Gainesville Regional Utilities
Deerhaven Generating Station

GRU[SM]

2019 Coal Combustion Residual Units
Annual Inspection Report

(Reporting Period: 13 December 2018 – 10 December 2019)

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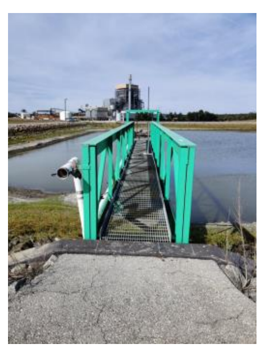

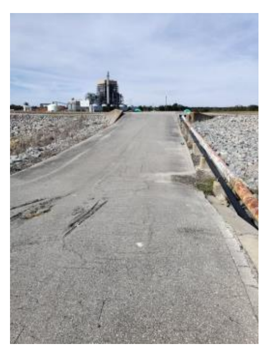

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1 Introduction

The Deerhaven Generating Station (site) has two coal combustion residuals (CCR) units: a surface impoundment system and a landfill. The surface impoundment system is comprised of two ash ponds (i.e., Ash Cell #1, Ash Cell #2) located within the same slurry wall containment system. These ponds receive cooling tower blowdown and bottom ash sluice water from the site's coal-fired combustion unit (i.e., Unit #2) through a piping network that allows discharge to either pond. Cooling tower blowdown represents the largest discharge stream routed to these ponds, and sluiced ash constitutes a relatively small portion of the discharges received by these ponds. As the water moves through the ash ponds, bottom ash settles, and the decant water gravity drains to adjacent pump back ponds (i.e., Pump Back Cell #1, Pump Back Cell #2) through subsurface culverts, which run beneath the embankment separating each ash pond from its adjacent pump back pond. The culvert inlets are enclosed within stoplog structures (located inside the ash ponds near the embankment separating each ash pond from the adjacent pump back pond) to minimize ash entering the culverts. The adjacent pump back ponds are exclusively used to store decant water prior to treatment and re-use in plant operations. The slurry wall containment system is located beneath the peripheral embankment which encompasses the surface impoundment system, the pump back ponds, and two front-end treatment (FET) lime sludge ponds. The slurry wall is keyed into an existing, underlying clay layer. Figure 1 presents a layout view of the surface impoundment system and the two adjacent pump back ponds at the site. The locations of several piezometers, which are used to qualitatively monitor for seepage through the exterior embankments, are also shown.

Figure 1. Layout of the CCR Surface Impoundment System and Adjacent Pump Back Ponds (Picture was taken by ITS on 20 December 2019)

The CCR landfill primarily accepts the flue gas desulfurization byproduct from the Unit #2 scrubbing process. The landfill also accepts the bottom ash that is periodically (i.e., approximately every five years) excavated from the surface impoundment system and lime sludge that is periodically dredged 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. 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 and they 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).

Similar to the surface impoundment system, a slurry wall containment system, which is keyed into an existing underlying clay layer, encompasses the landfill and Northern Drainage Ditch. A series of stormwater ditches located outside the slurry wall route stormwater to either a wetland area located just west of the landfill or to a stormwater pond located to the south of the landfill. Currently, Cell 1 and Cell 2 of the CCR landfill are actively receiving CCR and other non-CCR materials. Figure 2 presents an aerial layout of the CCR landfill at the site, facing west.

Figure 2. Aerial Image of CCR Landfill Facing West (Picture was taken by ITS on 20 December 2019)

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 is 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). This report documents observations made from 13 December 2018 through 10 December 2019 (referred herein to as the *reporting period*).

2 CCR Surface Impoundment System

2.1 Review of Relevant Information

2.1.1 Overview

The following documents have been reviewed by ITS to understand the design and operation of the CCR surface impoundment system located at the site while preparing previous annual inspection reports:

- Construction drawings for the surface impoundment system certified as conforming to construction records (B&M 1981)
- Bid documents for the site including construction specifications for the surface impoundment system (B&M 1980)
- A Site Certification Application for Unit 2 (RUB 1977)
- A State of Florida Department of Environmental Regulation Electric Power Plant Site Certification Review FDER (1978)
- A slope stability and liquefaction potential analysis conducted for the surface impoundment system (UES 2015)
- A topographic survey of the surface impoundment system (DSI 2015)
- CCR Surface Impoundment System Hazard Potential Classification (UES 2016a)
- CCR Abutment and Base Surface Impoundment System Evaluation (UES 2016b)
- CCR Surface Impoundment System and Landfill Groundwater Monitoring Systems Design and Construction (UES 2017); UES completed the installation and development of the groundwater monitoring wells around each of the CCR units in March 2017.
- Groundwater Sampling and Analysis Plan for the Coal Combustion Residuals Units (IWCS 2017c); the plan provides details on the methodology to be used for sampling and analyzing groundwater data collected from the monitoring well networks of each CCR unit.

No modification has been made to the design and operational procedures of the surface impoundment system. The following additional documents developed since the previous annual inspection were also reviewed for this report preparation:

- UES (2019). Coal Combustion Residuals (CCR) Surface Impoundment System and Updated Landfill Groundwater Monitoring Systems Design and Construction, Draft, prepared by Universal Engineering Services for Gainesville Regional Utilities and Innovative Waste Consulting Services, LLC, July 2019.
- Fifty-two (52) weekly (7-day) inspection worksheets for SIS
- Twelve (12) monthly (30-day) inspection worksheets for SIS

2.1.2 Review of Weekly and Monthly Inspection Worksheets

Weekly and monthly inspection worksheets for the CCR surface impoundment system have been completed and placed in the operating record since 19 October 2015. ITS reviewed the worksheets for all the weekly and monthly inspections conducted since the previous annual inspection. Documentation reporting that the deficiencies identified during the previous annual inspection have been addressed is available on GRU's publicly accessible internet site.

40 CFR 257.83(a)(1)(i) and (iii) respectively establish maximum time intervals for weekly (i.e., 7 days) and monthly (i.e., 30 days) inspections of the surface impoundment system. There were 10 and 6 instances where this maximum time interval was exceeded for weekly and monthly inspections, respectively.

The following unusual conditions were reported in weekly and monthly inspection worksheets covering the current annual inspection period:

- <u>Elevated Ash Cell Water Levels</u> – The top of the peripheral berm surrounding each of the ash cells is at an elevation of 195 feet, referenced to the National Geodetic Vertical Datum of 1929 (NGVD29). The ash cells are operated with a normal maximum operating level of 193 feet (NGVD29) to provide 2 feet of freeboard in case of heavy rain/storm events. Water levels higher than 193 ft NGVD29 were observed for five (5) weeks and eight (8) weeks for Ash Cell #1 and Ash Cell #2, respectively, during the time period covered by this report.

  For Ash Cell#1, the first occurrence of elevated water levels was reported on 7/16/2019 due to pump issues. Although the pumps were fixed in the same week, water levels in ash pond #1 continued to remain above the normal maximum operating level until 8/5/2019 due to the loss of the brine concentrator and heavy rains. The second incidence of elevated water levels occurred from 8/12/2019 to 8/26/2019 due to rain and elevated blowdown of the cooling tower to control the chemical balance of water in the systems.

  For Ash Cell#2, the first incidence of elevated water levels was reported on 12/17/2018 due to Unit 2 air heater washing. The second incidence of elevated water levels was reported 7/16/2019 due to pump issues. The pump was fixed in the same week and water levels were brought down to normal operating conditions. The water elevation was below 193 ft in the subsequent weekly inspection for both these occasions. The third period of elevated water levels was observed from 8/5/2019 to 9/16/2019 and was caused by a combination of heavy rains, loss of the brine concentrator and heavy blowdown of cooling towers to control chemical balance of water in the systems.

During each monthly inspection, depth-to-liquid readings in the piezometers located on the embankments of Ash Cell #1 and Ash Cell #2 were measured. The water level measured in these piezometers are used to qualitatively assess potential embankment seepage areas; Piezometer P-2, P-3, and P-4 are used to monitor exterior embankments of Ash Cell #1 and P-1 is used to monitor the exterior embankment of Ash Cell #2. The liquid elevation in the piezometers was compared to the liquid elevation in each adjacent ash pond. Figures 3 and 4 present a comparison of the measured liquid levels for Ash Cell #1 and corresponding piezometers and Ash Cell #2 and corresponding piezometer, respectively. The measurements taken by ITS engineers on the day of the annual inspection were consistent with those measured by GRU during the most recent monthly inspection.

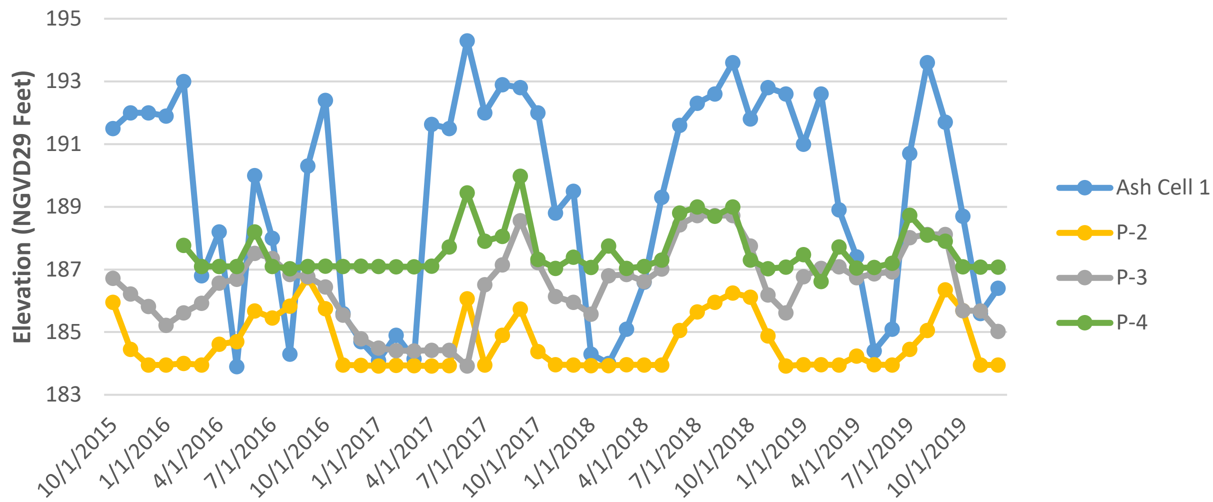

Figure 3. Liquid Elevations for Ash Cell #1 and Piezometers

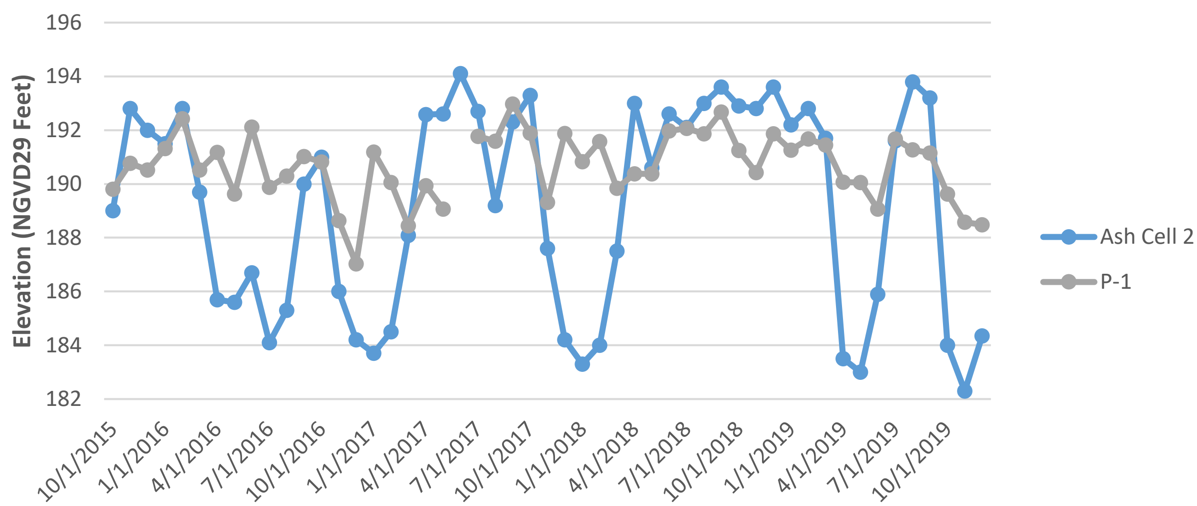

Figure 4. Liquid Elevations for Ash Cell #2 and Piezometer

2.2 Field Inspection

ITS inspected the CCR surface impoundment system on December 9-10, 2019. The following section describes the observations made during the inspection.

2.2.1 Signs of Distress or Malfunction of CCR Unit or Appurtenant Structures

No sign of distress or malfunction was observed for the visible sections of the ash ponds or the stoplog structures. The condition of the submerged interior slopes and the stoplogs of the ash ponds could not be visually inspected.

2.2.2 Hydraulic Structures

ITS was not able to inspect the subsurface culverts which connect each ash cell to its adjacent pump back pond as these were submerged below the water levels in the ash ponds and pump back ponds. ITS recommends that GRU conduct a dry/semi-dry inspection of the culverts to assess their structural integrity.

2.2.3 Geometrical Changes of CCR Unit

ITS conducted a topographic survey of select features of the surface impoundment system on 10 December 2019. A comparison of the topographic conditions collected during this survey to those observed in the survey conducted by DSI (2015) does not suggest any significant deviations in geometry from those observed during the previous annual inspection. Appendix A includes a comparison between the elevations of the features during this inspection to those presented by DSI (2015). Please note that the survey equipment used by ITS has a manufacturer-listed maximum accuracy of 4 inches. The surveyed elevations should be considered as rough approximations as the survey was not performed by a licensed surveyor.

2.2.4 Instrumentation Locations and Maximum Readings

Apart from a groundwater monitoring system (separately discussed in detail in annual groundwater monitoring and corrective action reports), the piezometers located adjacent to each of the two ash ponds are the only instruments used to monitor the surface impoundment system. Table 1 presents the location of the piezometers, along with their maximum recorded readings over the reporting period. Please note that the easting and northing coordinates are referenced to US State Plane 1983 Florida North 0903. The maximum reading liquid elevations are referenced to NGVD29. As a point of comparison, the approximate elevation of the top of the peripheral berm surrounding each of the ash cells is at an elevation of 195 feet NGVD29. The maximum liquids elevations observed for P-1, P-3, and P-4 during the reporting period, were 1.0, 0.6 and 0.3 ft lower than the maximum elevations observed during the previous reporting period, respectively. The maximum liquids elevation observed for P-2 during the reporting period is 0.1 ft higher than the maximum elevation observed during the previous reporting period.

Table 1. Location, Type, and Maximum Recorded Readings of Existing Instrumentation

Piezometer	Easting	Northing	Max Elevation (NGVD29)
P-1	2636972.5	284823.8	191.7
P-2	2636725.5	284571.1	186.4
P-3	2636691.7	284443.8	188.1
P-4	2636873.5	284259.3	188.7

2.2.5 Elevation of CCR and Impounded Water

Table 2 presents a comparison of the water levels observed on the day of inspection with the maximum and minimum levels recorded by GRU staff during weekly and monthly inspections; the water levels in the ponds are tracked with a staff gauge painted on one of the concrete walls of the stoplog structure in each ash pond. It should be noted that all liquid depths in each pond were calculated assuming the bottom of the ash ponds is located at 179 feet NGVD29, as indicated in the B&M (1981) drawing set. The surface of the settled bottom ash is not evenly distributed – the elevations presented in Table 2 correspond to the water elevation of the ponds.

Table 2. Maximum, Minimum and Present Depth and Elevation of CCR and Water

Location	Media	Parameter	Unit	12/10/19	Minimum of the Weekly and Monthly Measurements	Maximum of the Weekly and Monthly Measurements
Ash Cell #1	Water	Elevation	feet (NGVD29)	187.4	180.8	193.9
		Depth	feet	8.4	1.8	14.9
Ash Cell #2	Water	Elevation	feet (NGVD29)	184.2	181.6	194.2
		Depth	feet	5.2	2.6	15.2

2.2.6 Storage Capacity and Volume of CCR and Impounded Water

A large portion of the CCR surface in the ash ponds was inundated at the time of this inspection (as shown in Figure 1 aerial image); the current CCR storage capacity of the surface impoundment systems could not be estimated. However, based on construction records, it is estimated that the CCR surface impoundment system has a total volumetric capacity of 17.3 million gallons (or approximately 85,400 cubic yards) not including the capacity associated with the 2 feet of freeboard.

Based on the present (i.e., 10 December 2019) water elevations in each of the ash ponds, the total in-place volume of water and CCR in the ash ponds is roughly estimated to be 7.2 million gallons (or approximately 35,600 cubic yards).

2.2.7 Structural Weaknesses and Adverse Conditions

ITS visually inspected the external side slopes of the surface impoundment system and the pump back ponds to identify any potential indicators of structural weakness or any other adverse condition including signs of erosion; bulging; depressions; cracks; animal forage holes; boils; or excessive, turbid, or sediment-laden seepage. No signs of structural weaknesses were observed.

2.2.8 Other Changes Affecting Stability or Operation

No other changes or circumstances, which may impact the stability or operation of the surface impoundment systems, were noted during the inspection.

3 CCR Landfill

3.1 Review of Relevant Information

3.1.1 Reports and Documents Reviewed

The following additional documents developed since the previous annual inspection were also reviewed for this report preparation:

- IWCS (2019). Coal Combustion Residuals Landfill Stormwater Drainage System Modification. Prepared by Innovative Waste Consulting Services LLC for Gainesville Regional Utilities, September 2019.
- UES (2019). Coal Combustion Residuals (CCR) Surface Impoundment System and Updated Landfill Groundwater Monitoring Systems Design and Construction, Draft, prepared by Universal Engineering Services for Gainesville Regional Utilities and Innovative Waste Consulting Services, LLC, July 2019.
- Fifty-two (52) weekly (7-day) inspection worksheets.

3.1.2 Review of Weekly and Monthly Inspection Worksheets

A total of 52 weekly CCR landfill inspection worksheets were reviewed; these worksheets covered the period from 12 December 2018 through 10 December 2019. 40 CFR 257.84(a)(1)(i) establishes a maximum time interval of 7 days for weekly inspections of the CCR landfill. There were 13 instances where this maximum time interval was exceeded.

The worksheets allow the inspector to categorize observations as *Acceptable*, *Area of Concern*, or *Needs Attention*. *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 a 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."

Forty-four (45) *Needs Attention* observations were reported in the weekly inspection worksheets reviewed for this report. The majority of these issues appear to be because of the presence of loose ash piles that were not spread and compacted, and directly related to the heavy rains which occurred throughout June and July. Based on supervisor notes included in the inspection worksheets, it appears that these issues were addressed expeditiously and were generally resolved within a day of the observation.

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

1) **Loose Piles of CCR (22 instances)** – loose piles of CCR accumulated on the landfill surface were observed – these piles have the potential to contribute to dust emissions. The estimated repair date included in the weekly inspection reports indicates that these loose piles were compacted with 2 days of the observation.
2) **Water Level Above Underdrain Outlets (15 instances)** – four underdrain pipes collect and transport CCR contact water to the Northern Drainage Ditch. A majority of these observations 9) correspond to July 8-September 9 timeframe. Heavy rain during July-Sept resulted in elevated water levels in the Northern Drainage Ditch. The Northern Drainage Ditch was pumped down as soon as feasible following these observations.

3) **Unnavigable Access Road (2 instances)** – Landfill operators reported the road on the south side of the landfill to be missing/inaccessible on one occasion. In the second instance, ponding was observed within the landfill. The area was regraded to promote positive drainage in this case. Both these occasions occurred while the peripheral stormwater channels outside the southern and western extent of the landfill were being regraded to expand the capacities of these channels.

4) **Vegetation Height (2 instances)** – vegetation height on the exterior side slopes was recorded as a Need Attention issue on two occasions, in May 2019 and June 2019. The landfill was mowed within a week of the observations.

5) **Northern Drainage Ditch (Ash Canal) Overtopping, Sediment Accumulation in Northern Drainage Ditch and Bank Erosion (1 instance)** –An erosion on the southeast part of the Northern Drainage Ditch slope was recorded as a *Need Attention* observation. The erosion was repaired and the area was seeded within a day.

6) **Missing/Deteriorating Haybales (1 instance)** – Hay bales are installed around the downcomer inlets to minimize CCR migration to the Northern Drainage Ditch. A hay bale was observed to block one of the downcomer inlets. The hay bale was immediately removed and appear to be reinstalled at its original location.

7) **Unstable Active Area (1 instance)** – Due to heavy rains, the top deck area of the landfill was observed to be wet and muddy. This issue was not reported in the subsequent weekly inspection.

8) **Damaged Groundwater Monitoring Wells (1 instance)** – This was reported as a needs attention item during the peripheral stormwater channels regrading work. The existing landfill groundwater monitoring wells located on the south side of the CCR landfill were decommissioned before the beginning of the regrading work (February 2019) and were replaced immediately after regrading completion (April 2019).

Seventy-three (73) “Areas of Concern” were noted. These are listed as follows:

1. Uncovered/exposed CCR on external side slopes(14 instances). Exposed CCRs on the external side slopes were documented in weekly reports for the period(s) when the peripheral berm construction around the new lift was under progress. It should be noted that CCRs stockpiled to construct the berm for the next waste lift was contained within a soil berm to minimize the chances of CCRs migration outside the working face.
2. Grass and other vegetation height on external slopes (12 instances). The issue was not reported in the subsequent weekly inspection report at seven of the instances suggesting that the issue was addressed within a week of the observation. The vegetation was mowed within 2-3 weeks of the observation for the other instances.
3. Ash canal overtopping, sediment accumulation, bank erosion (12 instances). These specifically include 11 instances of the Northern Drainage Ditch bank erosion and the details for one instance were not provided. A majority of these occurrences were reported over consecutive weeks while the remedial measures were being planned. The area of repaired on two occasions to address all the 11 instances of the reported issues.

4. Damaged hay bales (8 instances). A majority of these occurrences were reported over consecutive weeks while the remedial measures were being planned. Existing haybales were replaced within a month of the reported observations.
5. Clogged stormwater culverts/ditches (7 instances). Heavy vegetation in the Northern Drainage Ditch was observed at 5 of these instances.
6. Ponding of water on inactive surface area (5 instances). The area was graded to address the issue.
7. Erosion and soft spots on active surface area (4 instances). The area was graded to address the issue.
8. Erosion on inactive surface area (4 instances). The area was graded to address the issue.
9. Damaged access roads and ramps(3 instances). The road was graded to address the issue.
10. Erosion and animal forage external side slopes (2 instances). The hog rooting observed were backfilled, raked, and seeded.
11. Ponding of water on active surface area (1 instance). The area was graded to address the issue.
12. Contact water downcomer pipes clogged (1 instance). The haybale blocking the downcomer inlet was removed to address the issue.

3.2 Field Inspection

ITS inspected the CCR landfill on 10 December 2019. The following section describes observations made during the inspection event.

3.2.1 Signs of Distress or Malfunction

The Northern Drainage Ditch accepts CCR contact water from the landfill and gravity drains to a pump station located at its eastern extent. As shown in Figure 5, soil erosion was observed around the south-east corner of the Northern Drainage Ditch. The erosion appears to have been caused by stormwater runoff. If not remediated, this area will continue to erode.

Figure 5. Erosion around the south-east corner of the Northern Ditch

All underdrains (Cells 1, 2, 3, and 4) were observed to have accumulated sediment (Figure 6). These underdrains route the contact water accumulated on the landfill bottom to the Northern Drainage Ditch. Sediment built-up in the underdrains will obstruct the flow of contact water, which may lead to water build-up in the landfill, which, in turn, may cause seepages and slope stability issues.

(a) (b)

(c) (d)

Figure 6. Sediment build-up in underdrain of (a) Cell 1, (b) Cell 2, (c) Cell 3, and (d) Cell 4

Thick vegetation built-up was observed around the Cell 4 culvert outlet (Figure 7). This culvert conveys contact water from Cell 4 area to the swale located northeastern toe of the landfill. Thick vegetation was also observed around the inlets of Cells 3/4 culverts that drain into the Northern Drainage Ditch (Figure

8). The presence of thick vegetation around the culverts outlets or inlets would impede the flow of stormwater/contact water and may lead to water accumulation on the toe of the cell and/or the area between the culverts.

Figure 7. Thick vegetation around the Cell-4 culvert outlet

Figure 8. Thick vegetation around the Cells 3 and 4 culvert inlets

The Cell 2 downcomer inlet was observed to be surrounded by the topsoil applied to the newly constructed peripheral berm of the Cells 1 and 2 (Figure 9). Loose soil around the downcomer inlet would build-up in the downcomers and/or may discharge into the Northern Drainage Ditch, reducing its capacity.

Figure 9. Cell 2 downcomer inlet surrounded by soil

Erosion was observed around one of the groundwater well (LF-3) concrete pad (Figure 10). Erosion of soil under and around the groundwater well may result in more soil erosion, and water accumulation around the well.

Figure 10. Erosion around LF-3's concrete pad

Several bare soil patches were observed in the southeast section of the peripheral stormwater channel of the CCR landfill was observed. Based on the observation recorded on the weekly inspection worksheets, these appear to be caused by feral hogs (Figure 11). These patches should be repaired and vegetated immediately to avoid erosion.

Figure 11. An example of a bare soil patch observed in the southeast corner of the stormwater channel

Sediment accumulation was observed for one of the stormwater culverts located in the southeast corner of the landfill (Figure 12). With the installation of a new culvert, the run-off carrying capacity of two culverts is more than the estimated peak flow. The observed sediment accumulation is not expected to have a significant impact on the performance of the stormwater management system. The accumulated sediments, if not removed, would migrate and deposit into the stormwater pond. GRU should consider removing the sediments to minimize sediment migration and deposition into the stormwater pond.

Figure 12. Sediments accumulation in one of the culverts located in the southeast corner of the landfill

3.2.2 Geometrical Changes of CCR Landfill

In accordance with the landfill filling plan, the interior of Cell 1 and Cell 2 and the peripheral berm on the external side slopes of Cell 1 and Cell 2 are progressively raised by approximately 4 feet for each lift of deposited material. The modifications made to the landfill since the last inspection are: expansion of the western and southern peripheral stormwater drainage channel capacity, installation of an additional culvert near the southeast corner of the landfill, and replacement of three groundwater monitoring wells located in the project area; the downgradient wells of the groundwater monitoring system of landfills were decommissioned before the construction activities and replaced with new wells after the stormwater drainage channels regrading. No changes in the geometry of the landfill indicative of structural instability or weakness were noted.

3.2.3 Volume of CCR

ITS conducted a topographic survey of the landfill on 10 December 2019 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 465,492 cubic yards of CCRs 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.

3.2.4 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 and adverse conditions were observed.

3.2.5 Other Changes Affecting Stability or Operation

No other changes or circumstances, which may impact the stability or operation of the landfill, were noted during the inspection.

4 Summary of Deficient Conditions and Recommendations

Table 3 presents a summary of the locations of each deficient condition observed during the annual inspection.

Table 3. Location Summary of Deficient Conditions Observed During the Annual Inspection

CCR Unit	Location	Condition
Surface Impoundment System	N/A	N/A
CCR Landfill	Underdrains	Sediments built-up in underdrains
	Southeast corner of Northern Drainage Ditch	Soil erosion
	Cells 3 and 4 culverts	Thick vegetation around the inlets/outlets
	Cell 2 Downcomer	Loose soil around the inlet
	groundwater well (LF-3)	Soil erosion around the concrete pad
	Southeast corner of peripheral stormwater channel	Bare soil patches
	Southeast stormwater culvert	Sediment accumulation

All deficiencies identified for the CCR units were brought to the attention of GRU on 10 December 2019.

ITS makes the following recommendations to address the deficiencies identified during this annual inspection:

1. GRU should consider jet cleaning the underdrains to ensure the freeflow of contact water from the landfill into the Northern Drainage Ditch.
2. GRU should stabilize the southeast corner of the Northern Drainage Ditch, where erosion was observed. Vegetation must be established to avoid erosion in the future.
3. The vegetation around the inlets and outlets of all downcomers and culverts should be trimmed to ensure the freeflow of stormwater.
4. Loose soil surrounding the Cell 2 downcomer inlet should be compacted and stabilized with vegetation.
5. GRU should stabilize the area surrounding the LF-3 groundwater well concrete pad, where erosion was observed. Vegetation must be established to avoid further erosion.

6. Bare soil patches observed in the southeast corner of the peripheral stormwater channel should be leveled and seeded to stabilize these areas.
7. GRU should consider removing the sediments from the southeastern stormwater culvert to minimize sediment migration and deposition into the stormwater pond.

Per §257.83(b)(5) and §257.84(b)(5), GRU is required to address these identified deficiencies as soon as feasible and document the corrective measures taken.

40 CFR 257.83(a)(1)(i) and (iii) respectively establish maximum time intervals for weekly (i.e., 7 days) and monthly (i.e., 30 days) inspections of the surface impoundment system. There were 10 and 6 instances where this maximum time interval was exceeded for weekly and monthly inspections for the impoundment system, respectively. Similarly, 40 CFR 257.84(a)(1)(i) establishes a maximum time interval of 7 days for weekly inspections of the CCR landfill. There were 13 instances where this maximum time interval was exceeded. GRU is recommended to perform the weekly and monthly inspection within these maximum intervals.

5 References

B&M (1980). Deerhaven Generating Station – Unit 2, Bid Documents, Contract 29C – Yard Structures III. Prepared for the City of Gainesville, Florida, by Burns and McDonnell.

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.

DSI (2015). Map Showing Topographic Survey of a Part of Sections 26 and 27, Township 8 South, Range 19 East, Alachua County, Florida. Survey conducted by Degrove Surveyors, Inc. on 13 April 2015 and Certified to Gainesville Regional Utilities. Drawing set completed 8 September 2015.

FDER (1978). State of Florida Department of Environmental Regulation Electric Power Plant Site Certification Review. Prepared for the Gainesville-Alachua County Regional Utilities Board, Deerhaven, Unit No. 2, Case No. PA 74-04, by the Power Plant Siting Section, Bureau of Permitting, Division of Environmental Permitting, 17 March 1978.

IWCS (2016a). History of Construction – Coal Combustion Residual Surface Impoundment System. Prepared for Gainesville Regional Utilities, Deerhaven Generating Station by Innovative Waste Consulting Services, June 2016.

IWCS (2016b). Coal Combustion Residuals Landfill Run-on and Runoff Control System Plan, Version 1.0. Prepared for Gainesville Regional Utilities, Deerhaven Generating Station by Innovative Waste Consulting Services, October 2016.

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IWCS (2018b). CCR Landfill. Aerial Imagery. Deerhaven Generating Station, Gainesville, Florida. Photograph taken on 11 December 2018.

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6 Professional Engineer Certification

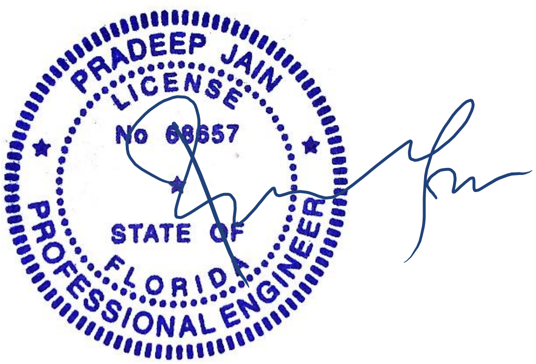
This plan was prepared under the supervision, direction and control of the undersigned, registered professional engineer (PE). The undersigned PE is familiar with the requirements of 40 CFR 257.83(b) and 84(b). The undersigned PE certifies that this CCR unit annual inspection report meets the requirements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

PE License No.: 68657



Appendix A

Comparison Table of Surface Impoundment System Elevations from DSI (2015) and Elevations Observed by ITS 10 December 2019

Surface Impoundment System Feature	10 December 2019 Elevation (feet NGVD29)	DSI (2015) Survey Elevation (feet NGVD29)
Top of Embankment - Ash Cell 1	195.4 – 195.8	194.9 - 195.9
Top of Embankment - Ash Cell 2	195.3 – 195.6	194.7 - 195.6
Top of Embankment - Pump Back Cell 1	188.7 – 188.8	187.6 - 188.7
Top of Embankment - Pump Back Cell 2	188.3 – 188.4	188.1 - 188.8
Stoplog Structure - Ash Cell 1	195.4	195.3
Stoplog Structure - Ash Cell 2	195.2	195.2
Stoplog Bridge Abutment - Ash Cell 1	194.9	194.8 - 194.9
Stoplog Bridge Abutment - Ash Cell 2	194.9	194.8 - 194.9
Top of North Splash Block Ash Cell 1	194.3	194.7
Top of South Splash Block Ash Cell 1	194.7	194.7
Top of North Splash Block Ash Cell 2	194.8	194.7
Top of South Splash Block Ash Cell 2	195.0	194.6 - 194.7
Electrical Equipment Building Retaining Walls	188.2 – 188.5	188.1 - 188.4
Ash Pipe Drain Pit	180.0	179.6 - 180.3
Ash Cell 1 Outer Embankment Toe	182.4 – 182.5	182.6 - 182.7
Ash Cell 2 Outer Embankment Toe	182.2– 182.5	182.1 - 182.7