



Inspection Report

To: John Shimshock (Conemaugh Generating Station)
From: Richard Southorn, P.E., P.G.
Re: Ash/Refuse Disposal Site – Annual CCR Unit Inspection Report
Inspection Date: November 11, 2020
Report Date: January 15, 2021

INTRODUCTION

Title 40 Code of Federal Regulations (CFR) Part 257 addresses, in part, the management of Coal Combustion Residuals (CCR Rule, or Rule) in regulated units, including landfills. Specific to §257.84(b) of the Rule, existing and new CCR landfills must be inspected on an annual basis by a qualified professional engineer. For the Keystone-Conemaugh Projects, LLC-Conemaugh Generating Station, this inspection requirement applies to the existing Ash/Refuse Disposal Site (Ash Disposal Site). In support of this obligation, Mr. Richard Southorn (a qualified professional engineer with Aptim Environmental & Infrastructure, LLC [APTIM]) conducted an on-site inspection of the Ash Disposal Site on November 11, 2020. The findings from this annual inspection are summarized in the remaining sections of this correspondence.

As required, this report will be placed in the Conemaugh facility's operating record per §257.105(g)(9), noticed to the State Director per §257.106(g)(7), and posted to the publicly accessible internet site per §257.107(g)(7). Placement of the prior annual inspection report into the facility's operating record was accomplished on January 16, 2020. Per §257.84(b)(4), the current report will be entered into the facility's operating record no later than January 16, 2021.

BACKGROUND

The Ash Disposal Site consists of a valley fill located north of the Station proper, and is operated/maintained in accordance with Pennsylvania Department of Environmental Protection (PADEP) Solid Waste Permit No. 300876. The Ash Disposal Site consists of three stages, including Stage I (closed), Stage II (currently active), and Stage III (currently active horizontal and vertical expansion).

Stage I occupies approximately 160 acres within the northernmost reaches of the valley and was brought online in 1970. Stage I was constructed as an unlined facility and was subsequently closed in 1987. Stage II (brought online in 1985) is presently maintained as the primary active disposal area, and utilizes a single liner comprised of a 50-mil polyvinyl chloride (PVC) geomembrane with an accompanying leachate collection and detection system. Stage II occupies approximately 120 acres, and its northern side overlies the outslope of the Stage I disposal area.

(piggy-backs over Stage I); it extends approximately 2,000 feet southward into the valley from its interface with Stage I.

Stage IIIA, which is the first phase of construction of Stage III, has a composite liner that includes, from top to bottom: type A non-woven cushion geotextile; 60-mil HDPE primary liner; geocomposite drainage net; 60-mil HDPE secondary liner; geosynthetic clay liner (GCL), 2"-3" sand friction layer; and 6" subbase. In April 2019, PADEP issued its approval and authorization to initiate disposal activities in Stage IIIA, which is also currently active.

Upon complete buildout, Stage III will occupy an area of approximately 110 acres. The northern side of Stage III will piggy-back over the Stage II disposal area and it will extend southward approximately 2,100 feet where its outslope will terminate approximately 600 feet north of the existing Ash Disposal Site Leachate Surge Pond. At such time when the permitted disposal capacity has been fully expended and final grades attained, any uncapped areas of the Ash Disposal Site will be capped and closed in accordance with the approved Closure Plan.

With respect to the Ash Disposal Site, APTIM's evaluation has focused on the following items as outlined in §257.84(b)(1)(i-ii):

- *A review of available information regarding the status and condition of the CCR unit, including, but not limited to, files available in the operating record; and*
- *A visual inspection of the CCR unit to identify signs of distress or malfunction.*

Specific to APTIM's preparation of the annual inspection report, and per §257.84(b)(2)(i-iv), the following aspects have been addressed:

- *Any changes in geometry of the structure since the previous annual inspection;*
- *The approximate volume of CCR contained in the unit at the time of the inspection;*
- *Any appearances of an actual or potential structural weakness of the CCR unit, in addition to any existing conditions that are disrupting or have the potential to disrupt the operation and safety of the CCR unit; and*
- *Any other change(s) which may have affected the stability or operation of the CCR unit since the previous annual inspection.*

OPERATING RECORDS REVIEW

Principal items reviewed as part of this year's inspection included, but were not limited to: Design Drawings, 2019/2020 Weekly and Periodic Landfill Inspection Reports that have been completed since the 2019 Annual Inspection, 2019 Annual Landfill Operations Report, and the Solid Waste Permit No. 300876. During the site inspection, Mr. Southorn interviewed facility personnel to verify the information contained within the operating record.

Environmental Control System Overview

- i. Bottom Liner System
 - a. The bottom liner system of the Stage II landfill area is a 50-mil PVC geomembrane.
 - b. The bottom liner system of the Stage III landfill area is a composite liner, comprised from the top to bottom:
 - Type A non-woven cushion geotextile
 - Primary 60-mil high-density polyethylene (HDPE) liner
 - Geocomposite Drainage Net (Geonet) for leak detection
 - Secondary 60-mil HDPE liner
 - Geosynthetic Clay Liner (GCL)
 - 6-inch subbase
- ii. Leachate Collection System
 - a. The leachate collection systems of Stages II and III utilize gravity flow through the bottom ash material to a contact water underdrain channel, which in turn drains to the Surge Pond. From the pond, leachate is routed to the Leachate Wastewater Treatment Plant (WWTP), with treated effluent managed in accordance with the Station's National Pollutant Discharge Elimination System (NPDES) Permit.
- iii. Stormwater Management
 - a. "Non-contact" stormwater run-off from the closed Stage I area is managed in accordance with the current NPDES permit. Stormwater run-off from the Stage I area is discharged into a stormwater channel separate from the "contact" stormwater of the Stage II area.
 - b. "Contact" stormwater falling on currently active areas of Stages II and III (Stage IIIA) is combined with leachate in the underdrain system and is conveyed to the Surge Pond south of the disposal site.
- iv. Cover System
 - a. Stage I disposal area is capped and has established vegetative cover.

- b. Portions of the Stage II disposal area currently have an intermediate cover in place with established vegetation. These areas include the sideslopes and plateau areas adjacent to Stage I.

Summary of 2020 Landfill Construction

- i. The Stage II and IIIA disposal areas are currently accepting CCR.

Review of Prior Inspections

- i. Weekly inspections: A review of weekly inspections has concluded that no significant deficiencies occurred at the facility that required remedial actions.
- ii. Previous Annual Inspection Report: The previous annual inspection report does not note any other deficiencies or releases, actual or potential structural weaknesses, or concern to the stability of the land form. All environmental control systems were found to be in good operating condition and functioning as intended. Recommendations from the prior report (related to landfill operations and maintenance) were found to have been implemented.

CCR Disposal

- i. The total in-place disposal quantity of CCR materials is presently estimated at approximately 68,182,026 tons (67,745,590 tons through December 2019 plus 436,436 tons through December 2020).

SITE INSPECTION

The site inspection was performed on November 11, 2020 by Mr. Southorn, and during which time efforts were focused on identification of standard geotechnical signs of distress or malfunction. Specific aspects such as slumping at the toe of slope, tensile cracking, abnormal or excessive erosion on the side slopes, slope bulging, and groundwater/surface water seepage or ponding were assessed. If present, these readily visible signs are potential indicators of structural weakness of the CCR Landfill unit.

Visual signs of distress or malfunction

No visual signs of distress or malfunction were observed during the inspection. Stormwater drainage features, slope appearance and stability, leachate conveyance mechanisms, and overall site conditions were assessed. Closed portions of the landfill exhibited well established vegetative cover.

Review of environmental control systems

Stage II and IIIA disposal area stormwater channels, leachate collection, and intermediate cover areas (Stage II only) are functioning as intended. With no evidence to the contrary, the bottom liner systems for the Stage II and IIIA disposal areas are believed to be in good operating condition and functioning as intended.

Review of Previously Recommended Actions

There were no deficiencies or releases identified during the 2019 annual inspection that required the owner or operator to perform corrective actions per §257.84(b)(5). Recommendations were limited to the continued operation and maintenance of the facility and maintaining access to closed portions of the landfill for inspection purposes. These recommendations were found to have been followed, based on site conditions and the review of weekly inspection logs.

CONCLUSIONS

Changes in geometry

- i. As of the date of the inspection, peak fill elevation in the Stage II active disposal area is approximately 1,486 feet mean sea level, with an typical active disposal elevation of approximately 1,465-1,475 feet mean sea level.
- ii. Stage IIIA remains in its first lifts of CCR placement.

In-Place CCR Disposal Quantities

The total in-place disposal quantity of CCR materials is presently estimated at approximately 68,182,026 tons (67,745,590 tons through December 2019 plus 436,436 tons through December 2020).

Appearances of an actual or potential structural weakness of CCR unit

At the time of inspection, there were no signs of distress or malfunction that would indicate actual or potential structural weakness at the Ash Disposal Site.

Changes that may affect the stability or operation of the CCR Unit

There have been no changes to the inspected areas of the Ash Disposal Site that pose a threat or concern to the stability of the land form.

Other Items of Concern

No items of concern are noted.

RECOMMENDATIONS

1. Continue operation and maintenance in the active areas as currently performed.
2. Ensure adequate access to the closed portions of the landfill to maintain the ability to perform weekly visual site structural inspections.

PROFESSIONAL ENGINEER'S CERTIFICATION

In accordance with §257.84(b) of the Rule, I hereby certify based on a review of available information within the facility's operating records and observations from my personal on-site inspection (including the photographs contained in Attachment 2), that the Conemaugh Ash Disposal Site does not exhibit any appearances of actual/potential structural weakness that would be disruptive to the normal operations of the Stage II/III CCR Unit. The unit is being operated and maintained consistent with recognized and generally accepted good engineering standards and practices.

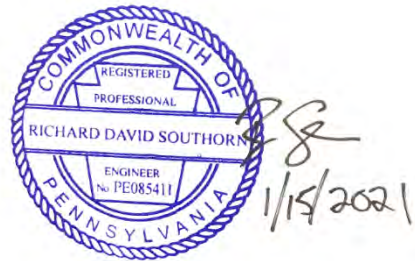
Certified by: RS

Date: JANUARY 15, 2021

Richard Southorn, P.E., P.G.

Professional Engineer Registration No. PE085411

Aptim Environmental & Infrastructure, LLC



ATTACHMENTS

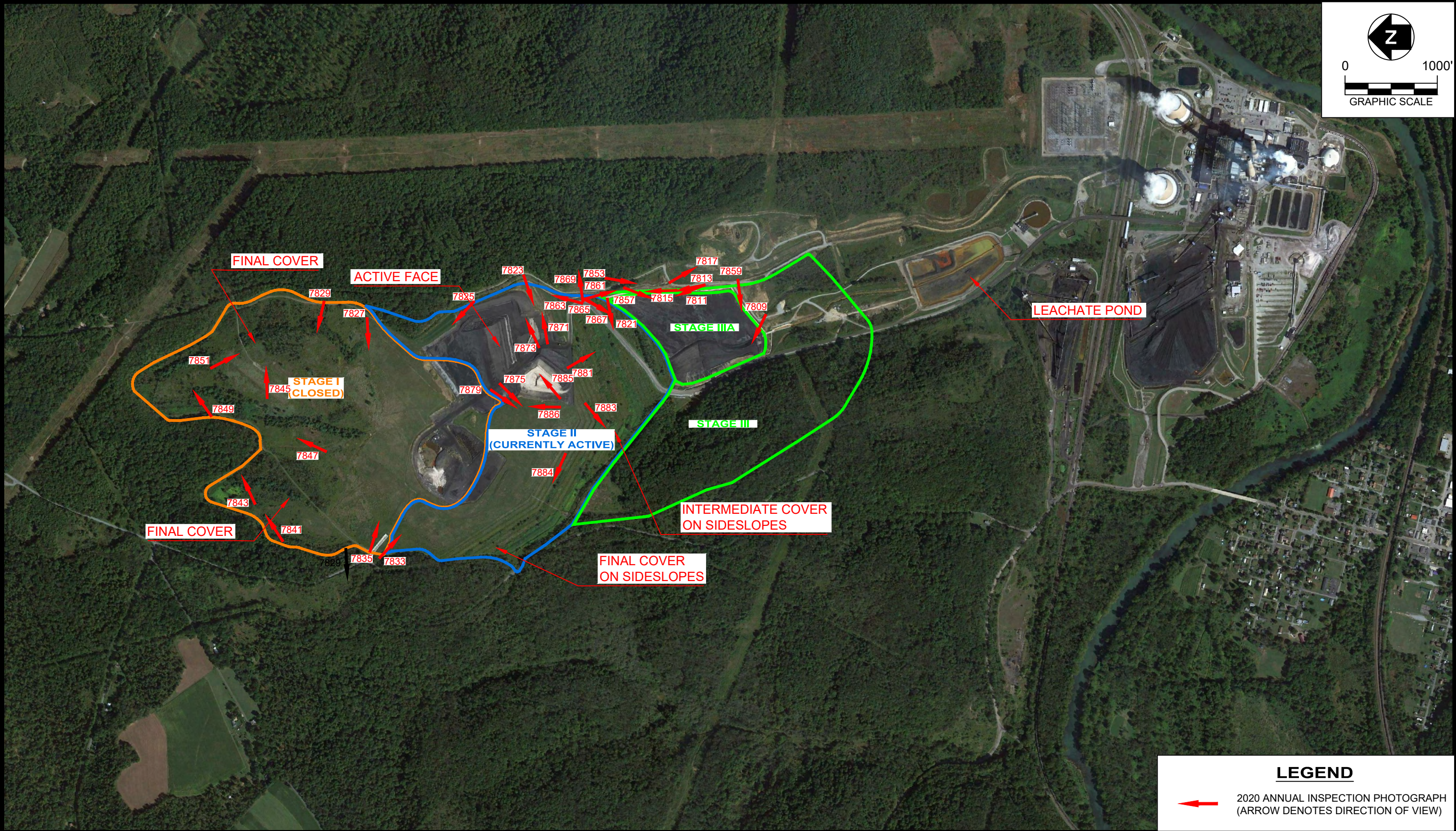
1. Site Map
2. Inspection Photo Log

REFERENCES

1. 2019 Conemaugh Generating Station Annual Landfill Operations Report.
2. Weekly and Periodic Landfill Inspection Reports, Nov 2019 – Nov 2020.
3. Major Permit Modification Application—Stage III Liner System, April 2014.
4. Conemaugh Stage III Permit Application Drawings, March 2014.
5. 40 Code of Federal Regulations Part 257.

Attachment 1
Site Map

C:\3DCivil\NRG\CCR-Annual Inspections\2020\Conemaugh-PA.dwg, 11x17, 1/8/2021 1:32:47 PM



LEGEND

 2020 ANNUAL INSPECTION PHOTOGRAPH
(ARROW DENOTES DIRECTION OF VIEW)

				<div><div>APTIM Environmental & Infrastructure, LLC <small>APTIM Environmental & Infrastructure, LLC has prepared this document for a specific project or purpose. All information contained within this document is copyrighted and remains intellectual property of APTIM Environmental & Infrastructure, LLC. This document may not be used or copied, in part or in whole, for any reason without expressed written consent by APTIM Environmental & Infrastructure, LLC.</small></div></div>	CONEMAUGH GENERATING STATION NEW FLORENCE, PENNSYLVANIA								
					PHOTOGRAPH LOCATION MAP								
REV. NO.	DATE	DESCRIPTION				DRAWN BY:	BWM	APPROVED BY:	RDS	PROJ. NO.:	631003459	DATE:	DECEMBER 2020

Attachment 2
Photo Log

Project: Conemaugh Landfill 2020 Annual Inspection

Photographer: Richard Southorn



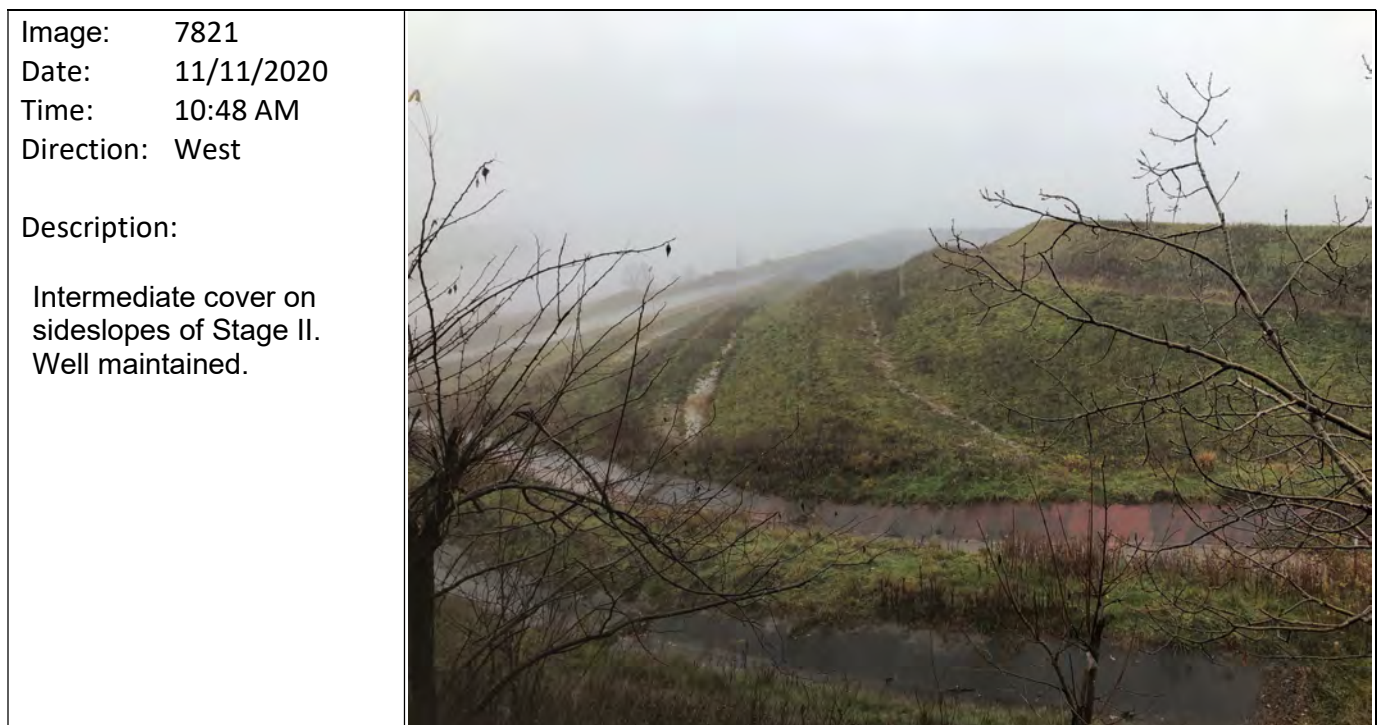
Project: Conemaugh Landfill 2020 Annual Inspection

Photographer: Richard Southorn



Project: Conemaugh Landfill 2020 Annual Inspection

Photographer: Richard Southorn



Project: Conemaugh Landfill 2020 Annual Inspection

Photographer: Richard Southorn



Project: Conemaugh Landfill 2020 Annual Inspection

Photographer: Richard Southorn

Image: 7827
Date: 11/11/2020
Time: 10:52 AM
Direction: West

Description:

Stage I Final Cover showing healthy vegetation that has no bare spots. No evidence of erosion or signs of instability.



Image: 7829
Date: 11/11/2020
Time: 10:59 AM
Direction: West-Northwest

Description:


Revetment mat installed on final cover area of Stage I to improve localized drainage.



Project: Conemaugh Landfill 2020 Annual Inspection

Photographer: Richard Southorn

<p>Image: 7833 Date: 11/11/2020 Time: 11:00 AM Direction: Southeast</p> <p>Description:</p> <p>Stage II Intermediate cover area. Vegetation is healthy with no bare areas. No evidence of instability or erosion.</p>	
--	---

<p>Image: 7837 Date: 11/11/2020 Time: 11:01 AM Direction: Southeast</p> <p>Description:</p> <p>Stage I Final Cover showing healthy vegetation that has no bare spots. No evidence of erosion or signs of instability.</p>	
--	--

Project: Conemaugh Landfill 2020 Annual Inspection

Photographer: Richard Southorn

Image: 7841
 Date: 11/11/2020
 Time: 11:02 AM
 Direction: Northeast

Description:

Stage I Final Cover
 showing healthy vegetation
 that has no bare spots.
 No evidence of erosion or
 signs of instability.



Image: 7843
 Date: 11/11/2020
 Time: 11:02 AM
 Direction: Northeast

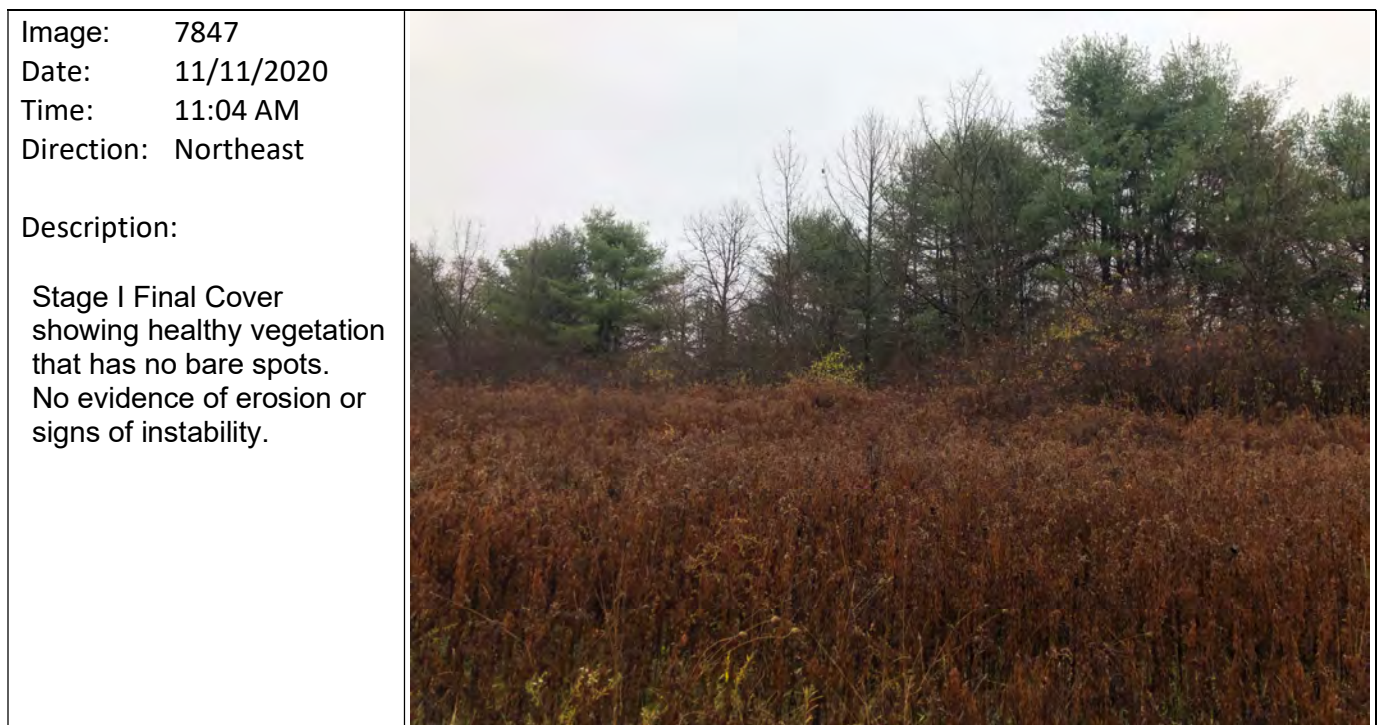
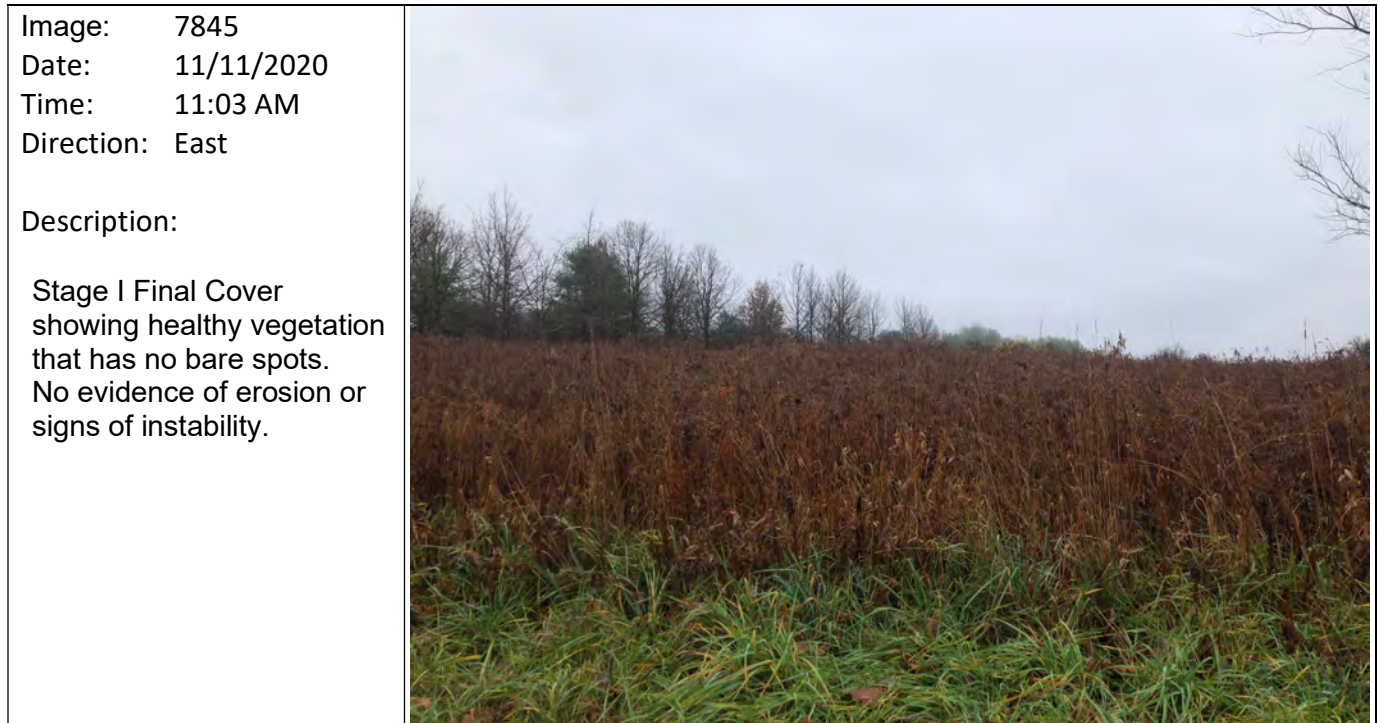
Description:

Stage I Final Cover
 showing healthy vegetation
 that has no bare spots.
 No evidence of erosion or
 signs of instability.



Project: Conemaugh Landfill 2020 Annual Inspection

Photographer: Richard Southorn



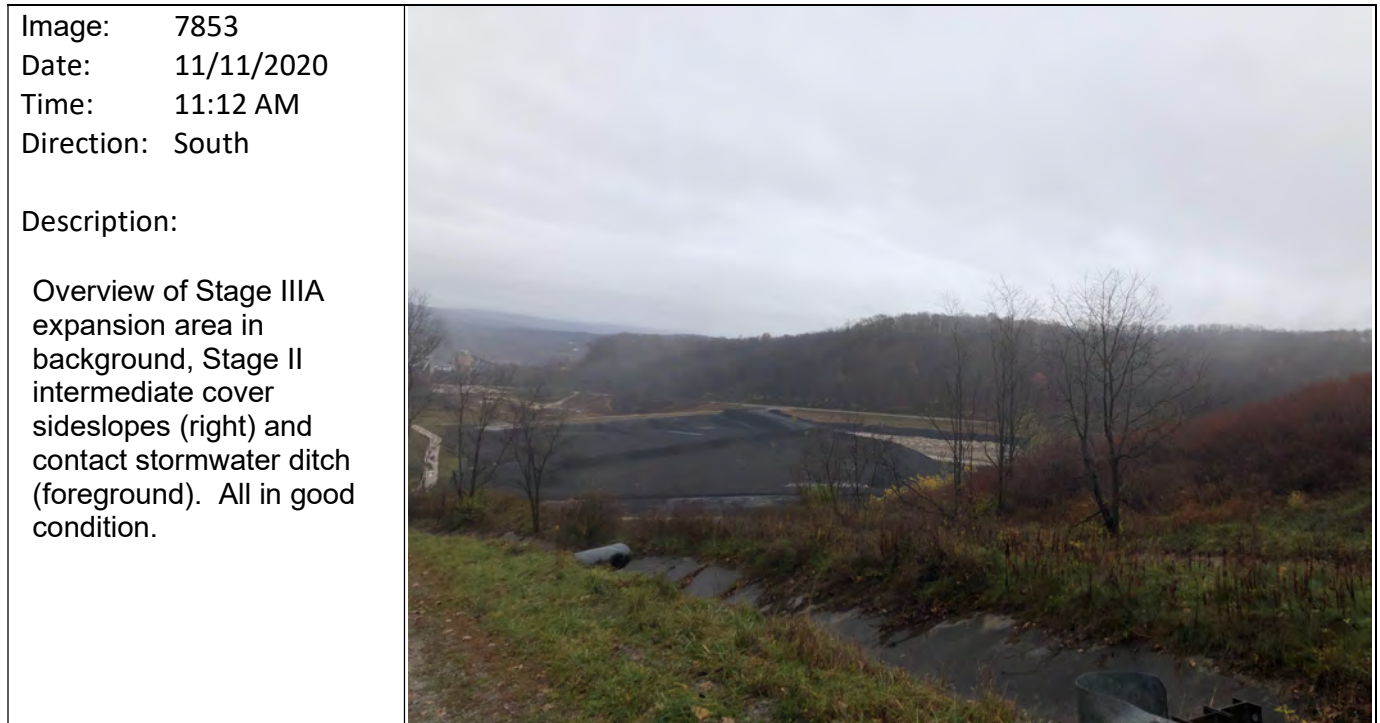
Project: Conemaugh Landfill 2020 Annual Inspection

Photographer: Richard Southorn



Project: Conemaugh Landfill 2020 Annual Inspection

Photographer: Richard Southorn



Project: Conemaugh Landfill 2020 Annual Inspection

Photographer: Richard Southorn



Project: Conemaugh Landfill 2020 Annual Inspection

Photographer: Richard Southorn

Image: 7863
 Date: 11/11/2020
 Time: 11:19 AM
 Direction: Northeast

Description:

Contact stormwater channel. Free of debris. Good condition.



Image: 7865
 Date: 11/11/2020
 Time: 11:19 AM
 Direction: Southwest

Description:

Diversion berm that was raised and improved along main haul road in 2018 to prevent run-off water from leaving the landfill during rainstorms. Vegetation has become well established.



Project: Conemaugh Landfill 2020 Annual Inspection

Photographer: Richard Southorn

Image: 7867
 Date: 11/11/2020
 Time: 11:19 AM
 Direction: Southwest

Description:

Main haul road. Road is well maintained. Inside toe of road was regraded in 2019 to better direct flow to contact stormwater channel.



Image: 7869
 Date: 11/11/2020
 Time: 11:20 AM
 Direction: East

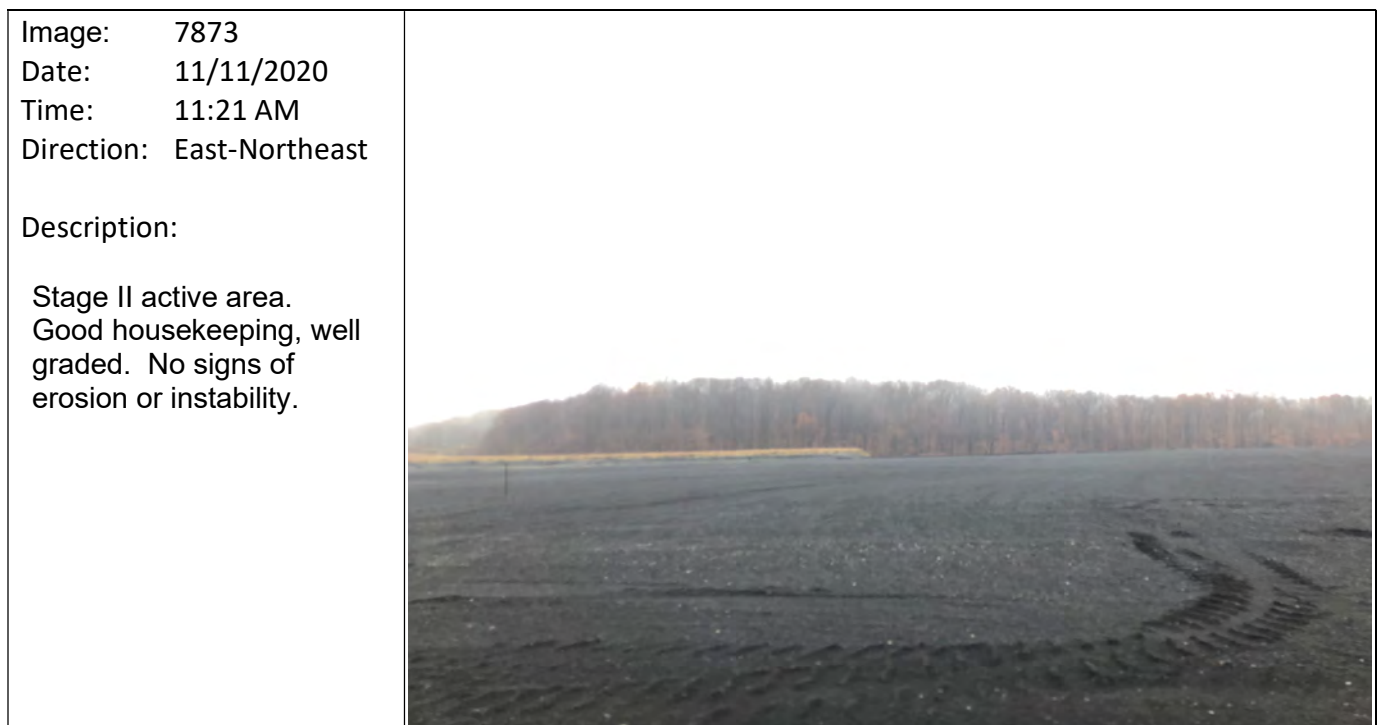
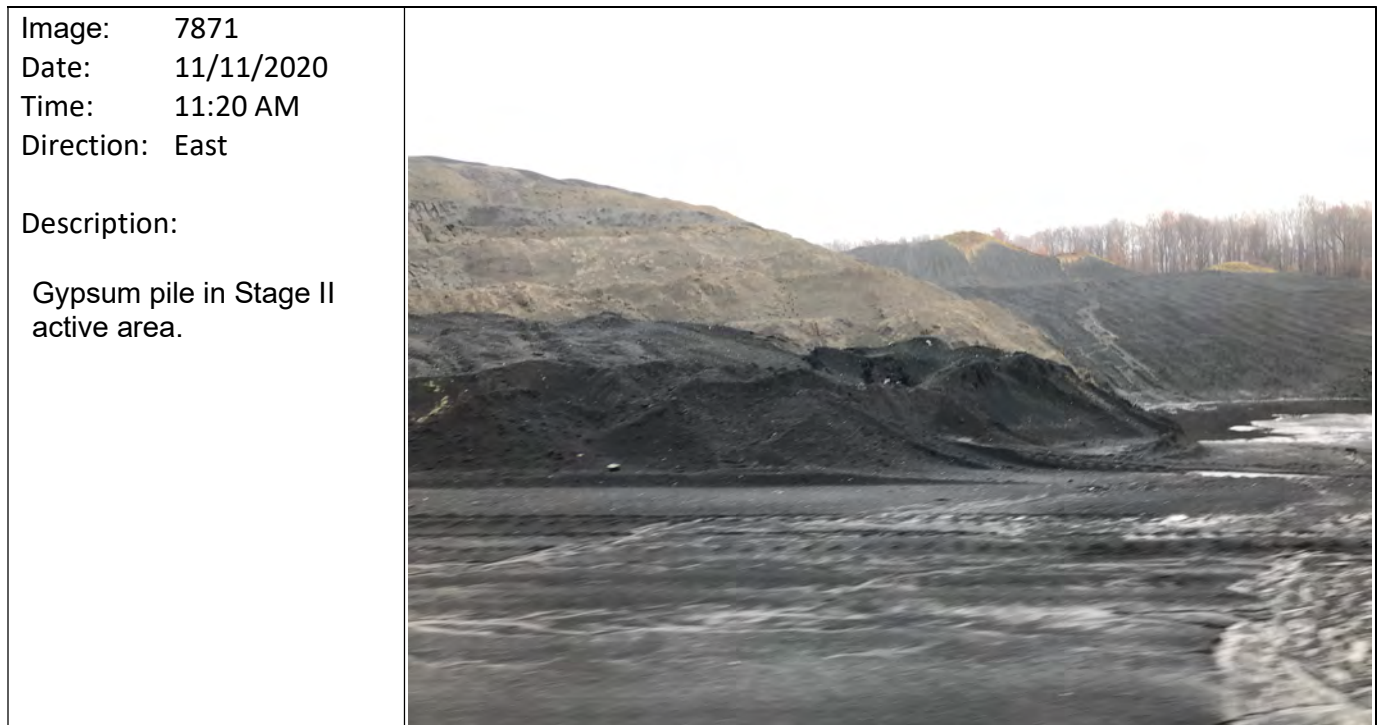
Description:

Location on Stage II active face that is maintained as a low point to temporarily collect contact stormwater during significant precipitation events.



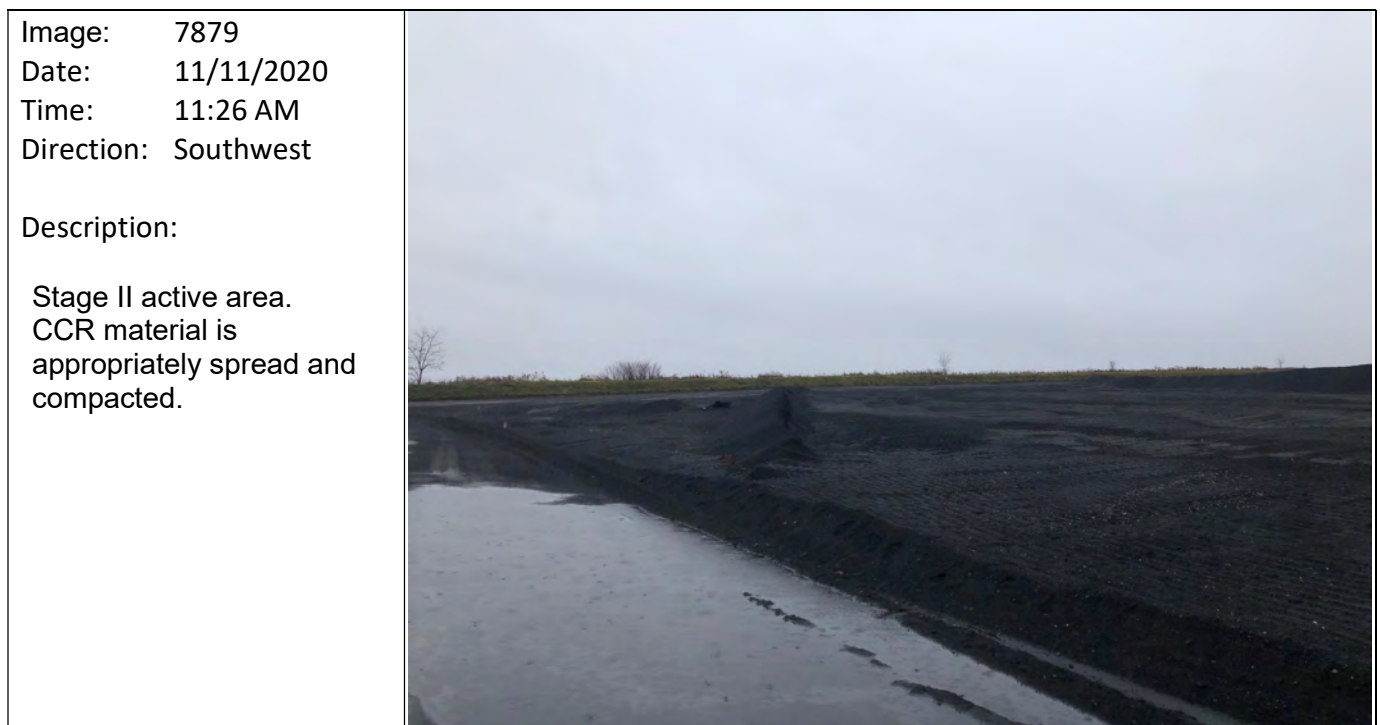
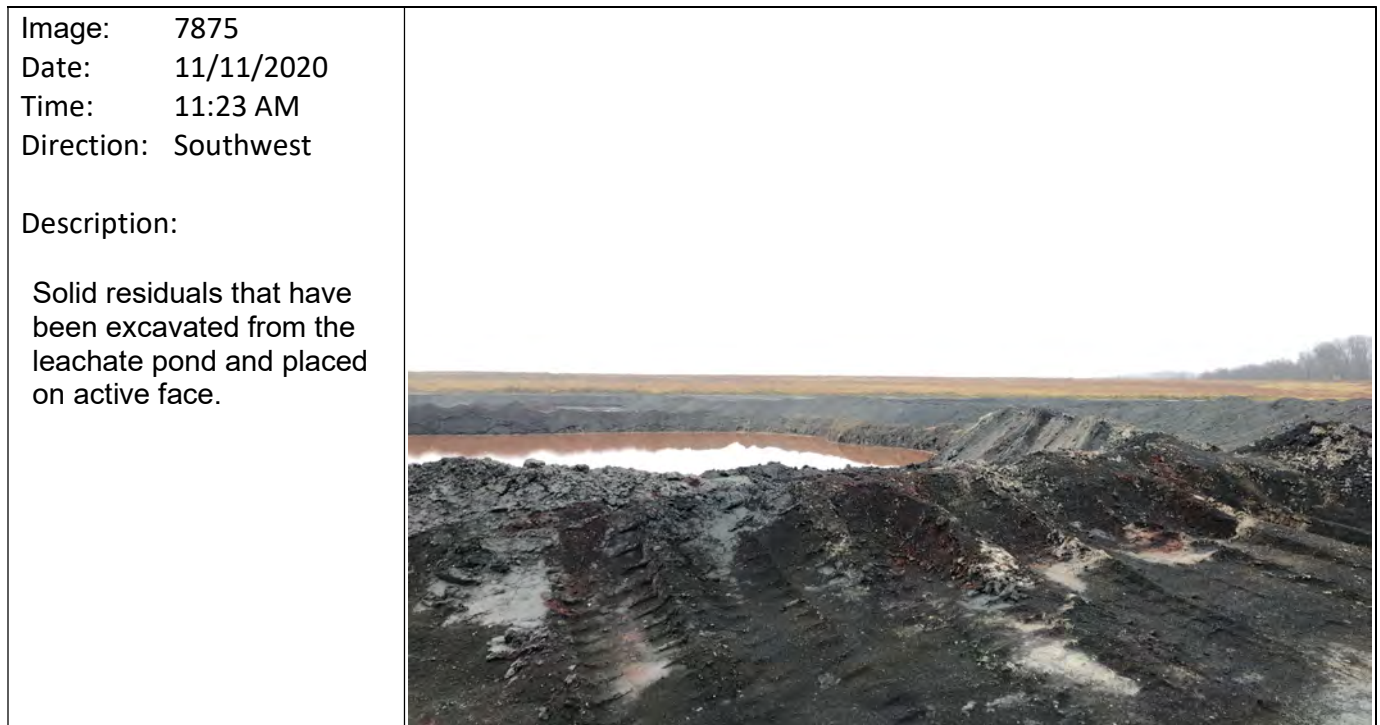
Project: Conemaugh Landfill 2020 Annual Inspection

Photographer: Richard Southorn



Project: Conemaugh Landfill 2020 Annual Inspection

Photographer: Richard Southorn



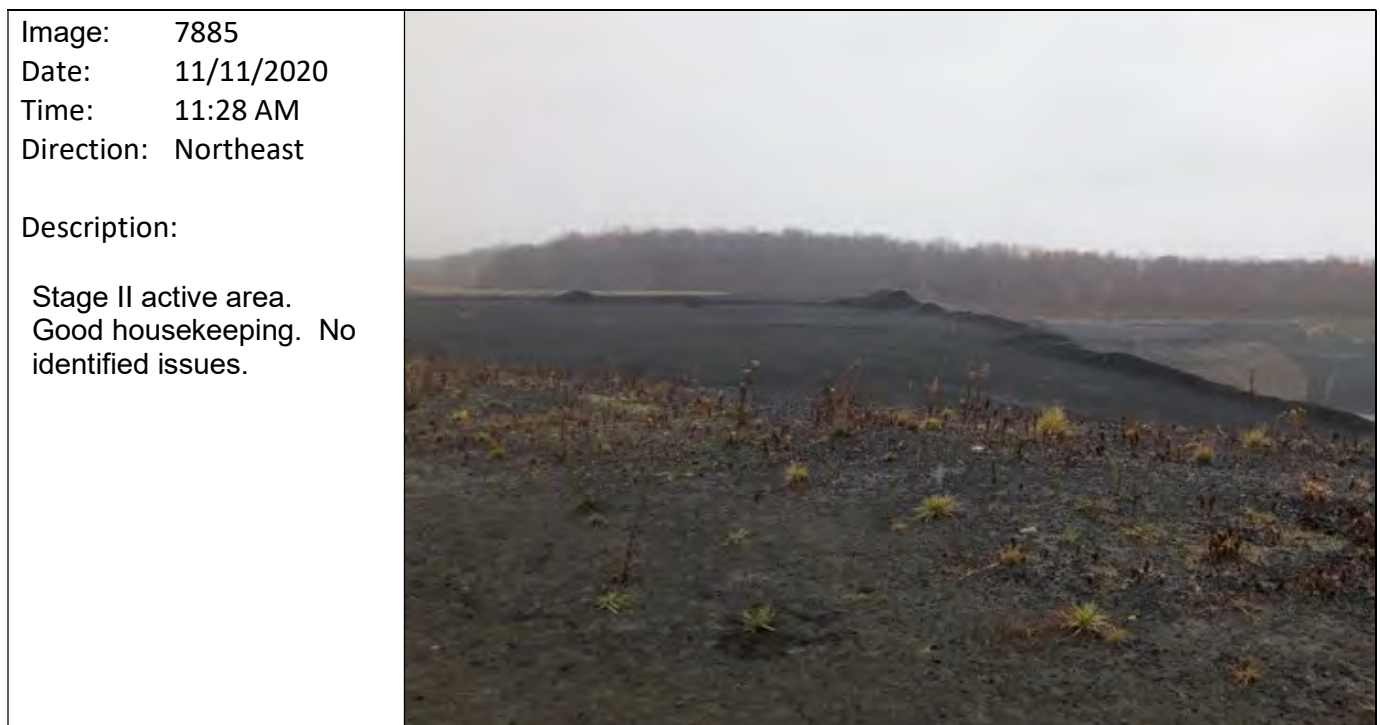
Project: Conemaugh Landfill 2020 Annual Inspection

Photographer: Richard Southorn



Project: Conemaugh Landfill 2020 Annual Inspection

Photographer: Richard Southorn



Project: Conemaugh Landfill 2020 Annual Inspection

Photographer: Richard Southorn

Image: 7886
Date: 11/11/2020
Time: 11:28 AM
Direction: North

Description:

Boundary of Stage II intermediate cover (left) and active areas (right).

