

8. CLOSURE PLAN

CLOSURE PLAN

HUFFAKER ROAD LANDFILL

PLANT HAMMOND
FLOYD COUNTY, GEORGIA

FOR



Georgia
Power

NOVEMBER 2018



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1. INTRODUCTION

The Georgia Environmental Protection Division (EPD) adopted a new Solid Waste Regulation entitled "Rule 391-3-4-.10 Coal Combustion Residuals" (State CCR Rule). This rule, effective November 22, 2016, applies to owners and operators of new and existing coal combustion residuals (CCR) disposal facilities that dispose or otherwise engage in solid waste management of CCR generated from the combustion of coal at electric utilities and independent power producers. The State CCR Rule incorporates by reference the provisions contained in the United States Environmental Protection Agency (USEPA) Title 40 of the Code of Federal Regulations (CFR) §257 (40 CFR §257) (Federal CCR Rule). Per State CCR Rule 391-3-4.10(2)(a), which incorporates the definitions of the different CCR units under the Federal CCR Rule (40 CFR § 257.53), Huffaker Road Landfill Parcels A, B, and E meet the definition of an existing CCR landfill and Parcels C and D meet the definition of a lateral expansion.

GPC will close this site in a manner that minimizes the need for further maintenance and minimizes the potential of post-closure release of contaminants to the ground or surface waters. The closure plan considers closure of the CCR landfill at any point throughout the active life of the facility. Facility phasing drawings provide guidance on closure at the end of any parcel or phase construction. Should intermediate closure be required, all components of this plan will be followed.

2. NOTIFICATION OF CLOSURE

No later than the date GPC initiates closure of the CCR unit, GPC will notify EPD of the intent to close the unit after receipt of the final load of waste. This notification will include certification by a professional engineer registered in Georgia for the design of the final cover system as required in 40 CFR §257.102(d)(3)(iii), incorporated by reference by State CCR Rule 391-3-4.10(7)(b). GPC will complete all closure activities of this CCR unit in accordance with this Closure Plan within 180 days following the beginning of closure.

Initiation of closure will commence no later than 30 days after the date on which the CCR unit either:

- a. Receives the known final receipt of waste, either CCR or any non-CCR waste stream; or
- b. Removes the known final volume of CCR from the CCR unit for the purpose of beneficial use of CCR.

3. SURVEY CONTROL

All areas within which CCR has been disposed will be located to the best of GPC's ability and surveyed by a Registered Surveyor who will provide a legal description of the CCR management boundaries.

Filling and closure activities will be confined to within the limits indicated on the Permit Drawings. An "as-built" topographic survey will be conducted indicating the extent and final topography of the CCR disposal facility. Other topographic surveys will be conducted as specified in the Construction Quality Assurance Plan. Site horizontal and vertical survey control will be



provided by a permanent concrete monument. Standard survey practices will be used to establish vertical and horizontal controls during closure.

4. PLAT AND LEGAL DESCRIPTION

A copy of the Plat and Legal Description of the Permit Boundary is included in the Permit Drawings included in Part A of this Permit Application.

5. ESTIMATE OF CCR IN UNIT

Huffaker Road Landfill is permitted to contain approximately 4,230,776 cubic yards of CCR upon final receipt of CCR.

6. AREA OF UNIT REQUIRING FINAL COVER

Huffaker Road Landfill is permitted to consist of approximately 72 acres requiring a final cover upon final receipt of CCR.

7. WRITTEN CLOSURE PLAN

The Initial Written Closure Plan for the Huffaker Road Landfill was posted to the GPC website under Environmental Compliance on October 17, 2016.

All parcels will be closed by leaving CCR in place and installing a final cover system. In accordance with 40 CFR §257.102(b)(3), which is incorporated by reference by State CCR Rule 391-3-4.10(7)(b), the written closure plan will be amended if there is a change in operation that would substantially affect the written closure plan in effect and/or if there are unanticipated events that necessitate a revision of the closure plan.

The CCR for active and future parcels will be graded to create a stable subgrade for the final cover system. In accordance with State CCR Rule 391-3-4.10(7)(b), the final cover will be constructed to control, minimize, or eliminate, to the maximum extent feasible, post-closure infiltration of liquids into the waste and potential releases of CCR from the unit. This will be prevented by providing sufficient grades and slopes to: 1) preclude the probability of future impoundment of water, sediment, or slurry; 2) ensure slope and cover system stability; 3) minimize the need for further maintenance; and 4) be completed in the shortest amount of time consistent with recognized and generally accepted good engineering practices. A detailed description of the final cover system is provided in Section 12 of this Closure Plan.

8. AMENDMENT TO THE CLOSURE PLAN

This Closure Plan will be amended within the timeframes established in State CCR Rule 391-3-4.10(7)(b) if there is a change that would substantially affect the Closure Plan in effect or if there are unanticipated events that necessitate a revision of the Closure Plan.

9. CERTIFICATION OF CLOSURE

Upon completion of closure activities, a professional engineer registered in Georgia will prepare and GPC will submit a Closure Certification Report to EPD. The closure report will be completed on forms provided by EPD. The closure report will include an as-built plan of the grades at the time of closure.

Concurrent with the submission of the Closure Certification Report to the Director, GPC must submit confirmation to the Director that a notation on the property deed has been recorded. This recording must in perpetuity notify any potential purchaser of the property that the land has been used as a CCR Landfill and that its use is restricted under the post-closure care requirements of State CCR Rule 391-3-4-.10(7). Within 30 days of completing this deed notification, the owner or operator must prepare a notification and place in the facility's operating record.

Within 30 days of completion of closure, GPC will prepare a notification which will include certification from a qualified professional engineer registered in Georgia verifying that closure has been completed in accordance with this closure plan. GPC has completed the notification when it has been placed in the facility's operating record.

10. DIRECTIONAL INFORMATIONAL SIGNS

Signs will be posted at the entrance gate notifying users of the closure of the CCR landfill and a telephone number for emergencies will be printed on the sign.

11. REMOVAL OF CCR

If GPC wishes to remove CCR, GPC will request and receive written approval from EPD prior to conducting any such activity.

12. FINAL COVER

The final cover for parcels A, B, C and D consists of (from bottom to top) a 60-mil HDPE (High Density Polyethylene) liner, double-sided geocomposite drainage media, a minimum 18-inch protective soil cover, and a 6-inch vegetative layer to establish vegetation. The permitted Parcel E final cover system consists of 18 inches of low permeability clay ($k < 1 \times 10^{-6}$ cm/s) and six inches of topsoil. Alternatively, Parcel E may be capped with a geosynthetic clay liner, double-sided geocomposite drainage layer, 18 inches of protective soil cover, and six inches of top soil instead of the low permeability clay. These final cover systems meets the requirements of Rule 391-3-4.10(7)(b) in that:

1. The permeability of the final cover system will be less than or equal to the permeability of the bottom liner system;
2. The infiltration of liquids through the closed CCR unit will be minimized;
3. The erosion of the final cover system will be minimized;
4. The disruption of the integrity of the final cover system will be minimized.

The Engineering Report included in Section 2 in Part B of the Permit Application includes the design of the final cover system.



13. SURFACE DRAINAGE (RUN-OFF)

The sedimentation basins, clear pools, drainage ditches and piping are sized to convey a 25-year, 24-hour storm event. The benches will be graded to drain to various low points around the stacks. Surface water will be conveyed between benches via aboveground HDPE piping that ranges in diameter from 12 to 24 inches. Three sediment basins and associated clear pools will provide final treatment of stormwater run-off.

14. VEGETATIVE PLAN

Upon completion of the cover placement, the topsoil layer will be fertilized and seeded with a perennial grass as indicated in the vegetation schedule below. The seeded areas will be mulched as soon as possible after placement. The seeded areas will be maintained by repairing washes, re-fertilizing, and reseeded such that a satisfactory stand of grass is established. Once established, the grass cover will be maintained by repairing erosion features, reseeded and re-fertilizing. Hydro-seeding, or other approved methods, may be utilized in lieu of the fertilizing, seeding and mulching steps above.

All disturbed areas will be grassed and maintained in accordance with the schedules shown in Tables 1 and 2. Permanent covers which are slow to establish will receive temporary seeding. The fertilizer requirements are suggested. The operator may submit soil samples to the County Extension Agent for analysis and determination of proper soil conditioners including lime. This analysis will become part of the operational records. Planting dates, fertilizer rates, and seeding rates will meet the requirements in the current edition of the Manual for Erosion and Sediment Control in Georgia.

Table 1: Vegetation Schedule

Seeds	lbs/Acre	Date of Planting
Pensacola Bahia Alone or with temporary cover	60	April 1- May 31
Wilmington Bahia With other perennials	30	March 1 – May 31
Tall Fescue Alone	50	August 15 - October 15, March 1 – April 30
Tall Fescue With other perennials	30	September 1 - October 15
Reed Canary Grass Alone	50	August 15 - October 15
Reed Canary Grass With other perennials	30	September 1- October 15
Common Bermuda Unhulled seed w/ temporary cover	10	October 1- February 28
Common Bermuda unhulled seed w/ other perennials	6	November 1- February 28

Notes:

1. All seeding rates are pure live seed rates.
2. All seeding will be mulched with clean dry hay at the rate of 2.5 tons per acre. Mulch will be anchored by pressing the mulch into the soil immediately after the mulch is spread using a packer disk or disk harrow or equivalent piece of equipment.
3. Temporary seeding should also complement permanent seeding to produce a suitable cover while the permanent grasses germinate.
4. Disturbed slopes greater than 3%, including soil stockpiles, are to be mulched immediately.
5. D.O.T. or County Extension seed type, seed rates, fertilizer requirements, etc. may also be used in lieu of the table above.

Table 2: Fertilization Rates

Fertilizer Requirements				
Type of Species	Year	Analysis or Equivalent N-P-K	Rate	N Top Dressing Rate
1. Cool Season Grasses	First	6-12-12	1500 lbs./ac.	10-100 lbs.ac.(1)(2)
	Second	6-12-12	1000 lbs./ac.	-
	Maintenance	10-10-10	400 lbs./ac.	30
2. Cool Season Grasses and Legumes	First	6-12-12	1500 lbs./ac.	0-50 lbs./ac.(1)
	Second	0-10-10	1000 lbs./ac.	-
	Maintenance	0-10-10	400 lbs./ac.	-
3. Ground Covers	First	10-10-10	1300 lbs./ac.(3)	-
	Second	10-10-10	1300 lbs./ac.(3)	-
	Maintenance	10-10-10	1100 lbs./ac.	-
4. Temporary Cover Crops Seeded Alone	First	10-10-10	500 lbs./ac.	30 lbs./ac.(4)
5. Warm Season grasses	First	6-12-12	1500 lbs./ac.	50-100 lbs./ac.(2)(5)
	Second	6-12-12	800 lbs./ac	50-100 lbs./ac.(2)
	Maintenance	10-10-10	400 lbs./ac.	30 lbs./ac.
6. Warm Season Grasses and Legumes	First	6-12-12	1500 lbs./ac.	50 lbs./ac.(5)
	Second	0-10-10	1000 lbs./ac	-
	Maintenance	0-10-10	400 lbs./ac.	-

Notes:

1. Apply in spring following seeding.
2. Apply in split applications when high rates are used.
3. Apply in 3 split applications.
4. Apply to grass species only.
5. Apply when plants grow to height to 2"-4".

15. SITE EQUIPMENT NEEDED

GPC will coordinate with the closure contractor to make adequate equipment available to ensure that closure requirements are executed correctly and efficiently. Should said equipment not be available, back up equipment may be obtained from rental companies.

16. SEDIMENT REMOVAL

Accumulated sediment will be removed from drop inlets, drainage pipes, diversion ditches, sediment basins and clear pools, and other drainage structures throughout closure construction as required.

17. EROSION AND SEDIMENTATION CONTROL

Upon closure, all ditches, diversion berms, rip-rap, and other drainage structures serving disturbed areas, but not already built, will be constructed and placed according to the Permit Drawings or as required. Erosion control methods include, but are not limited to, silt fence, rock check dams, and riprap protection. These controls will be used until the site is stabilized. A site-specific stormwater management plan will be followed during construction following the most recent edition of the Manual for Erosion and Sediment Control in Georgia.

18. COST OF CLOSURE AND FINANCIAL ASSURANCE

The estimated cost of closing the largest area of the CCR landfill ever open during the active life of the landfill is \$14,509,300 for an open area equal to approximately 72 acres. A cost estimate is included in Appendix A.

Closure cost estimates were developed at a level of detail, and from the perspective that, sufficient funding could be set aside in a financial assurance mechanism for a third party (other than GPC) to complete closure. Closure estimates include construction and construction quality assurance support.

The financial assurance estimate in this application for closure was developed by the professional engineers preparing this application. This estimate represents the anticipated financial assurance requirements for the application as submitted.

It is understood that through the review process by the EPD and based on any comments or questions by the EPD, this application may be revised. These revisions could be reason for the financial assurance estimates in this application to change.

GPC understands there may be changes in the financial assurance estimates, and therefore is prepared to make any necessary changes in the financial assurance instruments that result from any changes in the application.

19. CLOSURE SCHEDULE

Closure activities must commence within no later than 30 days after the date on which the landfill receives the known final receipt of waste or removes the known final volume of CCR from the landfill for the purpose of beneficial use. Once the decision has been made by GPC to close the CCR landfill, the following schedule will be followed over a 180-day period:

- a. Submit notice of intent to close the landfill (or parcel) to EPD with the date of final CCR receipt.
- b. Commence closure activities within 30 days of final receipt of CCR.
- c. Prepare accurate legal description of final CCR management boundary.
- d. Construct all erosion and sediment control systems serving disturbed areas, but not previously built.
- e. Prepare subgrade for final cover system.
- f. Install final cover system.
- g. Initiate vegetative plan.
- h. Remove all accumulated sediments from ponds, ditches and other drainage structures.
- i. Prepare final topographic as-built survey.
- j. Within 30 days of closure activities completion, prepare and submit the Closure Report and confirmation of the deed notation to EPD.
- k. Place the required notifications and records on the public website.

20. RECORDKEEPING

GPC maintains and will continue to maintain the facility's operating record at all times during the life of the disposal facility including the closure period. These records are maintained by plant personnel and are located at Plant Hammond. All information contained in the facility's operating record will be furnished to EPD or be made available at all reasonable times for inspection by EPD staff. Unless specified otherwise, each file must be retained for at least five (5) years following the date of each occurrence, measurement, maintenance, corrective action, report, record, or study.

21. NOTIFICATION AND INTERNET POSTING REQUIREMENTS

Unless otherwise specified by the State CCR Rule, GPC will provide notifications to EPD within 30 days of placing documents in the facility's operating record. The notifications will be sent before the close of business on or before the day the notification is required to be completed. Notifications to EPD will be postmarked or sent by electronic mail. Electronic mail sent to a designated EPD recipient will be used only if approved by EPD. If a notification deadline falls on a weekend or federal holiday, the notification deadline will be extended to the next business day. GPC will state in the notification to EPD if the relevant information was placed on the publicly available GPC website under Environmental Compliance.



APPENDIX



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A. CLOSURE COST ESTIMATE



HUFFAKER ROAD LANDFILL CLOSURE COST ESTIMATE

CLOSURE ACTIVITIES

ITEM	QUANTITY	UNIT	UNIT PRICE	ESTIMATED COST	NOTES
MOB/ DEMOB	1	LS	\$515,339.68	\$515,339.68	Unit cost based on 5% of all other construction items.
EROSION CONTROL (FENCES)	8,915	LF	\$4.37	\$38,958.55	
TOPSOIL	56,067	CY	\$9.79	\$548,895.93	6" thickness
PROTECTIVE COVER SOIL	186,200	CY	\$10.75	\$2,001,650.00	18" thickness
60 MIL HDPE GEOMEMBRANE	246,840	SY	\$16.47	\$4,065,454.80	Parcels A, B, C and D
GEOCOMPOSITE DRAINAGE MEDIA	348,480	SY	\$6.84	\$2,383,603.20	Parcels A, B, C, D and E
GEOSYNTHETIC CLAY LAYER	101,640	SY	\$5.58	\$567,151.20	Parcel E only
HYDRO-SEEDING/GRASSING	72	AC	\$4,215.00	\$303,480.00	A&B = 29 ac, C&D = 22 ac, E = 21 ac
SURVEYING	1	LS	\$32,300.00	\$32,300.00	
CERTIFICATION	1	LS	\$24,192.00	\$24,192.00	
CLEAN SEDIMENTATION BASINS	3	EACH	\$5,600.00	\$16,800.00	
CONSTRUCTION MANAGER	1	LS	\$121,000.00	\$121,000.00	
CONSTRUCTION QA TESTING	1	LS	\$161,280.00	\$161,280.00	
DOWN DRAINS	120	EACH	\$2,464.00	\$295,680.00	
GRAVEL TOE DRAINS	1,900	CY	\$44.80	\$85,120.00	

CLOSURE ACTIVITIES SUBTOTAL	\$11,161,000
30% Contingency	\$3,348,300
CLOSURE ACTIVITIES TOTAL COST	\$14,509,300