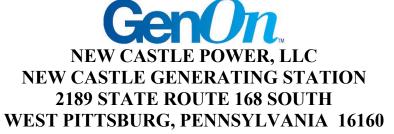
ANNUAL CCR UNIT INSPECTION REPORT 2021

NEW CASTLE STATION ASH LANDFILL WEST PITTSBURG, LAWRENCE COUNTY, PENNSYLVANIA





Prepared By:

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CEC Project 312-990.0002

INSPECTION DATE: 11/18/2021 REPORT DATE: 1/14/2022



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1.0 INTRODUCTION

On behalf of New Castle Power, LLC, Civil & Environmental Consultants, Inc. (CEC) has prepared the 2021 Annual Inspection Report for the New Castle Station Ash Landfill in accordance with the United States Environmental Protection Agency (USEPA) Coal Combustion Residuals (CCR) Rule 40 CFR 257.84 (§257.84) dated April 17, 2015, as amended July 2, 2015.

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 New Castle Generating Station (operated by New Castle Power, LLC), this inspection requirement applies to the existing New Castle Station Ash Landfill (Ash Landfill). In support of this obligation, Mr. Duane Lanoue (a qualified professional engineer with Civil & Environmental Consultants, Inc. [CEC]) conducted an on-site inspection of the Ash Landfill on November 18, 2021. The findings from this annual inspection are summarized in the remaining sections of this correspondence.

As required, this report will be placed in the New Castle facility's operating record per §257.105(g)(9), notice provided 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, 2021. Per §257.84(b)(4), the date that the annual inspection report must be entered into the facility's operating record is based on the previous inspection report, therefore, the current report will be entered into the facility's operating record no later than January 15, 2022.

2.0 BACKGROUND

The Ash Landfill is situated north of the main generating station. Prior to landfill development in this portion of the property, an impoundment existed (occupying an area of approximately 120 acres) that was used for the disposal of sluiced fly ash and bottom ash; these operations took place from approximately 1939 to 1978. From 1978 to 1984 and following the installation of electrostatic precipitators at the station, "dry" fly ash was disposed on the dewatered impoundment area. Beginning in 1984, CCR materials (including "dry" fly ash and dredged bottom ash) have been placed in this area.

In 1997, the Pennsylvania Department of Environmental Protection (PADEP) issued Solid Waste Permit No. 300818 for the Ash Landfill, addressing Stages 1, 2, and 3A. In April 2008, a permit modification was issued for Stages 4, 5, 6, and 7, which together comprise a vertical expansion of the Ash Landfill over top of the previously PADEP permitted stages.

From 2008 through 2010, approximately 16.8 acres of layover liner system (liner between Stages 4 and underlying Stages 1, 2, and 3A) was placed within Stage 4. Approximately 17.9 acres of final cover cap liner system was installed over the lower landfill slopes (southern and eastern perimeters) in 2008/2009; approximately 11.6 acres installed over Stage 1, 2, and/or 3A sideslopes below the area designated for Stage 5 (not active) in 2010; and approximately 10.2 acres installed over Stage 1, 2, and 3A sideslopes below the area designated for Stage 6 (not active) in 2013. Therefore, Stages 1, 2, and 3A were entirely capped and closed by 2013 with the layover liner system installation in Stage 4 and final cover cap placement in the areas designated for Stages 5 and 6.

Stage 4 is currently the active disposal area. The currently permitted Ash Landfill occupies an area of approximately 60 acres, and is operated/maintained in accordance with Permit No. 300818.

In June 2016, the New Castle Generating Station successfully completed a natural gas addition project and began operating with this new fuel source (the ability to run on coal has still been maintained). As a result, disposal of CCR materials in the Stage 4 area has been significantly reduced since approximately May 2016. In 2017, intermediate cover, which is now well established, was installed over the majority of the previous active face of Stage 4.

With respect to the Ash Landfill, CEC'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 CEC'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.

3.0 OPERATING RECORDS REVIEW

Principal items reviewed as part of this year's inspection included, but were not limited to: Design Drawings, 2021 Weekly and Periodic Landfill Inspection Reports that have been completed since the 2020 inspection, 2020 Annual Landfill Operations Report, and Solid Waste Permit No. 300818. During the site inspection, Mr. Lanoue interviewed facility personnel (Mr. Brian Baierl) to verify the information contained within the operating record

3.1 ENVIRONMENTAL CONTROL SYSTEM OVERVIEW

3.1.1 Layover Liner System

The active disposal area overlies the previous disposal areas (Stages 1, 2, and 3A). A layover liner system consisting of the subbase layer, geosynthetic clay liner, 60-mil textured HDPE geomembrane with a geocomposite drainage layer and leachate detection system was installed above Stages 1, 2, and 3A prior to placement of CCR materials in Stage 4.

3.1.2 Leachate Collection System

A leachate collection system is used to collect leachate from Stage 4 of the Ash Landfill. Leachate is routed to the Leachate Pond via dedicated perimeter ditches. From the Leachate Pond, the flows are discharged to the Beaver River via Outfall 009 in accordance with the New Castle Station's National Pollutant Discharge Elimination System (NPDES) Permit. There is a leachate leak detection system in place, located beneath the layover liner.

3.1.3 Stormwater Management

"Non-contact" stormwater and surface water is drained downslope. The slopes drain to perimeter stormwater ditches (separate from the leachate ditches) which convey the water to a Sedimentation Pond. From this pond, the waters are discharged to the Beaver River via NPDES-permitted Outfall 006.

"Contact" stormwater from within the active disposal area is collected in the leachate underdrain system and routed to the Leachate Pond as described above.

3.1.4 Cover System

The top of Stages 1, 2, and 3A that was within the designated areas of Stages 5 and 6 was capped using two feet of final cover soil with vegetative cover; double-sided bonded geocomposite consisting of 220-mil geonet and 6 oz. geonet drainage layer; a 40-mil textured HDPE flexible membrane liner; and compacted subgrade. All lower perimeter slopes, as well as the plateaus and side slopes of Stages 5 and 6, have a final cover installed and established vegetation where final cover is present.

The majority of Stage 4 has intermediate cover installed.

3.2 SUMMARY OF LANDFILL CONSTRUCTION AND OPERATIONS

No construction activity was completed in 2021 other than routine maintenance activities.

In 2021, the active disposal area (Stage 4) received approximately 33 tons of residual coal from coal pile runoff pond cleanout activities, and 12 tons of raw water tank sediment from cleanout activities. As a result, the geometry of Stage 4 has not been significantly modified.

3.3 REVIEW OF PRIOR INSPECTIONS

3.3.1 Weekly inspections

A review of weekly inspections has concluded that no significant deficiencies occurred at the facility that required remedial actions. Animal burrows are occasionally noted on inspection reports, but are addressed through backfilling in a timely manner.

3.3.2 Annual Inspections

A review of the previous annual inspection report has determined that there were no deficiencies or releases, actual or potential structural weaknesses, or concern to the stability of the landfill. All environmental control systems were in good operating condition and functioning as intended.

3.4 CCR DISPOSAL

Based on review of the 2020 Annual Landfill Operations Report and disposal quantities provided by Station personnel, the total in-place disposal quantity of CCR materials is estimated at approximately 1,378,851 tons (1,378,806 tons at end of year 2020 plus 45 tons in 2021).

4.0 SITE INSPECTION

The site inspection was performed on November 18, 2021 by Mr. Lanoue, 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, 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. Photographs were taken during the site inspection to document findings. A photograph location map is included in Appendix A and the photographs are included in Appendix B.

4.1 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. Capped portions of the Ash Landfill exhibited well established vegetative cover. The intermediate cover vegetation of Stage 4 appears healthy with full coverage.

4.2 REVIEW OF ENVIRONMENTAL CONTROL SYSTEMS

With no evidence to the contrary, the layover liner system at the active Stage 4 disposal area is believed to be in good operating condition and functioning as intended. At the time of the inspection, leachate and stormwater conveyance systems were operating as designed. A leachate leak detection pipe was reviewed during the inspection and was not flowing, indicating that the bottom liner system of Stage 4 is not leaking.

4.3 REVIEW OF PREVIOUSLY RECOMMENDED ACTIONS

No corrective actions were required based on the findings of the 2020 Annual Inspection. Recommendations were limited to the continued repair of any animal burrows or holes observed during weekly inspections to prevent instability, operation and maintenance of the facility, maintenance of access to closed portions of the landfill for inspection purposes, and continued operation and maintenance of the stormwater drainage features and leachate collection systems. These recommendations were found to have been followed, based on site conditions and the review of weekly inspection logs.

5.0 CONCLUSIONS

5.1 CHANGES IN GEOMETRY

During the previous annual inspection, CCR materials were being placed within the active disposal area at approximate elevations ranging between 836 and 842 feet mean sea level. No significant changes have been made to the geometry of the Ash Landfill site since the previous annual inspection, with only 45 tons of CCR materials disposed in 2021.

5.2 IN-PLACE CCR DISPOSAL QUANTITIES

As previously mentioned, the total in-place disposal quantity of CCR materials is estimated at approximately 1,378,851tons (1,378,806 tons at end of year 2020 plus 45 tons in 2021).

5.3 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 Landfill.

5.4 CHANGES THAT MAY AFFECT THE STABILITY OR OPERATION OF THE CCR UNIT

There have been no changes to the Ash Landfill area that pose a threat or concern to the stability of the landfill.

6.0 RECOMMENDATIONS

- 1. Continue to fill any animal burrows or holes observed during weekly inspections to prevent instability.
- 2. Ensure adequate access to the closed portions of the landfill to maintain the ability to perform weekly visual site structural inspections.
- 3. Continue operations and maintenance of stormwater drainage features and leachate collection systems.

There were no deficiencies or releases identified during the annual inspection that required the owner or operator to perform corrective actions as required under §257.84(b)(5).

7.0 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 Appendix B), that the New Castle Station Ash Landfill does not exhibit any appearances of actual/potential structural weakness that would be disruptive to the normal operations of the CCR Unit. The unit is being operated and maintained consistent with recognized and generally accepted good engineering standards and practices

Printed Name of Professional Engineer

Dr. D. Jamon

Signature

PE076388

Pennsylvania

Registration No.

PROFESSIONAL

DUANE LANOUE

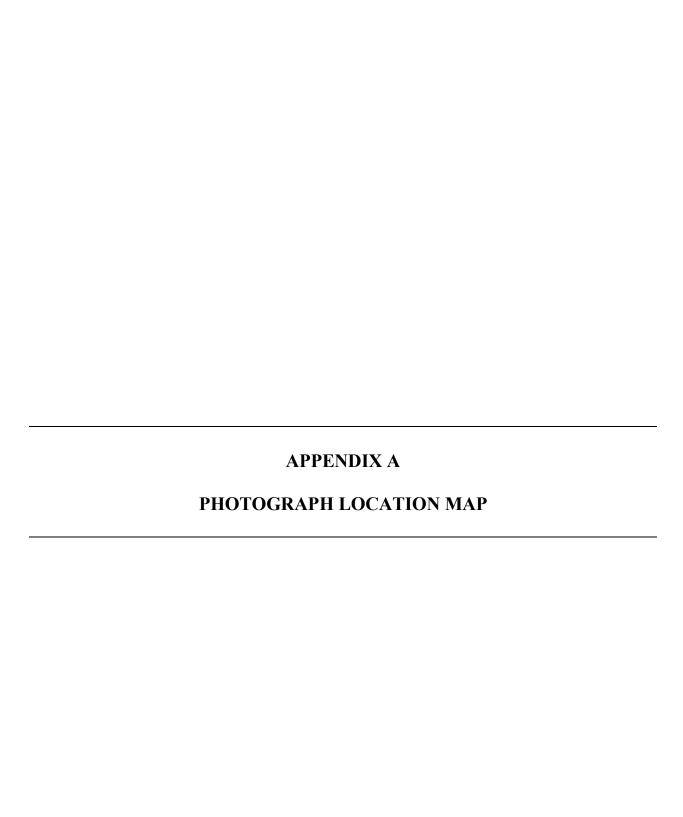
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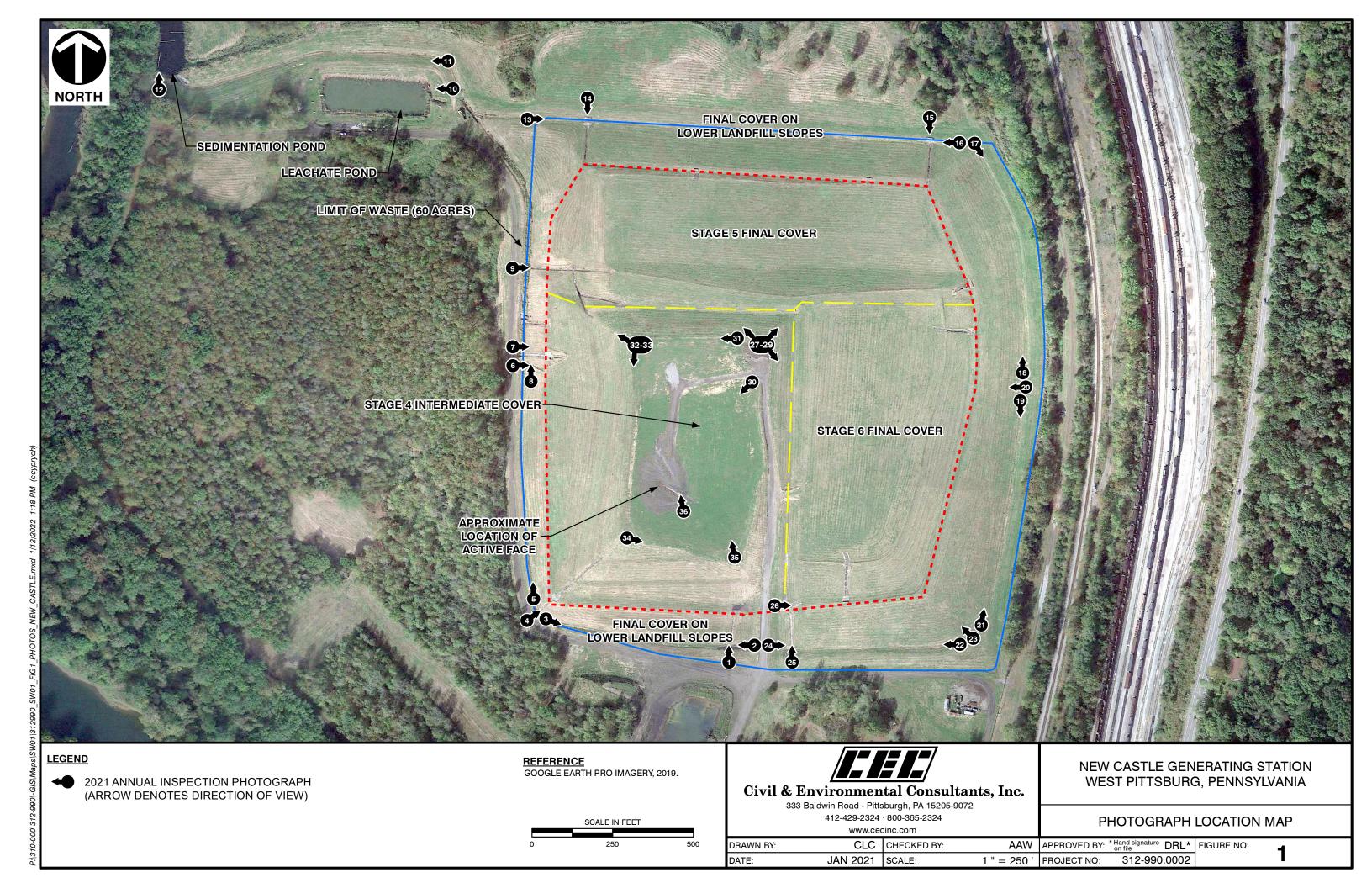
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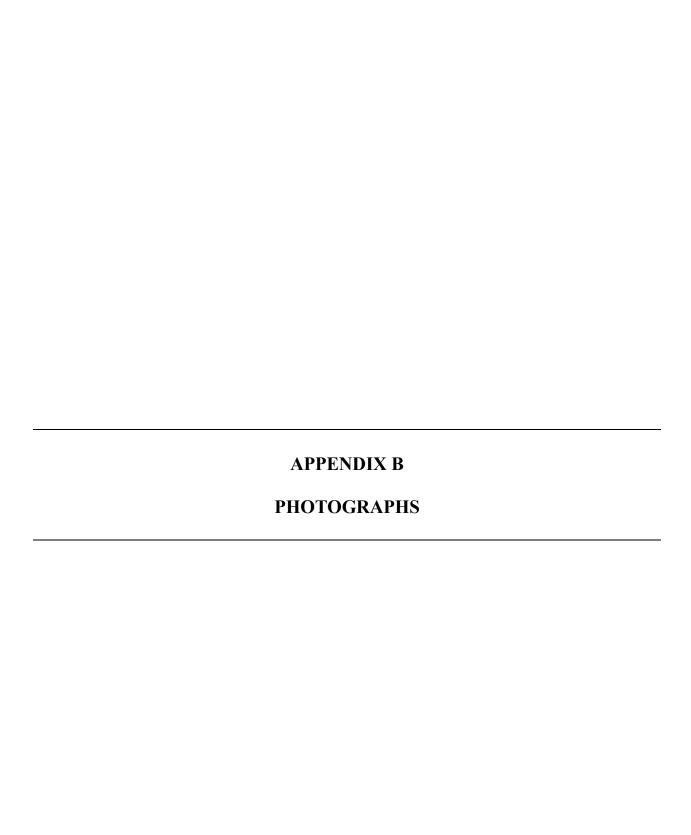
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8.0 REFERENCES

- 1. Application for Major Permit Modification of Vertical Expansion. New Castle Ash Landfill. Permit I.D. No. 300818. December 2010. Civil & Environmental Consultants, Inc.
- 2. 2020 New Castle Generating Station Annual Landfill Operations Report.
- 3. Landfill Periodic Inspection Reports, November 2020 November 2021.
- 4. 40 Code of Federal Regulations, Part 257.









Photograph 1: Non-contact stormwater downchute is clear of obstructions.



Photograph 2: South non-contact stormwater channel is clear of obstructions. South final cover lower slope is well vegetated and mowed annually. No evidence of animal burrows, erosion, or stability issues.



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CEC Project: 312-990.0002 Taken by: Duane Lanoue Date: November 18, 2021

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Photograph 3: South non-contact stormwater channel is clear of obstructions. South final cover lower slope is well vegetated and mowed annually. No evidence of animal burrows, erosion, or stability issues.



Photograph 4: Non-contact stormwater downchute is clear of obstructions. Gabion energy dissipator is installed at the junction with the stormwater (non- contact water) perimeter ditch.



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Photograph 5: West non-contact stormwater channel is clear of obstructions. West final cover lower slope is well vegetated and mowed annually. No evidence of animal burrows, erosion, or stability issues.



Photograph 6: Non-contact stormwater downchute is clear of obstructions. Gabion energy dissipator is installed at the junction with the stormwater (non- contact water) perimeter ditch.



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Photograph 7: Leachate collection zone and leak detection zone discharge pipes.



Photograph 8: West non-contact stormwater channel is clear of obstructions. West final cover lower slope is well vegetated and mowed annually. No evidence of animal burrows, erosion, or stability issues.





Photograph 9: Non-contact stormwater downchute is clear of obstructions. Gabion energy dissipator is installed at the junction with the stormwater (non- contact water) perimeter ditch.



Photograph 10: Leachate (contact water) Pond. No evidence of animal burrows or liner damage.



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Photograph 11: North non-contact stormwater channel is clear of obstructions.



Photograph 12: Non-contact stormwater Sedimentation Pond. No evidence of animal burrows.



Photograph 13: North non-contact stormwater channel is clear of obstructions. North final cover lower slope is well vegetated and mowed annually. No evidence of animal burrows, erosion, or stability issues.



Photograph 14: Non-contact stormwater downchute is clear of obstructions. Gabion energy dissipator is installed at the junction with the stormwater (non- contact water) perimeter ditch.



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Photograph 15: Non-contact stormwater downchute is clear of obstructions. Gabion energy dissipator is installed at the junction with the stormwater (non- contact water) perimeter ditch.



Photograph 16: North non-contact stormwater channel is clear of obstructions. North final cover lower slope is well vegetated and mowed annually. No evidence of animal burrows, erosion, or stability issues.



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Photograph 17: East non-contact stormwater channel is clear of obstructions. East final cover lower slope is well vegetated and mowed annually. No evidence of animal burrows, erosion, or stability issues.



Photograph 18: East non-contact stormwater channel is clear of obstructions. East final cover lower slope is well vegetated and mowed annually. No evidence of animal burrows, erosion, or stability issues.



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Photograph 19: East non-contact stormwater channel is clear of obstructions. East final cover lower slope is well vegetated and mowed annually. No evidence of animal burrows, erosion, or stability issues.



Photograph 20: East final cover lower slope is well vegetated and mowed annually. No evidence of animal burrows, erosion, or stability issues.



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Photograph 21: East non-contact stormwater channel is clear of obstructions. East final cover lower slope is well vegetated and mowed annually. No evidence of animal burrows, erosion, or stability issues.



Photograph 22: South non-contact stormwater channel is clear of obstructions. South final cover lower slope is well vegetated and mowed annually. No evidence of animal burrows, erosion, or stability issues.



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Photograph 23: Southeast corner final cover lower slope is well vegetated and mowed annually. No evidence of animal burrows, erosion, or stability issues.



Photograph 24: South non-contact stormwater channel is clear of obstructions. South final cover lower slope is well vegetated and mowed annually. No evidence of animal burrows, erosion, or stability issues.



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Photograph 25: Non-contact stormwater downchute is clear of obstructions. Gabion energy dissipator is installed at the junction with the stormwater (non- contact water) perimeter ditch.



Photograph 26: South final cover upper slope is well vegetated and mowed annually. No evidence of animal burrows, erosion, or stability issues.



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Photograph 27: Stage 6 final cover is well vegetated and mowed annually. No evidence of animal burrows, erosion, or stability issues.



Photograph 28: Stage 5 final cover is well vegetated and mowed annually. No evidence of animal burrows, erosion, or stability issues.



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Photograph 29: Stage 5 final cover is well vegetated and mowed annually. No evidence of animal burrows, erosion, or stability issues.



Photograph 30: Intermediate cover in active area is well vegetated and mowed annually.



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Photograph 31: Stage 4 north slope is well vegetated and mowed annually. No evidence of animal burrows, erosion, or stability issues.



Photograph 32: Downchutes from west side of Stage 4 and Stage 5. No evidence of animal burrows, erosion, or stability issues on the vegetated slopes.



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Photograph 33: Stage 4 west slope is well vegetated and mowed annually. No evidence of animal burrows, erosion, or stability issues.



Photograph 34: Stage 4 south slope is well vegetated and mowed annually. No evidence of animal burrows, erosion, or stability issues.



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Photograph 35: Intermediate cover in active area is well vegetated and mowed annually.



Photograph 36: Contact water collection riser in active area.