



Gainesville Regional Utilities Deerhaven Generating Station



Coal Combustion Residual Units Annual Inspection Report (December 6, 2023 – December 3, 2024)

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1 Introduction

Gainesville Regional Utilities (GRU) operates the Deerhaven Generating Station (facility) located in Gainesville, Florida. The facility has the ability to generate electricity from a variety of sources, including coal. Unit #2 was retrofitted in early 2021 to primarily burn natural gas. It has the ability to fire coal as needed. From January through November 2024, coal constituted approximately 0.3% by heat input for Unit #2. Because of the change in operation following the 2021 retrofit, the provisions of the Coal Combustion Residuals (CCR) regulations (40 CFR 257 Subpart D) are not applicable to the residuals generated from the facility. The CCRs generated in the past and managed at this facility include bottom ash, fly ash, and flue gas desulfurization byproduct. A CCR surface impoundment system (SIS) underwent closure by removal of in-place CCRs in March 2024 and these ponds are currently managing waste streams (e.g., cooling tower blowdown, sluice water, etc.) not regulated by the provisions of the federal CCR regulations. GRU submitted a closure certification report to the Florida Department of Environmental Protection in May 2024.

For regulatory purposes, the CCR landfill is considered a CCR unit. GRU operates the landfill per the provisions of an operations permit issued by the Florida Department of Environmental Protection in 2023. The landfill accepts residuals generated from the plant and lime sludge that is periodically removed from front-end treatment sludge ponds. Occasionally, fly ash is also deposited in the landfill when it is not hauled offsite for beneficial use. The landfill is comprised of four cells (i.e., Cells 1-4) sequentially arranged from west to east. The bottom of each landfill cell is graded to drain contact water (i.e., water that contacts CCR) intercepted by the cell bottom. In addition, perforated PVC pipes were installed at the base of the cells. Specifically, these pipes are located in the middle of each cell and between each cell to intercept and gravity-drain the contact water to a drainage ditch located along the northern toe of the landfill (i.e., the Northern Drainage Ditch).

A slurry wall containment system, which is keyed into an existing underlying clay layer, encompasses the landfill and the Northern Drainage Ditch. A series of stormwater ditches outside the slurry wall route stormwater to either a wetland area located just west of the landfill or to a stormwater pond located southeast of the landfill. Currently, Cells 1, 2, and 3 of the CCR landfill still accept non-CCR materials. Figure 1 presents an aerial layout of the CCR landfill at the site, facing west.

Title 40 Code of Federal Regulations (CFR) 257.83(b) and 257.84(b) requires that CCR units be annually inspected by a qualified professional engineer to ensure that the design, construction, operation, and maintenance of each CCR unit are consistent with recognized and generally accepted good engineering standards. 40 CFR 257.53 defines a qualified professional engineer as *“an individual who is licensed by a state as a Professional Engineer to practice one or more disciplines of engineering and who is qualified by education, technical knowledge, and experience to make the specific technical certifications required under this subpart. Professional engineers making these certifications must be currently licensed in the state where the CCR unit(s) is located”*. This report was prepared under the supervision of Pradeep Jain, who is a licensed professional engineer in the State of Florida (FL PE License No. 68657).



Figure 1. Aerial Image of the CCR Landfill Facing West

2 CCR Landfill

2.1 Review of Relevant Information

The following additional documents (i.e., beyond those reviewed for previous annual inspections) were reviewed by ITS to understand the design and operation of the CCR landfill located at the site while preparing this annual inspection report:

- a. A total 52 weekly CCR landfill inspection worksheets were reviewed; these worksheets covered the period from December 11, 2023 through December 2, 2024. 40 CFR 257.84(a)(1)(i) establishes a maximum time interval of 7 days for weekly inspections of the CCR landfill. All 52 weekly CCR landfill inspections were performed without exceeding the maximum time interval.

The worksheets allow the inspector to categorize observations as *Acceptable*, *Area of Concern*, or *Needs Attention*. The *Area of Concern* is defined in the worksheet as “may develop into a *Needs Attention* area if not addressed. Monitor the situation and reevaluate during the next inspection. Address as necessary.” It should be noted that an *Area of Concern* is not indicative of a problem but is used to proactively identify and monitor circumstances that have an elevated chance of developing into a problem. *Needs Attention* is defined in the worksheet as “currently or imminently presents a human-health, operation or environmental hazard/problem. Address as soon as possible.”

Sixty-five (65) *Needs Attention* observations were reported in the weekly inspection worksheets reviewed for this report. The majority of these observations (35 instances) were inundated underdrains because of the high water level in the Northern Drainage Ditch, and the presence of loose ash piles that were not spread and compacted (14 occasions). Based on supervisor notes included in the inspection worksheets,

it appears that GRU made attempts to address the issues expeditiously and were resolved as soon as feasible.

The *Needs Attention* observations corresponded to the following eight categories:

- 1) **Water Level Above Underdrain Outlets (35 instances)** – Four underdrain pipes collect and transport CCR contact water to the Northern Drainage Ditch. Multiple events under this category were related to the lack of SIS storage capacity to due the Ash Cell # 2 closure activities. The placement of CCR and non-CCR wastestreams in Ash Cell # 2 was ceased by October 1, 2023 to initiate its closure. Ash Cell #2 was unavailable to manage the process water until April 2024. The water level was above the underdrains during 17 weekly inspections from December 2023 through April 2024. The site received heavy rainfall during August through October 2024 from three hurricanes (Debby, Helene, and Milton). The underdrains were under water during all 13 weekly inspections between July 29 through October 28, 2024. The high water level in the northern drainage ditch was a frequently occurring issue during the reporting period. In summary, the unavailability of Ash Cell #2 for 4 months during the reporting period and excessive rain from three hurricanes were the primary causes of elevated water levels in the Northern Drainage Ditch.
- 2) **Loose Piles of CCR (14 instances)** – Loose piles of CCR accumulated on the landfill surface were observed – these piles have the potential to contribute to dust emissions. The piles were spread and compacted within a week of the observation based on the supervisor’s note on the weekly inspections reports.
- 3) **Overgrown Vegetation (4 instances)** – Vegetation on the side slopes of the CCR landfill was observed to be taller than 6 inches. Issues related to overgrown vegetation were generally resolved within a week.
- 4) **Ponding in Cell 4 (2 instances)** – Cell 4 was used for storing liquid during Ash Cell #2 closure due to the unavailability of Ash Cell #2 for managing liquids.
- 5) **Elevated Water Level in Northern Drainage Ditch (3 instances)** – The water level in the ditch was close to the top of the bank during 3 weekly inspections (25 December 2023, 1 April 2024, and 5 August 2024). This was primarily due to the unavailability of Ash Cell #2 until April 2024 and heavy rainfall during August through October 2024 from three hurricanes (Debby, Helene, and Milton).
- 6) **Elevated Water Level in Stormwater Pond (4 instances)** – The water level in the stormwater pond resulted in water back-up into the culverts on the southeast corner of the landfill on one occasion in December 2023 and three occasions in September 2024.
- 7) **Water Level Above Downcomer Outlets (2 instances)** – two downcomer pipes drain contact water from the top of the landfill into the Northern Drainage Ditch. On two occasions, the downcomer outlets were observed to be inundated due to elevated water elevation in the Northern Drainage Ditch. As discussed earlier, the unavailability of Ash Cell #2 for 4 months during the reporting period and excessive rain from three hurricanes were the primary causes of elevated water levels in the Northern Drainage Ditch.

- 8) Sediments Accumulation in Northern Drainage Ditch (1 instance)** – Sediment accumulation in the ash canal was reported as a “Needs Attention” item during a weekly inspection on May 20, 2024.

Forty (40) “Areas of Concern” observations were noted. These are listed as follows:

- 1. Ponding in Cell 4 (13 instances)** – Cell 4 was used for storing liquid during Ash Cell #2 closure due to the unavailability of Ash Cell #2 for managing liquids. Ponded liquids were reported during 10 weekly inspections from December 18, 2023 through April 1, 2024, when Ash Cell #2 was unavailable for liquid management.
- 2. Grass and other vegetation height on external slopes (9 instances)**. The vegetation on external side slopes was reported as an area of concern in 9 instances. One of the instances was reported to be due to equipment maintenance.
- 3. Sediments Accumulation in Northern Drainage Ditch (8 instances)** – Sediment accumulation in the ash canal was reported as a “Area of Concern” item during eight weekly inspections during the reporting period.
- 4. Elevated Water Level in Stormwater Pond (4 instances)** – The water level in the stormwater pond resulted in water back-up into the culverts on the southeast corner of the landfill on multiple occasions during the rainy season, primarily due to heavy rain from three hurricanes.
- 5. Erosion (1 instance)** – Erosion was observed in the active disposal area in September 2024. The area was repaired within one week of reporting.
- 6. Water Level Above Downcomer Outlets (2 instances)** – The outlets of the downcomers that drain into the Northern Drainage Ditch were reported to be slightly submerged with water. The drainage ditch was pumped down to address this issue.
- 7. Erosion of Access Road (2 instances)** – The access road was reported to be eroded on two occasions. These issues were resolved within a week of reporting.
- 8. Ponding in Active Area (1 instance)**. Ponding of water was observed in the active area on August 5, 2024 after heavy rain from Hurricane Debby.

Based on supervisor notes included in the inspection worksheets, it appears that these issues were addressed expeditiously and were generally resolved as soon as practically feasible.

2.2 Field Inspection

ITS inspected the CCR landfill on December 4, 2023. The following section describes observations made during the inspection event.

2.2.1 Signs of Distress or Malfunction

Cells 1-4 underdrains were either partially or completely inundated due to elevated water levels in the Northern Drainage Ditch (Figure 2). GRU should consider draining the ditch and inspect the underdrain pipes for sediment built-up.



(a)



(b)



(c)



(d)

Figure 2. Condition of Underdrain Outlets of (a) Cell 1, (b) Cell 2, (c) Cell 3, and (d) Cell 4 on December 4, 2024.

2.2.2 Thick Vegetation

Thick vegetation was observed near the top of the slopes of Cells 1-3. Figure 3 shows an example of an area with thick vegetation.



Figure 3. An Example Area with Thick Vegetation

2.2.3 Geometrical Changes of CCR Landfill

No changes in the geometry of the landfill indicative of structural instability or weakness were noted. Since the last inspection, no modification has been made to the design and operational procedures of the landfill.

2.2.4 Volume of CCR

ITS conducted a topographic survey of the landfill on December 3, 2024 and used AutoCAD Civil 3D 2013 cut-and-fill procedures to estimate the in-place CCR volume; the landfill bottom elevation was assumed to be 184 feet NGVD29 (as approximately shown in B&M 1981). Approximately 551,500 cubic yards of CCR and other materials (i.e., cover soil, FET lime sludge) have been deposited in the landfill to date. The topographic survey and the estimated in-place volume should be considered as a rough approximation as the survey was not performed by a licensed surveyor.

2.2.5 Structural Weaknesses and Adverse Conditions

ITS performed a visual inspection of all exterior slopes of the CCR landfill for any appearance of actual or potential structural weakness, including signs of erosion, bulging, depressions, cracks, animal forage

holes, boils, or excessive, turbid, or sediment-laden seepage. No signs of structural weakness or adverse conditions were observed.

2.2.6 Other Changes Affecting Stability or Operation

Apart from those discussed above, no other changes or circumstances that may impact the stability or operation of the landfill were noted during the inspection.

3 Summary of Deficient Conditions and Recommendations

Table 1 presents a summary of the locations of each deficient condition observed during the annual inspection of the CCR Landfill.

Table 1. Location Summary of Deficient Conditions Observed During the Annual Inspection

Location	Condition
Underdrains	Underdrains were either partially or completely submerged under water due to elevated water levels in the Northern Drainage Ditch.
Thick vegetation	Near the top of the slopes of Cells 1-3.

Two deficient conditions, as listed in Table 3-1, were observed during the annual inspection that require GRU’s attention. 40 CFR 257.84(a)(1)(i) establishes a maximum time interval of 7 days for weekly inspections of the CCR landfill. All the weekly inspections were performed within this maximum time interval of 7 days.

4 References

B&M (1981). Deerhaven Generating Station – Unit 2 Construction, Contract 29C – Yard Structures III. Drawing set conforming to construction records. Prepared for the City of Gainesville, Florida – Alachua County Regional Utilities Board, by Burns and McDonnell. Revised 1 July 1981.

6 Professional Engineer Certification

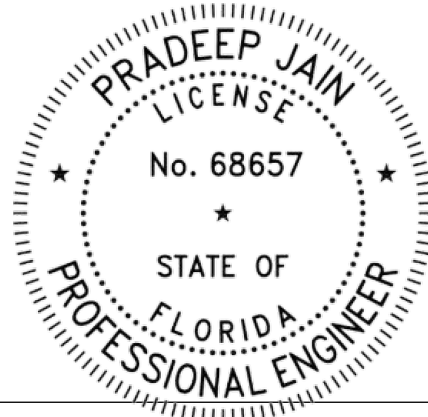
This plan was prepared under the supervision, direction, and control of the undersigned registered professional engineer (PE). The undersigned PE is familiar with the requirements of 40 CFR 257.83(b) and 84(b). The undersigned PE certifies that this CCR unit annual inspection report meets the requirements of 40 CFR 257.83(b) and 84(b).

Name of Professional Engineer: Pradeep Jain

Company: Innovative Waste Consulting Services, LLC

PE Registration State: Florida

Florida PE License No.: 68657



This item has been digitally signed and sealed by Pradeep Jain, PE, on the date adjacent to the seal. Printed copies of this document are not considered signed and sealed and the signature must be verified on any electronic copies.