



RUN-ON and RUN-OFF CONTROL SYSTEM PLAN (40CFR Part 257.81)

LOCKWOOD ASH DISPOSAL SITE

Prepared on behalf of:

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

Prepared by:



2620 Grand Island Blvd.
Grand Island, New York 14072-2131

August 2019

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1 INTRODUCTION

Lockwood Hills LLC (Lockwood Hills) manages the Lockwood Ash Disposal Site (Lockwood or the Landfill), an ash monofill located in the Town of Torrey, Yates County, New York on Swarthout Road. Lockwood Hills maintains a 6 NYCRR Part 360 Solid Waste Management Facility permit (Permit No. 8-5736-00005/00003) for this facility issued by the New York State Department of Environmental Conservation (NYSDEC).

2 COMPLIANCE REQUIREMENT

All existing coal combustion residuals (CCR) landfills must prepare an initial run-on and run-off control system plan (Plan). The Plan must document how the run-on and run-off control systems have been designed and constructed to meet the applicable requirements of 40CFR Part 257.81. Each Plan must be supported by the appropriate engineering calculations. Because an existing document for the Landfill already meets this compliance requirement objective, it has been incorporated. See 3.1 for specific information regarding the existing document.

The following design, construction, operation and maintenance factors and information must be considered when preparing the Plan to meet these performance standards:

- A run-on control system to prevent flow onto the active portion of the CCR unit during the peak discharge from a 24-hour, 25-year storm;
- A run-off control system from the active portion of the CCR unit to collect and control at least the water volume resulting from a 24-hour, 25-year storm; and
- Run-off from the active portion of the CCR unit must be handled in accordance with the surface water requirements under Part 257.3-3 which state a facility shall not cause a discharge of pollutants into waters of the United States that is in violation of the requirements of the National Pollutant Discharge Elimination System.

This Plan requires revision every five years from the date this Plan is placed in the operating record. The Plan will require an earlier revision if there is a change in conditions that would substantially affect the written Plan in effect. Revised plans are not in effect until they are certified by a qualified professional engineer and placed in the operating record.

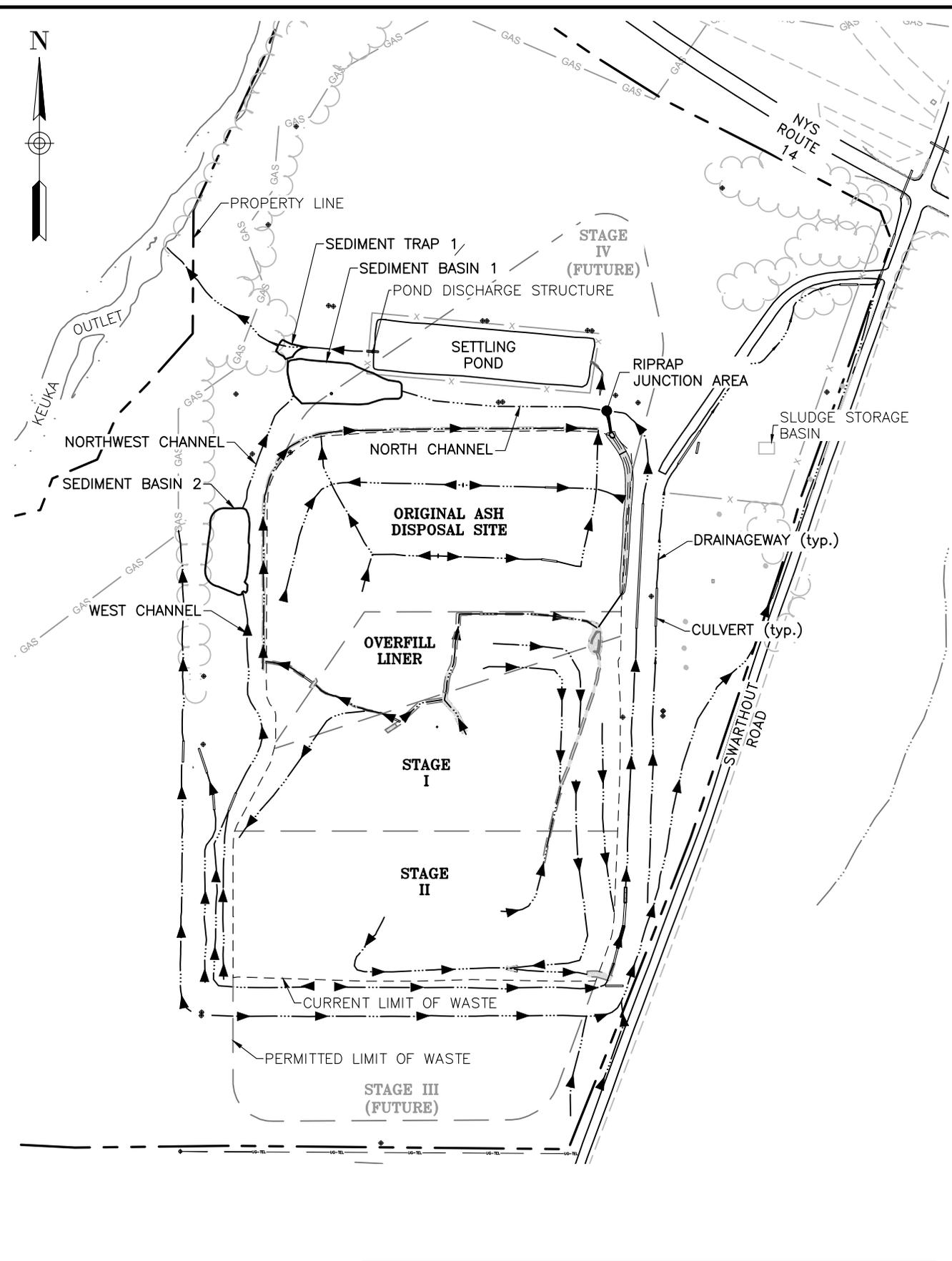
3 EVALUATION

The design of the major components of the facility's stormwater management system are described in detail in a report titled: Engineering Report Stormwater Separation Plan – Lockwood Ash Disposal Site, by Daigler Engineering, P.C., dated March 2016 and revised June 2016. This document is incorporated by reference herein. Of note, the components of the stormwater control system are designed to convey a 100-year, 24-hour storm for Yates County, New York. This design level is well in excess of the federal requirement for CCR landfills (40CFR Part 257.81) to be designed to manage run-off from a 24-hour, 25-year storm. Figure 3-1 depicts the Site's stormwater management features.

Several technical sources were used in the design process for this site. The sediment basins were designed in general accordance with the NYS Stormwater Management Design Manual (herein the Manual), January 2015. Erosion and sediment control structures were designed in general accordance with the NYS Standards and Specifications for Erosion and Sediment Control, Draft February 2016. Stormwater runoff calculations were completed using "Hydraflow Hydrographs Extension for AutoCAD Civil 3D 2009", a computer program for modeling hydrology and hydraulics for site conditions. The Soil Conservation Service (SCS) Method and Technical Release (TR)-55: Urban Hydrology for Small Watersheds were used to calculate the discharge quantities, among other characteristics, for the delineated watersheds. These methods are appropriate and acceptable in the design of the stormwater management system for Lockwood.

The site's natural grading is from the generally flatter southern portion of the property to the topographically lower north end of the site. Pursuant to a State Pollutant Discharge Elimination System permit, non-contact stormwater drainage from the property will eventually enter the Keuka Outlet, either directly from the combined outlets from Sediment Basins 1 and 2, located at the current location of Sediment Trap ST-1 (See Figure 3-1), or indirectly from an unnamed tributary to the Keuka Outlet shown on the eastern side of Swarthout Road on Figure 3-1.

Q:\Lockwood Hills LLC\31-0019-03_2019 General Services\CCR Rule Compliance\CCR Rule Submission\Run-on & Run-off Control\Stormwater Features 2019 Figure.dwg 7/29/2019 10:09 AM



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STORMWATER MANAGEMENT FEATURES		
LOCKWOOD ASH DISPOSAL SITE RUN-ON AND RUN-OFF CONTROL SYSTEM PLAN		
LOCKWOOD HILLS LLC		
TOWN OF TORREY	YATES COUNTY	NEW YORK
August 2019	SCALE: NOT TO SCALE	REVISION # 0

FIGURE
3-1

3.1 EXISTING RUN-ON CONTROL SYSTEM COMPONENTS AND DESIGN

The Environmental Protection Agency (EPA) defines run-on to mean any liquid that drains over land onto any part of a CCR landfill. The Landfill design plays an important role as the active area of the Landfill is well above the surrounding grade. In addition, the Landfill base is surrounded by a perimeter channel system. The channel is sized to handle both minor run-on contributions from the immediate area outside the Landfill footprint as well as the non-contact stormwater drainage from the Landfill itself. These channels, depending on location around the Landfill are grass-lined, rock-lined and asphalt-lined. Stormwater inundation from off-landfill areas is not expected.

Run-on from the southern end of the property is readily intercepted by the south perimeter channel and diverted either east and north to Sediment Basin 1 or west and north to Sediment Basin 2. The topography along the eastern side of the site drains away from the Landfill and toward drainage features along Swarthout Road. This feature conveys drainage to the north, underneath Route 14 and then eastward underneath Lampman Road to the unnamed tributary to the Keuka Outlet. The western side of the site, away from the Landfill, drains generally in a parallel northward direction toward the Keuka Outlet.

The facility's Operation and Maintenance Manual (O&M Manual) discusses the use of temporary berms, channels and swales to further direct run-on away from any active area. By their very nature, these temporary devices are not constructed based on design calculations. However, their use as temporary control measures is an acceptable practice for an operating Landfill.

3.2 EXISTING RUN-OFF CONTROL SYSTEM COMPONENTS AND DESIGN

The CCR rule requires that the Landfill be designed, constructed, operated and maintained to collect and control at least the volume of run-off resulting from a 24-hour, 25-year storm. This run-off must be collected through hydraulic structures, such as drainage ditches and swales, and controlled to not adversely affect the conditions of the Landfill. EPA requires, through these regulations, to minimize the detention time of run-off on the Landfill and minimize infiltration into the Landfill. The Lockwood facility is designed to manage storms up to the 24-hour, 100-year frequency and to minimize any retention of stormwater on the Landfill itself.

Lockwood's stormwater management system utilizes two sediment basins connected to the perimeter drainage channels. The perimeter drainage channels are fed by a series of drainage channels and swales on the Landfill surface. 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 Landfill. This basin is between nine and ten feet deep with a design bottom elevation at 546.8, and with side slopes of two horizontal to one vertical (2H:1V) from the basin floor to the aquatic bench. The aquatic bench is 15 linear feet wide. Above the aquatic bench the pond side slopes extend at 4H:1V, eliminating the need for a safety bench, to a top of bank elevation of 556.3.

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 Landfill. This basin is 7.5 feet deep with a design bottom elevation at 567.80 and the top of bank at 575.35. From the basin floor, the aquatic bench is 15 linear feet wide. From the top of the aquatic bench, the pond side slopes extend at 4H:1V to elevation 575.35, again with the flatter slope, eliminating the need for a safety bench.

Each basin is designed to store 100 percent of the water quality volume (WQv) in a permanent pool. Forebays are included at the inlets to the basins for maintenance and longevity of the basins via easier access for sediment removal. The basins are constructed with four-foot by four-foot concrete outlet structures, installed in the berm of each basin, that are designed for multiple objectives. The outlet structures address outlet channel protection requirements by releasing 1-year, 24-hour storms over a minimum 24-hour period. The outlet structure addresses overbank flood control requirements by managing the 10-year, 24-hour storm event through the use of weirs with design elevations to limit the outflows from these storms to between 20 percent and 40 percent of the predicted inflows. Extreme flood protection using the 24-hour, 100-year storm value is also managed in the outlets using weirs. In these cases, the weirs are designed to discharge no more than 70 percent (Sediment Basin 1) or 50 percent (Sediment Basin 2) of the calculated inflow. Finally, emergency spillways are constructed in each basin and sized to convey a 24-hour, 100-year storm while maintaining a freeboard of 1.64 feet (Sediment Basin 1) or 1.82 feet (Sediment Basin 2).

Each channel is sized to convey the 100-year, 24-hour storm event flow. A minimum freeboard of 0.5 feet is included in the designed channels for additional capacity, although New York State specifies a minimum of 0.3 feet freeboard. Channels are designed to be trapezoidal in shape with 2H:1V side slopes. Where the calculated velocity exceeds the permissible velocity for a grass lined channel, an erosion control blanket (ECB) or riprap is installed.

3.3 ADDITIONAL SURFACE WATER PROTECTION

There are additional features in this stormwater management system that provide further protection to surface water.

Drainage channels are designed and constructed to prevent erosion and failure of the channel. Improperly designed channels can cause erosion of the cover surface and result in exposure of the uncovered waste, with additional erosion and transport of that waste off the Landfill. The sediment basins are designed to provide treatment by capturing and treating runoff from small, frequent storm events that tend to contain higher pollutant levels using permanent pools. These permanent pools are sized for a 1-year, 24-hour storm event, a very common occurrence. The basins also contain an aquatic bench. The benches are planted with emergent wetland vegetation and are intended to intercept pollutants prior to entering the permanent pool. The plantings are extended up the interior banks of the basins to the elevation of the 1-year, 24-hour stormwater surface to provide regular intervals for inundation. The outlet structures from the basins are designed to minimize downstream erosion impacts.

A review of the 2018 Annual Report for the Landfill concerning surface water monitoring upstream and downstream of the site on the Keuka Outlet noted no discernable surface water impacts from the site.

4 CERTIFICATION

"I hereby certify that I have reviewed the run-on and run-off control system performance standards for the Lockwood Ash Landfill owned and operated by Lockwood Hills LLC, and the requirements in federal regulation 40CFR Part 257 Subpart D - Standards for the Disposal of Coal Combustion Residuals (CCR) in Landfills and Surface Impoundments published April 17, 2015 and amended on March 15, 2018. The proposed run-on and run-off control system has been designed and constructed to meet the requirements specified for CCR units in 40CFR 257.81- Run-on and Run-off Controls for CCR Landfills. Any future revisions or updates to this Plan will be certified and added to the facility's operating record."

I am a duly licensed professional engineer in the State of New York.


James A Daigler, P.E.



NYSPE LIC # 061689

5 REFERENCES

Engineering Report Stormwater Separation Plan, Lockwood Ash Disposal Site, prepared by Daigler Engineering, P.C., March 2016, revised June 2016.

Construction Report Leachate Flow Metering System and Stormwater Separation Construction – Lockwood Ash Disposal Site, prepared by Daigler Engineering, P.C., January 2017.

Record Drawings and Construction Summary Stormwater & Leachate Separation Construction, Lockwood Hills LLC, letter to Greg MacLean, PE from Joseph P. Randel and James A. Daigler, PE, dated January 23, 2018.

2018 Annual Report, Lockwood Ash Disposal Site, Facility No. 62N01 prepared by Daigler Engineering, P.C., March 2019.

Lockwood Ash Disposal Site Operation and Maintenance Manual, prepared for AES Greenidge, LLC by Daigler Associates, February 2007.

Federal Register Supplementary Information, C.VI.G., April 17, 2015, pp 21388-21390.