with state or local regulations as well as the special conditions of the permit, including proof of valid financial assurance sufficient to cover the cost of closure, post-closure and custodial care of the Facility in its current active status, and a deed description as described in subdivision 363-7.1(r), which must be updated upon facility closure;
- Copies of all written approvals or directives from the NYSDEC regarding the construction and operation of the Facility;
- A copy of the effective edition of the controlling 6 NYCRR Part 360 regulations;
- Baseliner and closure construction certification documents and NYSDEC's written approvals thereof;
- All quarterly and annual reports as discussed in Sections 14.2.1 and 14.2.2; and
- Documentation of training programs, schedules, and certifications (see Section 2.3).

Records pertaining to the operation of the Facility are required to be kept for seven years from the date they are made or required to be made, whichever is latest. Water quality records required by section 363-4.6, records associated with applications for a Part 360 permit, baseliner construction certification documents, and closure construction certification documents shall be kept throughout the active life and the post-closure and custodial care periods of the Facility.

14.2 REPORTING

14.2.1 Quarterly Reporting

For each quarter, the water quality monitoring results are compiled into an environmental monitoring report and submitted to the NYSDEC within 90 days of the end of sample collection, per 6 NYCRR 364-4.6(f)(10). These reports shall contain a table listing the sample collection date, the analytical results, designation of upgradient wells and location number for each monitoring point, potentiometric data (updated annually), applicable water quality and groundwater protection standards if established, MDLs, and Chemical Abstracts Service (CAS) numbers for each parameter. Analytical results shall include peaks even if results are below the method detection limit.

Comparisons of current water quality to existing water quality within individual wells are shown in quarterly reports using a combination of tables and time-series plots. Intrawell sampling precludes the comparison of current water quality values with upgradient water quality. The downstream surface water quality sampling data are compared with upstream water quality results to determine if discharges from Lockwood are degrading downstream water quality.

In the event of contraventions of NYS water quality standards, significant increases in any parameter concentration above existing water quality, and exceedances of groundwater protection standards, the report shall contain a discussion of the results and what modifications to routine sampling were undertaken (e.g., initiation of contingency water quality monitoring program) to take corrective action. An alternative source demonstration may be included if the increase in any parameter concentration is not believed to be facility derived.

A summary of AQA/AQC documentation, as outlined in the Site Analytical Plan (see Section 13), shall be submitted with quarterly or annual reports in a format acceptable to the NYSDEC. Section 13.6 describes the procedures for producing data quality assessment reports required pursuant to 6 NYCRR 363-4.6(g)(5).

Two paper copies of all quarterly reports will be submitted to the Regional Materials Management Engineer at New York State Department of Environmental Conservation, Region 8, 6274 East Avon-Lima Road, Avon, New York, 14414-9519. Additionally, electronic copies in

pdf format shall be submitted via e-mail to both the Regional Materials Management Engineer and the Regional Water Engineer.

14.2.2 Annual Reporting

Annually, following sampling for baseline parameters during the third quarter, a stand-alone data validation report shall be produced by an independent data validator and submitted to the department as an attachment to the third quarter environmental monitoring report.

14.2.2.1 Annual Report

An annual report required by paragraph 360.19(k)(3) will be submitted to the Department by March 1st following each year of operation on forms provided by the NYSDEC. Additionally, an annual report will be required within 30 days of the last known receipt of wastes. This report shall include all water quality monitoring results required by 6 NYCRR 363-4.6(f)(10) and the data quality assessment required by 6 NYCRR 363-4.6(g)(5) from the previous year. Specifically, the annual report shall include a summary of data reported from quarterly sampling with specific notes on any significant changes in water quality that occurred during the last year; time-series plots for, at a minimum, any parameter that has exceeded groundwater quality standards or trigger values at each affected monitoring point; and updated groundwater contour maps (potentiometric surfaces) and an evaluation of landfill operation impacts on the elevation and flow patterns of groundwater. Each annual report must include a historical water quality monitoring table that includes the following information for any parameter that has been detected in at least one sample at one or more monitoring points; the sampling date, detected concentrations, data qualifiers, detection limits associated with each non-detect, and summary statistics including means, standard deviations, medians, and 10^{th} and 90^{th} percentiles.

Additionally, the annual report must include information on the following operational and facility management information:

- The types and total quality of solid waste disposed of, in tons, on a monthly basis for the calendar year;
- An updated calculation of the remaining site life and waste capacity in cubic yards for the constructed landfill;

- Updated closure, post-closure, custodial care, and, if applicable, corrective measures estimates and proof of the appropriate financial assurance amount; and
- Any proposed changes from the approved reports, plans, and specifications or permit conditions with a justification for the change.

Each annual report must include a signed certification by the President of Lockwood Hills as specified in the Annual Report Form provided by the NYSDEC.

Two paper copies of the annual report shall be submitted to the Regional Materials Management Engineer at New York State Department of Environmental Conservation, Region 8, 6274 East Avon-Lima Road, Avon, New York, 14414-9519. Additionally, electronic copies in pdf format shall be submitted via e-mail to both the Regional Materials Management Engineer and the Regional Water Engineer, as well as the Bureau of Solid Waste Management (SWMFannualreport@dec.ny.gov).

14.2.3 Event Specific Reports

Several additional reports may require submittal to the NYSDEC based on specific events that occur at the Facility. These reports are covered elsewhere throughout this Facility Manual and include the following:

- Waste Generator Profile and Supporting Documentation (see Section 5.1.1);
- Deliverables associated with an assessment of corrective measures including, a Corrective Measures Report, a Corrective Measures Workplan, Interim Measures Evaluation, a report justifying alternative measures, and certification that the corrective measure has been completed (see Section 12.6);
- Leachate Collection System Blockage Letter Report (see Section 15.5.3.3);
- Reports associated with exceedances of the maximum allowable leakage rate in the Leak Detection System (see Section 15.5.3.4); and
- Administrative deliverables associated with closure, post-closure, and custodial care periods (see Sections 17.1.3, 17.2.6, 17.3.6).

15 EMERGENCY RESPONSE PLAN

This Emergency Response Plan (ERP) has been prepared to meet the requirements of paragraph 360.16(c)(4) and subdivision 363-4.6(o). The ERP addresses measures that should be taken in response to emergency situations that may occur during construction, operation, and closure/post-closure periods at the Facility. The purpose of the ERP is to present an organized, planned and coordinated, technically and financially feasible course of action to be followed whenever emergency situations develop which have the potential to endanger public health and safety or the environment.

The types of emergencies that are discussed in this ERP include medical, due to injury or illness, fire and, specific to the landfill operation, spills or releases related to the leachate collection system and its components. Responses by the Facility due to natural or manmade disasters not directly impacting the Facility itself are also covered. Emergencies related to explosive landfill gases detected onsite or beyond the property boundary, as well as, unexpected events during the construction and operation of a landfill gas management system are not covered as only non-putrescible wastes have been accepted at the landfill.

15.1 FACILITY EMERGENCY CONTACT INFORMATION

In the event of an emergency, the Facility Emergency Contact is:

Christopher Gill, Project Manager
590 Plant Road
Dresden, New York 14441
Office: (315) 536-2359 ext. 3277
Cell: (315) 729-0491

If in doubt about the severity of the incident, call 9-1-1 first and then call Facility Emergency Contact.

Additional emergency response contacts are found in Section 15.4.

15.2 PERSONNEL

15.2.1 Project Manager

The Project Manager is responsible for all aspects of the project, including review and approval of all plans and documents. Inquiries regarding procedures and technical/regulatory issues should be addressed to this individual. It is the Project Manager's responsibility to ensure that all affected parties are informed of any changes to the work plan or design. The Project Manager will review the ERP and provide modifications as needed.

Specifically, the Project Manager's duties include the following:

- Coordinating emergency response with outside agencies and conducting follow up reporting and documentation as may be required;
- Confirming and posting emergency telephone numbers, routes to medical facilities, and arranging emergency transportation to medical facilities, if necessary;
- Verifying that all project personnel have training which is current;
- Establishing evacuation routes and meeting place prior to commencement of work activities;
- Conducting or arranging site-specific training and safety meetings for all appropriate personnel prior to a change in operations; and
- Designating alternate personnel to assist in performing these duties, as well as other duties that may arise related to health and safety and emergency response.

15.2.2 Operations Contractor

All project-related personnel must read and acknowledge their understanding of this ERP, abide by the requirements of the plan, and cooperate with supervision in ensuring a safe work area. Project personnel will immediately report any of the following to the Project Manager or his designee:

- All accidents and injuries;
- Unexpected or uncontrolled release of chemicals;
- Symptoms of chemical exposure;

- Unsafe or malfunctioning equipment; and
- Changes in work activities that may affect the health and safety of project personnel.

15.3 EMERGENCY EQUIPMENT

Various emergency equipment are available at the Facility as described below.

TABLE 15-1: ONSITE EMERGENCY RESPONSE EQUIPMENT

EMERGENCY RESPONSE EQUIPMENT	USES
Bulldozer	Respond to fire and unauthorized waste contingencies
Pickup Truck	Transportation of injured personnel to medical care facilities
Water Truck	Dust and fire control
First Aid Equipment	Administer to minor injuries and those needing immediate attention
Eye Wash Station	Rid eyes of harmful contaminants
Fire Extinguisher	Small fire control
Hard Hat	Protect head against falling debris
Eye Protection (Goggles)	Protect eyes against harmful substances
Safety Boots with Toe and Heel Protection	Protect feet against falling/fallen debris
Hearing Protections	Protect hearing when onsite noise levels are above 85 decibels
Spill Kits	Retain spill in the incident area

15.3.1 Warning System

Cell phone communication as well as face-to-face contact will be utilized to provide warnings to onsite staff in case of emergency.

15.3.2 Fire-Fighting Equipment

Earth-moving equipment that is utilized on a regular basis for site operations may be used to move and apply cover material for fire control. A water tank truck will also be kept onsite, and readily available for use in controlling fires.

The Facility will maintain a supply of fire extinguishers that may be used in the event of an emergency incident. Fire extinguishers will be located on select site vehicles and equipment for use in cases of field emergencies. Extinguishers are maintained in conformance with state and local fire codes and regulations.

15.3.3 Spill Control Equipment

A supply of desiccant materials will available onboard any offsite fuel/lube truck, tool truck, and/or equipment maintenance truck that may visit the site from time to time to control and capture minor amounts that might be spilled at the site outside of the existing structural features. The available mobile equipment, in particular earth moving machinery, will be available to control and recover spilled materials and to clean up any impacted area. A spill kit will be kept onsite, near the working face area, when the Facility is active.

15.3.4 First Aid/Safety Equipment

First aid and safety equipment will be kept in site related vehicles and equipment. First aid kits will contain a full range of items necessary to care for minor injuries needing prompt attention, and will be easily and immediately accessible to personnel. An eye wash kit will be kept with the operation contractor's onsite supervisor.

15.4 Available Emergency Services

In the event of an emergency at the site, the following services are available. Contact information for all emergency agencies is provided in Table 15-2.

TABLE 15-2: EMERGENCY RESPONSE AGENCIES AND CONTACTS LIST

Agency/Organization	Emergency Number
Fire	
- Dresden Volunteer Fire Department	(315) 536-6391; 911 (Emergency)
Police	
- Yates County Sheriff's Department	(315) 536-4438; 911 (Emergency)

- New York State Police (Waterloo, NY)	(315) 539-3976; 911 (Emergency)
- Penn Yan Police Department	(315) 536-4426; 911 (Emergency)
Medical	
- **Ambulance**	
- Penn Yan Volunteer Ambulance	(315) 536-2714; 911 (Emergency)
- **Hospital (24-Hour Emergency Service)**	
- Soldiers and Sailors Memorial Hospital	(315) 531-2000
- **Upstate New York Poison Control Center**	(800) 222-1222 (Emergency) (315) 464-5424 (TTY)
Local Emergency Response Contacts	
- Yates County Public Health Department	(315) 536-5160
- Yates County Department of Public Works	(315) 536-3374
State Emergency Response Contacts	
- Spill Response Hotline	(800) 457-7362
- New York State Department of Environmental Conservation, Region 8	
- Elmira Spill Prevention and Response	(607) 732-2214
- New York State Department of Health, Western Region	
- Rochester Office	(585) 423-8100
- New York State Department of Transportation, Region 6	
- Regional Director	(607) 324-8404
Federal Emergency Response Contacts	
- Environmental Protection Agency Region II	
- Air and Waste Management Division	(212) 637-3725
- Emergency and Remedial Response	(800) 424-8802

15.4.1 Police Protection

Police protection in the Town of Torrey is provided by Penn Yan Police Department. The Penn Yan Police Department is located at 111 Elm Street, Penn Yan, New York. Also serving the area is the Yates County Sheriff's Department, out of Penn Yan, New York and the New York State Police Department's Troop E, which maintains a substation in the Village of Waterloo. Services are provided on a 24-hour basis.

15.4.2 Fire Protection

Yates County has a total of 10 fire departments, most of which are capable of providing mutual aid to nearby districts. The Town of Torrey is serviced by the Dresden Fire Department at 3 Firehouse Avenue, Dresden, New York.

15.4.3 Health Services

Soldiers and Sailors Hospital in Penn Yan, New York services the residents of Yates County. The hospital is located at 418 N. Main Street, Penn Yan, New York and is about six miles from the Facility.

If travel to the Soldiers and Sailors Hospital is required, the following route should be taken for the quickest arrival time:

- Begin travelling north on Swarthout Road;
- Turn left at the first cross street (north-northwest) onto NY-14N;
- At 0.4 miles, turn left (west) onto NY-54W;
- After four miles, turn right (west) onto North Avenue; and
- Arrive at Soldiers and Sailors Hospital about 1.1 miles on the right-hand side of North Avenue.

15.5 EMERGENCY RESPONSE ACTIONS

15.5.1 Medical Emergency

When it is safe to do so, all injuries or medical emergencies must be reported to the Project Manager.

In cases of medical emergency that are beyond first aid, the injured should be transported to the nearest hospital; Soldiers and Sailors Hospital in Penn Yan, New York (see Section 15.4.3). Depending on the seriousness of the injury, trained medical response personnel should be contacted immediately. If there is any doubt as to the injured worker's condition, it is best to have the local paramedic or ambulance service examine and transport the worker.

First aid administered by onsite facility personnel should continue until professional assistance arrives. First aid is the immediate care of a person who has been injured or has suddenly taken ill. It is intended to prevent death or further illness and injury, and to relieve pain until additional, professional medical aid can be obtained if required. The objectives of first aid are:

- To control conditions that might endanger life;
- To prevent further injury;
- To prevent contamination and treat for shock; and
- To relieve pain and make the patient as comfortable as possible.

The initial responsibility for the first aid rests with the first person at the scene who should react quickly, but in a calm and reassuring manner. If required, the person assuming responsibility should immediately summon medical assistance being as explicit as possible in reporting suspected types of injury or illness. The injured person should not be moved, except in cases where it is necessary to prevent further injury.

15.5.2 Fires/Explosion

The use of cover material is an effective and practical means of fire control. The earth moving equipment used regularly at the site is capable of moving and applying the amount of material needed for a fire event.

Water can be used to supplement the use of cover soil or serve as an alternative means of controlling fires. The Operations Contractor will maintain one water truck, which can be available for use during emergency situations. For larger or more serious outbreaks, the local volunteer fire department will be contacted. The emergency telephone number for the local fire department is provided in Section 15.4. Emergency telephone numbers will be provided to site personnel. Portable fire extinguishers are kept onsite as described in Section 15.3.2 as a precautionary measure.

If, at any time, assistance is required to control the fire, local fire-fighting units will be contacted.

15.5.3 Leachate Collection and Removal System Events

15.5.3.1 Interruption in Discharges from the Treatment Pond

Prior to any discharge from the Treatment Pond, the collected water is sampled and analyzed to determine whether the SPDES Permit discharge water quality requirements will be met. In the event the pre-discharge water quality sample analyses indicate that the water is not acceptable quality for discharge, the following activities are initiated:

- Additional samples of the collected water are obtained for laboratory determination of the treatment required; typically, this consists of an adjustment of pH;
- The pH is adjusted, or other treatment technologies are implemented as required;
- Water samples are obtained during the treatment process;
- The treated pond water is retained for a minimum of one day and is re-sampled to assure acceptable water quality prior to discharge; and
- Composite samples are obtained from the discharge to ensure an adequate record of the quality of the water discharged is documented.

15.5.3.2 Treatment Pond Cleaning Event or Treatment Pond Malfunction

When the Treatment Pond is taken offline for cleaning, or if there is suspected liner damage to the containment liner, the following activities are initiated:

- Temporary storage tanks compliant with subdivision 360.19(n) will be placed in the temporary leachate storage and transfer area to manage leachate for transport offsite. The secondary containment liner system was designed to provide a stable surface which prevents movement, rolling, or settling. The secondary containment system was designed with a maximum containment volume of 130,000 gallons. For the purpose of maintaining the 110% minimum containment volume, the total volume of interconnected tanks installed within the temporary leachate storage and transfer area shall not exceed 118,000 gallons.
- The contingency leachate storage area shall be drained of stormwater through a gravity drain pipe to ensure a minimum of 100% containment capacity for the given tank system is maintained. When tanks are present, the gate valve on the pipe shall remain normally

closed. Stormwater will be drained before 10% of the secondary containment area capacity is filled and must be visually assessed for evidence of contamination before being drained from system. If contamination is suspected, stormwater runoff will be pumped into the temporary storage tanks or removed with a vacuum truck and hauled offsite for treatment.

- The gate valve at MH Common-1 will be opened and the eight-inch outlet to the meter pit will be plugged to divert leachate from the onsite treatment system to the contingency storage area.
- After the Pond is drained, the gate at the access ramp will be opened and a small low ground pressure bulldozer will enter the Treatment Pond for the purpose of pushing the soft sediments to the northeast corner of the pond where they can be removed by a long reach hydraulic excavator loading sealed tailgate dump trucks for proper disposal.
- Once the sediment is removed, careful inspection of the surface of the protective gravel layer will be completed to determine whether the integrity of the underlying geomembrane may have been compromised.

In the event post-sediment removal or other routine site observations of the surface of the Treatment Pond's gravel layer suggest there may be damage to the underlying membrane liner:

- Manual excavation of the gravel layer will be performed to expose the liner system in the area in question; and
- If deemed necessary, repairs will be made in accordance with the site specific CQA/CQC Plan for liner system installation and repair.

The use of the temporary leachate storage and transfer area must continue until the sediment removal project or any repair effort is complete. In the event that the contingency leachate storage and transfer area is in use for longer than one month, the tanks and overfill protection system shall be inspected at a frequency of no less than once per month. Remedial action to eliminate leaks or correct deficiencies shall be undertaken as soon as possible after a problem is identified.

15.5.3.3 Leachate Collection System Component Malfunction

The leachate collection system is designed to convey leachate by gravity from the landfill to the final effluent discharge; therefore, no pumps are needed. Malfunctions can include blockage of piping through sediment buildup, pipe breakage, or deterioration of equipment due to age and use.

In the event a blockage of a portion of the system is discovered between annual pipe cleaning events, a focused pipe cleaning effort will be scheduled for the suspect location, and the results recorded. If a blockage cannot be cleared through routine cleaning efforts, a letter report to the NYSDEC will be made indicating when the blockage was first noticed, where the blockage location is suspected or known, what efforts have been made to clear the blockage, and what next steps are proposed.

If minor pipe or manhole cracking is suspected or observed anywhere outside the limit of waste but there is no observable spillage of leachate, repairs will be scheduled as soon as practicable and a notification will be made to the NYSDEC indicating location of and schedule for the upcoming repair.

15.5.3.4 Exceedance of Allowable Leakage Rate

In accordance with 6 NYCRR 363-7.1(f)(7) the maximum allowable leakage rate measured in the Leak Detection System is 20 gpad, based on a 30-day rolling average. If this maximum leakage rate is exceeded the NYSDEC shall be notified within 72 hours from the time of the exceedance and the secondary leachate shall be sampled and analyzed for baseline parameters following the procedures in the Environmental Monitoring and Site Analytical Plans (see Sections 12 and 13). Additionally, the minimum frequency of manual measurement in the leak detection system shall be increased to weekly, regardless of whether the Facility is operating.

Within 14 days of the exceedance, a written report shall be submitted to the NYSDEC documenting planned or in-progress remedial actions, the amount of liquid observed, and the suspected cause(s) of the excessive leakage rate. Following this preliminary report, Lockwood Hills shall, to the extent practicable, determine the location, size, and cause of the leak(s). This investigation should be used to determine short or long-term actions needed to address the source

of the leak(s); if receipt of waste should be halted or curtailed; if waste should be removed from the cell for inspection, repairs, or engineering controls; and whether the cell should be closed.

Within 30 days of initially notifying the NYSDEC, a second written report documenting the results of baseline parameter sampling and the determinations in the preceding paragraph of this section shall be submitted to the NYSDEC along with descriptions of any remedial actions that are planned or already underway. Weekly flow rate measurements in the leak detection system shall continue as long as the 30-day rolling average remains above the maximum allowable leakage rate, regardless of whether the Facility is operating. Daily measurements will be taken for periods during which the Facility is operating. Monthly reports to the NYSDEC summarizing the results of any planned or executed remedial actions will also be required during the time that the leakage rate exceeds the 20 gpad limit.

If the leakage rate cannot be reduced to less than 20 gpad within six months of the original exceedance, the Facility shall comply with additional NYSDEC mandates.

15.5.4 Uncontrolled Release to Surface Water

The Operations Contractor will be responsible for preventing any uncontrolled release to surface water and will take appropriate action to prevent erosion within the construction area. A working landfill can inadvertently cause an uncontrolled release to surface water. Typical landfill activities and/or events that may cause such releases include, but are not limited to:

- Operation of heavy construction equipment;
- Waste hauling and loading/unloading;
- Earth/soil moving;
- Outdoor storage of significant materials including daily, interim and final cover material stockpiles, as well as, temporary waste storage areas;
- Exposure of active and inactive landfill areas;
- Fertilizer, herbicide, and pesticide application associated with intermediate and final cover installation and maintenance;
- Uncontrolled leachate flows from leachate breakouts; and

- Failure or leaks from leachate collection and treatment systems.

Significant fluid leakage from construction equipment will be prevented by proper maintenance and repair of equipment.

Prior to any site disturbance or construction activity, silt fencing or hay bales will be placed at the boundary of the construction area and upgradient of potential sediment discharges to a surface water body. This practice will be employed throughout each stage of construction, and any accumulated sediment will be removed periodically. The sediment controls will be removed after vegetation has been established on the disturbed areas.

Due to the nature of landfill construction practice, construction activities will be limited to periods of little or no precipitation whenever practicable. Runoff from areas disturbed by construction will be routed through the existing stormwater controls whenever practical. Temporary sediment traps will be constructed as required at the lowermost point of disturbed areas as required. Temporary and permanent sediment traps will be cleared of accumulated sediment as required.

All reportable petroleum spills and most hazardous materials spills will be reported to the NYSDEC hotline number at 1-800-457-7362. The release of untreated leachate to State waters is prohibited, and Lockwood will report any such inadvertent spill to the NYSDEC. Prior to calling, collect as much of the following information as possible:

- Description of the spill;
- Material spilled;
- Incident location;
- Volume of material spilled;
- Time of spill/discovery;
- Weather conditions;
- Impacts to facility personnel;
- Impacts to the environment (e.g., surface waters); and

- Remedial actions undertaken (e.g., turned 55-gallon drum upright).

A petroleum product spill is considered to have not impacted land or water if it occurs on a paved surface such as asphalt or concrete and is contained. A petroleum spill in a soil or gravel surfaced area is considered to have impacted land and may require that the spill be reported. A spill is reportable to the NYSDEC within two hours of discovery unless ALL of the following criteria are met:

- The quantity is known to be less than five gallons;
- The spill is contained and under the control of the spiller;
- The spill has not and will not reach the State's water or any land (meaning the small spill has occurred on a concrete or asphalt paved surface); and
- The spill is cleaned up within two hours of discovery.

Even if the spill is not deemed reportable, Lockwood or its Operations Contractor must still record the facts concerning the incident and the record will be maintained in accordance with Section 14.1.

In the event of a spill of a petroleum-based product such as diesel fuel, motor oil, or hydraulic fluid, the following activities are initiated:

1. Assess the scene for safety hazards and determine if there are any injuries requiring medical attention. Determine if there is a risk of fire or explosions. In the case of an emergency, immediately contact medical and fire emergency services first;
2. Notify the facility personnel and Project Manager;
3. Determine where the spill originated and attempt to contain the spill by stopping the discharge at its source;
4. Use a spill kit if available to contain the spill in a localized area;
5. Contact the NYSDEC spill hotline, if required;

6. Read the MSDS sheet for the spilled material to determine the necessary spill response and precautions that will need to be taken. Using guidance from the MSDS, perform corrective actions if possible, and clean up the spill, if it is safe to do so;
7. If necessary, an Emergency Spill Contractor (listed in Appendix 6) shall be contacted to respond to the spill. The closest contractors are located in Rochester, NY;
8. Create a record of the spill and remedial actions taken;
9. If facility personnel conduct the cleanup, all recovered materials and materials used to contain the spill must be disposed of properly;
10. Restock the spill containment supplies as soon as is reasonably possible; and
11. The Operations Contractor shall hold a post-incident meeting to determine if the incident could have been prevented, how the spill occurred, if response to the incident was adequate, and how future incidents can be prevented.

15.5.5 Unauthorized Waste

The site is controlled by locked gates and signs are conspicuously posted warning potential trespassers. Should any unauthorized waste be placed at the site without the knowledge of the Operations Contractor or Project Manager, law enforcement authorities shall be contacted to investigate the event as a criminal activity.

Operations Contractor personnel are responsible for the identification and rejection of unacceptable loads delivered to the landfill. Facility personnel involved in any aspect of the waste handling operation are required stay vigilant in case unauthorized waste evades the initial screening. Receipt of solid waste not authorized by the NYSDEC must be reported to the Project Manager. The following measures will be taken to respond to the inadvertent acceptance of unauthorized wastes:

- Should an unacceptable waste load be encountered before the waste has been deposited at the working face, the vehicle will be required to leave the Facility immediately.
- In the event that some portion of an unacceptable load has been deposited at the working face, the person rejecting the material will notify the Project Manager while the available onsite equipment will be used to remove and segregate the waste, or to control and

contain the contaminated area if safe removal and segregation cannot be accomplished. The unacceptable waste will be placed in containers and returned to the generator.

- Solid waste that is segregated must be adequately secured and contained to prevent leakage or contamination of the environment.
- The Project Manager is responsible for ensuring that the unauthorized waste is removed from the site as promptly as is practicable and for maintaining a record for the unauthorized waste received, its temporary disposition onsite, and its final offsite disposal location.
- All incidents of receipt of unauthorized waste, regardless of whether or not it ever left the vehicle it was delivered in, must be recorded and reported as described in Section 5.3.

Refer to the Waste Control Plan in Section 5.3 of this Facility Manual for additional requirements concerning unauthorized waste handling and reporting.

15.5.5.1 Wastes Encountered in the Greenidge Gravel Disposal Area

Construction of the Stage IV baseliner includes the excavation of a portion of the Greenidge Gravel Disposal Area. Material excavated during construction of the Stage IV baseliner where construction impacts the GGDA will be sorted into three categories. The first category will include any drums, tires, or miscellaneous material that is not acceptable waste at the landfill. If found, material in this category will be characterized and properly disposed of. The second category is for fly ash and any material that is permitted for disposal at the landfill. Acceptable waste materials will be hauled to and disposed of in the active area of the landfill. The remaining material is expected to be soil that is usable for backfill, subgrade, berms, etc.

15.5.6 Natural or Manmade Disaster Response

The Operations Contractor should stay informed of any possible natural disasters by checking the weather forecast daily. Though this does not eliminate the risk of natural disasters it will provide the ability to plan for foreseeable events such as intense thunderstorms and blizzards. In the event of a natural disaster, the following actions will be undertaken by the Operations Contractor during a period of active landfilling or by the Project Manager during a period of site inactivity to ensure proper facility function, the health and safety of facility personnel, and

prevention, if possible, otherwise mitigation of any environmental impacts resulting from the natural disaster in a timely and appropriate manner:

- Assess the damage from the natural disaster, if any, and determine if it has caused a release of contaminants that may cause harm to the environment or human health;
- If any damages are discovered shall take corrective action as soon as it is safe to do so (e.g., after an earthquake and aftershocks have subsided);
- If the natural disaster results in any of the emergency situations listed in Section 15.5, the appropriate response protocols will be conducted; and
- If damage to interim or final cover systems occurs, the damaged areas shall be repaired in accordance with the site specific CQA/CQC Plan for liner system repair or replaced as soon as it safe to do so.

Since Lockwood is a privately owned and used facility, an interruption in service at Lockwood would not have an impact on community solid waste management needs. However, in the event of a disaster that had offsite impacts, Lockwood would stand ready to assist Yates County or the State of New York with extra disposal capacity for items like storm debris removal, for example.

15.5.7 Evacuation Plan

In the unlikely event that the Operations Contractor deems the fallout from any event (e.g., fire, spill, etc.) to constitute a threat to human health the Operations Contractor shall be responsible for initiating and overseeing the unscheduled shutdown and evacuation of the Facility.

When time permits, the following evacuation procedures should be followed:

- Alert all personnel by cell phone or face-to-face contact;
- Shutdown all vehicles and other facility equipment;
- Facility personnel should proceed to a pre-determined meeting point at the intersection of the paved access road and Swarthout Road just outside the main access gate. (If this location is compromised facility personnel shall proceed to MW-8401, located near the western property boundary adjacent to Feagle Road);

- While in transit to the meeting point the Operations Contractor or designated personnel shall contact pertinent emergency services from the list provided in Section 15.4;
- Upon arrival at the meeting point, the Operations Contractor should take a roll call of all personnel to identify any missing persons; and
- If any personnel are injured follow the medical emergency response actions detailed in Section 15.5.1.

When time does not permit, facility personnel shall immediately evacuate the site by the following routes:

1. Principal Evacuation Route – Personnel should proceed down the paved access road and evacuate via Swarthout Road; or
2. Alternative Evacuation Route – If the principal evacuation route is compromised, personnel should evacuate the site on foot to nearby properties.

If the unscheduled shutdown caused by the event exceeds 24 hours the Project Manager will notify the NYSDEC describing the incident and any proposed waste management activities.

16 SUSTAINABILITY PLAN

Subdivision 363-4.6(a) requires Lockwood to prepare a sustainability plan as part of the Facility Manual. The purpose of a sustainability plan, as outlined in the Final Generic Environmental Impact Statement (GEIS) on the Proposed Amendments to Part 360 dated August 23, 2017, is to address how a landfill will be run on a daily basis to help conserve resources, reduce greenhouse gas emissions, and maximize the landfill's disposal capacity. The sustainability plan requires a description of operations that will conserve landfill airspace through front-end diversion of recyclables, reduce receipt of organic wastes, reduce greenhouse gas emissions, utilize alternative operating cover materials, produce alternative energy or material resources, enhance waste mass stabilization, include landfill reclamation techniques, and utilize other sustainable landfill management techniques.

Lockwood is somewhat unique since it is not open to the public and the wastes it is permitted to accept do not contain organic waste. However, there are strategies that can be employed to meet other elements of the sustainability plan.

16.1 NATURAL RESOURCE CONSERVATION

A proposal to utilize an EGC as a long-term interim cover was submitted to the NYSDEC in October 2019. An EGC system is composed of either a HDPE or a LLDPE material. The geomembrane materials are made with extraction-resistant, antioxidant additives to inhibit degradation from high temperatures and ultraviolet (UV) light. These exposed cover materials come in various colors such as white, black, tan and green. The green color is the preferred selection by Lockwood. A system such as an EGC will replace six to nine inches of intermediate cover soils and potentially, if used as final cover, an additional six inches of soil.

16.2 GREENHOUSE GAS REDUCTION

An EGC cover has significant greenhouse gas reduction benefits. At a Solid Waste Association of North America conference in 2013, Geosyntec Consultants reported an 80% reduction of greenhouse gas emission potential compared to a Subtitle D cover construction project since much less fuel is needed by avoiding the importation of cover soil components.

Additional greenhouse gas reduction is achieved by Lockwood's decision to install an onsite leachate treatment system and maintain a SPDES Permit for discharge to Keuka Outlet rather than opt to store the leachate in tanks and haul it offsite for treatment. Managing the leachate onsite avoids a possible three to six tanker truck trips per day and the carbon dioxide equivalents (carbon dioxide, methane, and nitrous oxide emissions) that would be produced from diesel gasoline consumption from these tanker truckers.

16.3 Recyclables Diversion

Due to the nature of the type of wastes received at Lockwood, recyclables diversion is limited. However, bottom ash has been actively diverted from disposal for use by dozens of nearby Towns as a road traction agent. Opportunities for beneficial use of accepted materials rather than disposal will continue to be explored.

16.4 Landfill Reclamation

Coal fly ash is a traditional ingredient in concrete. As more power plants close or revert to other forms of energy generation, the supply of this ash will diminish to a point where demand will exceed supply. The American Coal Ash Association projects the overall utilization rate of fly ash in ready-mixed concrete will increase from 44% in 2013 to 63% by 2033. Harvesting techniques to separate out and condition fly ash from bottom ash are improving. Fly ash marketers are beginning to target fly ash stored in active and inactive areas for reclamation

In a newer development, the Department of Energy identified coal ash as a source of rare earth elements and began funding of research projects to find economic and environmentally sound ways to recover these elements. Recent technological advances in extracting rare earth metals from coal ash have been reported. Given that the United States relies solely on foreign importation of rare earth metals, existing stores of coal ash may become the new feedstock for this very important commodity.

Lockwood will continue to investigate these avenues of potential landfill reclamation. If reclamation is feasible, Lockwood will notify the department and initiate the approval process to undertake the operation.

16.5 Alternative Energy Production

Lockwood has expressed an interest in pursuing solar energy initiative onsite as part of their closure plan. If solar becomes a feasible option, Lockwood will notify the department and initiate the approval process to undertake the operation.

16.6 Waste Mass Stabilization

Waste mass stabilization measures (e.g., leachate recirculation) to promote rapid waste mass stabilization are unnecessary due to the non-putrescible waste types accepted at Lockwood. The waste deposited at the landfill is considered to be stable after compaction and placement of cover.

16.7 Sustainability Plan Updates

The sustainability plan shall be updated and submitted to the NYSDEC every five years after its initial approval.

17 CONCEPTUAL CLOSURE, POST-CLOSURE, CUSTODIAL CARE AND END USE PLAN

17.1 CONCEPTUAL CLOSURE PLAN

Closure of the landfill will occur sequentially in areas of the landfill that reach final waste grades. Per subdivisions 363-9.3(a) and (b) final closure activities must be completed either within five years of a landfill cell achieving final grades or within 365 days of the last known receipt of waste, unless an extension is approved in the landfill's closure plan. Following the last known receipt of waste, no waste requiring offsite disposal is expected to be present at the Facility. If any insufficiently dewatered material is present in the sludge dewatering basin after the last known receipt of waste, it is anticipated that the waste will be sufficiently solidified to dispose in the landfill within 60 days. However, should it be required, the waste will be transported offsite to a facility permitted to accept the waste removed from the basin for disposal within 60 days of the last known receipt of waste in accordance with paragraph 360.21(a)(3).

The Conceptual Final Cover and Drainage Plan for Lockwood, including all requirements of paragraph 363-4.6(p)(1), is shown on PD-6. Sequential closure of the landfill is planned as is discussed in Section 7.3, which will minimize the construction effort when final closure occurs in the future. Final closure of the landfill will occur when the last open area reaches final grade. According to Phase 5 of the fill progression plan (see PD-10), this area will be in the OADS Overfill. Final closure of the landfill would also occur if all land disposal activities at the site permanently cease before the remaining capacity of the landfill is exhausted. Part 363-9.3(b) requires final closure of the landfill to be completed within 365 days after waste acceptance permanently ceases.

Currently no landfill reclamation activities are planned, although Lockwood proposed to maintain the option to do so as is discussed in Section 16.4.

Both sequential closure projects and final closure will follow the requirements of the New York State Department of Environmental Conservation (NYSDEC) Part 363 regulations.

17.1.1 Largest Active Area

The largest active area of the landfill that will require closure at any one time is expected to be about 33.8 acres and is expected to occur at the beginning of Phase 3. As can be seen on PD-10, the Stage III baseliner system will be constructed during Phase 2, but no waste is expected to be placed in Stage III until Phase 3. During Phase 3 of the fill progression plan, landfilling will continue in the OADS overfill plateau and Stage III, while Stages I and II will remain under temporary exposed geomembrane cover. Extension of the final cover from the sideslopes of the OADS overfill will not take place until later in Phase 3. Thus, the greatest number of landfill cells that would have received waste but not undergone final closure will be four, the OADS overfill, and Stages I, II, and III.

17.1.2 Maximum Waste Inventory

The maximum amount of waste during the active life of the landfill will occur at the time the last load of waste is delivered to the landfill, unless Lockwood petitions to exercise landfill reclamation. Accordingly, the maximum amount of waste in the landfill is equal to its total waste volume at full build out. This can be calculated as the design total airspace volume, minus an assumed operational cover soil volume.

To determine the design total airspace of the landfill, information obtained from the record drawings of the 29.8 acres of currently constructed baseliner was used to prepare an AutoCAD model of the bottom of waste (i.e., top of drainage layer) surface in the existing landfill. The existing bottom of waste surface was extended to the south and north by pasting on the conceptual subgrade design for Stages III and IV (see PD-5) after raising the surfaces by five feet to account for the thickness of the baseliner (see detail on PD-8) to complete the entire 44.2-acre surface. A top of waste model was constructed from the final grading plan shown in PD-6. The top of final cover grades were lowered by 2.0 feet to account for the thickness of the final cover system as shown in the detail on PD-8. AutoCAD was used to perform a volume comparison between the bottom of waste and top of waste surface. The resulting total maximum airspace is approximately 4.9 million cubic yards.

Assuming approximately 5% of the airspace will be consumed by operational cover soils left in place with the waste, Lockwood's design total airspace will contain about 246,000 cubic yards of

cover soil and 4,667,000 cubic yards of waste. Therefore, the maximum waste inventory is 4,667,000 cubic yards.

17.1.3 Administrative Deliverables

In addition to the physical construction requirements to place a final cover system, closure will also entail investigative and administrative action items. The following items will be submitted to the NYSDEC according to required schedules: Closure Site Investigation Report, Closure Construction Documents, Closure Construction Certification Reports, Closure Report, and a Final Closure Plan.

17.1.3.1 Notifications to the NYSDEC

When the expected date of the final receipt of waste is known the NYSDEC shall be notified in writing 30 days prior to the anticipated date. The NYSDEC shall also be notified in writing within seven days of the completion of all closure activities.

17.1.3.2 Annual Report

Within 30 days of the last known receipt of waste an annual report shall be submitted to the NYSDEC. The report shall contain all information to be included in an annual report, as described in Section 14.2.2.1, that has been collected between the time the previous annual report was submitted and the last known receipt of waste.

17.1.3.3 Closure Site Investigation/ Closure Site Investigation Report

Before finalizing closure design, a closure site investigation including a surface leachate and a vector presence investigation will be completed. The surface leachate investigation identifies any instances of leachate seeps or uncontrolled leachate at or emanating from the Facility, including chemical characterization of any observed surface leachate, which is not contained within the onsite leachate treatment system. Chemical characterization will include analyses for the baseline parameters identified in the EMP. The surface leachate investigation will also note if any fugitive leachate from the Facility is being discharged to surface waters. The vector investigation identifies the presence of nuisance vectors that could damage the final cover system components and, if necessary, implements a remedial program prior to the cessation of waste acceptance at the Facility. Decades worth of groundwater monitoring under the EMP presented in Section 12, have well defined the hydrogeological conditions onsite. As such, Lockwood

proposes that the hydrogeologic investigation required by paragraph 363-9.2(a)(1) be waived under the allowance granted by subdivision 363-9.2(a). Additionally, Lockwood proposes that the explosive gas investigation required by paragraph 363-9.2(a)(2) be waived under the allowance granted by subdivision 363-9.2(a) because the waste at the Facility is non-putrescible in nature and, therefore, does not produce explosive gas.

For a sequential closure project, the results of the closure site investigation will be used internally and are not subject to review and approval by the NYSDEC. However, for final closure, the results of the closure investigations must be summarized in a Closure Site Investigation Report and submitted to the NYSDEC for approval.

17.1.3.4 Closure Construction Documents

Prior to each closure construction project, Lockwood Hills will have prepared detailed construction documents, including construction drawings accompanied by an Engineering Report that describes key design and installation criteria and a Construction Quality Assurance/Construction Quality Control Plan, for contractor and material selection purposes. NYSDEC approval of the construction documents will be required before contractor and materials selection can commence. Materials selected for final cover construction will have to undergo testing to ensure minimum design factors of safety can be achieved. Integral to all these actions, Lockwood Hills will schedule such that the actual construction can occur during a typical June – October construction season appropriate for Central New York State.

17.1.3.5 Closure Construction Certification Reports

A Closure Construction Certification Report will be in accordance with section 363-9.4 and submitted to the NYSDEC within 60 days after constructing final cover on any section of the landfill. These reports will document the construction activities and will include all quality assurance and quality control testing results. The reports will also provide documentation of failed tests, descriptions of procedures used to rectify improper installations and documentation of retesting. Record drawings of the closure construction will be included, noting any deviation from the approved final closure plans. A comprehensive narrative, consisting of, at minimum, daily reports from the project engineer and a series of color photographs documenting major project features also will be included in this report.

All closure construction must be undertaken under the supervision of an individual licensed to practice engineering in the State of New York. Upon completion of construction, that individual must certify in writing as part of the Closure Construction Certification Report that the construction is in accordance with the NYSDEC-approved construction documents and the terms of Lockwood's permit.

17.1.3.6 Revised Closure, Post-Closure, and Custodial Care Cost Estimate

After, the NYSDEC approves the closure construction certification report, a revised post-closure and custodial care cost estimate will be submitted to the NYSDEC to adjust the financial assurance requirements for the new landfill condition. See the Financial Assurance Plan (Daigler Engineering, PC, 2020) included with this Part 360 Series Permit Renewal/Modification Application for information on how these estimates were calculated.

17.1.3.7 Final Closure Plan

A Final Closure Plan will be submitted to the NYSDEC 180 days prior to commencement of construction on the Facility's final closure. The Final Closure Plan will update this conceptual closure plan providing detail on final landfill closure activities. Key details include all required information outlined in subdivision 363-4.6(p), a plan to addresses unacceptable environmental impacts identified in the closure site investigation report (see Section 17.1.3.3), an estimate of the facility area to be covered, an estimate of the final inventory of waste in the Facility, a closure construction schedule, and final closure, post-closure care, and custodial care cost estimates, amended in accordance with section 360.22.

17.1.4 Final Cover System Design

Referring to PD-8, the final cover system design for Lockwood includes in descending order:

- A six-inch (minimum) topsoil layer, vegetated with cool season grasses;
- A 12-inch thick (minimum) barrier protection soil layer;
- A GCD layer;
- A single, 40-mil LLDPE, textured geomembrane on slopes greater than or equal to 25% or a composite barrier layer consisting of a GCL overlain by a 40-mil LLDPE, textured geomembrane on slopes less than 25%; and

- Six inches of operational or intermediate cover soils.

Infiltration is minimized by the composite liner on the landfill slopes less than 25% and the single geomembrane on slopes steeper than or equal to 25%. The infiltration minimization performance objective is further enhanced with the GCD which will reduce liquid head build-up on the geomembrane liner. The two systems complement each other with the GCD reducing the driving force of any liquid above a defect in the geomembrane and the GCL acting as a plug for any minor defect in the geomembrane.

Maintaining final cover system durability is afforded by both the six-inch thick cover soil subbase layer, as well as, the 18-inch thick layers of barrier protection soil and the topsoil. The thickness of the barrier protection and topsoil layers protects the cover from root penetration.

17.2 Conceptual Post-Closure Care Plan

A post-closure care plan is intended to guide the operations and maintenance of the Facility until such a time that the owner demonstrates to the satisfaction of the NYSDEC that the threat posed by the Facility to public and environment has been reduced to a point that less frequent environmental monitoring and maintenance is acceptable. Given the nature of the waste deposited at Lockwood, it is expected that this post-closure care period will last fewer than 30 years. Remedial actions to eliminate the hydraulic connection between the Treatment Pond and groundwater were completed in 2019, which are anticipated to lead to groundwater quality improvements prior to the onset of the post-closure care period.

17.2.1 General Site Maintenance

All slopes will be maintained at the grades specified in the conceptual final grading plan as shown on PD-6 to minimize the possibility of ponding. All drainage structures shown on PD-6 shall be maintained free and clear of debris and vegetation to ensure the site is adequately drained.

Vegetative cover shall be established on all areas with final cover within four months of final cover placement and shall be maintained by annual mowing. If vegetative cover cannot be established in this timeframe measures will be taken to protect the exposed final cover areas from damage and erosion (e.g., erosion and sediment controls). Any damage to the final cover

system during this time will be repaired when conditions permit. Mowing activity will be scheduled for late summer, between August 16th and October 1st. This timing for mowing is preferred per the NYSDEC's best management practices for the protection of ground-nesting species to nest and raise their young in an undisturbed manner. The late summer timing also will allow grasses and forbs to form seeds to generate the next season's plants, which are an important food item for native and migratory birds and small mammals. Any undesirable plant species (i.e., woody plant growth) will be subject to more extensive removal techniques if their presence is suspected to have the potential to deteriorate the integrity of the final cover.

All access roads shall be maintained to allow personnel and the regulators access to the site for other maintenance, monitoring, and inspection activities. Fencing and gates shall be maintained to secure the Facility and ensure that it is not accessible to the public.

17.2.2 Final Cover System Care

Lockwood Hills will maintain the integrity and effectiveness of the final cover system. Post-closure care of the final cover system begins with the proper establishment of vegetation. Vegetation shall be established on all final cover areas within four months after placement. Additionally, proper maintenance of the final cover stormwater system will prevent run-off and run-on from eroding or otherwise damaging the final cover system. Maintenance and repair activities will be conducted as necessary and may include minor soil erosion repairs and an evaluation and more detailed repair should an unexpected issue be revealed during one of the routine inspections. Such unexpected issues include possible settlement, subsidence, major erosion, small mammal burrows, or any other events.

17.2.3 Leachate Management System Operation and Care

The leachate collection and removal system will be operated and maintained to collect and remove leachate from the landfill during post-closure care period in the same manner as during landfill's active life (see Section 11.3.2). Leachate management activities include proper maintenance of leachate gate valves, recording of the total volume of the leachate removed from the landfill and treated in the Treatment Pond, evaluation of liner performance by continuing to manually monitor the flow rate in the leak detection system, and leachate sampling and analysis. Maintenance also includes annual leachate line cleaning and repairing any damage to the leachate collection, removal, maintenance (i.e., leachate cleanouts) and treatment systems.

The batch discharge of the Treatment Pond will continue as described in Section 11.3.3.2 into the post-closure care period. However, a SPDES permit modification application will be submitted to allow the Treatment Pond to be converted to a flow through system once it is demonstrated to the NYSDEC's satisfaction that the final cover system is working properly, that leachate generation is de-minimis, that the Facility's leachate poses a significantly reduced threat to public health and the environment, and that a flow through system can meet the requirements of effluent limits in the Lockwood's SPDES permit. Leachate manholes will be secured to prevent unauthorized entrance.

17.2.4 Environmental Monitoring

Groundwater, surface water, and leachate monitoring points shall be sampled quarterly for site-specific routine parameters and annually for site-specific baseline parameters provided in Table 12-5. This sampling shall take place at the monitoring points defined in the EMP (see Section 12). Samples will be collected, preserved, and analyzed according to the methodologies outlined in the SAP (see Section 13).

After the initial five-year post-closure period, a request may be submitted to the NYSDEC to modify the sampling and analysis frequencies as allowed under clause 363-9.6(a)(1)(iv)(*b*).

Well condition surveys are expected to take place every five years beginning with the year in which the post-closure care period begins.

17.2.5 Facility Inspections

Facility inspections will occur at a minimum on a quarterly basis during the post-closure care period. Final cover condition, leachate management system, stormwater management system, perimeter fencing, site access roads, and groundwater monitoring well integrity will be inspected and documented for reporting to the NYSDEC. The groundwater monitoring system will be assessed visually for signs of damage to the wells and indications of surface water drainage ponding around a well casing during quarterly site inspections.

More frequent inspections will occur whenever there is a seismic event that may affect the integrity of the final cover or other Facility systems and after each five-year, 24-hour storm event.

17.2.6 Administrative Deliverables

17.2.6.1 Final Post-Closure Care Plan

Prior to last known receipt of waste, this conceptual post-closure care plan shall be evaluated for completeness and accuracy, revised where necessary and submitted to the Department for approval. This plan will describe actions to be taken to comply with the post-closure care operating requirements and provide additional details, such as, a description of resource requirements including the minimum number of personnel and required qualifications and minimum equipment needs, emergency personnel contact information, a description of the planned uses of the property during and after the post-closure period; and a change log to keep track of any future changes to the approved final post-closure care plan. The final post-closure care plan will also include an update summary of financial assurance criteria in compliance section 360.22 for post-closure and custodial care periods.

17.2.6.2 Post-Closure Care Plan Updates

Prior to initiation of any changes to the approved post-closure plan or at a minimum of every five years during the post-closure period, an updated final post-closure care plan shall be submitted to the NYSDEC. Every proposed change must be listed in the change log by topic, author, date of submittal, and date approved by the Department.

17.2.6.3 Environmental Monitoring Reports

Per subparagraph 363-9.6(a)(1)(x), a report that includes all sampling and analysis results for all environmental and facility monitoring must be submitted at the same frequency as the sampling events. Thus, quarterly environmental monitoring reports will continue for at least the first five years post-closure. Should the request to modify the environmental monitoring after the first five years be successful, the post-closure environmental monitoring report frequency will be adjusted accordingly.

17.2.6.4 Annual Reports

An annual report will be prepared and submitted to the NYSDEC during the post-closure care period. The report will include the results of maintenance, monitoring, quarterly and major rainfall event inspections. The report will also include all sampling and analysis results for environmental and facility monitoring carried out during the previous year.

17.2.6.5 Demonstration of Significantly Reduced Threat Report

When Lockwood Hills or their contracted engineer determine that sufficient supporting evidence exists, a demonstration of significantly reduced threat report shall be prepared and submitted for the Department's approval. This report shall demonstrate that the Facility poses a significantly reduced threat to public health and the environment and that environmental monitoring and maintenance can be reduced. Upon approval of this report, Lockwood will transition from the post-closure care period to the custodial care period.

17.3 CONCEPTUAL CUSTODIAL CARE PLAN

17.3.1 General Site Maintenance

All site maintenance activities described in the conceptual post-closure care plan in Section 17.2.1 will continue into the custodial care period.

17.3.2 Final Cover System Care

Lockwood Hills will continue to maintain the integrity and effectiveness of the final cover system. This includes making any repairs to the final cover as required to correct the effects of settlement, subsidence, erosion, or any other events. Replacement of final cover system components such as any geosynthetics may be required during this period if these components have degraded to the point of being ineffective for their intended use. Based on product service life information for final cover geosynthetic components that will be installed in the future, an evaluation will be made when the anticipated half-life approaches to determine actual conditions and estimate a replacement schedule. Any investigation program and results of the investigation will be submitted to the NYSDEC for review and consultation.

17.3.3 Leachate Management System Operation and Care

During the custodial care period, it is anticipated the Treatment Pond be operated as a flow through system under a valid SPDES permit.

17.3.4 Environmental Monitoring

Groundwater, surface water, and leachate monitoring points shall be sampled once every five years for site-specific baseline parameters provided in Table 12-5. This sampling shall take place at the monitoring points defined in the EMP (see Section 12). Samples will be collected, preserved, and analyzed according to the methodologies outlined in the SAP (see Section 13).

Well condition surveys are expected to take place every five years during the post-closure and custodial care periods, with the first five-year period beginning with the start of the post-closure care period.

17.3.5 Facility Inspections

Facility inspections will occur at a minimum on an annual basis. Final cover condition, leachate management system, stormwater management system, perimeter fencing, site access roads, and groundwater monitoring well integrity will be inspected and documented for reporting to the NYSDEC. More frequent inspections will occur whenever there is a seismic event that may affect the integrity of the final cover or other facility systems and after each 5-year, 24-hour storm event.

17.3.6 Administrative Deliverables

17.3.6.1 Final Custodial Care Plan

A final custodial care plan will be submitted for the Department's approval once a successful demonstration of significantly reduced threat has been made. The final custodial care plan will describe actions to be taken to comply with the custodial care operating requirements and ensure proper functioning of the components of the landfill's waste containment system. This plan will also update this conceptual custodial care plan with additional required detail, such as, a description of resource requirements including the minimum number of personnel and required qualifications and minimum equipment needs, and emergency contact information. An updated summary of financial assurance criteria in accordance with section 360.22 for the custodial care period will also be included in the final custodial care plan.

17.3.6.2 Annual Reports

An annual report will be prepared and submitted to the NYSDEC during the custodial care period in accordance with subparagraph 363-9.6(b)(1)(vii). The report will include the results of maintenance, monitoring, annual inspections and major rainfall/seismic event inspections. The report will also include all sampling and analysis results for environmental and facility monitoring carried out during the previous year, if such sampling occurred. Any end use changes proposed for the Facility will be included in the annual report.

17.4 Conceptual End Use Plan

Currently, the intended end-use of the property after closure will be an open field. No activities, beyond maintenance and repair of the final cover system, the leachate management system or the groundwater monitoring system are planned at this time. The potential use of the land for solar power production may be evaluated at a future date. However, no future activity or use that may potentially damage the integrity of the final cover system will be permitted without first assessing any potential impact, designing necessary steps to address any impacts and revising this Plan as necessary. The intended end use will not interfere with post-closure or custodial care monitoring and maintenance of the Facility. Public access to the Facility will not be permitted and as such will not result in damage to the final cover system or adverse impacts to public health of the environment.

17.5 Financial Assurance Criteria

A separate Financial Assurance Plan (Daigler Engineering, PC, 2020) is included with this Part 360 Series Permit Renewal/Modification Application. The Financial Assurance Plan provides a cost estimate to conduct closure, post-closure, and custodial care activities for Lockwood by a third-party entity or entities. The cost estimate will be updated as required by section 360.22 during the active life of the Facility and during its post-closure and custodial care periods until such time as the NYSDEC approves a petition to end custodial care. Lockwood Hills will maintain financial assurance in an amount sufficient to cover the cost estimate provided in the Financial Assurance Plan with an approved financial assurance mechanism in accordance with section 360.22.

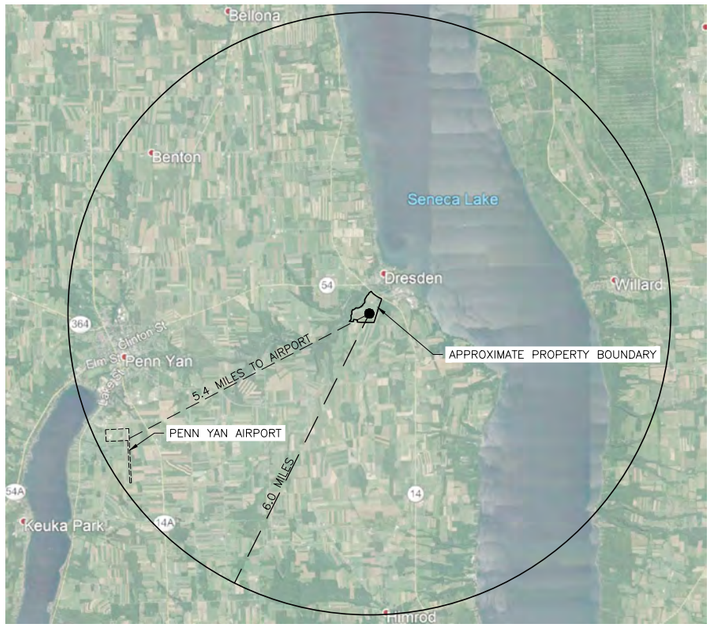
Permit Drawing Set

- **Title Sheet**
- **PD-1 - Site Plan**
- **PD-2 - Top of Bedrock Plan**
- **PD-3 - Bedrock and Glacial Till Seasonal High Groundwater**
- **PD-4 - Grid Map**
- **PD-5 - Conceptual Subgrade Plan**
- **PD-6 - Conceptual Final Cover and Drainage Plan**
- **PD-7 - Lockwood Ash Disposal Site Cross Sections**
- **PD-8 - Liner and Leachate Collection System Details**
- **PD-9 - Conceptual Stormwater Collection System Details**
- **PD-10 - Fill Progression Plans**

LOCKWOOD HILLS LLC

LOCKWOOD ASH DISPOSAL SITE
PART 360 SERIES PERMIT RENEWAL / MODIFICATION APPLICATION DRAWINGS

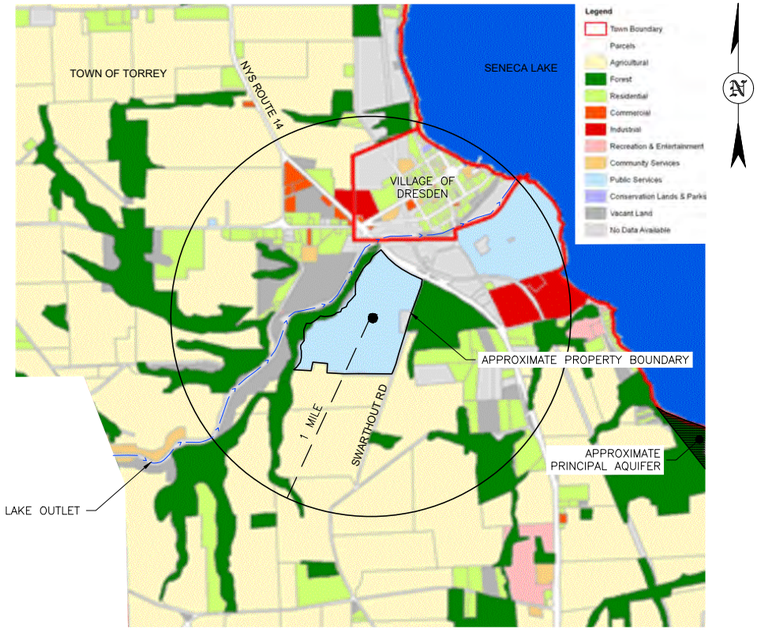
TOWN OF TORREY, YATES COUNTY, NEW YORK
AUGUST 2020



SOURCE: GOOGLE EARTH

REGIONAL MAP
NOT TO SCALE

INDEX OF DRAWINGS



SOURCE: https://www.townoftorrey.org/map_landuse.php

VICINITY MAP
NOT TO SCALE

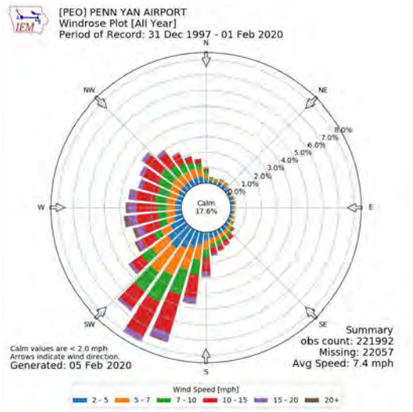
PREPARED BY:

DAIGLER ENGINEERING, P.C.
CIVIL & GEO-ENVIRONMENTAL ENGINEERING
2620 GRAND ISLAND BLVD. GRAND ISLAND, NEW YORK 14072
(716) 773-6872 (716) 773-6873 FAX

PREPARED FOR:

LOCKWOOD HILLS LLC
590 PLANT ROAD
P.O. BOX 187
DRESDEN, NEW YORK 14441

DATE:	DWG:	CHECKED BY:	PROJ. NO.:	DRAWING:
AUGUST 2020	TITLE SHEET.dwg		31-1518	0 OF 10



LEGEND:

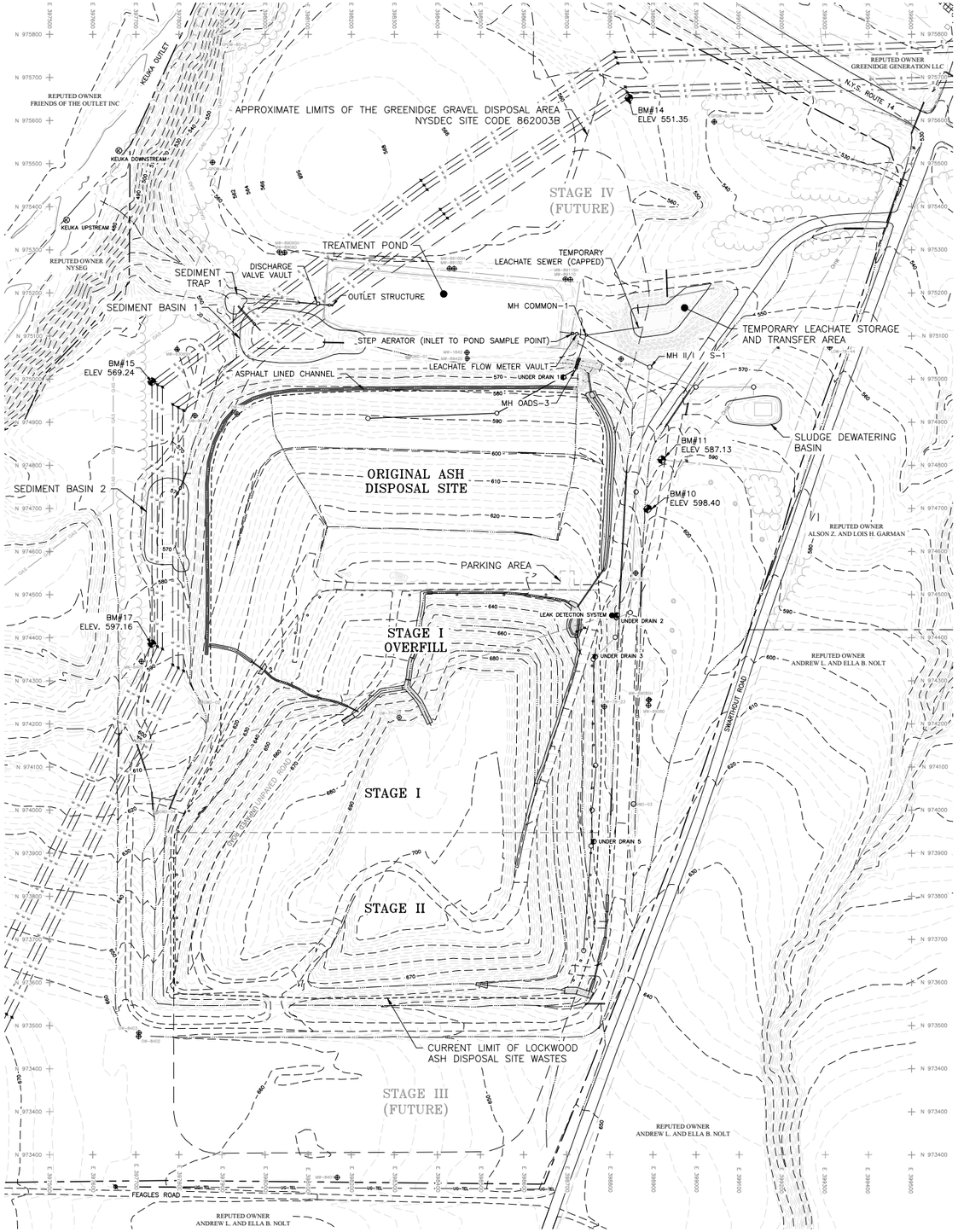
- GROUND SURFACE 10' CONTOUR
- GROUND SURFACE 2' CONTOUR
- PAVED ROAD
- UNPAVED ROAD
- FENCE
- LIMIT OF EXISTING WASTE
- PERMITTED LIMIT OF WASTE
- PROPERTY BOUNDARY
- GROUNDWATER WELL
- OHW — OVERHEAD POWER LINES AND POLES
- E — 34.5kv POWER LINES AND TOWERS
- LEACHATE SEWER AND MANHOLE
- GAS — NATURAL GAS LINE
- UNDERGROUND TELEPHONE LINE
- UG-TEL — DRAINAGE CHANNEL
- ROCK-LINED CHANNEL
- CULVERT
- GROUNDWATER DRAIN
- SURVEY BENCHMARK
- TREELINE

NOTES:

1. THE TOPOGRAPHY AND PLANIMETRICS SHOWN ON THIS DRAWING HAVE BEEN COMPILED BY KUCERA INTERNATIONAL, INC. USING PHOTOGRAMMETRIC METHODS FROM AERIAL PHOTOGRAPHY DATED FEBRUARY 4, 2010. TOPOGRAPHY WAS SUPPLEMENTED WITH SURVEY FROM WILLSON ASSOCIATES ON 11/13/17, 11/24/17, 12/21/17, AND 12/19/19.
2. VERTICAL CONTROL IS THE GREENIDGE STATION PLANT DATUM. HORIZONTAL CONTROL IS REFERENCED TO THE NEW YORK STATE GRID NAD 83.

VERTICAL CONTROL POINT DESCRIPTIONS:

BM#10	RAILROAD SPIKE, WEST SIDE OF POLE NYSEG #P35828. ELEV. 598.40
BM#11	TOP OF BRASS CAP IN 6" SQUARE CONCRETE MONUMENT PROPERTY CORNER, NORTHWEST CORNER OF FORMER LOCKWOOD RESIDENCE. ELEV. 587.13
BM#14	RAILROAD SPIKE, EAST SIDE OF POLE MOST SOUTHERLY OF 5 POLES. ELEV. 551.35
BM#15	RAILROAD SPIKE, EAST SIDE OF POLE NYSEG #234 EASTERLY OF THREE POLES. ELEV. 569.24
BM#17	RAILROAD SPIKE IN POLE, MOST WESTERLY OF POLES. ELEV. 597.16



ALTERATION OF ANY SURVEY, DRAWING, DESIGN, SPECIFICATION OR REPORT MUST BE COMPLETED IN ACCORDANCE WITH SECTION 7209 PROVISION 2 OF THE NEW YORK STATE EDUCATION LAW.

NO.	REVISION	BY	DATE

DAIGLER ENGINEERING, P.C.
CIVIL & GEO-ENVIRONMENTAL ENGINEERING
2620 GRAND ISLAND BLVD. GRAND ISLAND, NEW YORK 14072
(716) 773-6872 (716) 773-6873 FAX

DAVID A. LENOX, P.E.
NYSPE NO. 093384

DATE: August 2020

150' 0' 150'

PREPARED FOR:	LOCKWOOD HILLS LLC		
DES. BY:	DRW. BY:	CHK. BY:	
DWG.	PD-1 Site Plan.dwg		

EXISTING CONDITIONS SITE PLAN
PART 360 SERIES PERMIT RENEWAL / MODIFICATION APPLICATION

TOWN OF TORREY | YATES COUNTY | STATE OF NEW YORK

PD-1

Q:\Lockwood Hills LLC\31-1619 Consent Order 2019\Part 360 Permit Modification Application\Drawings\Part 360 Permit Mod DWGs\PD-1 Site Plan.dwg 8/5/2020 10:02 AM

LEGEND:

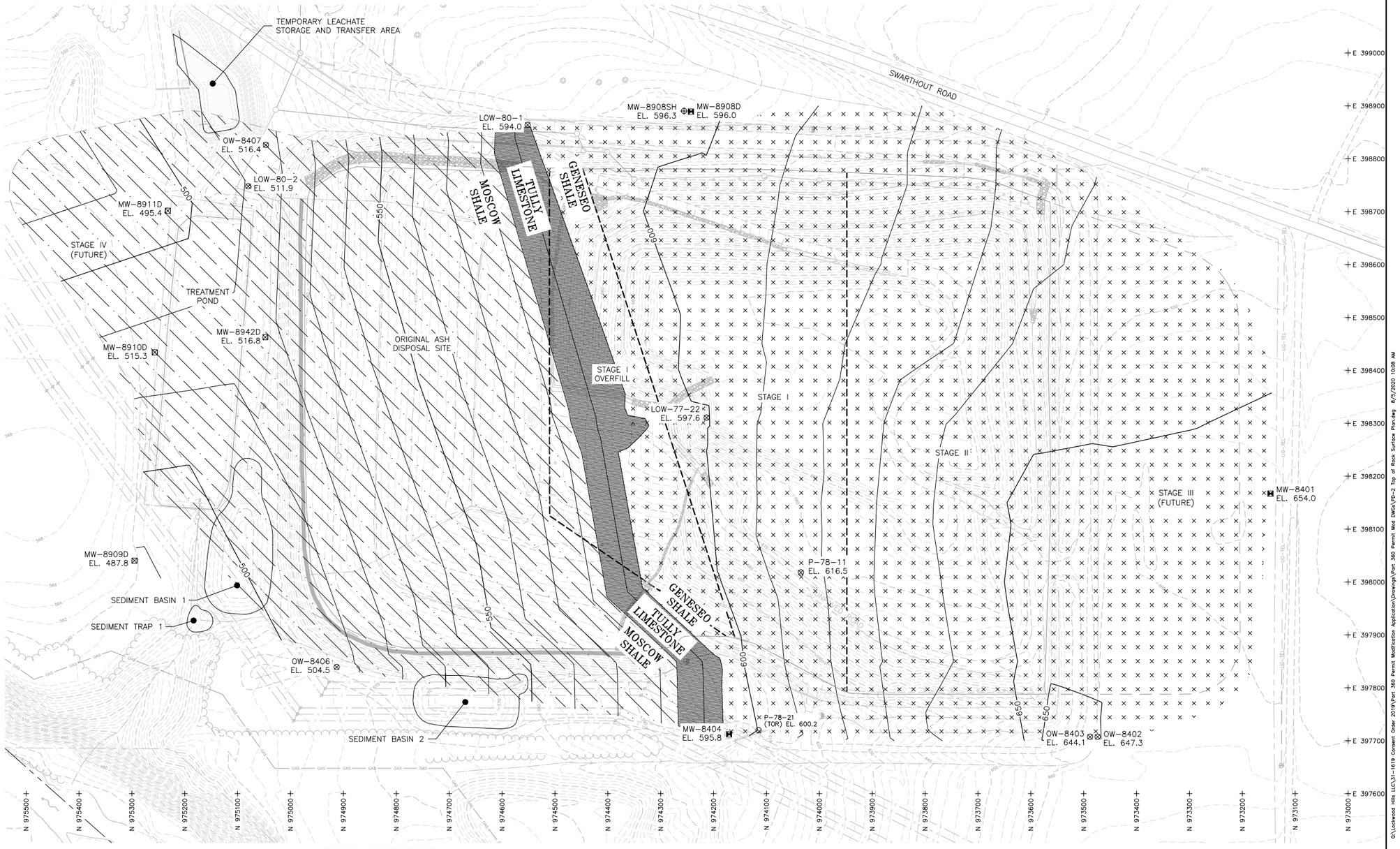
- 550 GROUND SURFACE 10' CONTOUR
- GROUND SURFACE 2' CONTOUR
- 550 TOP OF BEDROCK MAJOR CONTOUR
- TOP OF BEDROCK MINOR CONTOUR
- PAVED ROAD
- UNPAVED ROAD
- FENCE
- LIMIT OF EXISTING WASTE
- PERMITTED LIMIT OF WASTE
- PROPERTY BOUNDARY
- 35.4kv POWER LINES AND TOWERS
- LEACHATE SEWER AND MANHOLE
- NATURAL GAS LINE
- UNDERGROUND TELEPHONE LINE
- DRAINAGE CHANNEL
- ROCK-LINED CHANNEL
- ASPHALT LINED CHANNEL
- CULVERT
- GROUNDWATER DRAIN
- MOSCOW SHALE
- TULLY LIMESTONE
- GENESEO SHALE
- TREELINE

TOP OF BEDROCK ELEVATION DATA POINTS

- MW-8942D EL. 516.8 — DOWNGRADIENT BEDROCK GW MONITORING WELL
- MW-8908SH EL. 596.3 — BACKGROUND GLACIAL TILL GW MONITORING WELL
- MW-8401 EL. 654.0 — BACKGROUND BEDROCK GW MONITORING WELL
- OW-8403 EL. 644.1 — WATER LEVEL OBSERVATION WELL

NOTES:

1. THE TOPOGRAPHY AND PLANIMETRICS SHOWN ON THIS DRAWING HAVE BEEN COMPILED BY KUCERA INTERNATIONAL, INC. USING PHOTOGRAMMETRIC METHODS FROM AERIAL PHOTOGRAPHY DATED FEBRUARY 4, 2010. TOPOGRAPHY WAS SUPPLEMENTED WITH SURVEY FROM WILLSON ASSOCIATES ON 11/13/17, 11/24/17, 12/21/17, AND 12/19/19.
2. VERTICAL CONTROL IS THE GREENIDGE STATION PLANT DATUM. HORIZONTAL CONTROL IS REFERENCED TO THE NEW YORK STATE GRID NAD 83.
3. TOP OF BEDROCK CONTOURS GENERATED BY DAIGLER ENGINEERING, PC USING BORING AND WELL INSTALLATION LOGS SUPPLIED BY LOCKWOOD HILLS LLC.



NO.	REVISION	BY	DATE

DAIGLER ENGINEERING, P.C.
CIVIL & GEO-ENVIRONMENTAL ENGINEERING
2620 GRAND ISLAND BLVD. (716) 773-6872
GRAND ISLAND, NEW YORK 14072 (716) 773-6873 FAX
DAVID A. LENOX, P.E.
NYSPE NO. 093384

DATE: August 2020

100' 0' 100'

PREPARED FOR:	LOCKWOOD HILLS LLC		
DES. BY:	DRW. BY:	CHK. BY:	
DWG.	PD-2 Top of Rock Surface Plan.dwg		

GENERALIZED TOP OF BEDROCK

PART 360 SERIES PERMIT RENEWAL / MODIFICATION APPLICATION

TOWN OF TORREY | YATES COUNTY | STATE OF NEW YORK

PD-2

G:\Lockwood Hills LLC\31-1619 Consent Order 2019\Part 360 Permit Modification Application\Drawings\Part 360 Permit Mod DWGs\PD-2 Top of Rock Surface Plan.dwg 8/5/2020 10:08 AM

LEGEND:

- GROUND SURFACE 10' CONTOUR
- GROUND SURFACE 2' CONTOUR
- BEDROCK HIGH GROUNDWATER MAJOR CONTOUR
- GLACIAL TILL SEASONAL HIGH GROUNDWATER MAJOR CONTOUR
- PAVED ROAD
- UNPAVED ROAD
- FENCE
- LIMIT OF EXISTING WASTE
- PERMITTED LIMIT OF WASTE
- PROPERTY BOUNDARY
- GROUNDWATER WELL
- OVERHEAD POWER LINES AND POLES
- LEACHATE SEWER AND MANHOLE
- NATURAL GAS LINE
- UNDERGROUND TELEPHONE LINE
- DRAINAGE CHANNEL
- ROCK-LINED CHANNEL
- ASPHALT LINED CHANNEL
- CULVERT
- TREELINE
- GROUNDWATER DRAIN

SEASONAL HIGH GROUNDWATER (SHGW) DATA POINTS
- GROUNDWATER OBSERVATION WELL
- DOWNGRADIENT BEDROCK GROUNDWATER MONITORING WELL
- DOWNGRADIENT GLACIAL TILL GROUNDWATER MONITORING WELL
- BACKGROUND GLACIAL TILL GROUNDWATER MONITORING WELL
- BACKGROUND BEDROCK GROUNDWATER MONITORING WELL

NOTES:

1. THE TOPOGRAPHY AND PLANIMETRICS SHOWN ON THIS DRAWING HAVE BEEN COMPILED BY KUCERA INTERNATIONAL, INC. USING PHOTOGRAMMETRIC METHODS FROM AERIAL PHOTOGRAPHY DATED FEBRUARY 4, 2010. TOPOGRAPHY WAS SUPPLEMENTED WITH SURVEY FROM WILLSON ASSOCIATES ON 11/13/17, 11/24/17, 12/21/17, AND 12/19/19.
2. VERTICAL CONTROL IS THE GREENIDGE STATION PLANT DATUM. HORIZONTAL CONTROL IS REFERENCED TO THE NEW YORK STATE GRID NAD 83.
3. SEASONAL HIGH GLACIAL TILL GROUNDWATER ELEVATIONS WERE MEASURED ON JANUARY 20, 2014 DURING QUARTERLY ENVIRONMENTAL MONITORING. SEASONAL HIGH BEDROCK GROUNDWATER ELEVATIONS WERE MEASURED ON APRIL 7, 2014 DURING QUARTERLY ENVIRONMENTAL MONITORING.

NO.	REVISION	BY	DATE

DAIGLER ENGINEERING, P.C.
CIVIL & GEO-ENVIRONMENTAL ENGINEERING
2620 GRAND ISLAND BLVD. (716) 773-6872
GRAND ISLAND, NEW YORK 14072 (716) 773-6873 FAX
DAVID A. LENOX, P.E. NYSPE NO. 093384

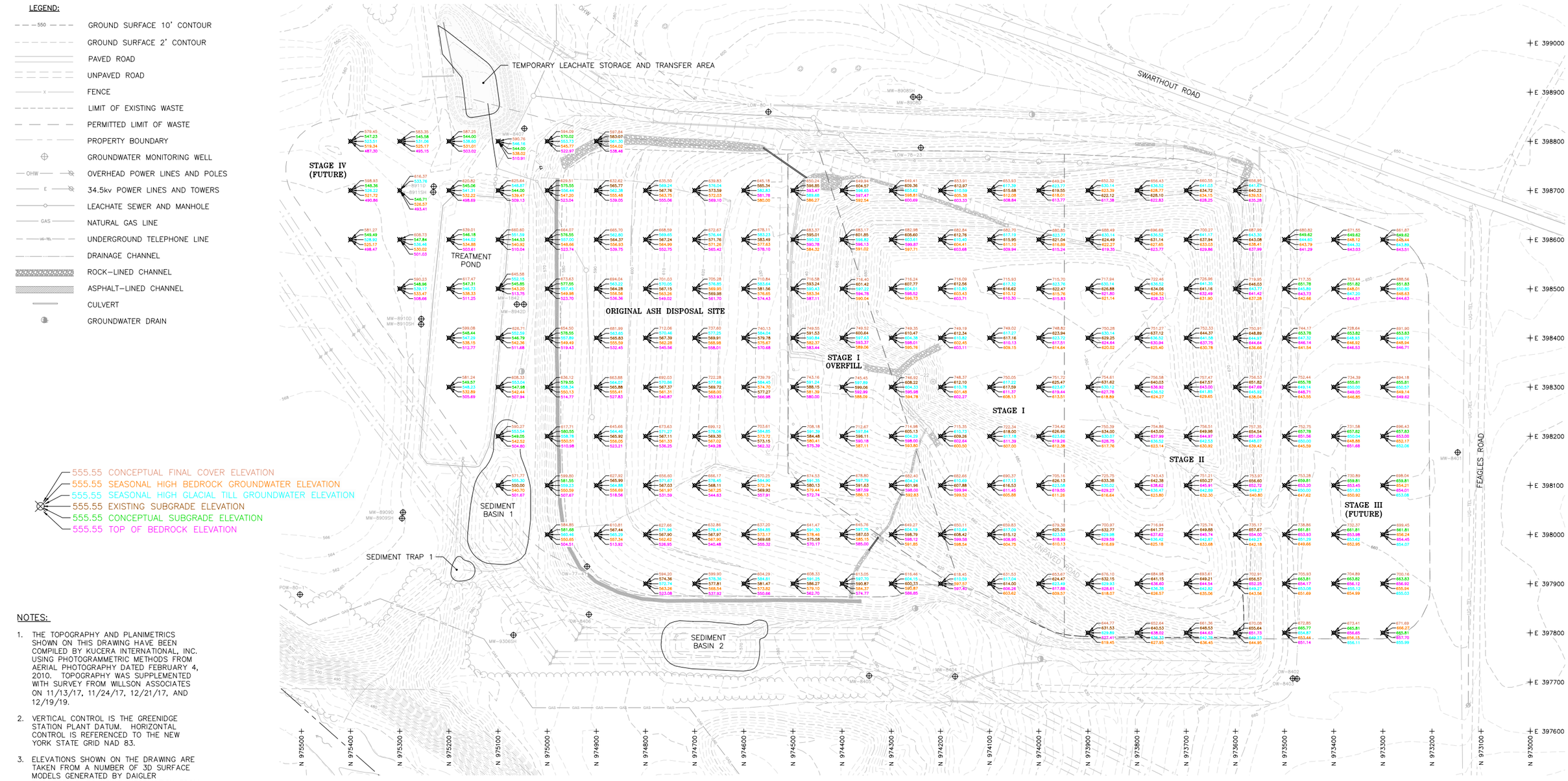
DATE: August 2020

100' 0' 100'

PREPARED FOR: LOCKWOOD HILLS LLC			BEDROCK AND GLACIAL TILL SEASONAL HIGH GROUNDWATER
DES. BY:	DRW. BY:	CHK. BY:	PART 360 SERIES PERMIT RENEWAL / MODIFICATION APPLICATION
DWG. PD-3 Bedrock and Glacial Till Seasonal High Groundwater.dwg	TOWN OF TORREY	YATES COUNTY	STATE OF NEW YORK

PD-3

G:\Lockwood Hills LLC\31-1619 Consent Order 2019\Part 360 Permit Modification Application\Drawings\Part 360 Permit Mod DWGs\PD-3 Bedrock and Glacial Till Seasonal High Groundwater.dwg 8/5/2020 10:11 AM



NOTES:

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2. VERTICAL CONTROL IS THE GREENIDGE STATION PLANT DATUM. HORIZONTAL CONTROL IS REFERENCED TO THE NEW YORK STATE GRID NAD 83.
3. ELEVATIONS SHOWN ON THE DRAWING ARE TAKEN FROM A NUMBER OF 3D SURFACE MODELS GENERATED BY DAIGLER ENGINEERING, PC USING INFORMATION FROM BORING AND WELL INSTALLATION LOGS, AND QUARTERLY MONITORING MEASUREMENTS SUPPLIED BY LOCKWOOD HILLS LLC.

NO.	REVISION	BY	DATE

DAIGLER ENGINEERING, P.C.
CIVIL & GEO-ENVIRONMENTAL ENGINEERING
2620 GRAND ISLAND BLVD. GRAND ISLAND, NEW YORK 14072
(716) 773-6872 (716) 773-6873 FAX
DAVID A. LENOX, P.E.
NYSPE NO. 093384

DATE: August 2020

100' 0' 100'

PREPARED FOR: LOCKWOOD HILLS LLC			GRID MAP
DES. BY:	DRW. BY:	CHK. BY:	PART 360 SERIES PERMIT RENEWAL / MODIFICATION APPLICATION
DWG. PD-4 Grid Map.dwg			TOWN OF TORREY / YATES COUNTY / STATE OF NEW YORK

PD-4

LEGEND:

- GROUND SURFACE 10' CONTOUR
- GROUND SURFACE 2' CONTOUR
- PAVED ROAD
- UNPAVED ROAD
- FENCE
- LIMIT OF WASTE (SEE NOTE 9)
- PROPERTY BOUNDARY
- GROUNDWATER MONITORING WELL
- OVERHEAD POWER LINES AND POLES
- 34.5kv POWER LINES AND TOWERS
- LEACHATE SEWER AND MANHOLE
- PRIMARY LEACHATE COLLECTION PIPE
- NATURAL GAS LINE
- UNDERGROUND TELEPHONE LINE
- DRAINAGE CHANNEL
- CULVERT
- GROUNDWATER DRAIN

NOTES:

1. THE TOPOGRAPHY AND PLANIMETRICS SHOWN ON THIS DRAWING HAVE BEEN COMPILED BY KUCERA INTERNATIONAL, INC. USING PHOTOGRAMMETRIC METHODS FROM AERIAL PHOTOGRAPHY DATED FEBRUARY 4, 2010. TOPOGRAPHY WAS SUPPLEMENTED WITH SURVEY FROM WILLSON ASSOCIATES ON 11/13/17, 11/24/17, 12/21/17, AND 12/19/19.
2. VERTICAL CONTROL IS THE GREENIDGE STATION PLANT DATUM. HORIZONTAL CONTROL IS REFERENCED TO THE NEW YORK STATE GRID NAD 83.
3. THE TOPOGRAPHIC INFORMATION SHOWN INSIDE THE LIMIT OF WASTE, FOR STAGE I AND STAGE II WAS OBTAINED FROM RECORD SURVEY GRADE AND ELEVATION DATA FOR THE TOP OF SUBGRADE PREPARED BY NEW YORK STATE ELECTRIC AND GAS, BINGHAMTON, NEW YORK LOCKWOOD ASH SITE 89/90 EXTENSION, DRAWING NO. GD-20416, AND LOCKWOOD ASH SITE 91/92 EXTENSION, DRAWING NO. GE-030945, AND IS APPROXIMATE. THE CONTOUR LINES SHOWN WITHIN THE OADS OVERFILL REPRESENT THE CONCEPTUAL SUBGRADE SURFACE FOR THE FUTURE OVERFILL LINER SYSTEM. THE PROPOSED PRIMARY LEACHATE COLLECTION PIPES ARE SHOWN FOR INFORMATIVE PURPOSES THE PROPOSED PRIMARY LEACHATE COLLECTION PIPES WILL BE PLACED ABOVE THE PRIMARY GEOMEMBRANE LAYER WITHIN THE OVERFILL DOUBLE COMPOSITE LINER SYSTEM. THE PROPOSED SECONDARY LEACHATE COLLECTION SYSTEM WILL BE PLACED ABOVE THE SECONDARY SOIL LINER LAYER WITHIN THE OVERFILL DOUBLE COMPOSITE LINER SYSTEM. THE OVERFILL LINER SYSTEM TRANSITION TO THE STAGE I OVERFILL LINER DETAIL IS SHOWN ON PD-8.
4. LOCATION AND LENGTH OF THE STAGE I PRIMARY LEACHATE PIPE WERE OBTAINED FROM RECORD DRAWINGS PREPARED BY NEW YORK STATE ELECTRIC AND GAS, BINGHAMTON, NEW YORK, DRAWING NO. GD-20415, LEACHATE UNDERDRAIN & UNDERGROUND RELIEF DRAINAGE SYSTEMS FOR THE LOCKWOOD ASH SITE 89/90 EXTENSION.
5. LOCATION AND LENGTH OF THE STAGE II PRIMARY LEACHATE PIPE WERE OBTAINED FROM RECORD DRAWINGS PREPARED BY NEW YORK STATE ELECTRIC AND GAS, BINGHAMTON, NEW YORK, DRAWING NO. GE-030946, ASBUILT LEACHATE UNDERDRAIN AND GROUNDWATER RELIEF DRAINAGE SYSTEM FOR THE LOCKWOOD ASH SITE 91/92 EXTENSION.
6. THE CONTOUR LINES SHOWN WITHIN STAGE III AND STAGE IV REPRESENT THE CONCEPTUAL SUBGRADE SURFACE FOR THE FUTURE BASELINER SYSTEM. THE PROPOSED PRIMARY LEACHATE COLLECTION PIPES ARE SHOWN FOR INFORMATIVE PURPOSES. THE PROPOSED PRIMARY LEACHATE COLLECTION PIPES WILL BE PLACED ABOVE THE PRIMARY GEOMEMBRANE LAYER WITHIN THE BASELINER SYSTEM. THE PROPOSED SECONDARY LEACHATE COLLECTION SYSTEM WILL BE PLACED ABOVE THE SECONDARY SOIL LINER LAYER WITHIN THE BASELINER SYSTEM, APPROXIMATELY TWO FEET ABOVE THE SUBGRADE LAYER. THE PRIMARY AND SECONDARY LEACHATE COLLECTION SYSTEM IS SHOWN ON THE DOUBLE COMPOSITE LINER SYSTEM DETAILS ON PD-8.
7. BEDROCK WITHIN TEN FEET OF THE SUBGRADE IN STAGE III SHALL BE OVER EXCAVATED AND REPLACED WITH ONSITE SOILS TO ACHIEVE TEN FEET OF VERTICAL SEPARATION BETWEEN THE BASE OF THE LINER SYSTEM AND THE TOP OF BEDROCK.
8. THE ENTIRE PERMITTED LIMIT OF WASTE IS SHOWN FOR CLARITY.
9. THE STAGE I OVERFILL CLEANOUTS AND THE OADS LEACHATE COLLECTION SYSTEM MANHOLES SHALL BE EXTENDED ABOVE THE FINAL COVER ELEVATIONS.

NO.	REVISION	BY	DATE

DAIGLER ENGINEERING, P.C.
CIVIL & GEO-ENVIRONMENTAL ENGINEERING
2620 GRAND ISLAND BLVD. (716) 773-6872
GRAND ISLAND, NEW YORK 14072 (716) 773-6873 FAX
DAVID A. LENOX, P.E.
NYSPE NO. 093384

PRELIMINARY NOT FOR CONSTRUCTION

DATE: August 2020

150' 0' 150'

PREPARED FOR: LOCKWOOD HILLS, LLC			CONCEPTUAL SUBGRADE PLAN
DES. BY:	DRW. BY:	CHK. BY:	PART 360 SERIES PERMIT RENEWAL / MODIFICATION APPLICATION
DWG. PD-5 Conceptual Subgrade Plan.dwg	TOWN OF TORREY	YATES COUNTY	STATE OF NEW YORK

PD-5

Q:\Lockwood Hills LLC\31-1619 Consent Order 2019\Part 360 Permit Modification Application\Drawings\Part 360 Permit Mod DWGs\PD-5 Conceptual Subgrade Plan.dwg 8/5/2020 10:22 AM

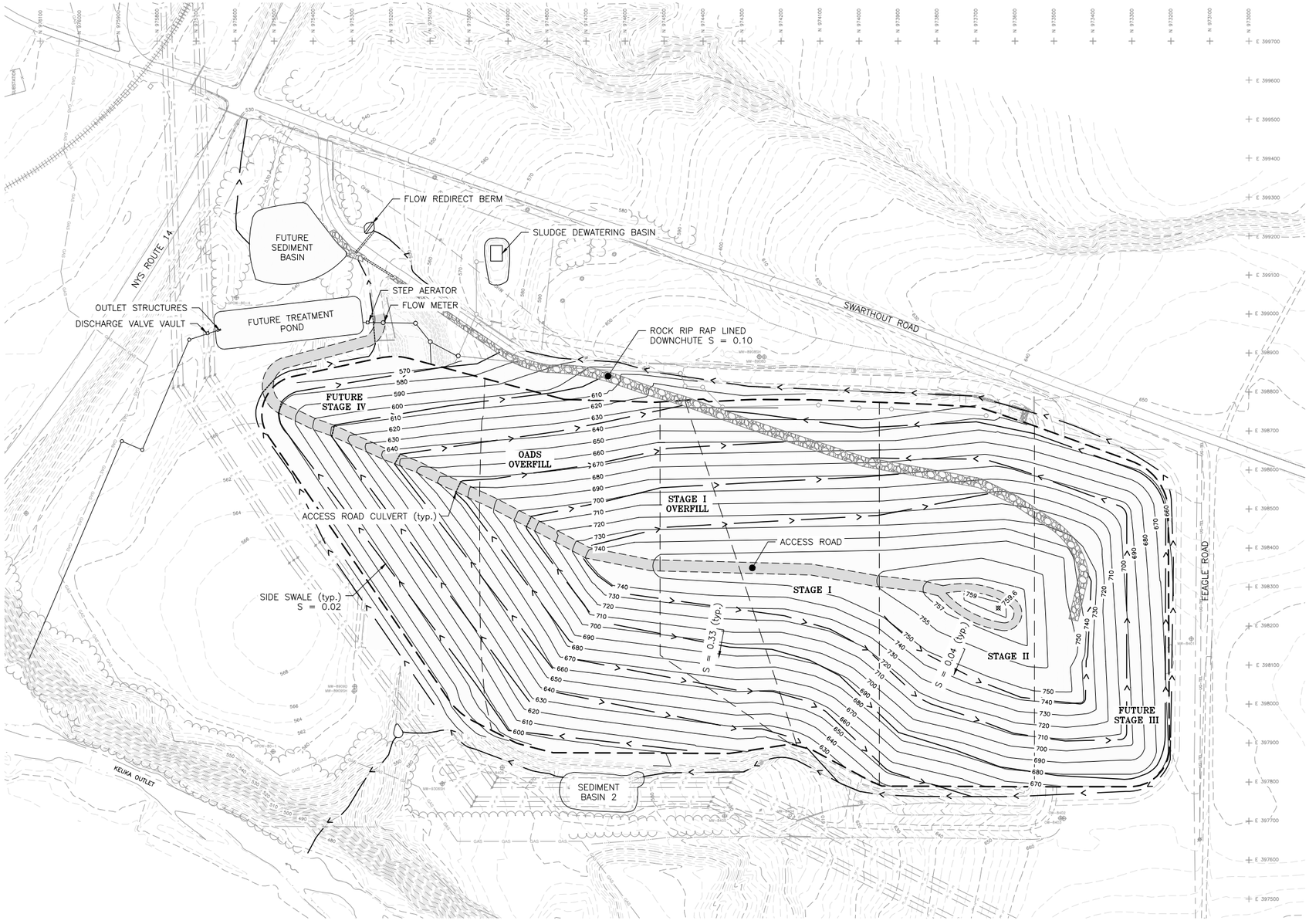
LEGEND:

- GROUND SURFACE 10' CONTOUR
- GROUND SURFACE 2' CONTOUR
- CONCEPTUAL FINAL COVER CONTOUR
- PAVED ROAD
- UNPAVED ROAD
- FENCE
- PERMITTED LIMIT OF WASTE
- PROPERTY BOUNDARY
- GROUNDWATER MONITORING WELL
- OVERHEAD POWER LINES AND POLES
- 34.5kv POWER LINES AND TOWERS
- LEACHATE SEWER AND MANHOLE
- NATURAL GAS LINE
- UNDERGROUND TELEPHONE LINE
- DRAINAGE CHANNEL
- ROCK-LINED CHANNEL
- CULVERT
- GROUNDWATER DRAIN
- PROPOSED DRAINAGE SWALE OR PERIMETER CHANNEL
- TREELINE
- RAILROAD TRACKS

NOTES:

1. THE TOPOGRAPHY AND PLANIMETRICS SHOWN ON THIS DRAWING HAVE BEEN COMPILED BY KUCERA INTERNATIONAL, INC. USING PHOTOGRAMMETRIC METHODS FROM AERIAL PHOTOGRAPHY DATED FEBRUARY 4, 2010. TOPOGRAPHY WAS SUPPLEMENTED WITH SURVEY FROM WILLSON ASSOCIATES ON 11/13/17, 11/24/17, 12/21/17, AND 12/19/19.

2. VERTICAL CONTROL IS THE GREENIDGE STATION PLANT DATUM. HORIZONTAL CONTROL IS REFERENCED TO THE NEW YORK STATE GRID NAD 83.



NO.	REVISION	BY	DATE

DAIGLER ENGINEERING, P.C.
CIVIL & GEO-ENVIRONMENTAL ENGINEERING
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DAVID A. LENOX, P.E.
NYSPE NO. 093384

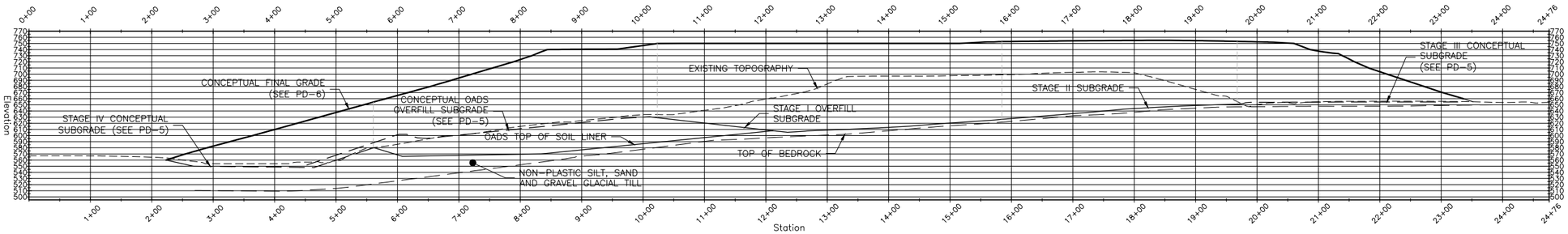
DATE: August 2020

PRELIMINARY NOT FOR CONSTRUCTION

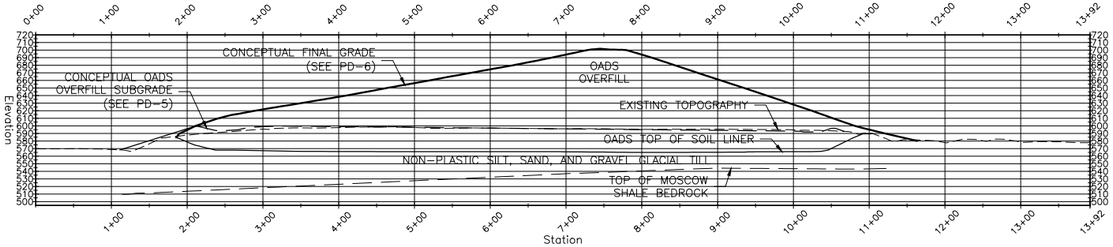
150' 0' 150'

PREPARED FOR: LOCKWOOD HILLS LLC			CONCEPTUAL FINAL COVER AND DRAINAGE PLAN PART 360 SERIES PERMIT RENEWAL / MODIFICATION APPLICATION
DES. BY:	DRW. BY:	CHK. BY:	PD-6
DWG. PD-6 Conceptual Final Cover & Drainage Plan.dwg	TOWN OF TORREY	YATES COUNTY / STATE OF NEW YORK	

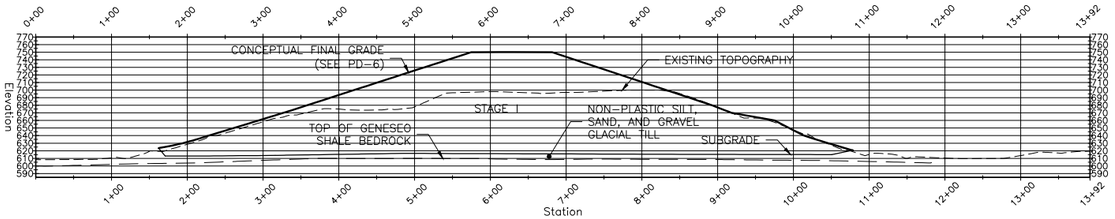
Q:\Lockwood Hills LLC\31-1619 Consent Order 2019\Part 360 Permit Modification Application\Drawings\Part 360 Permit Mod DWGs\PD-6 Conceptual Final Cover & Drainage Plan.dwg 9/5/2020 10:28 AM



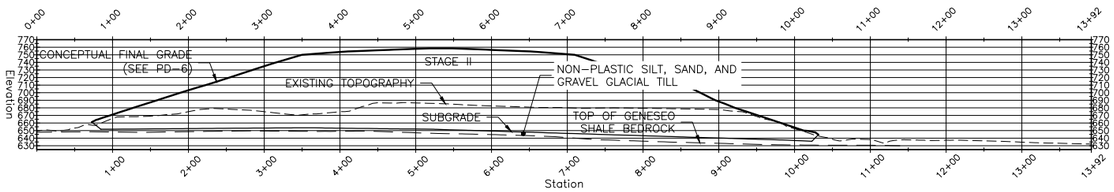
PROFILE VIEW A–A
SCALE: 1"=100'



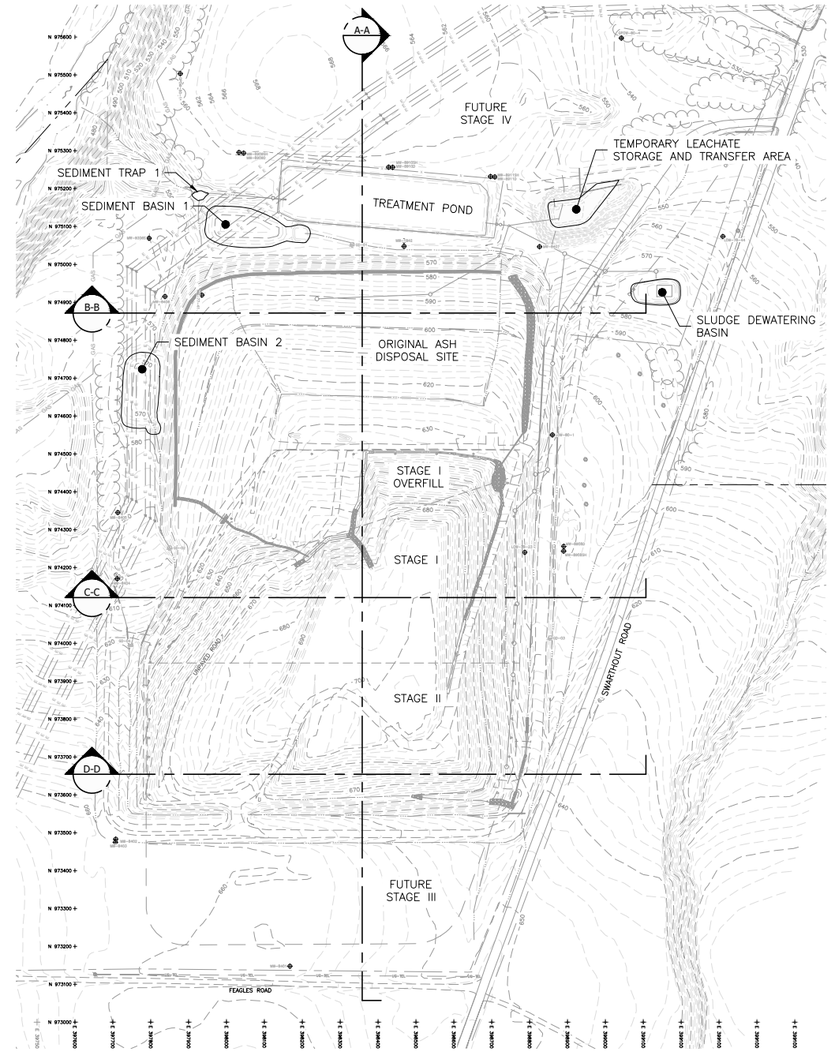
PROFILE VIEW B–B
SCALE: 1"=100'



PROFILE VIEW C–C
SCALE: 1"=100'



PROFILE VIEW D–D
SCALE: 1"=100'



KEY MAP
SCALE: 1"=200'

NO.	REVISION	BY	DATE

ALTERATION OF ANY SURVEY, DRAWING, DESIGN, SPECIFICATION OR REPORT MUST BE COMPLETED IN ACCORDANCE WITH SECTION 7209 PROVISION 2 OF THE NEW YORK STATE EDUCATION LAW.

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NYSPE NO. 093384

DATE: August 2020

PLOTTED HALF–SCALE

PRELIMINARY NOT FOR CONSTRUCTION

SCALE: NOTED

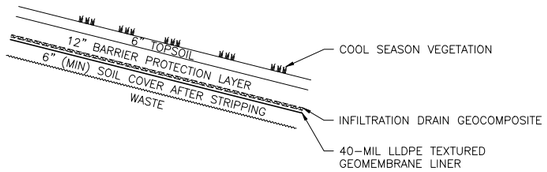
PREPARED FOR:	LOCKWOOD HILLS LLC		
DES. BY:	DRW. BY:	CHK. BY:	
DWG.	PD-7 Cross Sections.dwg		

CONCEPTUAL LANDFILL CROSS SECTIONS

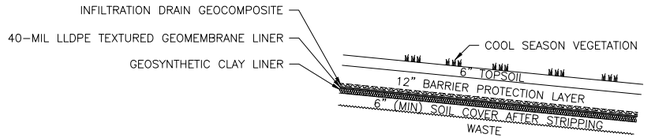
PART 360 SERIES PERMIT RENEWAL / MODIFICATION APPLICATION

TOWN OF TORREY | YATES COUNTY | STATE OF NEW YORK

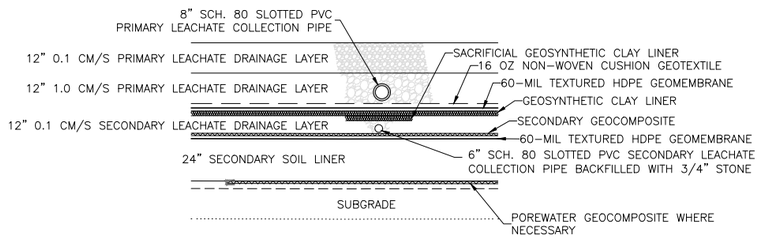
PD-7



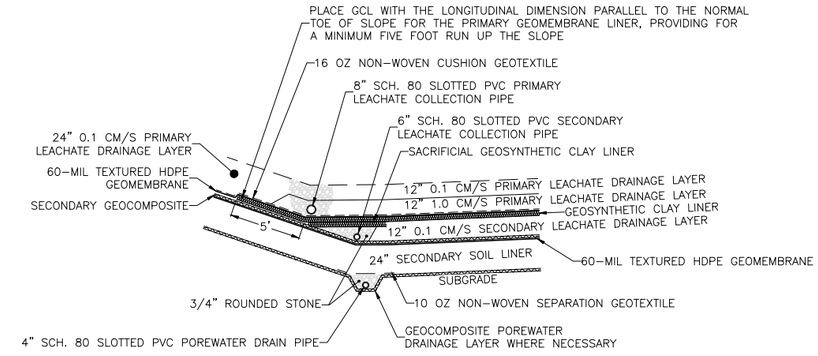
FINAL COVER SLOPES > 25%
SCALE: NOT TO SCALE



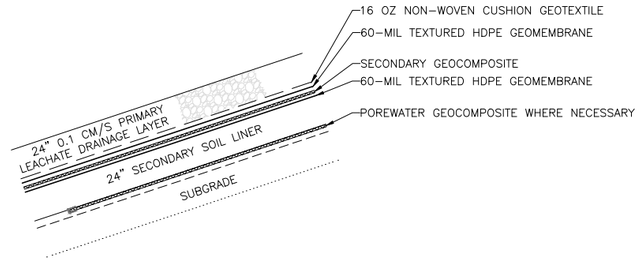
FINAL COVER SLOPES < 25% TO 4% (MIN.)
SCALE: NOT TO SCALE



DOUBLE COMPOSITE LINER SYSTEM ON SLOPES < 10%
SCALE: NOT TO SCALE



DOUBLE COMPOSITE LINER SYSTEM AT TOE OF SLOPE
SCALE: NOT TO SCALE



DOUBLE COMPOSITE LINER SYSTEM ON SLOPES > 10%
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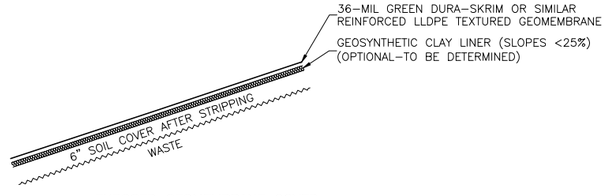
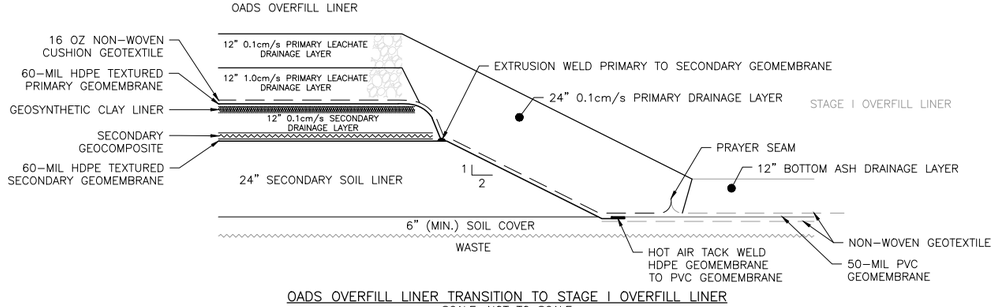


EXPOSED GEOMEMBRANE COVER
SCALE: NOT TO SCALE



OADS OVERFILL LINER TRANSITION TO STAGE I OVERFILL LINER
SCALE: NOT TO SCALE

GENERAL NOTES:

1. FINAL COVER, EXPOSED GEOMEMBRANE COVER AND DOUBLE COMPOSITE BASELINER SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE STAGE SPECIFIC CONSTRUCTION DRAWINGS AND LOCKWOOD CQA/CQC PLAN TO BE SUBMITTED AT LEAST NINETY (90) DAYS PRIOR TO BEGINNING CONSTRUCTION FOR REVIEW AND APPROVAL.
2. PRIOR TO CONSTRUCTION, THE SHEAR STRENGTH OF ALL CRITICAL SOIL AND GEOSYNTHETIC INTERFACES MUST BE DETERMINED BY LABORATORY TESTING AS DESCRIBED IN APPENDIX D INTERFACE SHEAR TESTING PROTOCOL INCLUDED IN THE LOCKWOOD CQA/CQC PLAN.
3. THE MINIMUM INTERFACE SHEAR STRENGTH SHALL BE NO LESS THAN AS IS DETERMINED BY THE STABILITY ANALYSIS TO BE COMPLETED FOR STAGE SPECIFIC CONSTRUCTION DESIGN.
4. THE EXPOSED GEOMEMBRANE COVER MUST BE SUFFICIENTLY ANCHORED TO PREVENT WIND UPLIFT. ANCHORING WILL BE ACCOMPLISHED THROUGH A COMBINATION OF MECHANICAL ANCHORING SYSTEMS (E.G. WIND DEFENDER), ANCHOR TRENCHES, STORMWATER DRAINAGE FEATURES, AND PLACEMENT OF THE ACCESS ROAD WEARING SURFACE.

NO.	REVISION	BY	DATE

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DAVID A. LENOX, P.E.
NYSPE NO. 093384

DATE: August 2020

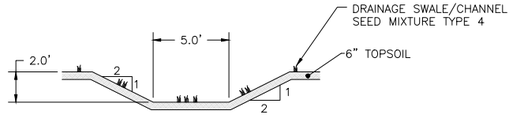
SCALE: NOTED

PLOTTED HALF-SCALE

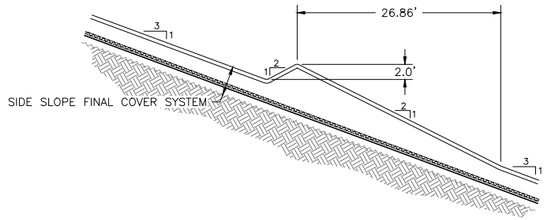
PRELIMINARY NOT FOR CONSTRUCTION

PREPARED FOR: LOCKWOOD HILLS LLC			LINER AND LEACHATE COLLECTION SYSTEM DETAILS
DES. BY:	DRW. BY:	CHK. BY:	PART 360 SERIES PERMIT RENEWAL / MODIFICATION APPLICATION
DWG. PD-8 Liner and Leachate Collection System Details.dwg	TOWN OF TORREY	YATES COUNTY	STATE OF NEW YORK

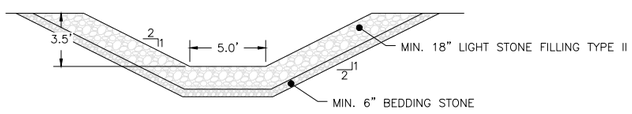
PD-8



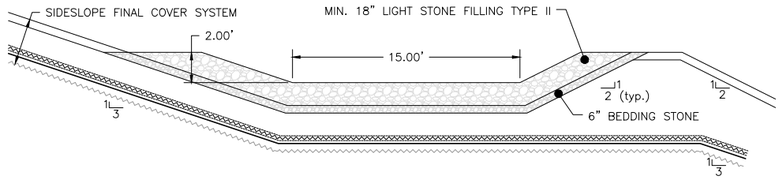
TYPICAL FUTURE PERIMETER CHANNEL SECTION
SCALE: NOT TO SCALE



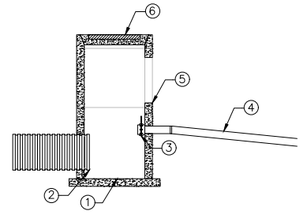
TYPICAL FINAL COVER SIDESWALE DETAIL
SCALE: NOT TO SCALE



TYPICAL CHANNEL TO FUTURE SEDIMENT BASIN SECTION
SCALE: NOT TO SCALE



ROCK RIP-RAP LINED DOWNCHUTE DETAIL
SCALE: NOT TO SCALE



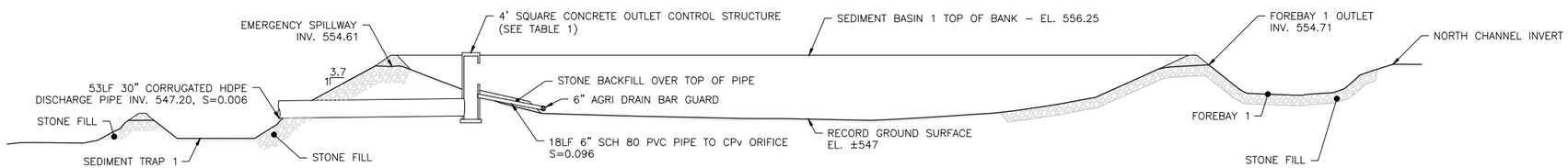
EXISTING SEDIMENT BASIN 1 OUTLET CONTROL STRUCTURE DETAIL
SCALE: NOT TO SCALE

TABLE 1 – SEDIMENT BASIN 1 OUTLET CONTROL STRUCTURE DETAILS

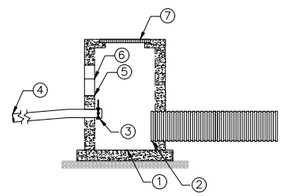
ITEM	DESCRIPTION	MATERIAL	SIZE	ELEVATION
1	INSIDE BASE	CONCRETE	4'X4'	547.03
2	DISCHARGE PIPE	CORRUGATED HDPE	30" DIA	INLET INV. 547.52
3	CPv ORIFICE	STEEL	3" DIA	INV. 550.11
4	PIPE TO CPv ORIFICE	SCH 80 PVC	6" DIA	INLET INV. 548.42
5	Qp10 & Qf100 WEIR	CONCRETE	2.8' WIDE	552.05
6	TOP GRATE	STEEL	2.2'X2.2'	556.61

LIGHT STONE FILLING TYPE II

STONE SIZE	PERCENT BY WEIGHT
HEAVIER THAN 100lbs	40–100
LARGER THAN 12"	50–100
SMALLER THAN 6"	0– 10



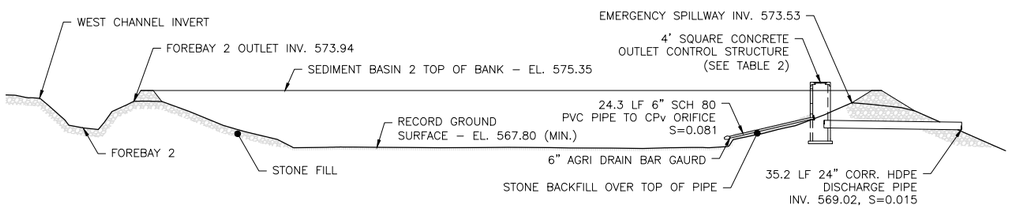
EXISTING SEDIMENT BASIN 1 PROFILE VIEW
SCALE: NOT TO SCALE



EXISTING SEDIMENT BASIN 2 OUTLET CONTROL STRUCTURE DETAIL
SCALE: NOT TO SCALE

TABLE 2 – SEDIMENT BASIN 2 OUTLET CONTROL STRUCTURE DETAILS

ITEM	DESCRIPTION	MATERIAL	SIZE	ELEVATION
1	INSIDE BASE	CONCRETE	4'x4'	568.54
2	DISCHARGE PIPE	CORRUGATED HDPE	24" DIA	INLET INV. 569.02
3	CPv ORIFICE	STEEL	2.3" DIA	INV. 571.05
4	PIPE TO CPv ORIFICE	SCH 80 PVC	6" DIA	INLET INV. 569.5
5	Qp10 WEIR	CONCRETE	0.8' WIDE	572.08
6	Qf100 WEIR	CONCRETE	4.0' WIDE	573.18
7	TOP GRATE	STEEL	2.2'x2.2'	575.89



EXISTING SEDIMENT BASIN 2 PROFILE VIEW
SCALE: NOT TO SCALE

NO.	REVISION	BY	DATE

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DAVID A. LENOX, P.E.
NYSPE NO. 093384

DATE: August 2020

PRELIMINARY NOT FOR CONSTRUCTION

SCALE: NOTED

PREPARED FOR: LOCKWOOD HILLS LLC			STORMWATER MANAGEMENT SYSTEM DETAILS
DES. BY:	DRW. BY:	CHK. BY:	PART 360 SERIES PERMIT RENEWAL / MODIFICATION APPLICATION
DWG. PD-9 Conceptual Stormwater Collection System Details.dwg	TOWN OF TORREY	YATES COUNTY	STATE OF NEW YORK

PD-9

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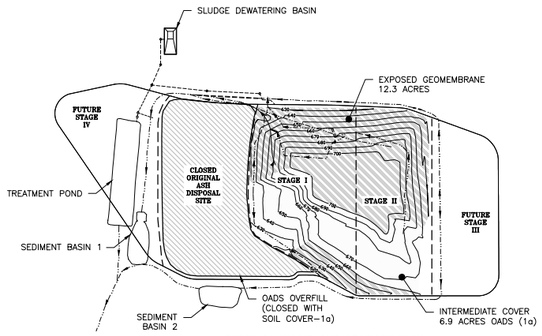
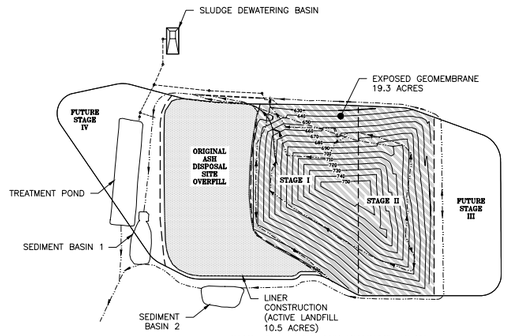


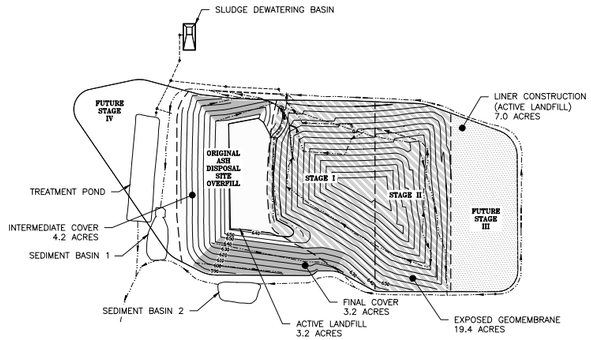
PHASE 1a FILLING AND DRAINAGE PLAN

PHASE 1a (CURRENT LANDFILL, AS OPERATING)
ACTIVE LANDFILL = 0.0 ACRES
INTERMEDIATE COVER = 7.0 ACRES
CLOSED SOIL COVER = 10.5 ACRES
EXPOSED GEOMEMBRANE = 12.3 ACRES
TOTAL = 29.8 ACRES



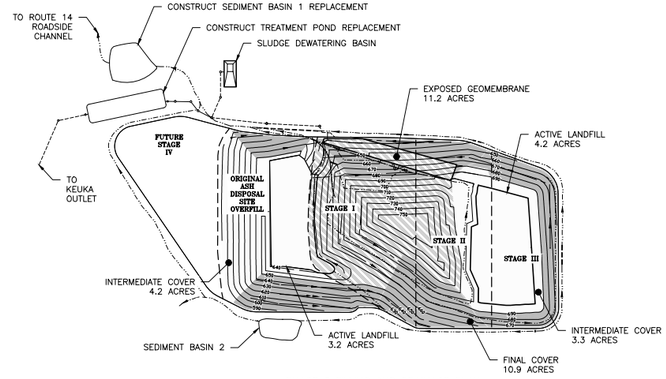
PHASE 1b FILLING AND DRAINAGE PLAN

PHASE 1b (ACTIVE LANDFILL OF OADS OVERFILL)
ACTIVE LANDFILL = 10.5 ACRES
EXPOSED GEOMEMBRANE = 19.3 ACRES
TOTAL = 29.8 ACRES



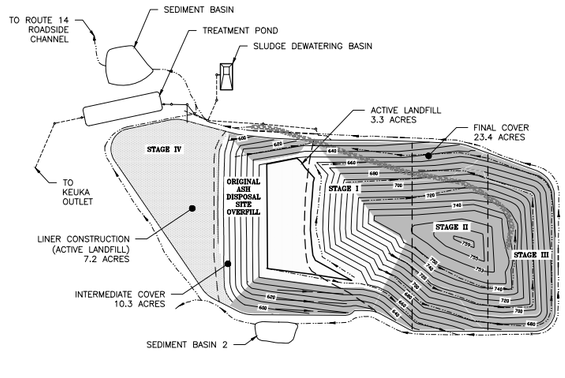
PHASE 2 FILLING AND DRAINAGE PLAN

PHASE 2
ACTIVE LANDFILL = 10.2 ACRES
EXPOSED GEOMEMBRANE = 19.4 ACRES
INTERMEDIATE COVER = 4.2 ACRES
FINAL COVER = 3.2 ACRES
TOTAL = 37.0 ACRES



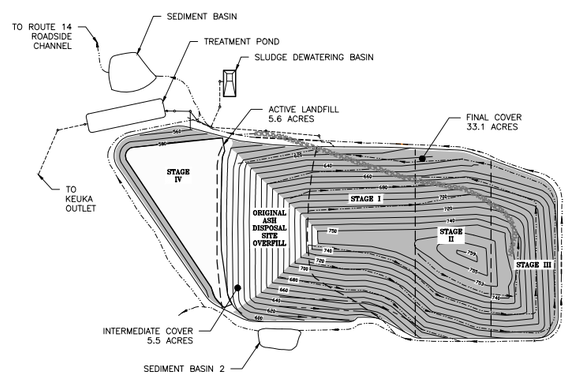
PHASE 3 FILLING AND DRAINAGE PLAN

PHASE 3
ACTIVE LANDFILL = 7.4 ACRES
INTERMEDIATE COVER = 7.5 ACRES
EXPOSED GEOMEMBRANE = 11.2 ACRES
FINAL COVER = 10.9 ACRES
TOTAL = 37.0 ACRES



PHASE 4 FILLING AND DRAINAGE PLAN

PHASE 4
ACTIVE LANDFILL = 10.5 ACRES
INTERMEDIATE COVER = 10.3 ACRES
FINAL COVER = 23.4 ACRES
TOTAL = 44.2 ACRES



PHASE 5 FILLING AND DRAINAGE PLAN

PHASE 5
ACTIVE LANDFILL = 5.6 ACRES
INTERMEDIATE COVER = 5.5 ACRES
FINAL COVER = 33.1 ACRES
TOTAL = 44.2 ACRES

LEGEND:

- FINAL COVER
- CLOSED – SOIL COVER
- LINER CONSTRUCTION
- EXPOSED GEOMEMBRANE
- LEACHATE TRANSFER PIPE AND MANHOLE
- STORMWATER CHANNEL

NOTE:
SEE PD-7 FOR PHASE 6/CONCEPTUAL FINAL COVER AND DRAINAGE PLAN

NO.	REVISION	BY	DATE

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DAVID A. LENOX, P.E.
NYSPE NO. 093384

DATE: August 2020

PRELIMINARY
NOT FOR
CONSTRUCTION

SCALE: NOT TO SCALE

PREPARED FOR:	LOCKWOOD HILLS LLC		
DES. BY:	DRW. BY:	CHK. BY:	
DWG.	PD-10 Fill Progression Plan.dwg		

FILL PROGRESSION PLAN
PART 360 SERIES PERMIT RENEWAL / MODIFICATION APPLICATION

TOWN OF TORREY | YATES COUNTY | STATE OF NEW YORK

PD-10

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APPENDIX 1

Operations and Maintenance Plan Attachments

- **Attachment 1 – Monthly Site Inspection Form**
- **Attachment 2 – Daily Self Inspection Form**
- **Attachment 3 – Personnel Training Program**
- **Attachment 4 – Training Documentation Form**

ATTACHMENT 1

Monthly Site Inspection Form

LOCKWOOD HILLS LLC

LOCKWOOD ASH DISPOSAL SITE
MONTHLY SITE INSPECTION

Inspector:_____ Date:_____ Time:_____

Weather Conditions: _____

OK = Condition Met NA = Not Applicable/Not Observed CA = Corrective Action Required

Note: For any items marked CA, a description of the problem and its proposed or implemented resolution should be noted in the corrective action section of this form.

OK	NA	CA	
			FACILITY MANAGEMENT
_____	_____	_____	1. Required permits and operational records are filed in the Project Manager's Office at Greenidge Station (Part 360 Series permits to operate/construct, SPDES permit, Part 364 transport permits, stormwater permit, compaction tests, and routine, and monthly inspection records.
_____	_____	_____	2. Transport vehicles are marked in accordance with Part 364.6(b) and are covered during transit.
			OPERATIONAL CONTROL
_____	_____	_____	3. Dust is effectively controlled and does not constitute an off-site nuisance.
_____	_____	_____	4. Berms, dikes, and slopes are free of channeling, slumping, erosion, potentially damaging vegetation, and damage caused by wildlife.
_____	_____	_____	5. The sludge dewatering basin has at least one foot of freeboard and does not need to be emptied.
			WATER
_____	_____	_____	6. Solid waste and associated leachate is prevented from entering surface waters and/or groundwater.
_____	_____	_____	7. Leachate collection system appears to be functioning properly (no ponded water on active site, no obstructions in piping or manholes).
_____	_____	_____	8. Perimeter drainage ditches are sufficiently clear to allow water to flow freely.
_____	_____	_____	9. Treatment Pond is free of potentially damaging vegetation and banks exhibit no apparent damage from wildlife.
			ACCESS
_____	_____	_____	10. Access to site and sedimentation pond discharge mechanisms are controlled by means of fencing, gates, locks, or other suitable means.
_____	_____	_____	11. Access roads are passable and free of CCR, debris, and leachate.

LOCKWOOD HILLS LLC

LOCKWOOD ASH DISPOSAL SITE
MONTHLY SITE INSPECTION

WASTE HANDLING

_____	_____	_____	12. CCR are placed in accordance with operating procedures (10-foot maximum lifts, well-compacted, in designated areas).
_____	_____	_____	13. Only authorized material generated at Greenidge Station has been placed at the site. If authorized or permitted waste from another source has been placed, note source and quantity in the comment section.

MONITORING

_____	_____	_____	14. Monitoring wells and their surface seals are intact.

OTHER

_____	_____	_____	15. All required equipment is on-site and operational.
_____	_____	_____	16. Compaction tests have been performed during the last month. Note: If tests have been performed, dates and results should be listed in comment section.
_____	_____	_____	17. There are no apparent unsafe site or operational conditions.

CORRECTIVE ACTIONS
(Note Item #s)

_____

_____

_____

_____

_____

_____

OTHER COMMENTS
(Include compaction test dates and results, any known complaints, incidents, or violations)

_____

_____

_____

_____

_____

_____

_____
Signature of Inspector

ATTACHMENT 2

Daily Self Inspection Form

LOCKWOOD HILLS LLC

LOCKWOOD ASH DISPOSAL SITE
DAILY SELF INSPECTION

Date:_____ Time:_____ Inspector:_____

Weather:_____ Temperature: _____°F Wind: (Speed/Direction) _____

Site appearance - exterior: neatness? vector control? dust control?	GOOD	FAIR	POOR
Site appearance - interior: neatness? vector control? dust control?	GOOD	FAIR	POOR
Conditions of onsite roads: potholes? mud? dust? snow removal? unsafe conditions?	GOOD	FAIR	POOR
Conditions of offsite roads: mud? dust? signs of abnormal wear?	GOOD	FAIR	POOR
Condition of transport vehicles: Marked per Part 364.6(b); waste covered?	GOOD	FAIR	POOR
Site security conditions: gates, locks, fencing	GOOD	FAIR	POOR
Condition of monitoring wells	GOOD	FAIR	POOR
Condition of operating equipment; is equipment being operated correctly?	GOOD	FAIR	POOR
Condition of emergency equipment: first aid kits, spill kits, fire extinguishers	GOOD	FAIR	POOR
Condition of stormwater drainage system	GOOD	FAIR	POOR
Condition of cover system: erosion? cracks? leachate breakouts?	GOOD	FAIR	POOR
Condition of leachate collection system: ponded water? obstructions?	GOOD	FAIR	POOR
Condition of sludge dewatering basin	GOOD	FAIR	POOR
Waste handling operations: follow Facility Manual, Section 5; authorized waste	GOOD	FAIR	POOR

Inspection Observations:

_____

_____

_____

_____

_____

_____

Date/Description of any repairs/remedial actions required:

_____

_____

_____

_____

_____

_____

ATTACHMENT 3

Personnel Training Program

Personnel Training Program Outline

A well-defined training program can provide personnel with a structured and organized instruction program for the performance of their assigned duties during emergencies, contingencies, and standard operating conditions. This program includes instruction in various aspects of waste management procedures, as well as, inspection and maintenance procedures, emergency response procedures and the proper use of facility and personal protective and emergency equipment.

Training Program Outline

This training program provides basic on-the-job training instructions in the following areas:

- An introduction to the layout of the site and its waste handling methods;
- An overview of the contents of this Facility Manual;
- An overview of the proper handling procedures and safety concerns associated with the waste materials accepted and the equipment utilized onsite;
- Instruction in required inspection and maintenance procedures;
- Instruction on the use of safety and emergency equipment.
- An overview of the emergency response procedures, and the specific function of each employee during the implementation of this plan; and,
- A discussion on the importance placed on personnel safety and protection.

Technical Training Approaches

All new employees of the Operations Contractor will be trained on the job. As part of introductory training efforts, each new employee will be given a general tour. An explanation of the relationship between the employee's position and the operation of the Landfill will be provided. This will include a discussion of the waste disposal activities, and an overview of the nature of the overall site practices from solid waste handling and safety perspectives.

The importance of preventive and routine inspections and maintenance will be stressed, with particular emphasis placed on those duties the employee will perform in the job to which they are assigned. The employee will be informed about, and shown the location of, the emergency and

safety equipment available at the site, and scheduled for subsequent instruction in the use of any equipment requiring special training or explanation. He/she will also be informed about the procedures for responding to emergency conditions, including a fire and/or explosion, spill incident, or medical emergency. A copy of the Facility Manual and, any other pertinent facility information will be made available to any employee on request.

The employee will be questioned on the information pertinent to him contained in the Facility Manual, and the other facility information provided. This shall include a discussion of the permits, authorizations, and approvals required for proper operation of the facility. At the completion of this instruction session, the Operations Contractor's supervisor and the employee will document the training and maintain a copy of the records at the Station office.

The following sections provide specific details on the additional on-the-job training each employee will receive regarding the duties to which they are assigned.

Inspection & Maintenance Procedures

Each employee at the facility will be educated in the importance of both the preventive and routine maintenance inspections that are conducted at the facility.

As part of the training, each employee will be informed to be constantly aware of problems that may arise with the equipment used on a daily basis, and the activities performed. The employee will receive training regarding any inspections required for the equipment to be operated to ensure that if any problems are encountered, the employee will be able to easily recognize the problem and take immediate action.

Employees involved directly with the waste receiving and management aspects of the facility will learn the proper handling of each type of waste material along with the practical implementation of applicable regulatory guidelines. Emphasis will be continually placed on safe and proper waste handling. Employees will also be educated in proper fuel handling and equipment fueling procedures to prevent spills or other incidents.

Safety and first aid equipment inspections will be given special attention during the employee's instruction. Each individual will be impressed with the importance of keeping all site safety

equipment in good working condition. Procedures will be outlined for reporting any deficiencies the employee detects with his own or company equipment or when first aid supplies are low.

Emergency Response Procedures

Each facility employee will be trained in the proper and effective response procedures to potential emergency situations that may occur at the site.

Individuals will be informed of correct notification procedures in the event of a fire, explosion and/or release incident, including:

- Initiating the internal notification system;
- Notifying the Lockwood Project Manager; and
- Evacuating the area, if required.

Employees will be advised of the steps taken by the Lockwood Project Manager to continue the notification process, including the notification of fire and police departments, medical assistance, and state and local emergency response teams. An explanation of the Evacuation Plan for the facility will be provided. Specific conditions will be described under which the site should be abandoned.

Control measures will be thoroughly explained for possible incident occurrences, detailing precautions to be taken and remedial techniques to be used for the various types of equipment and materials at the facility. In conjunction with incident control measures, instructions for the use of all available fire-fighting, first aid, and safety equipment also will be given.

During these group and individual instruction sessions, employees will be given every opportunity to ask questions about the facility emergency response procedures. This will include the usage of available emergency and safety equipment, to ensure that each person has a clear understanding of the actions that should be taken in an emergency incident.

Record Keeping Practices

Documentation of the training that is provided to each facility employee will be recorded on the attached form and maintained on file in the Project Manager's office. This documentation will include a description of the type of training or instruction, basic information regarding the

employee receiving the instruction, the instructor, and the date of completion. This will serve as a record that the instruction was given and successfully completed by the employee.

Personnel Program Evaluation

The personnel training program will be evaluated periodically to determine the need for improvements or revisions.

Lockwood Hills LLC

Training Documentation Form

Name of Employee: _____

Name of Instructor: _____

Date of Completion: _____

Description of Training:

_____
_____
_____
_____
_____
_____
_____

I certify that the employee listed on this form has adequately completed the training described above.

Employee Signature: _____

Title: _____

Date: _____

I certify that the employee listed on this form has adequately completed the training described above.

Instructor Signature: _____

Title: _____

Date: _____

APPENDIX 2

Waste Control Plan Attachments

- **Attachment 1 – Daily Waste Receipt Log**
- **Attachment 2 – Unauthorized Waste Receipt Log**

ATTACHMENT 1

Daily Waste Receipt Log

Lockwood Hills LLC

Daily Waste Receipt Log

Date: _____ Time: _____ Employee: _____

Name of Waste Transporter: _____

NYSDEC Waste Hauler Permit No.: _____

Truck License Plate: _____

Driver's Name: _____

Origin of Waste: _____

Description of Waste: _____

Quantity and Type: _____

Placement Location: Using the figure on the back of this form, mark the grid cell(s) that correspond to the location where waste was deposited.

Were unauthorized wastes identified? Yes ___ No ___

If yes, complete an Unauthorized Waste Receipt Log and follow Section 5.3 of the Facility Manual.

Were wastes containing <20% solids content identified? Yes ___ No ___

If yes, was the waste deposited in the sludge dewatering basin? Yes ___ No ___

Comments:

_____

_____

_____

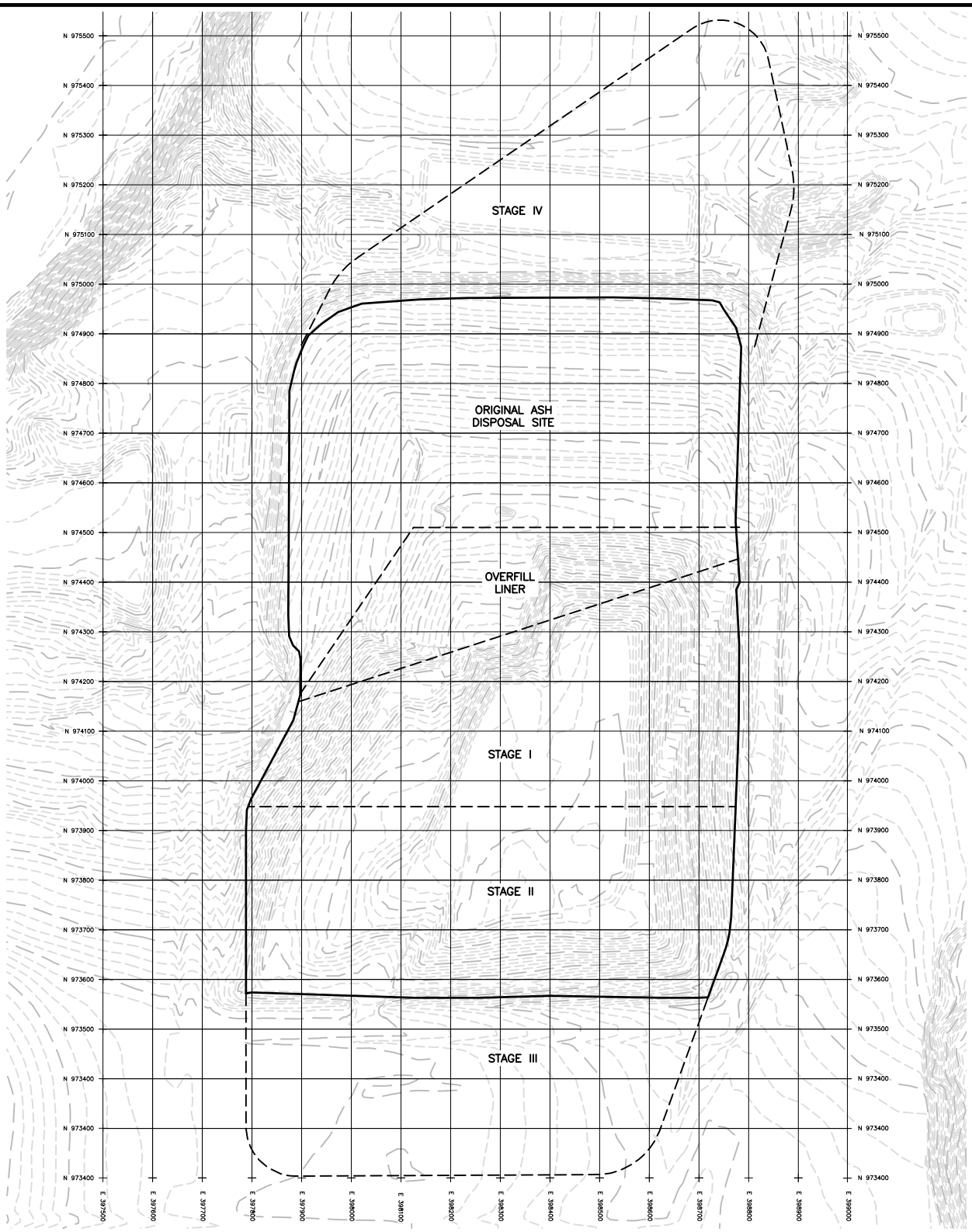
_____

_____

_____

Signature: _____

Title: _____



DIRECTIONS: INDICATE WITH AN "X" THE GRID OR GRIDS THAT LANDFILLING OCCURED IN EACH OPERATIONAL DAY. INDICATE LIFT NUMBER AND APPROXIMATE WASTE ELEVATION. RETURN FORM TO THE SCALE EACH DAY

DATE: _____

RECORDED BY: _____

COMMENTS: _____

WASTE PLACEMENT LOG

FACILITY MANUAL

LOCKWOOD HILLS LLC			
TOWN OF TORREY	YATES COUNTY	NEW YORK	FIGURE 1
April 2020	SCALE: 1" = 300'	REVISION # 0	

DAIGLER ENGINEERING, P.C.
CIVIL & GEO-ENVIRONMENTAL ENGINEERING
2620 GRAND ISLAND BLVD. GRAND ISLAND, NEW YORK 14072
(716) 773-6872 (716) 773-6873 FAX

ATTACHMENT 2

Unauthorized Waste Receipt Log

Lockwood Hills LLC

Unauthorized Waste Receipt Log

Date: _____ Time: _____ Employee: _____

Name of Waste Transporter: _____

Waste Transporter Phone/Email: _____

NYSDEC Waste Hauler Permit No.: _____

Truck License Plate: _____

Driver's Name: _____

Waste Generator: _____

Waste Generator Phone/Email: _____

Quantity and Type: _____

Description of Waste:

_____

_____

_____

Was the unauthorized waste deposited at the facility? Yes ___ No ___

If waste was deposited at the facility, describe the disposition of the waste and the facility's response to the disposal of the unauthorized waste(s).

_____

_____

_____

Date of Removal: _____

Signature: _____

Title: _____

APPENDIX 3

Leachate Management Plan Attachments

- **Attachment 1 – Daily Line Cleaning Record**
- **Attachment 2 – Daily Operating Records**
  - **A. Secondary Leachate Flow Measurements**
  - **B. Monthly Leachate Generation Totals**
  - **C. Leachate Collection System Maintenance Log**
- **Attachment 3 – Treatment Pond Stage Storage Curve**
- **Attachment 4 – Leachate Treatment Pond Discharge Report Form**

ATTACHMENT 1

Daily Line Cleaning Record

Lockwood Ash Disposal Site
Daily Line Cleaning Record

Site Location: Dresden, NY **Equipment:** _____ **Date:**_____

Client: Lockwood Hills LLC **Nozzle Type:**_____ **Weather:**_____

Pressure:_____ **GPM:**_____ **Company:**_____

Daily Total Gallons Water Used:_____ **Technicians:**_____

Location Stage	Line Segment		Pipe Diameter	Pipe Type	Total Length Linear Footage	Total Linear Footage Cleaned*	No. of Passes	Comments
Stage II	CO-0A		6"	PVC	962			
	CO-0		6"	PVC	969			
	CO-1		6"	PVC	970			
	CO-2		6"	PVC	972			
	CO-3		6"	PVC	973			
	CO-4		6"	PVC	975			
	CO-5		6"	PVC	973			
	CO-38**	~CO-36	6" CO/21" Header	PVC	100			
	CO-36**	~CO-31	6" CO/ 21" Header	PVC	250			
	CO-31**	MH I/II-1	6" CO/ 21" Header	PVC	400			

Notes:_____

_____

_____

*Record approximate length if partially jetted; record "Flushed" if simply flushed with water without entering the line.

Lockwood Ash Disposal Site
Daily Line Cleaning Record

Site Location: Dresden, NY **Equipment:** _____ **Date:**_____

Client: Lockwood Hills LLC **Nozzle Type:**_____ **Weather:**_____

Pressure:_____ **GPM:**_____ **Company:**_____

Daily Total Gallons Water Used:_____ **Technicians:**_____

**CO-38, 36, & 31 are saddled to the header pipe with two 45° wye angled in the downstream direction. Visually verify flow/hose by observing in MH II-1 for CO-38, MH II-2 for CO-36 and MH II-3 for CO-31.

Location Stage	Line Segment		Pipe Diameter	Pipe Type	Total Length Linear Footage	Total Linear Footage Cleaned*	No. of Passes	Water Used Total Gallons	Total Gallons Leachate Vac.
Stage I	CO-6		6"	PVC	973				
	CO-7		6"	PVC	953				
	CO-8		6"	PVC	958				
	CO-9		6"	PVC	987				
	CO-30	MH I/II-1	6" CO/ 6" Header	PVC	200				
	MH II-3	MH I/II-1	21”	PVC	678				
	MH I/II-1	MH I/II-2	21”	PVC	72				

Notes:_____

_____

_____

*Record approximate length if partially jetted; record “Flushed” if simply flushed with water without entering the line.

Lockwood Ash Disposal Site
Daily Line Cleaning Record

Site Location: Dresden, NY **Equipment:** _____ **Date:**_____

Client: Lockwood Hills LLC **Nozzle Type:**_____ **Weather:**_____

Pressure:_____ **GPM:**_____ **Company:**_____

Daily Total Gallons Water Used:_____ **Technicians:**_____

	MH I/II-2	MH I/II-3	21”	PVC	45				

Location Stage	Line Segment		Pipe Diameter	Pipe Type	Total Length Linear Footage	Total Linear Footage Cleaned*	No. of Passes	Comments
Stage I Overfill Liner	CO-10		6”	PVC	962			
	CO-11		6"	PVC	63			
	CO-12		6"	PVC	103			
	CO-13		6"	PVC	146			
	CO-14		6"	PVC	190			
	CO-15		6"	PVC	233			
	CO-17		6"	PVC	317			
	CO-18		6"	PVC	361			
	CO-19		6"	PVC	326			
	CO-20		6"	PVC	279			

Notes:_____

_____

_____

*Record approximate length if partially jetted; record “Flushed” if simply flushed with water without entering the line.

Lockwood Ash Disposal Site
Daily Line Cleaning Record

Site Location: Dresden, NY **Equipment:** _____ **Date:**_____

Client: Lockwood Hills LLC **Nozzle Type:**_____ **Weather:**_____

Pressure:_____ **GPM:**_____ **Company:**_____

Daily Total Gallons Water Used:_____ **Technicians:**_____

	CO-21		6"	PVC	233			
	CO-22		6"	PVC	186			
	CO-23		6"	PVC	141			

Location Stage	Line Segment		Pipe Diameter	Pipe Type	Total Length Linear Footage	Total Linear Footage Cleaned*	No. of Passes	Comments
OADS	MH OADS-1	MH OADS-2	12”	PVC	299			
	MH OADS-2	MH OADS-3	12”	PVC	205			
	CO-44	MH OADS-3	8”	PVC	81			

Notes:_____

_____

_____

*Record approximate length if partially jetted; record “Flushed” if simply flushed with water without entering the line.

Lockwood Ash Disposal Site
Daily Line Cleaning Record

Site Location: Dresden, NY **Equipment:** _____ **Date:**_____

Client: Lockwood Hills LLC **Nozzle Type:**_____ **Weather:**_____

Pressure:_____ **GPM:**_____ **Company:**_____

Daily Total Gallons Water Used:_____ **Technicians:**_____

Location Stage	Line Segment		Pipe Diameter	Pipe Type	Total Length Linear Footage	Total Linear Footage Cleaned*	No. of Passes	Comments
	Upstream	Downstream						
Downstream Sewer System	MH I/II-3	MH I/II-4	21”	PVC	35			
	MH I/II-4	MH I/II-5	21”	PVC	280			
	MH I/II-5	MH I/II/S-1	21”	PVC	292			
	CO-45	MH I/II/S-1	8”	PVC	157			
	MH COM-1**	Inlet to Pond	8”	PVC	34 + 6’ flume			

**This line segment includes the 6’ meter pit and Large 60-Degree V-Trapezoidal Flume. Care needs to be taken not to damage the flume. Visual observation of the cleaning effectiveness should be made in the meter pit. Access through the meter pit itself could be added if necessary.

Notes:_____

_____

_____

*Record approximate length if partially jetted; record “Flushed” if simply flushed with water without entering the line.

Lockwood Ash Disposal Site
Daily Line Cleaning Record

Site Location: Dresden, NY **Equipment:** _____ **Date:**_____

Client: Lockwood Hills LLC **Nozzle Type:**_____ **Weather:**_____

Pressure:_____ **GPM:**_____ **Company:**_____

Daily Total Gallons Water Used:_____ **Technicians:**_____

Manhole	Manhole Diameter	Total Gallons Leachate/Sediment Vacuumed	Comments

Notes:_____

_____

_____

Lockwood Ash Disposal Site
Daily Line Cleaning Record

Site Location: Dresden, NY

Client: Lockwood Hills LLC

Equipment: _____

Nozzle Type:_____

Pressure:_____ **GPM:**_____

Daily Total Gallons Water Used:_____

Date:_____

Weather:_____

Company:_____

Technicians:_____

Notes:_____
_____
_____

ATTACHMENT 2

Daily Operating Records

- **2A – Secondary Leachate Flow Measurements**
- **2B – Monthly Leachate Generation Totals**
- **2C – Leachate Collection System Maintenance Log**

LOCKWOOD ASH DISPOSAL SITE **Year: _____**

DAILY OPERATING RECORD

SECONDARY LEACHATE FLOW MEASUREMENTS

Date	Time	Personnel	Volume (mL) in 180 seconds	Flow Rate (gpd)*	Instantaneous Leakage Rate (gpad)**	30-Day Rolling Average Leakage Rate (gpad)***

* Multiply "Volume (mL) in 180 seconds" by 0.1268 to convert to gallons per day (gpd)

** Divide "Flow Rate (gpd)" by 15.8 acres of secondary liner to convert to Instantaneous Leakage Rate (gpad)

*** Calculate average of all instantaneous readings taken within the last 30 days. If greater than 20 gpad refer to Emergency Response Plan, Section 14.5.3.4 of the Facility Manual.

LOCKWOOD ASH DISPOSAL SITE **Year: _____**

MONTHLY LEACHATE GENERATION TOTALS

Month	Date	Time	Personnel	Total Monthly Volume (gal)
January				
February				
March				
April				
May				
June				
July				
August				
September				
October				
November				
December				

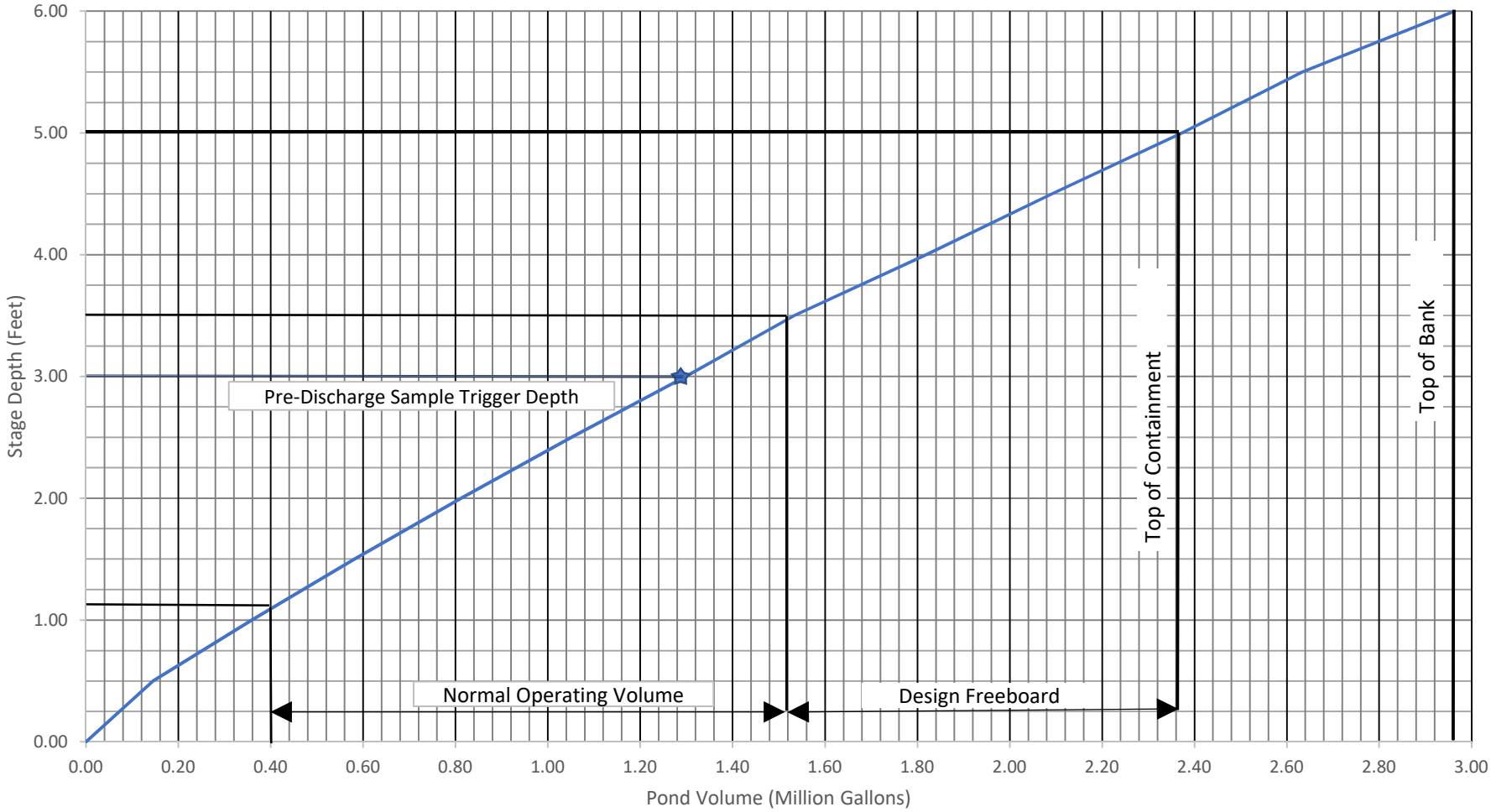
LOCKWOOD ASH DISPOSAL SITE
LEACHATE COLLECTION SYSTEM
MAINTENANCE LOG

START DATE	END DATE	ACTIVITY

ATTACHMENT 3

Treatment Pond Stage Storage Curve

Lockwood Ash Disposal Site Stage Storage Curve



NOTE: Storage volumes determined using TIN Volume Surfaces created from record survey information in AutoCad Civil 3D 2019.

Lockwood Ash Disposal Site Stage Storage Curve Data

	Pond Elevation	Pond Incremental Depth (feet)	Cumulative Pond Volume (gallons)
	550	Dry - Top of Stone	Dry
	550.5	0.5	145,112
	551	1.0	358,910
Pond Drain	**551.15**	**1.15**	400,000
	551.5	1.5	581,134
	552	2.0	811,719
	552.5	2.5	1,050,689
Pre-Discharge Sample	**553**	**3.0**	1,298,077
Design Freeboard	**553.5**	**3.5**	1,533,934
	554	4.0	1,818,318
	554.5	4.5	2,091,308
Top of Containment	**555**	**5.0**	2,372,963
	555.5	5.5	2,633,335
Top of Bank	**556**	**6.0**	2,962,915

ATTACHMENT 4

Leachate Treatment Pond Discharge Report Form

LOCKWOOD ASH LANDFILL

LEACHATE TREATMENT POND

DISCHARGE REPORT FORM LOCKSPDES001

PRE-DISCHARGE POND WATER QUALITY

SAMPLE DATE:	SAMPLE TYPE:	SAMPLING COMPANY: NAME OF SAMPLER:	
FIELD pH: (6-9)	Tot Fe: (<4.0)	Tot Mn: (<3.0)	Tot Zn: (<2.0)
NH3:	Tot As: (<0.1)	TSS: (<50.0)	Tot Se: (<0.07)

POND DRAINAGE AUTHORIZATION

NAME: DATE:

SIGNATURE: OTHER/NOTES:

POND DISCHARGE DATA

START OF DISCHARGE							
DATE:					TIME:		
POND LEVEL (FT):					POND VOLUME (GAL):		
FIELD pH:							
END OF DISCHARGE							
DATE:					TIME:		
POND LEVEL (FT):					POND VOLUME (GAL):		
FIELD pH							

COMPOSITE SAMPLE START DATE:

COMPOSITE SAMPLE END DATE:

DISCHARGE SUMMARY

TOTAL DISCHARGE (GAL):

OF DISCHARGE DAYS

MAX GAL/DAY:

AVG GAL/DAY:

AVG CUFT/DAY DISCHARGE:

FLOW RATE OF KEUKA OUTLET (CFS)

WEEKLY pH SUMMARY		
	Date	pH

APPENDIX 4

Monitoring Point Code to Name Translation

MONITORING POINT CODE TO NAME TRANSLATION

	Old Code Name	New Common Name
Groundwater Locations		
	LOGDD-8909	MW-8909-D
	LOGDD-8910	MW-8910-D
	LOGDD-8911	MW-8911-D
	LOGDD-8942	MW-8942-D
	LOGDSH8909	MW-8909-SH
	LOGDSH8910	MW-8910-SH
	LOGDSH8911	MW-8911-SH
	LOGDSH9306	MW-9306-SH
+	LOGDXX7842	MW-7842
	LOGUD-8908	MW-8908-D
	LOGUSH8908	MW-8908-SH
	LOGUXX8401	MW-8401
	LOGUXX8404	MW-8404
	LOGUXX8405	MW-8405
	LOGXDUXX01	GW Dup
	LOGXFBXX99	Field Blank
	LOGXGDXX01	GW Dep Drain 1 (GWD-1)
	LOGXGDXX02	GW Dep Drain 2 (GWD-2)
	LOGXGDXX03	GW Dep Drain 3 (GWD-3)
	LOGXGDXX04	GW Dep Drain 4 (GWD-4)
*	LOGUXX-8402	OW-8402
*	LOGUXX-8403	OW-8403
*	LOGDXX-7741	OW-7741
*	LOGDXX-8406	OW-7406
*	LOGDXX-8407	OW-8407
Leachate Locations		
	LOPXLDXX01	Leak Detection System (LDS)
	LOPXUDXX01	Under Drain 1 (UD-1)
	LOPXUDXX02	Under Drain 2 (UD-2)
	LOPXUDXX03	Under Drain 3 (UD-3)
	LOPXUDXX04	Inlet to Pond (UD-4)**
	LOPXUDXX05	Under Drain 5 (UD-5)
Surface Water Locations		
	LOSDSSXX02	Keuka Downstream
	LOSUSSXX01	Keuka Upstream
	LOSXDUXX01	Surface Water Dup
	LOSXSP0101	Pond Grab

+ Decommissioned and replaced by MW-1842 in 2018.

* Static water level only (OW = Observation Well)

**Formerly 24” Inlet to Pond prior to changes to the sewer piping in 2016, which led to its inclusion of discharge from UD-1.

APPENDIX 5

Site Analytical Plan Attachments

- **Attachment 1 – AQA Officer Resume**
- **Attachment 2 – Field Sampling Worksheet**
- **Attachment 3 – Chain of Custody Form**
- **Attachment 4 – Field Sampling Standard Operating Procedure (SOP)**
- **Attachment 5 – Field Meter Calibration Data Log**
- **Attachment 6 – Master List of Laboratory SOPs**
- **Attachment 7 – Analytical Methods**
- **Attachment 8 – Laboratory New York State Department of Health (NYSDOH) Environmental Laboratory Approval Program (ELAP) Certification**
- **Attachment 9 – Data Validation Checklist**

ATTACHMENT 1

AQA Officer Resume

Bethany Acquisto, Ph.D.
Senior Scientist/Group Manager

Summary of Experience

- ❑ Environmental Analysis and Permit Application Preparation
- ❑ Environmental Data Validation and Data Analysis
- ❑ Wastewater Disinfection and Biosolids Management Research
- ❑ Air Emissions Inventories and Air Quality Permitting

Education

Ph. D. Civil Engineering
University at Buffalo
Area of Emphasis: Environmental Engineering
Degree Granted: 2003

M. S. Civil Engineering
University at Buffalo
Area of Emphasis: Environmental Engineering
Professional Concentration: Wastewater Disinfection and Microbiology
Degree Granted: 1998

B. S. Environmental and Forest Biology
State University of New York College of Environmental Science and Forestry
Area of Emphasis: Environmental Science and Macrobiology
Degree Granted: 1995

Professional Experience

2007 – present
Senior Scientist/Group Manager - Daigler Engineering, P.C., Grand Island, New York

Senior Scientist – Responsible for data analysis and reporting related to environmental monitoring, producing permit application documents, and environmental analysis related to air quality, water quality, and wastewater treatment, and waste management.

- Evaluated quality control information for environmental analyses and prepared data validation reports and data usability summary reports as an approved Data Validator under the NYS DER-10 guidance.
- Prepared initial permit and permit modification application for federal wetland disturbances, individual SPDES, general SPDES for stormwater construction, mined land reclamation, nationwide Army Corps of Engineers permits, solid waste management facilities, Title V and State Air Permits.
- Prepared air emissions inventories, air permit applications, and an air quality monitoring plan for in state and out-of-state land disposal facilities.
- Provided oversight and management of air dispersion modeling and visibility analysis for landfill activities and possible effects on nearby scenic parks and an observatory.
- Prepared air emissions inventory and an air pollution control technology assessment for a municipal solid waste incinerator initial SEQRA environmental assessment.
- Prepared SEQRA public scoping documents, Draft Scope and responsiveness summary, Draft Environmental Impact Statement, and Final Environmental Impact Statement for highly contested land disposal facility permit application. Also, presented for client at Legislative Public hearing.
- Conducted data analysis and prepared reports for environmental monitoring programs.
- Prepared and submitted SPDES Discharge Monitoring Reports using the NetDMR system.
- Assisted in Consent Order negotiations and related environmental compliance support for a land disposal facility.
- Prepared 6NYCRR Part 360 Engineering Documents including Operations and Maintenance Manuals, Contingency Plans, Environmental Monitoring Plans, and Site Analytical Plans.
- Prepared Engineering Reports and assessments of wastewater treatment technologies required to meet SPDES Permit limitations for land disposal facilities, waste transfer stations, and energy generating facilities.
- Prepared Best Management Practices (BMP) Plans, Mercury Minimization Reports, Whole Effluent Toxicity Testing Reports, Dilution Study Alternatives Evaluations, and water treatment chemicals reporting for industrial SPDES Permitting efforts.
- Modeled existing and future conditions floodplain using HEC-RAS and prepared application for FEMA map revisions.

- Modeled a dynamic dam breech scenario using HEC-RAS.
- Prepared successful variance request on behalf on a land disposal facility to reduce construction quality control testing frequencies.
- Prepared successful petitions for reduction in environmental monitoring requirements for land disposal facilities and coal-fired generating plants.
- Prepared and executed an existing waste test pitting and waste characterization investigation at a closed land disposal facility.
- Coordinated a waste characterization and disposal effort for unexpected waste exhumated during installation of a high-pressure natural gas pipeline.
- Management of a Water Withdrawal System Permit for an energy generating facility, including oversight of inspections, water audits, and annual reporting.
- Prepared a Waste Tire Recycling ProForma and interactive spreadsheet tool.
- Evaluated available software for environmental compliance management system and provided recommendation.
- Evaluated available software for Environmental Database and statistical packages, recommended, populated and validated the new database with over four decades worth of data. Provided training and support to end users.
- Prepared work plans or sampling plans and assisted in conducting the work and assessing the results for environmental investigations of potential remediation sites, emerging contaminants, and solids scouring.
- Prepared detailed cost estimates for leachate treatment options and various construction projects.
- Designed package plant sewage treatment plant for rural campground expansion.
- Designed 3 pathogen reduction demonstration studies for the U.S. EPA's Pathogen Equivalency Committee.
- Provided supportive AutoCAD 3D modeling and drawing production for various projects.

Group Manager – Responsible for office productivity, personnel matters, and ensuring product quality management.

2003 – 2007
Environmental Engineer - U.S. EPA, Office of Research and Development, Edison, New Jersey and Cincinnati, Ohio

Environmental Engineer/Research Scientist – Responsible for providing essential support for Pathogen Equivalency Committee, participating in Agency strategic planning exercises, writing and reviewing Agency documents, especially Quality Assurance Project Plans (QAPPs), and presenting Agency research through oral presentations and technical articles. Responsible for researching, designing, and conducting field/laboratory research studies in support of current and/or future Agency regulations in the areas of solids and stormwater management.

- Designed & conducted field/laboratory study to assess alternative measures of sewage sludge stability at a sewage treatment plant employing anaerobic digestion with methane recovery.
- Provided essential support for the PEC which reviews innovative sewage sludge treatment processes in terms of pathogen reduction capability to those which are already regulatorily accepted for land application of biosolids. Primary duties included:
  - » Development of content for first comprehensive website to assist interested public and potential applicants through the equivalency process (http://www.epa.gov/nrmrl/pec/)
  - » Development of searchable database/tracking system for PEC applications (>450 records)
  - » Review of and response to equivalency applications and supporting correspondence
  - » Organization of and participation in a retreat for PEC and nationwide experts to review and update procedures for the equivalency process
- Designed and participated in sampling for laboratory project on size characterization of particle-bound nutrients in stormwater runoff. Produced data analysis and reported on results.
- Authored 2 chapters of a >250 page published book on stormwater best management practices.
- Prepared and presented 9 oral presentations and 2 poster presentations at national and international

conferences and workshops.
- Authored 2 papers for conference proceedings.
- Reviewed Agency documents, both internal and external, within focus area of wastewater disinfection, solids disinfection, solids management, land application of biosolids, CAFOs, and stormwater management.

1997 - 2002
Research Assistant/Technician – Research Foundation of the State University of New York, Buffalo, New York

Research Assistant – Responsible for developing and conducting two large research projects on ultraviolet and ultrasound disinfection of wastewater. Authored or co-authored 4 manuscripts published in highly respected trade journals.

Research Technician – Responsible for completing several short term studies troubleshooting and problem solving issues with industrial waste streams and stormwater/combined sewer overflows.

1992 - 1995
Environmental/Regulatory Compliance Intern – West Valley Nuclear Services, West Valley, New York

Environmental/Regulatory Compliance Intern – Responsible for auditing environmental compliance program, developing a site-wide air emissions inventory, developing materials for and arranging public relations and site inspection activities at the Department of Energy's West Valley Demonstration Project.

Professional Affiliations & Registrations

Member - Water Environment Federation (New York Chapter) and their Disinfection and Residuals & Biosolids Committees
Certification – Completed Visible Emissions Reader per Title 40 Part 60 Appendix A USEPA Method 9 (AeroMet Engineering, Inc. Training, 10/24/12)

ATTACHMENT 2

Field Sampling Worksheet

LOCKWOOD ASH DISPOSAL SITE

Field Sampling Worksheet

Wether Conditions: _____ **Date:** _____

Well ID	SWL	pH	Temp	Turbidity	D.O.	Flow	Time	Comments	GW Dup	SF Dup
7741		NA	NA	NA	NA	NA				
1842					NA	NA				
8401					NA	NA				
8402		NA	NA	NA	NA	NA				
8403		NA	NA	NA	NA	NA				
8404					NA	NA				
8405					NA	NA				
8406		NA	NA	NA	NA	NA				
8407		NA	NA	NA	NA	NA				
8908-D					NA	NA				
8908-SH					NA	NA				
8909-D					NA	NA				
8909-SH					NA	NA				
8910-D					NA	NA				
8910-SH					NA	NA				
8911-D					NA	NA				
8911-SH					NA	NA				
8942-D					NA	NA				
9306-SH					NA	NA				
GW DD 1	NA									
GW DD 2	NA									
GW DD 3	NA									
GW DD 4	NA									
Leak Det.	NA									
UnDr. 1	NA									
UnDr. 2	NA									
UnDr. 3	NA									
24" Inlet	NA									
UnDr. 5	NA									
Keuka US	NA					NA				
Keuka DS	NA					NA				
Pond Grab	NA					NA				

ATTACHMENT 3

Chain of Custody Form

314 North Pearl Street
Albany, New York 12207
518-434-4546♦ Fax: 518-434-0891

CHAIN OF CUSTODY RECORD

AES Work Order#:

EXPERIENCE IS THE SOLUTION

A full service analytical research laboratory offering solutions to environmental concerns

Client Name:	Address:	
Send Report to:	Project Name (Location):	Samplers Name:
Client Phone No:	PO #:	Samplers Signature:
Client Fax No:		

AES Sample ID	Client Sample ID:	Date Sampled	Time A=am P=pm		Sample Type Matrix	C	G	# of Cont's	Analysis
				A					
				P					
				A					
				P					
				A					
				P					
				A					
				P					
				A					
				P					
				A					
				P					
				A					
				P					
				A					
				P					
				A					
				P					
				A					
				P					
				A					
				P					
				A					
				P					

Shipment Arrived Via:

FedEx UPS Client AES Other:_____

Special Instructions/Remarks:

Turnaround Time Requested:

☐ 3 Day

Relinquished by: (Signature)	Date	Time	Received by: (Signature)	Date	Time
Relinquished by: (Signature)	Date	Time	Received by: (Signature)	Date	Time
Relinquished by: (Signature)	Date	Time	**Received for Laboratory by:**	Date	Time

Sample Temperature	**Properly Preserved**	**Received Within Holding Times**
Ambient Chilled	Y N	Y N
Chilling Process begun		
Notes: _____	Notes: _____	Notes:_____
_____	_____	_____

ATTACHMENT 4

Field Sampling Standard Operating Procedure (SOP)

EXPERIENCE IS THE SOLUTION
314 North Pearl Street+ Albany, New York 12207+ (518) 434-4546+ Fax: (518) 434-0891

Lockwood Hills LLC
Field Sampling SOP

Background:

Lockwood Ash Landfill is located off Route 14 in Dresden, NY. There are four groundwater sampling events a year, which consist of three quarterly sampling events and one annual sampling event. Typically, each event is scheduled for the first month of each quarter, with the annual event occurring in the third quarter every year.

Sampling is primarily done within the site limits, with additional surface water sample points off site along the Keuka Outlet.

Sampling Equipment Required:

The groundwater wells on site are configured to be both purged and sampled with a compressed gas system. In this case, compressed nitrogen is used. Essential equipment for this system includes:

Compressed gas cylinders (80 cubic feet – nitrogen)
Compressed gas hose reel (mounted in the truck)
Pressure regulators
Dual valve tool (to connect to well hardware)
Static water level indicators (blue)
Teflon tape
Adjustable wrenches

Over time, some of these systems have been removed due to failure of the system to retain pressure, so additional sampling equipment is needed to complete the job. Additional equipment includes:

Monsoon groundwater submersible pump (stainless steel), controller and dedicated LDPE tubing
Power source for pump (12 volt vehicle battery)
Bailers (HDPE) and twine
Scoop
Sample bottles
Well and gate keys
Field instrumentation – pH meters, YSI, Turbidimeter

Arriving on site:

The landfill is secured by a chain link fence perimeter. Access to the site by vehicle is only available through the main gate located on Swarthout Road. The main gate is locked at all times and requires the AES-E key for entry. If leaving the site for an extended period of time, be sure to lock the gate behind you.

In addition, the AES-E key will grant access to all groundwater well locks, and to the secondary fence surrounding the treatment pond. Due to the non-putrescible nature of the waste contained on the site, the presence of explosive or organic vapors is not expected in any of the monitoring wells.

Sampling Procedure

Cleaning/Decontaminating Equipment:

Due to the nature of the compressed nitrogen purge/sample system, there is minimal need to decontaminate the nitrogen equipment between wells. Each well contains its own dedicated hardware, and the tool can be freely used from well to well.

For wells where the nitrogen system has been removed, however, equipment that is being transferred from one well to another should be washed and rinsed in between uses. Many wells have their own dedicated down well tubing or bailers, but the pump itself should be cleaned before being placed in a different well. Similarly, most leachate and surface water samples are collected directly into the sample bottles. In cases where the long-handled scoop is used to collect surface water samples, it will be washed and rinsed several times with the source of the sample prior to use at each location.

Background Measurements:

Regardless of sampling event, each well must have its static water level recorded every quarter. Some wells only require data for static water level, and no samples need to be taken. Static water levels should all be obtained *before* any purging begins to get the most accurate snapshot of the water table. All wells on site are two-inch diameter wells. Wells will be observed at this time for evidence of contamination by non-aqueous phase liquids, although none are expected based on the nature of the waste.

Sampling Order:

Sampling order is not set in stone, but should be done in a manner that exercises efficiency and good work practices. It is typical to have two workers on site, working together or independently, since sample points are spread out widely across the site. There is no distinction

between number of sample points for quarterly and annual events, only number of bottles to be filled at each sample point. Sample points are as follows:

On Site Locations

Groundwater Wells	Leachates	Groundwater Depression Drains
OW-7741 (SWL Only)	Under Drain 1	GWD-01
MW-8401	Under Drain 2	GWD-02 **
OW-8402 (SWL Only)	Under Drain 3	GWD-03
OW-8403 (SWL Only)	Inlet to Pond	GWD-04 **
OW-8406 (SWL Only)	Under Drain 5 **	
MW-8404 *, +	Pond Grab	
MW-8405 *, **	Leak Detection System	
MW-8908 SH		
MW-8908 D		
MW-8909 SH		
MW-8909 D *, +		
MW-8910 SH **		
MW-8910 D		
MW-8911 SH		
MW-8911 D		
MW-8942 D *, +		
MW-9306 S *, ~		
MW-1842*, ~		
Groundwater Duplicate		
Field Blank		

Off Site Locations

Keuka Upstream
Keuka Downstream
Surface Water Duplicate

* Wells where compressed nitrogen system is absent
~ Wells sampled with a bailer
+ Wells sampled with Monsoon groundwater submersible pump
** Sample points that are historically dry, obstructed, or have inadequate recovery

Purging:

Wells with the compressed nitrogen system require either three or five purge volumes before sampling. Consult the purge information sheet in the field notebook for these values.

Wells without the compressed nitrogen system must be manually calculated to determine purge volume. Static water level is subtracted from the depth of the well giving total water column height. The water column height is then multiplied by 0.618, and the resulting product gives the value for *one* purge volume in liters. This is multiplied by three to give the value for three purge volumes. Purge rate for wells pumped with submersible pumps should be one that is most efficient at maintaining static water level within the well – i.e. the rate of incoming groundwater closely matches rate of water being purged from the well – thus minimizing sample turbidity.

Groundwater purged from the wells is discharged directly to the ground surface and managed by the Landfill's stormwater management system. For wells that are purged dry with the Monsoon submersible pump, the purge rate used is 3 liters per minute. For the well purged with the Monsoon that do not dry out, the purge rate is 2 liters per minute.

When the Monsoon submersible pump is used, the intake should be positioned at the approximate midpoint of the screened interval. If a bailer is used, water should be bailed from the top of the water column.

For wells purged and sampled with the Monsoon submersible pump, water level should be maintained above the top of the sand pack whenever feasible. This is not possible in wells that are allowed to purge dry. This also does not apply to wells with the compressed gas system because these wells are not constructed as typical groundwater monitoring wells.

Sampling:

Groundwater well sampling can be done immediately after the requisite number of purge volumes required for each well. Some wells may require time to produce enough volume for an adequate sample. If this is the case, the well must be returned to within 24 hours. If sufficient volume is not available within 24 hours after purging, the well is noted as having inadequate recovery.

Leachate samples are generally collected by inserting the sample bottle directly in the stream of flow liquid at an end of pipe discharge. The normal operating volume of the pond is between one and 3.5 feet; too shallow to develop meaningful stratification. The treatment pond grab is collected using a long-handled scoop near the discharge end of the Pond. Keuka Outlet is a lotic water body that remains mixed due to turbulence resulting from water movement. Surface water samples from the Keuka Outlet are collected by submerging the top of the sample bottle directly

into the flowing water. All surface water samples are to be collected without contamination with bottom sediment. To minimize interference from turbidity, samples must be collected from downstream monitoring sites prior to upstream monitoring point sampling.

Volatile organic samples are not collected from any monitoring wells, but samples still should be collected and stored in order of the parameters' volatilization sensitivity as follows:

1. Field Parameters
2. Total Organic Carbon
3. Metals
4. Remaining Water Quality Parameters

Observations and Field Data:

Groundwater wells require pH, temperature, and turbidity readings. Leachate samples require additional flow and dissolved oxygen readings. Consult the chain of custody for exact data on which sample points require what field data.

Duplicates and Field Blanks:

There are two different duplicate sets used each event – groundwater duplicate and surface water duplicate. Any one of the groundwater wells that produces sufficient volume can be chosen as the groundwater duplicate. Either surface water sample point can be chosen for the duplicate.

There are two types of blanks used at Lockwood each event.

1. Groundwater field blank - performed by pouring laboratory grade de-ionized water over shared sampling equipment into a groundwater well sample bottle set. Sampled at some point between groundwater sampling with the shared equipment and the cleaning and decontamination procedure.
2. Low Level Mercury blank – used for the Mercury Minimization program for two treatment pond influents (Under Drain 1 and Inlet to Pond). The Inlet to Pond sample must be taken from the discharge of the piped inlet to the step aerator, found inside the aerator's locked access hatch. The sample should be taken before water comes into contact with the steps. Laboratory mercury-free water is poured into mercury vials after sampling for mercury in settling pond influents.

Gas Vents:

Lockwood landfill primarily contains bottom and fly ash from coal fire power plants. Since there is no organic matter, there are no gas vents on site.

Submittals:

Each quarter, the proper Quarterly or Annual bottle chain of custody must be submitted after completing the sampling event. Field data is submitted through the laboratory Omega system, and water levels are uploaded into an excel spreadsheet and sent to the client.

Additional Information

PPE:

There are no PPE requirements to be on site at Lockwood, but safety-toe boots are required PPE by Adirondack, and nitrile gloves must be worn when sampling.

General Hazards:

Extreme heat and cold should be taken into account with the proper protective clothing. Excessive rain or snow may cause the buildup of mud and/or ice, resulting in loose or slippery ground. Always make sure the ground is stable before working on it to prevent slips, trips and falls. Be sure to have stable footing when working near steep inclines or areas with craggy and/or unstable ground. Always practice good housekeeping and keep the work area clean.

Wildlife such as hornets, ants, mice and spiders can take up residence in groundwater wells, so care must be used when opening wells for the first time after long periods of disuse. Ticks are prevalent throughout most of the year, so brightly colored clothing should be worn to make them easier to spot on you, and clothes should be tucked in to minimize contact when working in tall grass areas.

Other Considerations:

When working with compressed gas, always make sure gas cylinders are properly stored upright in the truck and secured in place at all times. Ensure all valves are in the off position and caps are tightly screwed on any time the vehicle is in motion.

Be sure to lock all wells after sampling is completed, and make sure all gates are closed and locked any time you leave the site.

When traveling the Keuka Outlet trail to access the surface water locations, take heed of pedestrians using the recreational trail, and if driving, make sure the access gate is locked behind you and the vehicle pass is displayed on the rearview mirror.

ATTACHMENT 5

Field Meter Calibration Log

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Field Meter Calibration Data

Project: _____ **Date:**_____

Field Tech Initials:_____

YSI S/N: _____

pH (s.u.)

[4] _____ @ _____

[10] _____ @ _____

[7] _____ @ _____

[ ] _____ @ _____

Specific Conductance (umhos/cm)

[1412] _____ @ _____

[ ] _____ @ _____

[ ] _____ @ _____

[ ] _____ @ _____

ORP (mV)

[234] _____ @ _____

[ ] _____ @ _____

[ ] _____ @ _____

Dissolved Oxygen (%)

100% SAT. _____@ _____

Turbidimeter S/N: _____

[ ] _____

[ ] _____

[ ] _____

Q-RAE S/N: _____

LEL [50%] _____

02 [15%] _____

H2S [10 ppm] _____

CO [60 ppm] _____

PID S/N: _____

[100 ppm] _____

Notes:_____

_____

_____

ATTACHMENT 6

Master List of Laboratory SOPs

Adirondack Environmental Services, Inc. - Master Document List
1/17/2020

Department	SOP	Rev. Date	Rev. Date	Rev. Date	Rev. Date	Rev. Date	Distributed to:	Electronic Signed
Wet Chemistry	Acidity	1/16/09	9/7/10	12/9/10	8/26/15	4/2/18	Copy -Wet Chem	LIMS / Server
Wet Chemistry	Alkalinity	9/7/10	12/9/10	8/26/15	11/16/15	4/2/18	Copy -Wet Chem	LIMS / Server
Wet Chemistry	Amenable Cyanide	8/25/03	**Removed**				**Removed**	
Wet Chemistry	Ammonia - Automated Phenate	9/7/10	8/23/13	8/26/15	9/15/17	4/2/18	Copy -Wet Chem	LIMS / Server
Wet Chemistry	Ammonia - Titration	8/1/08	8/22/13	8/26/15	11/16/15	4/2/18	Copy -Wet Chem	LIMS / Server
Wet Chemistry	Ash	8/29/02	9/2/03	7/19/06			Original -Wet Chem	LIMS / Server
Wet Chemistry	Benzidine	12/15/05	**Removed**				**Removed**	
Wet Chemistry	Biochemical Oxygen Demand	8/19/13	8/26/15	2/24/16	2/5/18	4/2/18	Copy -Wet Chem	LIMS / Server
Wet Chemistry	Bromide - Titration	1/24/01	9/19/03	7/19/06	**Removed**		**Removed**	
Wet Chemistry	BTU Conversion to BTU/gal	8/28/03	2/20/09				Original -Wet Chem	LIMS / Server
Wet Chemistry	Calibration Curves - Excel	6/24/08					Original -Wet Chem	LIMS / Server
Wet Chemistry	Cation Exchange of Soils	1/24/01	9/9/03				Original -Wet Chem	LIMS / Server
Wet Chemistry	Chemical Oxygen Demand	7/19/06	4/10/08	9/7/10	12/10/10		Original -Wet Chem	LIMS / Server
Wet Chemistry	Chloride - Titration / Solid	1/24/01	9/2/03	7/19/06	**Removed**		**Removed**	
Wet Chemistry	Chloride - Titration / Water	7/19/06	1/16/09	12/9/10	8/26/15	4/2/18	Copy -Wet Chem	LIMS / Server
Wet Chemistry	Chlorine and Bromine	7/18/06					Original -Wet Chem	LIMS / Server
Wet Chemistry	Chlorine Demand	9/3/03	11/10/14				Original -Wet Chem	LIMS / Server
Wet Chemistry	Chlorine in Oil	9/8/03	7/19/06				Original -Wet Chem	LIMS / Server
Wet Chemistry	Color	7/19/06	1/16/09	8/26/15	11/16/15	4/2/18	Copy -Wet Chem	LIMS / Server
Wet Chemistry	Conductivity	1/16/09	4/8/13	8/26/15	9/29/17	4/2/18	Copy -Wet Chem	LIMS / Server
Wet Chemistry	Corrosivity by pH	5/7/02	9/3/03	7/19/12			Original -Wet Chem	LIMS / Server
Wet Chemistry	Corrosivity to Steel	1/24/01	9/3/03				Original -Wet Chem	LIMS / Server
Wet Chemistry	Total Cyanide	9/7/10	2/12/13	8/26/15	1/12/18	4/2/18	Copy -Wet Chem	LIMS / Server
Wet Chemistry	Dielectric Breakdown Voltage	11/2/00	9/9/03				Original -Wet Chem	LIMS / Server
Wet Chemistry	Dissolved Oxygen	9/22/03	7/19/06	12/9/10	8/26/15	4/2/18	Copy -Wet Chem	LIMS / Server
Wet Chemistry	EDTA Determination	1/24/01	9/9/03	7/19/06			Original -Wet Chem	LIMS / Server
Wet Chemistry	Total Glycol in water	9/3/03	9/7/10				Original -Wet Chem	LIMS / Server
Wet Chemistry	Flash Point	5/15/02	9/3/03	12/3/09	9/12/12		Original -Wet Chem	LIMS / Server
Wet Chemistry	Fluoride	1/24/01	9/3/03	7/19/06	1/16/09		Original -Wet Chem	LIMS / Server
Wet Chemistry	Fluoride Distillation	11/2/00	9/3/03				Original -Wet Chem	LIMS / Server
Wet Chemistry	Fluorides in Air	7/18/06	**Removed**				**Removed**	
Wet Chemistry	Formaldehyde in Air	1/24/01	9/3/03	**Removed**			**Removed**	
Wet Chemistry	Formic Acid	7/18/06					Original -Wet Chem	LIMS / Server
Wet Chemistry	Hardness	1/24/01	9/3/03	7/19/06	**Removed**		**Removed**	
Wet Chemistry	Heat Value	8/21/02	9/8/03	2/20/09			Original -Wet Chem	LIMS / Server
Wet Chemistry	Hexavalent Chromium	12/13/10	3/6/14	8/26/15	10/17/17	4/2/18	Copy -Wet Chem	LIMS / Server
Wet Chemistry	Hexavalent Chromium - Soil	9/7/10	12/8/10	8/23/13	11/12/15		Original -Wet Chem	LIMS / Server
Wet Chemistry	Hexavalent Chromium - Air	11/2/04	10/19/10	**Removed**			**Removed**	
Wet Chemistry	IC Start-up	3/1/04	**Removed**				**Removed**	
Wet Chemistry	Ignitability	5/20/02	9/3/03	3/29/18			Copy -Wet Chem	LIMS / Server
Wet Chemistry	Industrial Hygiene IC SOP	2/22/13	**Removed**				**Removed**	

Adirondack Environmental Services, Inc. - Master Document List

1/17/2020

Department	SOP	Rev. Date	Rev. Date	Rev. Date	Rev. Date	Rev. Date	Distributed to:	Electronic Signed
Wet Chemistry	Iodine	8/21/02	9/3/03				Original -Wet Chem	LIMS / Server
Wet Chemistry	Ion Chromatography	7/20/10	12/7/10	8/26/15	1/19/18	3/14/18	Copy -Wet Chem	LIMS / Server
Wet Chemistry	Ion Chromatography - DBNPA	7/11/14					Original -Wet Chem	LIMS / Server
Wet Chemistry	KAPL Radiological Prep	9/5/03					Original -Wet Chem	LIMS / Server
Wet Chemistry	Linear Regression for TI-55	11/2/00	9/3/03				Original -Wet Chem	LIMS / Server
Wet Chemistry	MBAS Surfactants	9/7/10	12/8/10	8/26/15	11/12/15	4/2/18	Copy -Wet Chem	LIMS / Server
Wet Chemistry	Method 24 Density	9/23/03	7/18/06	4/8/13	2/26/18		Copy -Wet Chem	LIMS / Server
Wet Chemistry	Method 24 Karl Fisher	9/23/03	7/18/06	**Removed**			**Removed**	
Wet Chemistry	Method 24 Volatile Matter	9/22/03	7/18/06				Original -Wet Chem	LIMS / Server
Wet Chemistry	Nitrate-N TRAACS	9/17/03	7/18/06	1/16/09	**Removed**		**Removed**	
Wet Chemistry	Nitrate-N Cadmium Reduction	9/5/12	6/4/15	4/2/18			Copy -Wet Chem	LIMS / Server
Wet Chemistry	Nitrite-N Colorimetric	6/2/10	9/3/10	12/8/10	8/26/15	4/2/18	Copy -Wet Chem	LIMS / Server
Wet Chemistry	Nitrogen Dioxide in Air	1/24/01	9/3/03	**Removed**			**Removed**	
Wet Chemistry	NIOSH 0500/0600 Nuisance/Respirable dust	3/12/02	1/12/12	3/19/15	1/31/19		Original -Wet Chem	LIMS / Server
Wet Chemistry	Odor	9/4/03	**Removed**				**Removed**	
Wet Chemistry	Oil & Grease	9/3/10	11/17/15	1/8/18	1/19/18	4/5/18	Copy -Wet Chem	LIMS / Server
Wet Chemistry	Oil & Grease Solid Phase Extraction	4/23/13	11/17/15	1/8/18	4/5/18		Copy -Wet Chem	LIMS / Server
Wet Chemistry	Oil & Grease in Solids	7/31/08	**Removed**				**Removed**	
Wet Chemistry	Orthophosphate	1/16/09	9/7/10	12/13/10	8/26/15	3/23/18	Copy -Wet Chem	LIMS / Server
Wet Chemistry	Oxidizer Test	9/8/03					Original -Wet Chem	LIMS / Server
Wet Chemistry	Paint Filter	9/3/03	7/18/06	1/13/11	7/19/12		Original -Wet Chem	LIMS / Server
Wet Chemistry	Peroxide	2/10/12					Original -Wet Chem	LIMS / Server
Wet Chemistry	pH - Soil	9/5/03					Original -Wet Chem	LIMS / Server
Wet Chemistry	pH- Water	9/3/03	1/16/09	9/9/10	8/26/15		Original -Wet Chem	LIMS / Server
Wet Chemistry	Total Phenols	9/7/10	12/10/10	2/12/13	6/4/13		Original -Wet Chem	LIMS / Server
Wet Chemistry	Total Phenols - Soils/Solids	12/15/05	9/7/10	12/10/10	2/12/13		Original -Wet Chem	LIMS / Server
Wet Chemistry	pmoist	9/19/03	7/18/06	6/2/15			Original -Wet Chem	LIMS / Server
Wet Chemistry	Radiological Prep	11/2/00	9/5/03				Original -Wet Chem	LIMS / Server
Wet Chemistry	Reactive Cyanide	11/12/01	9/9/03	12/13/10			Original -Wet Chem	LIMS / Server
Wet Chemistry	Reactive Sulfide	9/9/03	7/18/06	3/2/10	12/9/10		Original -Wet Chem	LIMS / Server
Wet Chemistry	Reactivity	1/24/01	9/9/03	7/18/06			Original -Wet Chem	LIMS / Server
Wet Chemistry	Residual Chlorine - Colorimetric	9/4/03	1/16/09	4/8/13	8/26/15	4/2/18	Copy -Wet Chem	LIMS / Server
Wet Chemistry	Residual Chlorine - Titration	1/24/01	9/3/03	**Removed**			**Removed**	
Wet Chemistry	Resistivity	5/1/13					Original -Wet Chem	LIMS / Server
Wet Chemistry	Settleable Particulate Matter	9/8/03					Original -Wet Chem	LIMS / Server
Wet Chemistry	Settleable Solids	9/9/03	1/16/09	12/10/10	8/26/15	3/30/18	Copy -Wet Chem	LIMS / Server
Wet Chemistry	Spectrophotometer Wavelength Check	3/4/13	12/18/17				Copy -Wet Chem	LIMS / Server
Wet Chemistry	Sulfate - Turbidimetric	9/12/03	7/18/06	**Removed**			**Removed**	
Wet Chemistry	Sulfide - Colorimetric	9/7/10	12/13/10	8/26/15	1/23/18	4/2/18	Copy -Wet Chem	LIMS / Server
Wet Chemistry	Sulfide - Titration	1/16/09	12/9/10	4/18/13	8/26/15	4/2/18	Copy -Wet Chem	LIMS / Server
Wet Chemistry	Sulfide Soil Prep - 9030B	8/23/13	**Removed**				**Removed**	

Adirondack Environmental Services, Inc. - Master Document List
1/17/2020

Department	SOP	Rev. Date	Rev. Date	Rev. Date	Rev. Date	Rev. Date	Distributed to:	Electronic Signed
Wet Chemistry	Sulfite	8/29/02	1/5/04	3/22/11	8/26/15	4/2/18	Copy -Wet Chem	LIMS / Server
Wet Chemistry	Sulfur Dioxide	7/18/06	**Removed**				**Removed**	
Wet Chemistry	Sulfur in Oil - XRF	9/22/03	7/18/06				Original -Wet Chem	LIMS / Server
Wet Chemistry	Temperature	9/4/03	1/16/09				Original -Wet Chem	LIMS / Server
Wet Chemistry	Total Chlorine/Chloride	8/21/02					Original -Wet Chem	LIMS / Server
Wet Chemistry	Total Dissolved Solids	9/4/03	1/16/09	12/10/10	8/26/15	3/26/18	Copy -Wet Chem	LIMS / Server
Wet Chemistry	Total Kjeldahl Nitrogen	12/9/10	8/26/15	2/12/18	4/2/18	3/20/19	Copy -Wet Chem	LIMS / Server
Wet Chemistry	Total Organic Carbon - Sediment	9/19/03	7/18/06	1/13/11	2/22/11		Original -Wet Chem	LIMS / Server
Wet Chemistry	Total Organic Carbon in Water	7/18/06	2/5/09	8/26/15	4/20/16	4/2/18	Copy -Wet Chem	LIMS / Server
Wet Chemistry	Total Petroleum Hydrocarbons	1/24/01					Original -Wet Chem	LIMS / Server
Wet Chemistry	Total Phosphorus	7/18/06	1/16/09	12/13/10	8/26/15	3/23/18	Copy -Wet Chem	LIMS / Server
Wet Chemistry	Total Solids	9/4/03	7/18/06	1/16/09	8/26/15	3/26/18	Copy -Wet Chem	LIMS / Server
Wet Chemistry	Total Suspended Solids	9/4/03	8/4/06	1/16/09	8/25/15	3/26/18	Copy -Wet Chem	LIMS / Server
Wet Chemistry	Total Suspended Volatile Solids	9/4/03	7/18/06	1/15/15	3/26/18		Copy -Wet Chem	LIMS / Server
Wet Chemistry	Total Volatile Solids	1/24/01	9/5/03	7/18/06	1/15/15	3/26/18	Copy -Wet Chem	LIMS / Server
Wet Chemistry	Turbidity	9/4/03	7/18/06	1/16/09	8/26/15		Original -Wet Chem	LIMS / Server
Wet Chemistry	UV-254 Absorbance	9/8/03	1/30/08	8/26/15			Original -Wet Chem	LIMS / Server
Wet Chemistry	Industrial Hygiene UV/VIS SOP	2/22/13	**Removed**				**Removed**	
Wet Chemistry	Visible Foam	2/1/05	7/18/06				Original -Wet Chem	LIMS / Server
QA	Quality Assurance/Quality Control SOP	2/19/13	3/26/13	11/16/15	2/6/18		Original - QA	LIMS / Server
QA	Estimation of Uncertainty SOP	2/21/13	3/2/15	1/31/19			Original - QA	LIMS / Server
Microscopy	Laboratory Methods Manual	3/13/02	**Removed**				**Removed**	
Microscopy	PLM Bulk Asbestos	10/17/06	3/4/14	3/14/14	9/16/14		Copy - Microscopy	LIMS / Server
Microscopy	TEM Asbestos	8/15/05	6/2/08				Copy - Microscopy	LIMS / Server
Microscopy	PCM Asbestos	10/12/06	5/17/07	3/19/15	3/21/17	10/31/19	Copy - Microscopy	LIMS / Server
Microscopy	Drinking Water Asbestos	10/12/06	11/13/06	8/23/13			Copy - Microscopy	LIMS / Server
Microscopy	AHERA Sample Prep	9/8/10	12/10/10	12/17/10			Copy - Microscopy	LIMS / Server
Microscopy	Asbestos in Water Sample Prep	9/8/10	12/10/10	8/23/13			Copy - Microscopy	LIMS / Server
Microscopy	PCM Asbestos Sample Prep	9/8/10					Copy - Microscopy	LIMS / Server
Microscopy	NIOSH 7402 Sample Prep	9/8/10					Copy - Microscopy	LIMS / Server
Microscopy	Yamate Sample Prep	9/8/10					Copy - Microscopy	LIMS / Server
Microscopy	TEM-NOB	12/10/10	8/20/13	9/16/14			Copy - Microscopy	LIMS / Server
Microscopy	NOB Asbestos Prep	12/10/10					Copy - Microscopy	LIMS / Server
Microscopy	Plasma Asher Calibration	9/29/10					Copy - Microscopy	LIMS / Server
Microscopy	PCM Quarterly Reference Slide	6/27/11	12/15/15	4/17/18			Copy - Microscopy	LIMS / Server
Metals	Metals Analysis	3/12/02	9/9/03	**Split into 3**			**Removed**	
Metals	ICP Metals Analysis	8/5/15	11/13/15	11/15/16	1/30/18	11/7/19	Copy - Metals	LIMS / Server
Metals	ICP MS Drinking Water SOP	10/7/16	12/19/16	7/21/17	11/7/19		Copy - Metals	LIMS / Server
Metals	ICP MS Water SOP	7/21/17	11/7/19				Copy - Metals	LIMS / Server
Metals	GFAA Analysis	3/25/13	8/19/13	8/5/15	5/1/16	2/26/18	Copy - Metals	LIMS / Server
Metals	Mercury Analysis	3/25/13	8/19/13	8/5/15	7/14/17		Copy - Metals	LIMS / Server

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Department	SOP	Rev. Date	Rev. Date	Rev. Date	Rev. Date	Rev. Date	Distributed to:	Electronic Signed
Metals	Low Level Mercury	1/19/11	2/2/18				Copy - Metals	LIMS / Server
Login	Sample Login	10/25/06	12/14/11	6/7/12	4/15/15	3/5/19	Original - Login	LIMS / Server
Login	1989 Routine Bottles	9/7/10					Original - Login	LIMS / Server
Login	1989 Baseline Bottles	9/7/10					Original - Login	LIMS / Server
Login	1993 Routine Bottles	9/7/10					Original - Login	LIMS / Server
Login	1993 Baseline Bottles	9/7/10					Original - Login	LIMS / Server
Login	1993 Expanded Bottles	9/7/10					Original - Login	LIMS / Server
Login	Part V Bottled water bottles	9/7/10					Original - Login	LIMS / Server
Login	Part V Full list Bottles	9/7/10	5/2/13	9/13/19			Original - Login	LIMS / Server
Login	Minimum Sample Volumes for analyses	12/15/15	1/31/18				Original - Login	LIMS / Server
Organics	Pressurized Fluid Extraction	7/13/10	3/1/11	8/27/15	8/2/17	5/29/18	Copy - Organics	LIMS / Server
Organics	Solid Phase Extraction	3/1/11	8/27/15	9/28/15	12/8/15	4/2/18	Copy - Organics	LIMS / Server
GC/MS	GC/MS Volatiles	4/23/14	12/14/15	1/19/18	4/2/18	8/8/18	Copy - GC/MS	LIMS / Server
GC/MS	Volatile Organics Soil Prep	6/13/12					Copy - GC/MS	LIMS / Server
GC/MS	Volatile Organics Wipe Prep	7/25/05					Copy - GC/MS	LIMS / Server
GC/MS	EPA 524.2	2/20/09	4/23/14	5/5/16	1/23/18		Copy - GC/MS	LIMS / Server
GC/MS	GC/MS Semi-Volatiles	8/18/11	12/14/11	2/17/15	1/23/18	4/2/18	Copy - GC/MS	LIMS / Server
GC/MS	Semi-Volatile Wipe Prep	7/25/05					Copy - GC/MS	LIMS / Server
GC/MS	EPA 1666	4/23/14	2/20/15	**Removed**			Removed	LIMS / Server
GC Organics	Method 24 GC Water Content	7/30/08	12/13/12	4/8/13			Copy - Organics	LIMS / Server
GC Organics	PCBs by TO-10A Modified	7/31/08	8/22/13	**Removed**			**Removed**	
GC Organics	Herbicides by SM6640B	8/1/08	10/18/10	5/5/14	**Removed**		**Removed**	
GC Organics	GC Volatiles	7/12/10	10/18/10	12/8/10	**Removed**		**Removed**	
GC Organics	Haloacetic Acids - 552.1	10/3/03	**Removed**				**Removed**	
GC Organics	Haloacetic Acids - 552.2	10/18/10	8/23/13	9/17/14	10/17/15	12/3/19	Copy - Organics	LIMS / Server
GC Organics	Herbicides	1/6/11	5/5/14	1/15/15	**Removed**		**Removed**	
GC Organics	Herbicides - 8321	2/17/15	8/27/15	9/28/15	8/2/17		Copy - Organics	LIMS / Server
GC Organics	Industrial Hygiene GC SOP	3/10/10	2/14/12	4/23/12	**Removed**		**Removed**	
GC Organics	Microextractables - 504.1	3/22/05	12/16/05	7/13/10	4/24/13		Copy - Organics	LIMS / Server
GC Organics	NP Pesticides - 507	10/2/03	9/19/08	**Removed**			**Removed**	
GC Organics	NP Pesticides - 8141	3/15/11	4/8/13	10/14/14	10/7/16		Copy - Organics	LIMS / Server
GC Organics	PCB	7/7/10	3/1/11	4/8/13	1/27/16	3/28/18	Copy - Organics	LIMS / Server
GC Organics	Pesticides	3/1/11	4/8/13	11/11/15	1/21/16	3/28/18	Copy - Organics	LIMS / Server
GC Organics	Phthalates - EPA 606 / EPA 612	2/20/09	7/12/10	4/11/13	5/8/13		Copy - Organics	LIMS / Server
GC Organics	GC Phenols	12/12/05	4/11/13	3/28/18			Copy - Organics	LIMS / Server
GC Organics	EPA 8015	10/21/10	1/3/11	3/15/11	2/12/18		Copy - Organics	LIMS / Server
GC Organics	EPA 8015 DRO	10/18/10	1/18/18				Copy - Organics	LIMS / Server
GC Organics	EPA 8015 GRO	1/28/11	12/10/15	1/29/18			Copy - Organics	LIMS / Server
GC Organics	Carbofuran by HPLC	1/28/10	4/18/13	7/17/13	9/5/17		Copy - Organics	LIMS / Server
GC Organics	Aldehydes by HPLC	2/22/10	4/23/12	2/12/18			Copy - Organics	LIMS / Server
GC Organics	Dissolved Gases - RSK175	8/12/11	1/31/12	**Removed**			**Removed**	
GC Organics	Ethylene Thiourea - EPA 509	6/21/12	8/23/13	11/12/15			Copy - Organics	LIMS / Server

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GC Organics	EPA 1671	12/18/15	10/7/16	1/23/18			Copy - Organics	LIMS / Server
GC Organics	Method 86306G nDPA by HPLC	9/1/17	2/1/18	2/15/18			Copy - Organics	LIMS / Server
All	SW-846 Test Methods	12/1/96	On-Line				On-Line	
All	TCLP Extraction	10/21/02	10/1/08	11/12/10	1/12/18	5/15/18	Copy - Metals,GC/MS	LIMS / Server
All	SPLP Extraction	12/9/11	1/25/12				Copy - Metals	LIMS / Server
All	Disposal Manual	5/1/01	6/15/18					LIMS / Server
All	General Housekeeping	11/5/04						LIMS / Server
All	NYSDEC ASP Manual	6/1/00	7/1/05				Original - QA	Server
All	SW-846 Test Methods	12/1/96	**On-Line**				**On-Line**	
All	EPA Test Methods 100 Series	3/1/83					Original - QA	
All	EPA Test Methods 200 Series	3/1/83					Original - QA	
All	EPA Test Methods 300 Series	3/1/83					Original - QA	
All	EPA Test Methods 400 Series	3/1/83					Original - QA	
All	EPA Test Methods 500 Series	6/1/95					Original - QA	
All	EPA Test Methods 600 Series	3/1/84					Original - QA	
All	Standards Methods	1/1/95	**On-Line**				**On-Line**	
All	NIOSH Manual 4th Edition	1/1/95	**On-Line**				**On-Line**	
All	EPA CLP SOW ILMO4.0	8/1/94					Original - QA	
All	EPA CLP SOW OLMO3.1	8/1/94					Original - QA	
All	Industrial Hygiene Supplement	2/19/13	11/6/14	3/4/15	4/30/15		Original - QA	LIMS / Server
All	Quality Manual	3/18/16	3/22/17	3/23/18	10/18/18	2/21/19	Original - QA	LIMS / Server
All	Microscopy Division Supplement	2/19/13	11/6/14	3/16/16	3/23/17		Original - QA	LIMS / Server
All	ELAP Manual	1/1/04	4/1/05	12/1/05	**On-Line**		**On-Line**	
All	ASTM 1994 Petroleum Stds 05.01	1/1/94					Original - QA	
All	ASTM 1994 Petroleum Stds 05.02	1/1/94					Original - QA	
All	Data Integrity	12/23/14	12/28/15	12/29/16	12/27/17	12/28/18	Original - QA	
All	Ethics Training	12/23/14	12/28/15	12/29/16	12/27/17	12/28/18	Original - QA	
All	Manual Integration	8/1/08	6/12/19				Original - QA	LIMS / Server
All	ISO 17025-2005	5/15/05	**Removed**				**Removed**	
All	AIHA Policies	3/14/14	7/1/15	10/3/16	2/20/17	7/1/18	Original - QA	
Field	Groundwater Sampling SOP	9/7/10	**Removed**				**Removed**	
Field	Potable Water Sampling SOP	9/7/10	**Removed**				**Removed**	
Field	Soil Sampling SOP	9/7/10	**Removed**				**Removed**	
Field	Wastewater Sampling SOP	9/7/10	**Removed**				**Removed**	
Field	Low Level Mercury Sampling	9/2/11	**Removed**				**Removed**	
Field	Volatile Organics Soil Sampling SOP	5/25/12	**Removed**				**Removed**	
IH Metals	NIOSH 7300 Mod.	4/9/15	4/23/15	2/1/17	3/21/17	1/25/19	Copy - Metals	LIMS / Server
IH Metals	NIOSH 7303	3/6/15	4/9/15	4/23/15	5/5/15	1/25/19	Copy - Metals	LIMS / Server
IH Metals	NIOSH 6009 Mod.	3/25/13	3/6/15	3/16/15	4/23/15		Copy - Metals	LIMS / Server
IH GC Organics	GC Organics for IH SOP	3/20/17	1/31/19				Copy - GC Organics	LIMS / Server
IH GC Organics	NIOSH 1003	3/25/13	3/5/15	4/8/15	4/23/15		Copy - GC Organics	LIMS / Server
IH GC Organics	NIOSH 1005	3/25/13	12/6/16				Copy - GC Organics	LIMS / Server

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IH GC Organics	NIOSH 1022	3/5/15	4/9/15	4/23/15			Copy - GC Organics	LIMS / Server
IH GC Organics	NIOSH 1025	11/23/16					Copy - GC Organics	LIMS / Server
IH GC Organics	NIOSH 1026	3/25/13	11/23/16				Copy - GC Organics	LIMS / Server
IH GC Organics	NIOSH 1300	3/25/13	12/6/16				Copy - GC Organics	LIMS / Server
IH GC Organics	NIOSH 1400	3/25/13	12/6/16				Copy - GC Organics	LIMS / Server
IH GC Organics	NIOSH 1450	3/25/13	12/6/16				Copy - GC Organics	LIMS / Server
IH GC Organics	NIOSH 1457	3/25/13	12/6/16				Copy - GC Organics	LIMS / Server
IH GC Organics	NIOSH 1500	3/25/13	3/5/15	4/9/15	4/23/15		Copy - GC Organics	LIMS / Server
IH GC Organics	NIOSH 1501	3/5/15	4/9/15	4/23/15	1/23/17		Copy - GC Organics	LIMS / Server
IH GC Organics	NIOSH 1550	3/25/13	11/23/16				Copy - GC Organics	LIMS / Server
IH GC Organics	NIOSH 2000	3/5/15	4/9/15	4/23/15	1/23/17		Copy - GC Organics	LIMS / Server
IH GC Organics	NIOSH 2016 Mod.	3/5/15	4/9/15	4/23/15	3/20/17		Copy - GC Organics	LIMS / Server
IH GC Organics	NIOSH 2500	3/25/13	12/6/16				Copy - GC Organics	LIMS / Server
IH GC Organics	NIOSH 5503	3/25/13	3/5/15	4/9/15	4/23/15	1/28/19	Copy - GC Organics	LIMS / Server
IH GC Organics	NIOSH 5515	3/25/13	3/5/15	4/9/15	4/23/15		Copy - GC Organics	LIMS / Server
IH GC Organics	OSHA 32	11/23/16					Copy - GC Organics	LIMS / Server
IH GC Organics	OSHA 42, 47	3/26/14	3/6/15	4/9/15	4/23/15		Copy - GC Organics	LIMS / Server
IH GC Organics	OSHA 1013	11/23/16					Copy - GC Organics	LIMS / Server
IH GC Organics	ASTM D5197	1/11/18					Copy - GC Organics	LIMS / Server
IH Wet Chemistry	NIOSH 6004	3/25/13	3/4/15	4/10/15	4/23/15		Original -Wet Chem	LIMS / Server
IH Wet Chemistry	NIOSH 6010	3/25/13	3/3/15	4/10/15	4/23/15		Original -Wet Chem	LIMS / Server
IH Wet Chemistry	NIOSH 6011	3/25/13	1/23/17				Copy -Wet Chem	LIMS / Server
IH Wet Chemistry	NIOSH 6013	3/25/13					Original -Wet Chem	LIMS / Server
IH Wet Chemistry	NIOSH 6014	3/25/13					Original -Wet Chem	LIMS / Server
IH Wet Chemistry	NIOSH 6015	3/3/15	4/10/15	4/23/15	1/15/18	12/7/18	Copy -Wet Chem	LIMS / Server
IH Wet Chemistry	NIOSH 7600	3/25/13	3/2/15	4/10/15	4/23/15		Original -Wet Chem	LIMS / Server
IH Wet Chemistry	NIOSH 7903	3/25/13	3/4/15	4/10/15	4/23/15		Original -Wet Chem	LIMS / Server
IH Wet Chemistry	NIOSH 7906	3/25/13					Original -Wet Chem	LIMS / Server
IH Wet Chemistry	NIOSH 7907	5/3/18					Copy -Wet Chem	LIMS / Server
IH Wet Chemistry	NIOSH 7908	5/3/18					Copy -Wet Chem	LIMS / Server
IH Asbestos	NIOSH 7500	11/1/16	4/20/17	4/9/18			Copy - Microscopy	LIMS / Server
IH GC Organics	NIOSH 2016 Mod. for Badges	5/22/18					Copy - GC Organics	LIMS / Server
IH GC Organics	ASTM D5197 Mod for Badges	5/22/18					Copy - GC Organics	LIMS / Server
IH GC Organics	ISO 16000-4	5/22/18					Copy - GC Organics	LIMS / Server
Wet Chemistry	BOD Excel Template	3/9/15					Original - Server	
All	AVO Form - Word	10/20/14	**Removed**				**Removed**	
All	Client Change Form - Word	10/20/14	**Removed**				**Removed**	
All	Project Change Form - Word	10/20/14	**Removed**				**Removed**	
All	Workorder Change Form - Word	10/20/14	**Removed**				**Removed**	
All	Personnel Training Checklist Template	3/10/15					Original - QA	
All	Training Program SOP	2/25/15					Original - QA	Server
All	RepGen (Report Generation) SOP	12/1/16	1/5/17	1/24/19			Original - QA	Server

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Field	Field Sampling Plan	4/20/18					Copy - Field	Server
Microscopy	TEM Grid Size Calibration	4/17/18					Copy - Microscopy	LIMS / Server
Wet Chemistry	Cyanate by Ammonia Titration	6/20/18					Copy -Wet Chem	LIMS / Server
Wet Chemistry	Total Phenol Seal Method	7/27/18					Copy -Wet Chem	LIMS / Server
Wet Chemistry	Total Phosphorus Seal Method	7/27/18					Copy -Wet Chem	LIMS / Server
Wet Chemistry	Hex Chrome Wipes	12/28/18					Copy -Wet Chem	LIMS / Server
GC Organics	Alcohol Reference Solution SOP	1/29/19					Copy - Organics	LIMS / Server
All	Corrective Action Policy	8/2/18					Original - QA	Server
All	AVO Form - PDF	9/11/18	9/21/18	2/28/19			Original - Accounting	Server
All	Bottle Order - PDF	9/11/18	9/21/18	2/28/19			Original - Accounting	Server
All	Client Change Form - PDF	9/11/18	9/21/18	2/28/19			Original - Accounting	Server
All	Project Change Form - PDF	9/11/18	9/21/18	2/28/19			Original - Accounting	Server
All	Workorder Change Form - PDF	9/11/18	9/21/18	2/28/19			Original - Accounting	Server
All	ISO 17025-2017	5/17/18					Original - QA	
All	coc.form.pdf	4/9/18					Original - Accounting	LIMS / Server
All	coc.pdf	9/11/14					Original - Accounting	LIMS / Server
All	coc.xlsx	10/20/17					Original - Accounting	LIMS / Server
All	coc.doc	10/20/17					Original - Accounting	LIMS / Server
All	coc.legionella.form.pdf	4/9/18					Original - Accounting	LIMS / Server
All	coc.legionella.pdf	10/20/17					Original - Accounting	LIMS / Server
All	coc.legionella.xls	10/20/17					Original - Accounting	LIMS / Server
All	coc-Asbestos-air2.form.pdf	4/9/18					Original - Accounting	LIMS / Server
All	coc-Asbestos-air2.pdf	4/9/18					Original - Accounting	LIMS / Server
All	coc-Asbestos-air.xls	4/3/18					Original - Accounting	LIMS / Server
All	coc-IH.form.pdf	4/9/18					Original - Accounting	LIMS / Server
All	coc-IH.pdf	12/1/17					Original - Accounting	LIMS / Server
All	Chemical Hygiene Plan	1/28/14					Original - IH	LIMS / Server
GC Organics	EPA 608.3 SOP - Mass	3/28/19					Original - QA	LIMS / Server
GC/MS	EPA 624.1 SOP - Mass.	4/4/19	6/12/19				Original - QA	LIMS / Server
All	Massachusetts Additional Requirements	4/5/19	6/7/19				Original - QA	

ATTACHMENT 7

Analytical Methods

ANALYTICAL METHODS, HOLDING TIMES, PRACTICAL QUANTITATION LIMITS, AND APPLICABLE STANDARDS/GUIDANCE VALUES

Baseline Parameter List (Includes Routine Parameters)

Analyte	Method	Units	PQL	Class GA Std. (TOGS 1.1.1 GV)	Class C(T) Standard	Holding Time
Field Parameters						
Turbidity	EPA 180.1	NTU	1.0	5	(See Note 1)	
pH	EPA 150.1	S.U.	-	6.5 < pH < 8.5	6.5 < pH < 8.5	
Temperature	EPA 170.1	°C	-	-	(See Note 2)	
Dissolved Oxygen	EPA 360.1	mg/L	0.10	-	(See Note 3)	
Wet Chemistry Parameters						
Color	SM 2120B	C.U.	5	15	(See Note 4)	48 hours
Alkalinity	SM 2320B	mg/L $CaCO_3$	10	-	-	14 days
Ammonia	EPA 350.1	mg/L	0.1	2	(See Note 5)	28 days
Chloride	EPA 300.0	mg/L	1.0	250	-	28 days
Sulfate	EPA 300.0	mg/L	2.0	250	-	28 days
Total Dissolved Solids (TDS)	SM 2540C	mg/L	5	500	500	7 days
Total Organic Carbon (TOC)	SM 5310C	mg/L	1.0	-	-	28 days
Hardness	SM 2340B	mg/L $CaCO_3$	5	-	-	
Specific Conductivity	SM 2510B	µmhos/cm	1	-	-	28 days
Metals						
Aluminum	EPA 200.7	µg/L	100	-	100	180 days
Antimony	EPA 200.7	µg/L	60.0	3	-	180 days
Arsenic	EPA 200.7	µg/L	5.00	25	150	180 days
Barium	EPA 200.7	µg/L	10.0	1,000	-	180 days
Boron	EPA 200.7	µg/L	50.0	1,000	10,000	180 days
Cadmium	EPA 200.7	µg/L	5.00	5	(See Note 6)	180 days
Calcium	EPA 200.7	µg/L	500	-	-	180 days
Copper	EPA 200.7	µg/L	5.00	200	(See Note 6)	180 days
Chromium, total	EPA 200.7	µg/L	5.00	50	(See Note 6)	180 days
Iron	EPA 200.7	µg/L	50.0	300	300	180 days
Magnesium	EPA 200.7	µg/L	50.0	(35,000)	-	180 days
Manganese	EPA 200.7	µg/L	20.0	300	-	180 days
Mercury	EPA 245.1	µg/L	0.2	0.7	(See Note 7)	28 days
Nickel	EPA 200.7	µg/L	20.0	100	(See Note 6)	180 days
Potassium	EPA 200.7	µg/L	50.0	-	-	180 days
Selenium	EPA 200.7	µg/L	5.00	10	4.6	180 days
Sodium	EPA 200.7	µg/L	50.0	20,000	-	180 days
Zinc	EPA 200.7	µg/L	10.0	(5,000)	(See Note 6)	180 days

Notes:

(1) No increase in turbidity that will cause a substantial visible contrast to natural conditions.

(2) Any discharge to trout waters must be ≤ 70°F; Also, from June through September no discharge shall cause a change in temperature greater than two degrees Fahrenheit and from October through May no discharge shall raise the temperature more than five degrees Fahrenheit or above 50°F, whichever is less.

(3) For trout waters, the minimum daily average shall not be less than 6.0 mg/L, and at no time shall the concentration be less than 5.0 mg/L.

(4) None in amounts that will adversely affect the color or impair the waters for their best usages.

(5) Range from 0.7 to 35 µg/L depending on the temperature and pH. See §703.5 for associated table.

(6) The standard is computed on the basis of hardness as follows:

Cadmium std = 0.85*exp(0.7852 [ln(ppm hardness)] - 2.715)
Chromium std = 0.86*exp(0.819 [ln(ppm hardness)] + 0.6848)
Copper std = 0.96*exp(0.8545 [ln(ppm hardness)] - 1.702)
Nickel std = 0.997*exp (0.846 [ln(ppm hardness)] + 0.0584)
Zinc std = exp(0.85 [ln(ppm hardness)] + 0.50)

(7) Class C(T) standards for undissolved mercury concentrations do not exist. The Class A, AS, AA and AA-S Type H(WS) standard of 0.7 µg/L shall be used.

ATTACHMENT 8

Laboratory New York State Department of Health (NYSDOH) Environmental Laboratory Approval Program (ELAP) Certification

NEW YORK STATE DEPARTMENT OF HEALTH
WADSWORTH CENTER

Expires 12:01 AM April 01, 2020
Issued April 01, 2019
Revised December 10, 2019

CERTIFICATE OF APPROVAL FOR LABORATORY SERVICE

Issued in accordance with and pursuant to section 502 Public Health Law of New York State

MS. TARA DANIELS
ADIRONDACK ENVIRONMENTAL SERVICES INC
314 NORTH PEARL STREET
ALBANY, NY 12207

NY Lab Id No: 10709

is hereby APPROVED as an Environmental Laboratory in conformance with the National Environmental Laboratory Accreditation Conference Standards (2003) for the category ENVIRONMENTAL ANALYSES NON POTABLE WATER
All approved analytes are listed below:

Acrylates	
Acrolein (Propenal)	EPA 8260C
	EPA 624.1
Acrylonitrile	EPA 8260C
	EPA 624.1
Ethyl methacrylate	EPA 8260C
Methyl acrylonitrile	EPA 8260C
Methyl methacrylate	EPA 8260C
Amines	
1,2-Diphenylhydrazine	EPA 8270D
1,4-Phenylenediamine	EPA 8270D
1-Naphthylamine	EPA 8270D
2-Naphthylamine	EPA 8270D
2-Nitroaniline	EPA 8270D
3-Nitroaniline	EPA 8270D
4,4'-Methylenebis(2-chloroaniline)	EPA 8270D
4-Chloroaniline	EPA 8270D
4-Nitroaniline	EPA 8270D
5-Nitro-o-toluidine	EPA 8270D
a,a-Dimethylphenethylamine	EPA 8270D
Aniline	EPA 8270D
Carbazole	EPA 8270D
Diphenylamine	EPA 8270D
Methapyrilene	EPA 8270D
Pronamide	EPA 8270D
Pyridine	EPA 8270D
Benzidines	
3,3'-Dichlorobenzidine	EPA 625.1
	EPA 8270D
3,3'-Dimethylbenzidine	EPA 8270D
Benzidine	EPA 625.1
	EPA 8270D
Carbamate Pesticides	
Carbofuran	EPA 632
Chlorinated Hydrocarbon Pesticides	
4,4'-DDD	EPA 8081B
	EPA 608.3
4,4'-DDE	EPA 8081B
	EPA 608.3
4,4'-DDT	EPA 8081B
	EPA 608.3
Aldrin	EPA 8081B
	EPA 608.3
alpha-BHC	EPA 8081B
	EPA 608.3
alpha-Chlordane	EPA 8081B
beta-BHC	EPA 8081B
	EPA 608.3
Captan	EPA 8270D
Chlordane Total	EPA 8081B
	EPA 608.3
Chlorobenzilate	EPA 8270D

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NELAP RECOGNIZED ACCREDITATION BODY

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Chlorinated Hydrocarbon Pesticides	
delta-BHC	EPA 8081B
	EPA 608.3
Diallate	EPA 8270D
Dieldrin	EPA 8081B
	EPA 608.3
Endosulfan I	EPA 8081B
	EPA 608.3
Endosulfan II	EPA 8081B
	EPA 608.3
Endosulfan sulfate	EPA 8081B
	EPA 608.3
Endrin	EPA 8081B
	EPA 608.3
Endrin aldehyde	EPA 8081B
	EPA 608.3
Endrin Ketone	EPA 8081B
gamma-Chlordane	EPA 8081B
Heptachlor	EPA 8081B
	EPA 608.3
Heptachlor epoxide	EPA 8081B
	EPA 608.3
Isodrin	EPA 8270D
Kepone	EPA 8270D
Lindane	EPA 8081B
	EPA 608.3
Methoxychlor	EPA 8081B

Chlorinated Hydrocarbon Pesticides	
Methoxychlor	EPA 608.3
Mirex	EPA 8081B
Toxaphene	EPA 8081B
	EPA 608.3
Chlorinated Hydrocarbons	
1,2,3-Trichlorobenzene	EPA 8260C
1,2,4,5-Tetrachlorobenzene	EPA 8270D
1,2,4-Trichlorobenzene	EPA 625.1
	EPA 612
	EPA 8270D
1-Chloronaphthalene	EPA 8270D
2-Chloronaphthalene	EPA 625.1
	EPA 8270D
Hexachlorobenzene	EPA 625.1
	EPA 8270D
Hexachlorobutadiene	EPA 625.1
	EPA 8270D
Hexachlorocyclopentadiene	EPA 625.1
	EPA 8270D
Hexachloroethane	EPA 625.1
	EPA 8270D
Hexachloropropene	EPA 8270D
Pentachlorobenzene	EPA 8270D
Chlorophenoxy Acid Pesticides	
2,4,5-T	EPA 8321B

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Chlorophenoxy Acid Pesticides	
2,4,5-TP (Silvex)	EPA 8321B
2,4-D	EPA 8321B
Demand	
Biochemical Oxygen Demand	SM 5210B-2011
Carbonaceous BOD	SM 5210B-2011
Chemical Oxygen Demand	EPA 410.4, Rev. 2.0 (1993)
Fuel Oxygenates	
Ethanol	EPA 1671
	EPA 8260C
	EPA 8015D
Methyl tert-butyl ether	EPA 8260C
	EPA 624.1
tert-amyl methyl ether (TAME)	EPA 8260C
tert-butyl alcohol	EPA 8260C
Haloethers	
2,2'-Oxybis(1-chloropropane)	EPA 625.1
	EPA 8270D
4-Bromophenylphenyl ether	EPA 625.1
	EPA 8270D
4-Chlorophenylphenyl ether	EPA 625.1
	EPA 8270D
Bis(2-chloroethoxy)methane	EPA 625.1
	EPA 8270D
Bis(2-chloroethyl)ether	EPA 625.1
Haloethers	
Bis(2-chloroethyl)ether	EPA 8270D
Metals I	
Barium, Total	EPA 200.7, Rev. 4.4 (1994)
	EPA 6010C
	EPA 200.8, Rev. 5.4 (1994)
Cadmium, Total	EPA 200.7, Rev. 4.4 (1994)
	EPA 6010C
	EPA 200.8, Rev. 5.4 (1994)
Calcium, Total	EPA 200.7, Rev. 4.4 (1994)
	EPA 6010C
Chromium, Total	EPA 200.7, Rev. 4.4 (1994)
	EPA 6010C
	EPA 200.8, Rev. 5.4 (1994)
Copper, Total	EPA 200.7, Rev. 4.4 (1994)
	EPA 6010C
	EPA 200.8, Rev. 5.4 (1994)
Iron, Total	EPA 200.7, Rev. 4.4 (1994)
	EPA 6010C
	EPA 200.8, Rev. 5.4 (1994)
Lead, Total	EPA 200.7, Rev. 4.4 (1994)
	EPA 6010C
	EPA 200.9 Rev. 2.2 (1994)
	EPA 200.8, Rev. 5.4 (1994)
Magnesium, Total	EPA 200.7, Rev. 4.4 (1994)
	EPA 6010C

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Metals I	
Manganese, Total	EPA 200.7, Rev. 4.4 (1994)
	EPA 6010C
	EPA 200.8, Rev. 5.4 (1994)
Nickel, Total	EPA 200.7, Rev. 4.4 (1994)
	EPA 6010C
	EPA 200.8, Rev. 5.4 (1994)
Potassium, Total	EPA 200.7, Rev. 4.4 (1994)
	EPA 6010C
Silver, Total	EPA 200.7, Rev. 4.4 (1994)
	EPA 6010C
	EPA 200.8, Rev. 5.4 (1994)
Sodium, Total	EPA 200.7, Rev. 4.4 (1994)
	EPA 6010C
Strontium, Total	EPA 200.7, Rev. 4.4 (1994)
	EPA 6010C
Metals II	
Aluminum, Total	EPA 200.7, Rev. 4.4 (1994)
	EPA 6010C
	EPA 200.8, Rev. 5.4 (1994)
Antimony, Total	EPA 200.7, Rev. 4.4 (1994)
	EPA 6010C
	EPA 200.8, Rev. 5.4 (1994)
Arsenic, Total	EPA 200.7, Rev. 4.4 (1994)
	EPA 6010C
	EPA 200.9 Rev. 2.2 (1994)

Metals II	
Arsenic, Total	EPA 200.8, Rev. 5.4 (1994)
Beryllium, Total	EPA 200.7, Rev. 4.4 (1994)
	EPA 6010C
	EPA 200.8, Rev. 5.4 (1994)
Chromium VI	EPA 7196A
	SM 3500-Cr B-2011
Mercury, Low Level	EPA 1631E
Mercury, Total	EPA 245.1, Rev. 3.0 (1994)
	EPA 7470A
Selenium, Total	EPA 200.7, Rev. 4.4 (1994)
	EPA 6010C
	EPA 200.8, Rev. 5.4 (1994)
Vanadium, Total	EPA 200.7, Rev. 4.4 (1994)
	EPA 6010C
	EPA 200.8, Rev. 5.4 (1994)
Zinc, Total	EPA 200.7, Rev. 4.4 (1994)
	EPA 6010C
	EPA 200.8, Rev. 5.4 (1994)
Metals III	
Cobalt, Total	EPA 200.7, Rev. 4.4 (1994)
	EPA 6010C
	EPA 200.8, Rev. 5.4 (1994)
Gold, Total	EPA 200.7, Rev. 4.4 (1994)
Molybdenum, Total	EPA 200.7, Rev. 4.4 (1994)
	EPA 6010C

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Metals III	
Thallium, Total	EPA 200.7, Rev. 4.4 (1994)
	EPA 6010C
	EPA 200.9 Rev. 2.2 (1994)
	EPA 200.8, Rev. 5.4 (1994)
Tin, Total	EPA 200.7, Rev. 4.4 (1994)
	EPA 6010C
Titanium, Total	EPA 200.7, Rev. 4.4 (1994)
	EPA 6010C
Mineral	
Acidity	SM 2310B-2011
Alkalinity	SM 2320B-2011
Calcium Hardness	EPA 200.7, Rev. 4.4 (1994)
Chloride	EPA 300.0, Rev. 2.1 (1993)
	SM 4500-Cl- C-2011
Fluoride, Total	EPA 300.0, Rev. 2.1 (1993)
	SM 4500-F- C-2011
Hardness, Total	EPA 200.7, Rev. 4.4 (1994)
Sulfate (as SO4)	EPA 300.0, Rev. 2.1 (1993)
Miscellaneous	
Boron, Total	EPA 200.7, Rev. 4.4 (1994)
	EPA 6010C
Bromide	EPA 300.0, Rev. 2.1 (1993)
Color	SM 2120B-2011
Corrosivity	SM 2330
Cyanide, Total	SM 4500-CN E-2011

Miscellaneous	
Cyanide, Total	EPA 335.4, Rev. 1.0 (1993)
Formaldehyde	EPA 8315A
non-Polar Extractable Material (TPH)	EPA 1664A
Oil and Grease Total Recoverable (HEM)	EPA 1664A
Organic Carbon, Total	SM 5310C-2011
Phenols	EPA 420.1 (Rev. 1978)
	EPA 420.4, Rev. 1.0 (1993)
Specific Conductance	EPA 120.1 (Rev. 1982)
	SM 2510B-2011
Sulfide (as S)	EPA 9034
	SM 4500-S2- D-2011
Surfactant (MBAS)	SM 5540C-2011
Turbidity	SM 2130 B-2011
	EPA 180.1, Rev. 2.0 (1993)
Nitroaromatics and Isophorone	
1,3,5-Trinitrobenzene	EPA 8270D
1,3-Dinitrobenzene	EPA 8270D
1,4-Naphthoquinone	EPA 8270D
2,4-Dinitrotoluene	EPA 625.1
	EPA 8270D
2,6-Dinitrotoluene	EPA 625.1
	EPA 8270D
4-Nitroquinoline-1-oxide	EPA 8270D
Isophorone	EPA 625.1
	EPA 8270D

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Nitroaromatics and Isophorone	
Nitrobenzene	EPA 625.1
	EPA 8270D
Nitrosoamines	
N-Nitrosodiethylamine	EPA 8270D
N-Nitrosodimethylamine	EPA 625.1
	EPA 8270D
N-Nitrosodi-n-butylamine	EPA 8270D
N-Nitrosodi-n-propylamine	EPA 625.1
	EPA 8270D
N-Nitrosodiphenylamine	EPA 625.1
	EPA 8270D
N-nitrosomethylethylamine	EPA 8270D
N-nitrosomorpholine	EPA 8270D
N-nitrosopiperidine	EPA 8270D
N-Nitrosopyrrolidine	EPA 8270D
Nutrient	
Ammonia (as N)	SM 4500-NH3 G-2011
	SM 4500-NH3 C-2011
	EPA 350.1, Rev. 2.0 (1993)
Kjeldahl Nitrogen, Total	SM 4500-NH3 C-2011
Nitrate (as N)	EPA 300.0, Rev. 2.1 (1993)
	SM 4500-NO3 F-2011
Nitrate-Nitrite (as N)	SM 4500-NO3 F-2011
Nitrite (as N)	EPA 300.0, Rev. 2.1 (1993)
	SM 4500-NO2 B-2011
Nutrient	
Orthophosphate (as P)	EPA 300.0, Rev. 2.1 (1993)
	SM 4500-P E-2011
Phosphorus, Total	SM 4500-P E-2011
	SM 4500-P (F-H)-2011
Organophosphate Pesticides	
Atrazine	EPA 8141B
Azinphos methyl	EPA 8141B
Chlorpyriphos	EPA 8141B
Diazinon	EPA 8141B
Dimethoate	EPA 8141B
Disulfoton	EPA 8141B
Famphur	EPA 8141B
Malathion	EPA 8141B
Parathion ethyl	EPA 8141B
Parathion methyl	EPA 8141B
Pendimethalin	EPA 8141B
Phorate	EPA 8141B
Simazine	EPA 8141B
Sulfotepp	EPA 8141B
Thionazin	EPA 8141B
Phthalate Esters	
Benzyl butyl phthalate	EPA 625.1
	EPA 606
	EPA 8270D
Bis(2-ethylhexyl) phthalate	EPA 625.1

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Phthalate Esters	
Bis(2-ethylhexyl) phthalate	EPA 606
	EPA 8270D
Diethyl phthalate	EPA 625.1
	EPA 606
	EPA 8270D
Dimethyl phthalate	EPA 625.1
	EPA 606
	EPA 8270D
Di-n-butyl phthalate	EPA 625.1
	EPA 606
	EPA 8270D
Di-n-octyl phthalate	EPA 625.1
	EPA 606
	EPA 8270D
Polychlorinated Biphenyls	
Aroclor 1016 (PCB-1016)	EPA 8082A
	EPA 608.3
Aroclor 1221 (PCB-1221)	EPA 8082A
	EPA 608.3
Aroclor 1232 (PCB-1232)	EPA 8082A
	EPA 608.3
Aroclor 1242 (PCB-1242)	EPA 8082A
	EPA 608.3
Aroclor 1248 (PCB-1248)	EPA 8082A
	EPA 608.3
Polychlorinated Biphenyls	
Aroclor 1254 (PCB-1254)	EPA 8082A
	EPA 608.3
Aroclor 1260 (PCB-1260)	EPA 8082A
	EPA 608.3
Aroclor 1262 (PCB-1262)	EPA 8082A
Aroclor 1268 (PCB-1268)	EPA 8082A
Polynuclear Aromatics	
2-Acetylaminofluorene	EPA 8270D
3-Methylcholanthrene	EPA 8270D
7,12-Dimethylbenzyl (a) anthracene	EPA 8270D
Acenaphthene	EPA 625.1
	EPA 8270D
Acenaphthylene	EPA 625.1
	EPA 8270D
Anthracene	EPA 625.1
	EPA 8270D
Benzo(a)anthracene	EPA 625.1
	EPA 8270D
Benzo(a)pyrene	EPA 625.1
	EPA 8270D
Benzo(b)fluoranthene	EPA 625.1
	EPA 8270D
Benzo(g,h,i)perylene	EPA 625.1
	EPA 8270D
Benzo(k)fluoranthene	EPA 625.1

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Polynuclear Aromatics	
Benzo(k)fluoranthene	EPA 8270D
Chrysene	EPA 625.1
	EPA 8270D
Dibenzo(a,h)anthracene	EPA 625.1
	EPA 8270D
Fluoranthene	EPA 625.1
	EPA 8270D
Fluorene	EPA 625.1
	EPA 8270D
Indeno(1,2,3-cd)pyrene	EPA 625.1
	EPA 8270D
Naphthalene	EPA 625.1
	EPA 8270D
Phenanthrene	EPA 625.1
	EPA 8270D
Pyrene	EPA 625.1
	EPA 8270D

Priority Pollutant Phenols	
2,3,4,6 Tetrachlorophenol	EPA 8270D
2,4,5-Trichlorophenol	EPA 8270D
2,4,6-Trichlorophenol	EPA 625.1
	EPA 604
	EPA 8270D
2,4-Dichlorophenol	EPA 625.1
	EPA 604

Priority Pollutant Phenols	
2,4-Dichlorophenol	EPA 8270D
2,4-Dimethylphenol	EPA 625.1
	EPA 604
	EPA 8270D
2,4-Dinitrophenol	EPA 625.1
	EPA 604
	EPA 8270D
2,6-Dichlorophenol	EPA 8270D
2-Chlorophenol	EPA 625.1
	EPA 604
	EPA 8270D
2-Methyl-4,6-dinitrophenol	EPA 625.1
	EPA 604
	EPA 8270D
2-Methylphenol	EPA 8270D
2-Nitrophenol	EPA 625.1
	EPA 604
	EPA 8270D
3-Methylphenol	EPA 8270D
4-Chloro-3-methylphenol	EPA 625.1
	EPA 604
	EPA 8270D
4-Methylphenol	EPA 8270D
4-Nitrophenol	EPA 625.1
	EPA 604
	EPA 8270D

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Priority Pollutant Phenols	
Cresols, Total	EPA 8270D
Pentachlorophenol	EPA 625.1
	EPA 604
	EPA 8270D
Phenol	EPA 625.1
	EPA 604
	EPA 8270D
Residue	
Settleable Solids	SM 2540 F-2011
Solids, Total	SM 2540 B-2011
Solids, Total Dissolved	SM 2540 C-2011
Solids, Total Suspended	SM 2540 D-2011
Solids, Volatile	SM 2540 E-2011
Semi-Volatile Organics	
1,1'-Biphenyl	EPA 8270D
1,2-Dichlorobenzene, Semi-volatile	EPA 8270D
1,3-Dichlorobenzene, Semi-volatile	EPA 8270D
1,4-Dichlorobenzene, Semi-volatile	EPA 8270D
2-Methylnaphthalene	EPA 8270D
2-Picoline	EPA 8270D
4-Amino biphenyl	EPA 8270D
Acetophenone	EPA 8270D
alpha-Terpineol	EPA 625.1
Aramite	EPA 8270D
Benzaldehyde	EPA 8270D

Semi-Volatile Organics	
Benzoic Acid	EPA 8270D
Benzyl alcohol	EPA 8270D
Caprolactam	EPA 8270D
Dibenzofuran	EPA 8270D
Ethyl methanesulfonate	EPA 8270D
Isosafrole	EPA 8270D
Methyl methanesulfonate	EPA 8270D
n-Decane	EPA 625.1
n-Octadecane	EPA 625.1
O,O,O-Triethyl phosphorothioate	EPA 8270D
p-Dimethylaminoazobenzene	EPA 8270D
Phenacetin	EPA 8270D
Safrole	EPA 8270D
Volatile Aromatics	
1,2,4-Trichlorobenzene, Volatile	EPA 8260C
1,2,4-Trimethylbenzene	EPA 8260C
1,2-Dichlorobenzene	EPA 8260C
	EPA 601
	EPA 624.1
	EPA 602
	EPA 524.2
1,3,5-Trimethylbenzene	EPA 8260C
1,3-Dichlorobenzene	EPA 8260C
	EPA 601
	EPA 624.1

Serial No.: 60747

NEW YORK STATE DEPARTMENT OF HEALTH
WADSWORTH CENTER

Expires 12:01 AM April 01, 2020
Issued April 01, 2019
Revised December 10, 2019

CERTIFICATE OF APPROVAL FOR LABORATORY SERVICE

Issued in accordance with and pursuant to section 502 Public Health Law of New York State

MS. TARA DANIELS
ADIRONDACK ENVIRONMENTAL SERVICES INC
314 NORTH PEARL STREET
ALBANY, NY 12207

NY Lab Id No: 10709

is hereby APPROVED as an Environmental Laboratory in conformance with the National Environmental Laboratory Accreditation Conference Standards (2003) for the category ENVIRONMENTAL ANALYSES NON POTABLE WATER
All approved analytes are listed below:

Volatile Aromatics	
1,3-Dichlorobenzene	EPA 602
1,4-Dichlorobenzene	EPA 8260C
	EPA 601
	EPA 624.1
	EPA 602
2-Chlorotoluene	EPA 8260C
4-Chlorotoluene	EPA 8260C
Benzene	EPA 8260C
	EPA 624.1
	EPA 602
	EPA 524.2
Bromobenzene	EPA 8260C
Chlorobenzene	EPA 8260C
	EPA 601
	EPA 624.1
	EPA 602
	EPA 524.2
Ethyl benzene	EPA 8260C
	EPA 624.1
	EPA 602
Isopropylbenzene	EPA 8260C
m/p-Xylenes	EPA 8260C
	EPA 624.1
Naphthalene, Volatile	EPA 8260C
	EPA 624.1
n-Butylbenzene	EPA 8260C

Volatile Aromatics	
n-Propylbenzene	EPA 8260C
o-Xylene	EPA 8260C
	EPA 624.1
p-Isopropyltoluene (P-Cymene)	EPA 8260C
sec-Butylbenzene	EPA 8260C
Styrene	EPA 8260C
	EPA 624.1
tert-Butylbenzene	EPA 8260C
Toluene	EPA 8260C
	EPA 624.1
	EPA 602
	EPA 524.2
Total Xylenes	EPA 8260C
	EPA 624.1
	EPA 602
Volatile Chlorinated Organics	
Benzyl chloride	EPA 8260C
Epichlorohydrin	EPA 8260C
Volatile Halocarbons	
1,1,1,2-Tetrachloroethane	EPA 8260C
1,1,1-Trichloroethane	EPA 8260C
	EPA 601
	EPA 624.1
1,1,2,2-Tetrachloroethane	EPA 8260C
	EPA 601

Serial No.: 60747

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Revised December 10, 2019

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Volatile Halocarbons	
1,1,2,2-Tetrachloroethane	EPA 624.1
1,1,2-Trichloro-1,2,2-Trifluoroethane	EPA 8260C
	EPA 624.1
1,1,2-Trichloroethane	EPA 8260C
	EPA 601
	EPA 624.1
1,1-Dichloroethane	EPA 8260C
	EPA 601
	EPA 624.1
1,1-Dichloroethene	EPA 8260C
	EPA 601
	EPA 624.1
1,1-Dichloropropene	EPA 8260C
1,2,3-Trichloropropane	EPA 8260C
1,2-Dibromo-3-chloropropane	EPA 8260C
1,2-Dibromoethane	EPA 8260C
1,2-Dichloroethane	EPA 8260C
	EPA 601
	EPA 624.1
	EPA 524.2
1,2-Dichloropropane	EPA 8260C
	EPA 601
	EPA 624.1
1,3-Dichloropropane	EPA 8260C
2,2-Dichloropropane	EPA 8260C
2-Chloro-1,3-butadiene (Chloroprene)	EPA 8260C

Volatile Halocarbons	
2-Chloroethylvinyl ether	EPA 8260C
	EPA 601
	EPA 624.1
3-Chloropropene (Allyl chloride)	EPA 8260C
Bromochloromethane	EPA 8260C
Bromodichloromethane	EPA 8260C
	EPA 601
	EPA 624.1
Bromoform	EPA 8260C
	EPA 601
	EPA 624.1
Bromomethane	EPA 8260C
	EPA 601
	EPA 624.1
Carbon tetrachloride	EPA 8260C
	EPA 601
	EPA 624.1
Chloroethane	EPA 8260C
	EPA 601
	EPA 624.1
Chloroform	EPA 8260C
	EPA 601
	EPA 624.1
	EPA 524.2
Chloromethane	EPA 8260C
	EPA 601

Serial No.: 60747

NEW YORK STATE DEPARTMENT OF HEALTH
WADSWORTH CENTER

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All approved analytes are listed below:

Volatile Halocarbons	
Chloromethane	EPA 624.1
cis-1,2-Dichloroetheno	EPA 8260C
	EPA 624.1
cis-1,3-Dichloropropene	EPA 8260C
	EPA 601
	EPA 624.1
cis-1,4-Dichloro-2-butene	EPA 8260C
Dibromochloromethane	EPA 8260C
	EPA 601
	EPA 624.1
Dibromomethane	EPA 8260C
Dichlorodifluoromethane	EPA 8260C
	EPA 601
	EPA 624.1
Hexachlorobutadiene, Volatile	EPA 8260C
Methyl iodide	EPA 8260C
Methylene chloride	EPA 8260C
	EPA 601
	EPA 624.1
	EPA 524.2
Tetrachloroethene	EPA 8260C
	EPA 601
	EPA 624.1
trans-1,2-Dichloroethene	EPA 8260C
	EPA 601
	EPA 624.1

Volatile Halocarbons	
trans-1,3-Dichloropropene	EPA 8260C
	EPA 601
	EPA 624.1
trans-1,4-Dichloro-2-butene	EPA 8260C
Trichloroethene	EPA 8260C
	EPA 601
	EPA 624.1
Trichlorofluoromethane	EPA 8260C
	EPA 601
	EPA 624.1
Vinyl chloride	EPA 8260C
	EPA 601
	EPA 624.1
Volatiles Organics	
1,4-Dioxane	EPA 8260C
2-Butanone (Methylethyl ketone)	EPA 8260C
2-Hexanone	EPA 8260C
2-Nitropropane	EPA 8260C
4-Methyl-2-Pentanone	EPA 8260C
	EPA 524.2
Acetone	EPA 8260C
	EPA 624.1
	EPA 524.2
Acetonitrile	EPA 1671
	EPA 8260C

Serial No.: 60747

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NEW YORK STATE DEPARTMENT OF HEALTH
WADSWORTH CENTER

Expires 12:01 AM April 01, 2020
Issued April 01, 2019
Revised December 10, 2019

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ALBANY, NY 12207

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All approved analytes are listed below:

Volatiles Organics	
Carbon Disulfide	EPA 8260C
Cyclohexane	EPA 8260C
Di-ethyl ether	EPA 8260C
Diethylamine	EPA 1671
Dimethyl sulfoxide	EPA 1671
Ethylene Glycol	EPA 8015D
Ethylene thiourea	EPA 509 (1995)
Isobutyl alcohol	EPA 8260C
Isopropanol	EPA 8260C
Methanol	EPA 1671
	EPA 8015D
Methyl acetate	EPA 8260C
	EPA 8015D
Methyl cellosolve (2-Methoxyethanol)	EPA 1671
Methyl cyclohexane	EPA 8260C
n-Butanol	EPA 8260C
o-Toluidine	EPA 8260C
	EPA 8270D
Propylene Glycol	EPA 8015D
Tetrahydrofuran	EPA 524.2
Triethylamine	EPA 1671
Vinyl acetate	EPA 8260C

Sample Preparation Methods

SM 4500-P B(5)-2011
EPA 5030C

Sample Preparation Methods

EPA 4.1.3
EPA 3010A
EPA 3005A
EPA 3510C
EPA 3020A
EPA 3535A
SM 4500-F B-2011
SM 4500-N Org B-2011 or C-20

Serial No.: 60747

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NELAP RECOGNIZED ACCREDITATION BODY

NEW YORK STATE DEPARTMENT OF HEALTH
WADSWORTH CENTER

Expires 12:01 AM April 01, 2020
Issued August 08, 2019
Revised December 10, 2019

CERTIFICATE OF APPROVAL FOR LABORATORY SERVICE

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MS. TARA DANIELS
ADIRONDACK ENVIRONMENTAL SERVICES INC
314 NORTH PEARL STREET
ALBANY, NY 12207

NY Lab Id No: 10709

is hereby APPROVED as an Environmental Laboratory for the category
ENVIRONMENTAL ANALYSES NON POTABLE WATER
All approved subcategories and/or analytes are listed below:

Nitrosoamines

N-Nitrosodiphenylamine	AES Method 86306G

Serial No.: 60748

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ATTACHMENT 9

Data Validation Checklist

CLIENT:_____ SDG:_____ DATE:_____

DATA VALIDATION CHECKLIST

	YES	NO	NA
PACKAGE COMPLETE ASSESSMENT:			
Field Forms present and complete?			
Chain of Custody (COC) Forms present and complete?			
Cover Page:			
Present & Signed?			
IDs match COC?			
Sample Data Group (SDG) Narrative:			
Sample Login Sheet present and complete?			
SDG Inventory Sheet present and complete?			
Summary Data Sheets:			
Compare 5% of all data values against raw data; are all computation or transcription errors found less than 10%?			
Raw Data Present and Complete?			

Comments: _____

PRESERVATION:			
Aqueous samples received with pH < 2? (pH verified by lab)			
Cooler temperature verified upon receipt to be ≤ 10°C?			

Comments: _____

FIELD BLANKS:			
Are all analytes < its CRDL (or 2x its IDL, when IDL > CRDL)?			
If no:			
Qualify sample results below the concentration in the field blank but above the CRDL as the concentration of the field blank with a "U".			
Qualify sample results > the concentration in the field blank but < 10x the concentration in the field blank as estimated (J).			
Qualify sample results ≥ IDL but ≤ the CDRL as the CRDL with a "U".			
Are all analyte results positive or, if negative, is result greater than (-CRDL)?			
If no:			
Qualify all associated samples ≥ CRDL as estimated low (J-).			
Qualify non-detects as estimated (UJ).			

Comments: _____

VALID DATA COMPLETENESS FOR OVERALL SAMPLE EVENT:			
Is completeness > 85% for:			
Sample collection?			
Field measurements?			
Analytical results?			

Comments: _____

CLIENT:_____ SDG:_____ DATE:_____

DATA VALIDATION CHECKLIST

	YES	NO	NA

ICP - TOTAL METALS

Were samples analyzed within the 180-day holding time?			

Comments: _____

Initial Instrument Calibration:

Were instruments calibrated daily/each time the instrument is set up, and verifiable from the raw data?			
ICP calibrated with a blank and one standard?			
Is the y-intercept of the calibration curve (i.e., the conc. in the blank) ≤ the CRDL?			

If no:

Qualify results ≥ IDL as J.

Qualify non-detects as UJ.

Comments: _____

Initial and Continuing Calibration Verification (ICV/CCV):

ICV analyzed immediately after instrument calibration?			
Is standard independently prepared and at a concentration not used during calibration?			
Is the CCV at or near the mid-range levels of the curve?			
Is mid-range CCV run every 10 samples, or 2 hours whichever is more frequent?			
Are all ICV/CCVs recovered within 90 - 110%?			
If CCV fails, is system recalibrated and associated samples reanalyzed?			

If no for both preceeding two questions, qualify all affected sample results as follows:

If the %R is < 75%:

Quailfy all sample results as rejected (R)

If the %R is between 75-89%:

Qualify results ≥ IDL as estimated bias low (J-) and results < IDL as estimated (UJ)

If the %R is between 111-160%:

Qualify results ≥ IDL as estimated bias high (J+)

If the %R is >160%:

Qualify results ≥ IDL as rejected (R)

Comments: _____

CRI Standards: (Not required for Al, Ba, Ca, Fe, Mg, Na, and K.)

Is the CRI analyzed at the beginning and end of each sequence?			
Are the % Recoveries within the laboratory's acceptable limits?			

If no, for sample results > IDL, but < 5x the CRDL:

If %R < lower limit, qualify estimated low (J-)

If %R > upper limit, quality estimated high (J+)

Comments: _____

CLIENT:_____ SDG:_____ DATE:_____

DATA VALIDATION CHECKLIST

	YES	NO	NA
Initial and Continuing Calibration Blank (ICB/CCB):			
Is a blank run after each ICV and CCV at a frequency of every 10 samples or 2 hours?			
Are all blanks less than the CDRL?			
If no:			
Qualify sample results ≥ IDL but ≤ CRDL as the CRDL with a "U".			
Qualify sample results > CRDL but < preparation blank results with a "U".			
For any sample > blank result, use professional judgment.			
Are all blanks less than the IDL?			
If no:			
Any non-detect result is valid without qualification.			
Qualify sample result ≥ IDL, but ≤ CRDL as the CRDL with a "U".			
For any sample > CRDL, use professional judgment.			
Are all negative ICB/CCB results ≥ -CRDL?			
If no:			
Qualify sample results that are non-detect as UJ.			
Qualify sample results < 10x the CRDL as estimated bias low (J-).			
Are all negative ICB/CCB results ≥ -IDL?			
If no:			
Use professional judgment to qualify any sample results ≥ IDL or non-detects.			
Comments: _____			
Preparation or Method Blanks:			
Is the preparation blank prepared and analyzed with every SDG or digestion group?			
Are all preparation blanks < the CRDL?			
If no:			
Qualify sample results ≥ IDL but ≤ CRDL as CRDL with a "U".			
Qualify sample results > CRDL but < 10x the blank result, qualify result as estimated high (J+).			
Sample results > 10x the blank result requires no action.			
Are all preparation blank results < IDL?			
If no:			
Qualify sample results ≥ IDL, but ≤ CRDL as the CRDL with a "U".			
For sample results > CRDL, use professional judgment.			
For non-detect sample results, no action is required.			
Are all preparation blanks with negative results ≥ -CRDL?			
If no:			
Qualify sample results < 10x the CRDL as estimated bias low (J-).			
Qualify non-detect sample results as estimated (J).			
Comments: _____			

CLIENT:_____ SDG:_____ DATE:_____

DATA VALIDATION CHECKLIST

	YES	NO	NA
ICP Interference Check Sample (ICS):			
Were the ICS standards run at the beginning and end of each analysis run or a minimum of twice per 8 hours but not before the ICV?			
Were the ICS standards analyzed consecutively?			
Is the ICSA result for each analyte within ± CRDL?			
Is the recovery of each analyte in ICSAB within 80 - 120%?			
If no for either of the two preceding questions, are the concentrations for all of the interferents in the samples at least 10% less than that of Sol. A/AB reported concentrations?			
If no, qualify these samples as follows:			
If the %R is > 120% (or the found value is > the true value +1 CRDL);			
Qualify failing analyte results ≥ IDL as estimated bias high (J+).			
Do not qualify non-detects.			
If the %R is between 50 - 79% (or the found value is < the true value - CRDL);			
Qualify failing analyte results ≥ IDL as estimated bias low (J-).			
Qualify non-detects as UJ.			
If any result is < 50% R;			
Qualify results ≥ IDL as estimated bias low (J-).			
Qualify non-detects as rejected (R).			
Are all analytes not present in the true ICS solutions exhibiting results < IDL?			
If no, this indicates the possibility of false positives. For those samples with similar levels of interferents and analyte concentrations that approximate the levels found in the ICS samples:			
Qualify those analytes that are ≥ IDL as estimated bias high (J+).			
Do not qualify non-detects.			
Are all analytes not present in the true ICS solutions with a negative result > -IDL?			
If no, this indicates the possibility of false negatives. For those samples with comparable or higher levels of interferents:			
Qualify non-detects for the affected analytes as UJ.			
Qualify results ≥ IDL but < 10x the absolute value of the negative ICS sample result as estimated bias low (J-).			

Comments: _____

CLIENT:_____ SDG:_____ DATE:_____

DATA VALIDATION CHECKLIST

	YES	NO	NA
Spiked Sample:			
Is one sample spiked from each SDG or daily? (Not required for Ca, Mg, K, and Na)			
Are spikes made prior to digestion?			
Are results calculated with sample, not duplicate?			
Is spike recovery within 75 - 125% when concentration in sample is < 4x spike added?			
Are results associated with unacceptable spike recoveries flagged "N"?			
Is a post-digestion spike analyzed for each analyte failing to meet spike criteria?			

If spike %R is < 30% and post-digestion spike %R is < 75% or was not performed:
Qualify the failing analyte in the original sample ≥ IDL only as estimated bias low (J-).
Qualify non-detects as unusable (R).

If spike %R is < 30% and post-digestion spike %R ≥ 75%:
Qualify results ≥ IDL in the original sample as J.
Qualify non-detects in the original sample as UJ.

If spike %R is within 30 - 74% and the post-digestion spike %R is < 75% or not performed:
Qualify sample results for the failing analyte in the original sample as estimated bias low (J-).
Qualify non-detects as estimated (UJ).

If spike %R is within 30 - 74% and the post-digestion spike %R is ≥ 75%:
Qualify sample results for the failing analyte in the original sample ≥ IDL as estimated (J).
Qualify non-detects as estimated (UJ).

If spike %R is > 125% and the post-digestion spike %R is > 125% or not performed:
Qualify sample results for the failing analyte ≥ IDL as estimated bias high (J+) in the original sample.
Do not qualify non-detects.

If spike %R is > 125% and the post-digestion spike %R is ≤ 125%:
Qualify sample results for the failing analyte ≥ IDL as estimated (J) in the original sample.

Are recovery calculations made with a concentration of 0 for samples < IDL?			

Comments: _____

Laboratory Duplicate Sample:			
Is one duplicate sample analyzed from each SDG or daily?			
Are the duplicate sample results from a client sample, not a blank?			
Is RPD < 20% when samples exceed 5x CRDL?			

If no:
Qualify results for RPD 20 - 100% in the original sample and the duplicate only as estimated (J).
Qualify results for RPD ≥ 100% in the original sample and the duplicate as unusable (R).

Is the difference < CRDL when both sample concentrations do not exceed 5x CRDL (the absolute value of the CRDL must be entered into the control limit column)?			

If no:
Qualify the failing analytes that are ≥ IDL as estimated (J).
Qualify non-detects as estimated (UJ).

Are data associated with duplicates failing to meet control limits flagged "*"?			

Comments: _____

CLIENT:_____ SDG:_____ DATE:_____

DATA VALIDATION CHECKLIST

	YES	NO	NA
Laboratory Control Sample (LCS):			
Is the LCS prepared as a sample with each SDG or batch of samples?			
Is the LCS prepared at the proper concentration (K = 10 mg/L; all other analytes = 2 mg/L)?			
LCS within 85 - 115% (except Ag and Sb)?			
If no:			
For %R within 40 - 69% (or 20 - 69% for Ag and Sb):			
Qualify all SDG results that are ≥ IDL as estimated bias low (J-).			
Qualify non-detects as UJ.			
For %R within 130 - 149% (or 150 - 169% for Ag and Sb):			
Qualify results ≥ IDL as estimated bias high (J+).			
Do not qualify non-detects.			
For %R < 40% (< 20% for Ag and Sb):			
Qualify results ≥ IDL as estimated bias low (J-).			
Qualify non-detects as unusable (R).			
For %R > 150% (> 170% for Ag and Sb):			
Qualify all results as unusable (R).			
Were samples redigested and reanalyzed if LCS was not within limits?			
Comments:			

ICP Serial Dilutions (L):			
Is ICP serial dilution performed for each SDG or batch of samples?			
If an analyte concentration is > 50x IDL, does a 5 fold dilution agree with the original result within ± 10%?			
If no:			
For % difference > 10% but < 100%:			
Qualify affected analytes in original sample as estimated (J).			
For % difference ≥ 100%:			
Qualify affected analytes in original sample as unusable (R).			
If the dilution is not within limits, are all affected analytes in the samples associated with the serial dilution flagged with an "E"?			
Comments:			

CLIENT:_____ SDG:_____ DATE:_____

DATA VALIDATION CHECKLIST

	YES	NO	NA
Field Duplicates (Fill out Field Duplicate Form):			
Is the RPD < 20% when both the sample and its field duplicate are ≥ 5x the CRDL?			
If no:			
For RPD within 20 - 100%:			
Qualify these results in the original sample and the duplicate only as estimated (J).			
For RPD ≥ 100%:			
Qualify results in the original sample and the duplicate as unusable (R).			
Is the absolute difference between the result for the sample and its field duplicate < the CRDL when one or both samples are < 5x the CRDL?			
If no:			
Qualify the failing analytes that are ≥ IDL in the original sample as estimated (J).			
Qualify non-detects as estimated (UJ).			
Comments: _____			
Instrument Detection Limits (IDL):			
Are IDLs determined within 1 year of the analysis?			
Are IDLs < ½ their corresponding CRDL?			
Comments: _____			
Interelement Correction Factors:			
Were ICP correction factors calculated for Al, Ca, Fe, and Mg within 1 year?			
Were any other corrections used or reported?			
Comments: _____			
ICP Linear Range:			
Were the ICP linear ranges determined within 1 year?			
Were all sample concentrations within 90% of the upper limit of the linear range diluted and reanalyzed?			
Comments: _____			

CLIENT:_____ SDG:_____ DATE:_____

DATA VALIDATION CHECKLIST

	YES	NO	NA

ATOMIC ABSORPTION - Mercury Total Metal

Were samples analyzed within the 28-day holding time?			

Comments: _____

Initial Instrument Calibration:

Were instruments calibrated daily/each time the instrument was set up, and verifiable from the raw data?			
AA calibrated with a blank and 5 points?			
Is the correlation coefficient for the calibration curve > 0.990?			

If no:

Qualify results ≥ IDL as J.

Qualify non-detects as R.

Is the correlation coeficient for the calibration curve > 0.995?			
Are all percent differences of any one data point in the calibration curve within ± 30%?			
Is the y-intercept of the calibration curve < the CRDL?			

If no to any of the three preceding questions:

Qualify results ≥ IDL as J.

Qualify non-detects as UJ.

Comments: _____

Initial Calibration Verification (ICV):

ICV analyzed immediately after instrument calibration?			
Is standard at a concentration not used during calibration, but at midpoint of curve?			
Is ICV recovered within 85 - 115%?			

If no:

For ICV %R < 80%:

Qualify all results in the SDG as unusable (R).

For ICV %R between 80 - 94%:

Qualify results in the SDG that are ≥ IDL as estimated bias low (J-).

Qualify non-detects in the SDG as estimated (UJ).

For ICV %R between 106 - 154%:

Qualify results in the SDG that are ≥ IDL as estimated bias high (J+).

For ICV %R > 155%:

Qualify results in the SDG that are ≥ IDL as unusable (R).

Comments: _____

CLIENT:_____ SDG:_____ DATE:_____

DATA VALIDATION CHECKLIST

	YES	NO	NA
Continuing Calibration Verification (CCV):			
Does the first CCV follow the ICB and does the last CCV follow all samples?			
Is mid-range CCV run every 10 samples, or 2 hours which ever is more frequent?			
Is the CCV recovered within limits 85 - 115%?			
Is the same CCV used throughout each SDG?			
If CCV fails, is system recalibrated and associated samples reanalyzed?			
Is the CCV at or near the mid-range levels of the curve?			

Comments: _____

CRA Standards:			
Is the CRA analyzed at the beginning of each sequence but not before the ICV?			
Are the % recoveries within the laboratory's acceptable range (70-130%)?			

If no, for sample results > IDL, but < 5x the CRDL:
- If %R < lower limit, qualify estimated low (J-)
- If %R > upper limit, quality estimated high (J+)

Comments: _____

Initial and Continuing Calibration Blank (ICB/CCB):			
Is a blank run after each ICV and CCV at a frequency of every 10 samples or 2 hours?			
Are all blanks less than the CRDL?			

If no:
- Qualify sample results ≥ IDL but ≤ CRDL as the CRDL with a "U".
- Qualify sample results > CRDL but < preparation blank results with a "U".
- For any sample > blank result, use professional judgment.

Are all blanks less than the IDL?			

If no:
- Any non-detect result is valid without qualification.
- Qualify sample results ≥ IDL, but ≤ CRDL as the CRDL with a "U".
- For any sample > CRDL, use professional judgment.

Are all negative ICB/CCB results ≥ -CRDL?			

If no:
- Qualify sample results that are non-detect as UJ.
- Qualify sample results < 10x the CRDL as estimated bias low (J-).

Are any results ≤ -IDL, but ≥ -CRDL?			

If yes:
- Use professional judgment to qualify any sample results ≥ IDL or non-detects.

Comments: _____

CLIENT:_____ SDG:_____ DATE:_____

DATA VALIDATION CHECKLIST

	YES	NO	NA
Preparation/Method Blank:			
Is the preparation blank prepared and analyzed with every SDG or digestion group?			
Is the preparation blank result < CRDL?			
If no:			
Qualify sample results ≥ IDL, but ≤ CRDL as the CRDL with a "U".			
Is the preparation blank result < IDL?			
If no:			
Qualify sample results ≥ IDL, but ≤ CRDL as the CRDL with a "U".			
For sample results > CRDL, use professional judgment.			
Sample results of non-detect require no action.			
Are all negative ICB/CCB results ≥ -IDL?			
If no:			
Qualify sample results > CRDL but < 10x the blank result as estimated bias high (J+).			
Comments: _____			
Spike Sample:			
Is a minimum of 10% of client samples or 1 per SDG (whichever is greater) spiked?			
Are spikes made prior to digestion?			
Are results calculated with sample, not duplicate?			
Is spike made at proper concentration?			
Is spike recovery within 75 - 125% when concentration in sample is < 4x spike added?			
Are results associated with unacceptable spike recoveries flagged "N"?			
If spike %R is < 30%:			
Qualify the failing analyte in the original sample ≥ IDL only as estimated bias low (J-).			
Qualify non-detects as unusable (R).			
If spike %R is within 30 - 74%:			
Qualify sample results for the failing analyte as estimated bias low (J-).			
Qualify non-detects as estimated (UJ).			
If spike %R is > 125%:			
Qualify sample results for the failing analyte ≥ IDL as estimated bias high (J+).			
Do not qualify non-detects.			
Are recovery calculations made with a concentration of 0 for samples < IDL?			
Comments: _____			

CLIENT:_____ SDG:_____ DATE:_____

DATA VALIDATION CHECKLIST

	YES	NO	NA
Laboratory Duplicate Sample:			
Is one duplicate sample analyzed from each SDG or daily?			
Are the duplicate sample results from a client sample, not a blank?			
Is RPD < 20% when samples exceed 5x CRDL?			
If no:			
For RPD between 20 - 100%:			
Qualify these results in the sample and the duplicate only as estimated (J).			
For RPD ≥ 100%:			
Qualify results in the original sample and the duplicate as unusable (R).			
Is the difference < CRDL when both sample concentrations do not exceed 5x CRDL (the absolute value of the CRDL must be entered into the control limit column)?			
If no:			
Qualify the failing analytes that are ≥ IDL as estimated (J).			
Qualify non-detects as estimated (UJ).			
Is data associated with duplicates failing to meet control limits flagged "*"?			
Comments:			
Field Duplicates (Fill Out Field Duplicate Form):			
Is the RPD < 20% when both the sample and its field duplicate are ≥ 5x the CRDL?			
If no:			
Qualify results in the sample and its duplicate only as estimated (J).			
Is the absolute difference between the result for the sample and its field duplicate < the CRDL when the sample and /or its duplicate in < 5x the CRDL?			
If no:			
Qualify results ≥ IDL as estimated (J).			
Qualify non-detects as estimated (UJ).			
Comments:			
Instrument Detection Limits (IDL):			
Are IDLs determined within 1 year of the analysis?			
Comments:			
ICP Linear Range:			
Were the ICP linear ranges determined within 1 year?			
Were all sample concentrations within 90% of the upper limit of the linear range diluted and reanalyzed?			
Comments:			

CLIENT:_____ SDG:_____ DATE:_____

DATA VALIDATION CHECKLIST

	YES	NO	NA
ALKALINITY: (If no for any question, use rules for total metals validation to qualify data)			
Present and complete?			
Hold times met (14 days)?			
Blank analyzed daily?			
Blank < reporting limit?			
Laboratory Control Sample performed 1 in every 20 client samples?			
Laboratory Control Sample percent recoveries within laboratory limits?			
Duplicate sample performed on a minimum of 1 per SDG?			
Duplicate RPDs < laboratory limit?			
Spiked sample performed on a minimum of 1 per SDG?			
Spiked sample percent recoveries within 80 - 120%?			
Comments:			

AMMONIA: (If no for any question, use rules for Hg validation to qualify data)			
Present and complete?			
Hold times met (28 days)?			
Calibration curve includes minmum of 3 standards and one blank?			
Are the correlation coefficients for the calibration curve of all analytes > 0.990?			
Are the correlation coeficients for the calibration curve of all analyte > 0.995?			
Are all percent differences of any one data point in the calibration curve within ± 30%?			
Is the y-intercept of the calibration curve < the CRDL?			
ICV/CCV samples ran immediately following calibration, after every 10th client sample and at the end of each run?			
ICV/CCV prepared at the proper concentration (mid-range of the calibration curve)?			
ICV/CCV percent recoveries within 90 - 110%?			
ICB/CCBs analyzed after every ICV/CCV?			
ICB/CCBs < reporting limt?			
Method blank analyzed 1 per SDG?			
Method blank < reporting limit?			
Duplicate sample analyzed 1 per SDG?			
Duplicate RPD < laboratory limits?			
Spiked sample performed on a minimum of 10% of client samples?			
Spiked sample prepared at the proper concentration (≥ 4x IDL)?			
Spiked sample percent recoveries within 90 - 110%?			
Laboratory Control Sample analyzed at least 1 per SDG?			
Laboratory Control Sample percent recoveries within 90-110%			
CRI % recoveries within the laboratory's acceptable range (50-150%)?			
Comments:			

CLIENT:_____ SDG:_____ DATE:_____

DATA VALIDATION CHECKLIST

	YES	NO	NA
COLOR: (If no for any question, use rules for total metals validation to qualify data)			
Present and complete?			
Hold times met (48 hours)?			
Duplicate sample 1 per SDG?			
Duplicate RPD < 10%?			
Blank analyzed at the beginning of each run?			
Blank < reporting limit?			
Comments:			
CONDUCTIVITY: (If no for any question, use rules for total metals validation to qualify data)			
Present and complete?			
Hold times met (28 days)?			
Check standard 1 per run?			
Check standard within laboratory limits (95-109)?			
Duplicate measurement 1 in 20?			
Duplicate RPD < laboratory limits (5.5%)?			
Comments:			
CHLORIDE AND SULFATE: (If no for any question, use rules for Hg validation to qualify data)			
Present and complete?			
Hold times met (28 days)?			
Instrument calibrated with a minimum of 3 standards and one blank?			
Are the correlation coefficients for the calibration curve of all analytes > 0.990?			
ICV/CCV samples ran immediately following calibration, after every 10th client sample and at the end of each run?			
ICV/CCV prepared at the proper concentration (mid-range of the calibration curve)?			
ICV/CCV percent recoveries within 90 - 110%?			
ICB/CCBs analyzed after every ICV/CCV?			
ICB/CCBs < reporting limit?			
Method blank analyzed 1 per SDG?			
Method blank < reporting limit?			
Laboratory Control Sample analyzed at least 1 per SDG?			
Laboratory Control Sample percent recoveries within 90-110%			
Duplicate sample performed on a minimum of 10% of client samples?			
Duplicate RPD < 20%?			
Spiked samples performed at a minimum of 10% of client samples?			
Spiked sample recoveries within 90 - 110%, when added concentration >25% of the sample concentration?			
Comments:			

CLIENT:_____ SDG:_____ DATE:_____

DATA VALIDATION CHECKLIST

TOTAL DISSOVLED SOLIDS: (If no for any question, use rules for total metals validation to qualify data)

	YES	NO	NA
Present and complete?			
Hold times met (7 days)?			
Laboratory Contol Sample analyzed 1 in every 20 client samples?			
Laboratory Control Sample percent recoveries within labortory's limits (85.4 - 114%)?			
Duplicate sample performed on a minimum of 10% of client samples?			
Duplicate RPD < laboratory limits (10%)?			

Comments: _____

TOTAL ORGANIC CARBON: (If no for any question, use rules for total metals validation to qualify data)

	YES	NO	NA
Present and complete?			
Hold times met (28 days)?			
ICV/CCV samples ran immediately following calibration, after every 10th client sample and at the end of each run?			
ICV/CCV prepared at the proper concentration (mid-range of the calibration curve)?			
ICV/CCV percent recoveries within 90 - 110%?			
ICB/CCBs analyzed after every ICV/CCV?			
ICB/CCBs < reporting limit?			
Method blank analyzed 1 per run?			
Method blank < reporting limit?			
Spiked sample performed on a minimum of 1 in 20 client samples?			
Spiked sample percent recoveries within laboratory's acceptable limits (82 - 120%)?			
Laboratory Contol Sample analyzed 1 per run?			
Laboratory Control Sample %Rs within laboratory's acceptable limits (88.7 - 115%)?			
Duplicate sample performed on 1 in every 20 client samples?			
Duplicate RPDs < laboratory's acceptable limits (21.2)%?			
CRI sample analyzed at beginning and end of each run?			
CRI sample percent recoveries within 50 - 150%?			

Comments: _____

CLIENT:_____ SDG:_____ DATE:_____

DATA VALIDATION CHECKLIST

	YES	NO	NA
pH - FIELD:			
Meter calibrated daily?			
Acid standard within acceptable limits (3.95 - 4.05)?			
If no, qualify pH results < 5.5 as estimated (J).			
Neutral standard within acceptable limits (6.95 - 7.05)?			
If no, qualify pH result between 5.5 - 8.5 as estimated (J).			
Basic standard within acceptable limits (9.95 - 10.05)?			
If no, qualify pH results > 8.8 as estimated (J).			
Comments:			
DISSOLVED OXYGEN - FIELD:			
Meter calibrated daily?			
Calibration standard within acceptable limits (95-105% of saturation)?			
If no, qualify associated results as estimated (J).			
Comments:			
TURBIDITY - FIELD:			
Meter calibrated daily?			
Calibration using a minimum of three standards?			
Each of the three standards within ±5%?			
If no, qualify associated results (i.e., those within range of the failing standard) as estimated (J).			
Comments:			
WET CHEMISTRY FIELD DUPLICATE (Fill out field duplicate form):			
Duplicate RPD < 20%?			
If no:			
For RPD within 20 - 100%:			
Qualify these results in the original sample and the duplicate only as estimated (J).			
For RPD ≥ 100%:			
Qualify results in the original sample and the duplicate as unusable (R).			
Comments:			

QC REVIEWER_____ DATE_____

APPENDIX 6

Spill Contractor List

Clean Harbors Environmental
Dewitt, NY 13211
Tel +1 (315) 463-9901
Tel +1 (800) 645-8265

Eggan Environmental Services
Rome, NY 13440
Tel +1 (315) 339-1847
Tel +1 (800) 527-6040
Fax +1 (315) 339-3455

Environmental Restoration LLC
Binghamton, NY 13901
Tel +1 (607) 729-2270
Tel +1 (888) 814-7477
Fax +1 (607) 729-2280

Environmental Products & Services of Vermont Inc
Syracuse, NY 13204
Tel +1 (315) 451-6666
Tel +1 (800) 577-4557
Fax +1 (315) 457-6652

HEPACO, LLC
Lancaster, NY 14086
Tel +1 (716) 393-3604
Tel +1 (800) 888-7689

National Vacuum Corporation
Rochester, NY 14611
Tel +1 (585) 235-0330
Tel +1 (866) 773-1167

Nature's Way Environmental
Alden, NY 14004
Tel +1 (716) 937-6527
Fax +1 (716) 937-9360

NRC
Rochester, NY 14624
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Fax +1 (585) 278-1150

NRC
Syracuse, NY 13206
Tel +1 (315) 463-1643
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Sun Environmental Corp
Rochester, NY 14611
Tel +1 (585) 436-5660
Tel +1 (800) 80-SPILL