

STATE OF DELAWARE  
DEPARTMENT OF NATURAL RESOURCES  
& ENVIRONMENTAL CONTROL  
DIVISION OF AIR & WASTE MANAGEMENT  
89 KINGS HIGHWAY  
DOVER, DELAWARE 19901



SOLID & HAZARDOUS WASTE  
MANAGEMENT BRANCH

TELEPHONE: (302) 739-9403  
FAX NO.: (302) 739-5060

May 29, 2009

**FILE COPY**

Mr. Glenn J. Hardcastle  
Motiva Enterprises, LLC  
P.O. Box 74  
Elk Mills, MD 21920

Subject: Fly Ash Pond 1 & 2 Closure Permit  
Reference: Permit SW-96/01, File Code: 02.B

Dear Mr. Hardcastle:

The Solid & Hazardous Waste Management Branch has modified Permit SW-96/01 to require closure of the Fly Ash Ponds. Compliance assessments of Fly Ash Pond operations and inspections of all closure activities will be based upon this permit so please review the permit carefully and let us know if you have any questions or concerns. Motiva is required to notify us at least 30 days prior to commencement of closure activities, and we ask that you please include an updated schedule of closure activities with that notification.

If you have any questions, please contact Robert Hartman at (302) 739-9403.

Sincerely,

A handwritten signature in cursive script that reads "Nancy C. Marker".

Nancy C. Marker  
Environmental Program Manager II  
Solid & Hazardous Waste Management Branch

NCM: RH: dtd  
Motiva\Solid Waste\Permits\RH09009.doc

Attachment

cc: Bryan Ashby, Environmental Program Manger I, SHWMB  
Frank Gavas, Hydrologist, SHWMB  
James Coffman, URS

*Delaware's good nature depends on you!*



Motiva Enterprises, LLC  
4500 Wrangle Hill Road  
Delaware City, DE 19706

**RE: Permit SW-96/01**

Date of Issue: August 5, 1996

Last Modified: May 29, 2009

Expiration Date: May 29, 2019

**I. General Conditions**

- A. Pursuant to provisions of the *Delaware Regulations Governing Solid Waste* (DRGSW), the Department of Natural Resources and Environmental Control (Department) hereby modifies Permit SW-96/01 to incorporate and require the closure of the two Motiva Enterprises LLC (Motiva) fly ash settlers also known as Fly Ash Ponds 1 and 2 (the Fly Ash Ponds). The Fly Ash Ponds are located at the Delaware City Refinery (DCR), 4500 Wrangle Hill Road, Delaware City, Delaware. Motiva used the Fly Ash Ponds for the disposal of non-hazardous fly ash and discharges from the spill collection system, and maintains responsibility for closure of these Fly Ash Ponds.
- B. The Department first issued permit SW-96/01 on August 5, 1996 in accordance with following submissions:
1. The *Permit Application, Fly-ash Settlers No. 1 and 2, March 1995, Star Enterprise, Delaware City Refinery*, prepared by Geosystems Consultants, 576 Virginia Drive, Fort Washington, PA 19034.
  2. The *Soil Quality Assessment Report, Former Fly-ash Pond No. 1, Star Enterprise, Delaware City Refinery*, dated April 15, 1996, prepared by Dames and Moore.
  3. The report dated June 14, 1996, prepared by GeoSystems Consultants. The report was submitted by Star in accordance with the meeting with the Department on June 10, 1996.
- C. On May 29, 2009, the Department modified permit SW-96/01 to include the closure of the Fly Ash Ponds in accordance with the following submissions:
1. *Plans for Final Closure and Post-Closure Care, Motiva Fly Ash Ponds, Delaware City Refinery, Delaware City, Delaware* (volumes I through IV), prepared by URS

Corporation and submitted by Motiva on December 29, 2006 (appended version of *Closure Plan for Flyash Settlers*, January 2003).

2. *Sampling and Analysis Plan Lining System and Subgrade Soils Fly Ash Pond No. 1, Delaware City Refinery, Delaware City, Delaware*, prepared by URS Corporation and submitted by on behalf of Motiva on November 8, 2007.
3. *Bench-Scale Crystallization Testing Plan for Fly Ash Pond No. 1 Motiva Fly Ash Ponds Delaware City Refinery Delaware City, Delaware*, prepared by URS Corporation and submitted by Motiva on February 19, 2008.
4. Other plans, letters, procedures and policy specifically referenced in this permit.

D. The Department issues this permit, subject to the following general conditions:

1. In addition to the closure requirements of the DRGSW, Motiva shall close the Fly Ash Ponds to achieve the closure performance standard required by the Delaware Regulations Governing Hazardous Waste (DRGHW), Subpart G, Section 264.111.
2. Representatives of the Department may inspect the Fly Ash Ponds at any reasonable time.
3. Motiva shall conduct activities at the Fly Ash Ponds in compliance with this permit and all applicable federal, state, county, and municipal environmental statutes, ordinances, and regulations. This general condition shall apply to all persons or entities conducting any activity at the Fly Ash Ponds on behalf of Motiva.
4. Any transfer of this permit shall be done in compliance with the requirements of Section 4.1.8 of the DRGSW, including post-closure care financial assurance. Motiva shall not transfer this permit until they have established a valid Environmental Covenant in accordance with the requirements of Delaware Code Title 7, Chapter 79, Subchapter II. Until transfer of the permit has been completed, Motiva shall continue to maintain control of, and responsibility for the Fly Ash Ponds in compliance with this permit and the DRGSW, including, but not limited to the requirements for financial assurance, closure, post-closure care, recordkeeping, reporting, monitoring and corrective actions.
5. Motiva shall maintain a readable, easily accessible copy of the most current version of this permit at the DCR Administration Building located on Wrangle Hill Road.

**II. Reserved**

**III. Reserved**

#### IV. Monitoring and Operational Requirements

##### A. Maintenance, Preservation and Monitoring of Groundwater Wells

##### 1. Maintenance and Preservation of Groundwater Monitoring Wells.

- a. Motiva shall preserve and maintain all groundwater monitoring wells shown in FASP Table 1. Motiva shall implement controls to protect these monitoring wells from damage from site activities and shall ensure that groundwater monitoring wells remain accessible for environmental monitoring required by this permit. Motiva shall report any damage to groundwater monitoring wells in accordance with the reporting requirements of condition VII.C.2 of this permit.
- b. Motiva shall inspect each monitoring well at least semiannually and shall document the observations and deficiencies found during these inspections. Motiva shall report and maintain records of these inspections in accordance with condition VIII.A.6 of this permit.
- c. Motiva shall replace any well that can no longer be used to provide monitoring data required by this permit. Replacement and abandonment of groundwater monitoring wells shall be done in accordance with the *Delaware Regulations Governing the Construction and Use of Wells*.

##### 2. Semiannual Groundwater Quality Monitoring

- a. During April and October each year, Motiva shall monitor groundwater at the Fly Ash Ponds in accordance with the *Groundwater Monitoring Network and Sampling and Analysis Plan*, dated December 29, 2006 and the additional requirements of this permit. During these monitoring events, Motiva shall collect samples from the groundwater monitoring wells shown in FASP Table 1 (except for monitoring wells C28, C30, and C36, where only water level measurements are required), and shall complete the analytical requirements shown in FASP Table 2.
- b. The permittee shall collect groundwater at low flow rates (less than 1 l/min) to minimize turbidity of the samples and will field filter samples only when turbidity exceeds 10 NTU's. Repeated sampling of any well where turbidity exceeds 10 NTU's is not permitted without specific Department approval.

**FASP Table 1** Groundwater Monitoring Wells

Well Number	Well Number
C1	C24
C2	C38
C3	C39
C4	C28*
C21	C30*
C22	C36*
C23	

\* Maintained and monitored for water level measurements only.

**FASP Table 2** Semiannual Groundwater Monitoring

Laboratory Parameters	Field Parameters
Total Dissolved Solids	Turbidity
pH	pH
Specific Conductance	Specific Conductance
Chloride	Temperature
Sulfate	Redox
Iron	Dissolved Oxygen
Manganese	
Nickel	
Vanadium	
Sodium	

3. Semiannual Groundwater Elevation Monitoring. During April and October each year, Motiva shall monitor groundwater at the Fly Ash Ponds in accordance with the *Groundwater Monitoring Network and Sampling and Analysis Plan*, dated December 29, 2006 and the additional requirements of this permit. During these monitoring events, Motiva shall measure water levels from the groundwater monitoring wells shown in FASP Table 1. Motiva shall prepare potentiometric maps for the Columbia aquifer showing the location of each well, the contoured potentiometric surface and the directions of ground water flow. These maps shall include an outline of the Fly Ash Ponds locations and the western and northern property boundaries of the facility.
- B. Operation, Maintenance, and Monitoring of the Leak Detection System at the Fly Ash Ponds.
1. Leak Detection System Operation and Maintenance.
    - a. Motiva shall operate the leak detection system to maintain less than 12 inches of liquid on the liner in the sump. Motiva shall operate the system so that it removes liquid automatically.

- b. Liquid removed from the leak detection system may be processed via the on site waste water treatment plant only if done so in compliance with a permit issued by the Division of Water Resources.
- c. Motiva shall maintain back-up equipment necessary to ensure that they are capable of monitoring and recording total flows from the leak detection system daily. The permittee shall maintain back-up equipment necessary to ensure that liquid levels in the sump are monitored continuously and that liquid levels do not exceed 12 inches in the sump.
- d. Motiva shall maintain the leak detection system of Fly Ash Pond 2 to include Manholes 1, 2 and 3 monitoring ports and totalizers, (reference URS Drawing C-10, revised 12/22/06), leachate collection pumps, leachate force mains, and the master flow meter. As soon as possible, but no later than 5 days from discovery, Motiva shall notify DNREC and provide a plan and schedule to repair or replace equipment including leachate sump pumps, totalizers or flow meters found not to be operating properly. Motiva shall replace all equipment discovered not to be operating properly as soon as practical unless otherwise approved by the Department.
- e. Motiva shall inspect leak detection system flowmeters, valves, pumps, totalizers, and recording devices at least once every 7 days to ensure proper functioning. Motiva shall document the observations and deficiencies found during these inspections on a form acceptable to the Department and shall report and maintain records of these inspections in accordance with conditions VII.C.1 and VIII.A.6 of this permit.
- f. At least once a year, Motiva shall clean all manholes and pumps as well as all accessible collection pipes in the Leak Detection System of Fly Ash Pond 2. For leachate collection pipes, the permittee shall use a self-propelled, high pressure jetting system or other cleaning system acceptable to the Department. Motiva shall be responsible for the identification, assessment, and reporting of all blockages encountered as well as identification and reporting of any areas found to be inaccessible during cleaning. The Department may, at its discretion, waive the annual cleaning event for any particular year if, after demonstration by the permittee, it determines that cleaning is not required. Motiva shall report cleanings in accordance with condition VII.C.4 of this permit.
- g. At least once each year, Motiva shall inspect all accessible collection pipes in the Leak Detection System of Fly Ash Pond 2 with a camera to assess their condition. Motiva shall complete a written assessment of the condition of the collection pipes to include an assessment of any observed clogging and the location, cause, and effect of any observed blockages and inaccessible areas. The Department may, at its discretion, waive the annual inspection for any particular year if, after demonstration by the permittee, it determines that an inspection is not required. Motiva shall report these inspections in accordance with condition VII.C.4 of this permit.

- h. Until it's removal in accordance with condition V.G of this permit, Motiva shall maintain and continue to remove liquid from the leak detection system of Fly Ash Pond 1.
- i. Motiva shall implement and maintain controls to protect the leak detection system components, including manholes, pumps, sampling ports, valves, flow meters, totalizers, electrical lines and force mains from damage from site activities.

2. Leak Detection System Monitoring

- a. Motiva shall monitor and record the quantity of flow from the leak detection system daily, and shall take all reasonable measures necessary to ensure that the Action Leakage Rate (ALR) is not exceeded. The ALR is 1000 gallons/acre/day, as averaged over a seven-day period.
- b. Semiannually during April and October, Motiva shall sample leachate from the leak detection system at Fly Ash Pond 1 (if present) and from Manholes 1, 2, and 3 at Fly Ash Pond 2 and complete the analytical requirements in FASP Table 3.
- c. Semiannually during April and October, Motiva shall sample surface water (if present) from each Fly Ash Pond and complete the analytical requirements in FASP Table 3.

**FASP Table 3** Semiannual Leachate Monitoring

Parameters	Parameters
pH (field)	Calcium
Temperature (field)	Chloride
Specific Conductance (field)	Chromium
pH (Laboratory)	Iron
Specific Conductance (Laboratory)	Manganese
Total Dissolved Solids	Nickel
COD	Sodium
Alkalinity (total)	Sulfate
	Vanadium
	Zinc

C. Analytical Procedures: Motiva shall analyze groundwater and leachate samples required by this permit in accordance with the most current legal edition of EPA Publication Number SW 846. If SW 846 does not contain a test method for a required parameter, that parameter shall be tested according to methods described in the most recent edition of the EPA Publication *Methods of Chemical Analysis for Water and Wastes* or of *Standard Methods for Examination of Water and Wastewater*.

D. General Operation and Maintenance:

1. Prior to closure of the Fly Ash Ponds, Motiva is prohibited from disposal of waste into either pond. This prohibition does not apply to stormwater or liquids already present in either pond.
2. The Fly Ash Ponds shall be operated so as to prevent degradation of land, air, surface water, and ground water.
3. Motiva shall maintain a vegetative cover or other stabilizing measures on the exposed portions of the dikes to prevent erosion.
4. Motiva shall maintain a minimum freeboard of two (2) feet.
5. Motiva shall maintain the surface spill collection system specified in the permit application package.
6. Access: Motiva shall ensure that access to the Fly Ash Ponds is effectively controlled at all times by the use of gates, security fence or other means necessary to limit access to the Fly Ash Ponds to authorized persons engaging in activities compatible with this permit. In accordance with the requirements of 7 Del. C. Section 6024, the Department's right of entry to the Fly Ash Ponds must not be impeded.
7. Employee health and safety.
  - a. Employees at the site shall work under appropriate health and safety guidelines established by Occupational Safety and Health Administration (OSHA).
  - b. First aid equipment shall be available at the site.
  - c. A reliable telephone or radio communication system shall be provided at the facility.
8. Wildlife deterrents. As long as surface water is present, Motiva shall maintain effective deterrent systems to preclude wildlife access to the Fly Ash Ponds.
9. Weekly Inspections. Motiva shall inspect the general condition of the Fly Ash Ponds at least once per week and document their findings on a form acceptable to the Department. Motiva shall maintain records of these inspections in accordance with condition VIII.A.6 of this permit. These general inspections shall include:
  - a. Wildlife deterrents
  - b. Litter
  - c. Sediment and erosion controls
  - d. Freeboard
  - e. Evidence of damage to liner system

- f. Evidence of seeps or spills from the Fly Ash Ponds and leachate pipes located outside of the Fly Ash Ponds.
- E. Contingency. Motiva shall provide for emergency response to fires, spills and other emergencies at the Fly Ash Ponds and shall provide for an Emergency Coordinator and at least one alternate Emergency Coordinator responsible for directing emergency response activities necessary to protect human health and the environment. Motiva shall ensure that at least one Emergency Coordinator is available at all times. Motiva shall record and report contact information for the Emergency Coordinator in accordance with condition VII.C.5 of this permit.

## V. Closure

- A. Motiva shall close the Fly Ash Ponds in accordance with the conditions of this permit, and the January 23, 2003 *Closure Plan, Fly Ash Ponds (Closure Plan)* revised December 29, 2006, including the *Technical Specifications*, and *Construction Quality Assurance Plan* provided in the application. Revisions to these plans or specifications related to leak detection system, waste containment system, stormwater management system, environmental monitoring system or the capping system, shall require Department approval in writing or by documentation in the minutes of the construction progress meeting or similar record approved by the Solid & Hazardous Waste Management Branch.
- B. Motiva shall initiate closure of the Fly Ash Ponds starting no later than December 31, 2009 and shall complete installation of the final cover no later than December 17, 2010 unless otherwise approved by the Department. Motiva shall notify the Department as least 30 working days prior to commencing closure activities.
- C. Motiva shall store, handle and install all geosynthetics used in Fly Ash Pond 2 in accordance with this permit and the manufacturer's guidelines.
- D. Construction Quality Assurance.
  - 1. Prior to staff performing any CQA duties at the Fly Ash Ponds, Motiva shall submit their qualifications and resumes to the Department in accordance with the requirements of the *Construction Quality Assurance Plan*.
  - 2. Supporting Documents for Construction Quality Assurance. The CQA consultant shall maintain copies of the following documents on site and shall allow Department representatives to review these documents at any reasonable time:
    - a. Construction drawings, including field changes, and as-builts.
    - b. Change orders.
    - c. Daily and weekly logs maintained by CQA staff.
    - d. Daily CQC log.

- e. Records showing type, volume and source for each fill, granular drainage material or cover soil placed onto Fly Ash Pond 2.
  - f. Manufacturer's certifications for geosynthetics used in the capping system and for repair of the exposed portion of the existing liner in Fly Ash Pond 2 in accordance with the approach presented in the Closure Plan and the requirements of this permit.
  - g. Manufacturer's MQA Plans for geosynthetics to be used in the capping system and for the exposed liner repair as presented in the Closure Plan and in accordance with the requirements of this permit.
  - h. Manufacturer's specifications regarding storage, handling, and installation of geosynthetics to be used in the capping system and for the exposed liner repair as presented in the Closure Plan and in accordance with the requirements of this permit.
  - i. Records showing material deliveries (including lot and roll numbers) for all geosynthetics shipped to the site for use in the capping system and liner repair.
  - j. Records of conformance testing for all geosynthetics used in the capping system and for the exposed liner repair as presented in the Closure Plan and in accordance with the requirements of this permit.
  - k. Records of all fill and soils testing for the project
  - l. Subgrade acceptance certifications
  - m. Project photographs
  - n. Calibration records for instruments used for CQA and CQC monitoring, to include nuclear density gages and tensiometers.
  - o. Applicable standards and procedures for any on-site laboratory involved in analyzing moisture content of ash or soils used in the project
  - p. Field seam test results
  - q. Analytical results and chain of custody forms for all waste determinations and for all sampling done in accordance with the *Sampling and Analysis Plan Lining System and Subgrade Soils Fly Ash Pond No. 1*, dated November 2007.
  - r. Surveying stake inventory
3. Prior to making repairs on the exposed portion of the existing liner in Fly Ash Pond 2 in accordance with the approach presented in the Closure Plan, installing geocomposite, or installing geomembrane, Motiva shall provide the qualifications of the installer, the installers key personnel (i.e. master seamer and site superintendent), and the Construction Quality Control Inspectors to the Department for its review. Prior to making repairs on the exposed portion of the existing liner in Fly Ash Pond 2, Motiva shall provide technical specifications, manufacturer's specifications, and detailed CQA procedures for storage, handling, installation and protection of work, for Department review and approval. If GCL is to be used for the repairs, Motiva shall evaluate the material's stability as part of the interior slope, its expected durability and its expected performance as a fluid barrier and shall provide that assessment to the Department as well.

4. Material testing frequencies and acceptable values shall not be reduced or lowered without Department approval. This shall include all conformance and CQC testing of materials used in the capping system, the waste containment system, and the leachate management system.
- E. Motiva shall close the Fly Ash Ponds in a manner that minimizes the need for further maintenance.
- F. Motiva shall close the Fly Ash Ponds in a manner that that controls minimizes or eliminates, to the extent necessary to protect human health and the environment, the post-closure escape of solid waste constituents and leachate.
- G. At closure, Motiva shall:
1. From Fly Ash Pond 1, remove or decontaminate all waste residues, contaminated containment system components, contaminated subsoils, and structures and equipment contaminated with waste and leachate and manage them as waste unless otherwise allowed under this permit or approved by the Department.
  2. Eliminate free liquids by removing liquid wastes or moisture conditioning the remaining wastes and waste residues in Fly Ash Pond 2.
  3. Inspect and repair the liner on the exposed interior slopes in Fly Ash Pond 2 in accordance with the Department's approval.
  4. Sample materials in Fly Ash Pond 1 in accordance with the *Sampling and Analysis Plan Lining System and Subgrade Soils Fly Ash Pond No. 1* and properly manage contaminated media to include the following requirements. Motiva shall also provide data that confirms that the waste in Fly Ash Pond 1 is not a hazardous waste.
    - a. Remove, handle and properly dispose of fly ash materials in a manner that prevents the discharge of leachate to the environment. Fly ash materials placed into Fly Ash Pond 2 shall be dewatered and staged in accordance with the recommendations cited in Section 5 of the *Final Report, Bench Scale Program to Assess Crystallization Potential Within Fly Ash of FAP No. 1*, dated November 13, 2008.
    - b. Remove the primary/secondary liner systems and leak detection system material and, after representative waste characterization sampling, dispose of these materials at an off-site facility permitted to accept the waste. Alternatively, with Department approval, these primary/secondary liner systems may be incorporated into Fly Ash Pond 2.

- c. In accordance with the *Sampling and Analysis Plan Lining System and Subgrade Soils Fly Ash Pond No. 1*, Motiva shall remove subgrade soils under Fly Ash Pond 1 that exceed the Delaware Uniform Risk-based Standards (DURS) for non-critical water resource, restricted use, subsurface soils. The Department may consider other soil management plans once initial sampling of subgrade soils has been completed. Motiva may place excavated subgrade soils into Fly Ash Pond 2 only after representative waste characterization sampling demonstrates that the materials are not a hazardous waste.
  - d. As part of the final report certifying closure of the Fly Ash Ponds, Motiva shall include a narrative description of the sampling, sampling results, and proof of proper disposal for all materials removed from the Fly Ash Ponds for off-site disposal.
5. Moisture condition remaining wastes as necessary to provide for stable support of the final cover in Fly Ash Pond 2.
  6. Cover Fly Ash Pond 2 with a final cover designed and constructed to:
    - a. Provide long-term minimization of the migration of liquids through the closed Fly Ash Pond.
    - b. Function with minimum maintenance.
    - c. Promote drainage and minimize erosion or abrasion of the final cover.
    - d. Accommodate settling and subsidence so that the cover's integrity is maintained.
    - e. Have a permeability less than or equal to the permeability of the bottom liner system.
  7. In accordance with the *Delaware Regulations Governing the Construction and Use of Wells*, Motiva shall properly abandon groundwater monitoring wells no longer required for monitoring the Fly Ash Ponds.
- H. During closure activities, Motiva shall take all necessary precautions to protect existing control systems in Fly Ash Pond 2, to include the liners and leak detection system systems. Motiva shall report any damage to control systems in accordance with the reporting requirements of condition VII.C.6 of this permit.
- I. Dust Control
1. Motiva shall conduct all closure activities at the Fly Ash Ponds in a manner to prevent dust emissions from causing a condition of air pollution (injurious to human, plant, or animal life or unreasonably interfering with the enjoyment of life and property). Motiva shall inspect for visible dust leaving the facility at least once each day during activities that may cause dust emissions of concern.

2. If fill or granular material used for closure activities is hauled to the site in trucks using public roads, Motiva shall require that all such vehicles be adequately tarped or covered and shall monitor these vehicles upon entry. Motiva shall administer controls necessary to minimize visible particulate emissions resulting from improperly tarped vehicles operating on public roads.
  3. Motiva shall implement controls as necessary to minimize tracking of soils or other materials onto public roads leading from the Fly Ash Ponds. During activities that may result in drag-out of material from the Fly Ash Ponds, the permittee shall inspect Landfill egress points at least once each day to identify if materials are being tracked onto public roads. In the event material is being tracked onto public roads, Motiva shall provide for street cleaning of that area on the day the problem is identified.
  4. Motiva shall document the observations and deficiencies found during these inspections using a form acceptable to the Department. Motiva shall report and maintain records of these inspections in accordance with conditions VII.C.1 and VIII.A.6 of this permit.
- J. During closure, Motiva shall provide for immediate access to the SHWMB project officer to facilitate unannounced inspections of construction and CQA activities at the Fly Ash Ponds.
- K. Final Report. No later than 60 days after completing closure activities, Motiva shall submit a final certification report for Department approval. The final report shall certify whether or not the closure of the Fly Ash Ponds was completed in accordance with the requirements of this permit and the *Closure Plan*, including the *Technical Specifications* and the *Construction Quality Assurance Plan*. The final report shall be certified correct by the construction quality assurance engineer who must be a Professional Engineer registered in Delaware. The final report shall include:
1. A cover letter presenting the Final Report and signed by the permittee after their review.
  2. Title page to include date, facility, project name, responsible party (Motiva), and preparing firm.
  3. Signature page.
  4. Table of contents.
  5. Introductory narrative with project overview.

6. Certification of adequate closure with assessments and conclusions for each major construction activity, including a determination if the work was done in accordance with the permit requirements and whether the work achieved the performance standard intended by the design. Major construction activities shall include at least the following:
  - a. Closure of Fly Ash Pond 1
  - b. Dewatering of Fly Ash Pond 2
  - c. Repair of exposed portion of liner system in Fly Ash Pond 2
  - d. Closure of Fly Ash Pond 2.
  - e. Stormwater management
  - f. Leak detection system.
7. A determination whether or not the materials used for capping, waste containment, and leak detection systems were manufactured, tested, transported, stored on site, installed and protected in accordance with the permit requirements.
8. A determination whether or not specified qualifications were met throughout the project. This shall include specified qualifications for manufacturers, installers, master seamers, surveyors, testing laboratories, contractors CQC inspectors and CQA staff.
9. Record drawings including detail drawings for control components.
10. A topographic drawing (with a scale of 1 inch = 80 ft) showing site contours, stormwater controls, stormwater flow directions, monitoring wells, the leak detection system and associated liquids collection and transport system, the limits of waste of Fly Ash Pond 2 and an outline of the area showing the original location of Fly Ash Pond 1.
11. A site drawing (with a scale of 1 inch = 200 feet) showing all environmental monitoring locations for the Fly Ash Ponds, the northern and western site boundaries, fence lines, outlines of the Fly Ash Pond 1&2 locations, stormwater controls, stormwater flow directions, stormwater monitoring locations (if required), and the limits of the property which will be regulated under the post-closure care permit and the Environmental Covenant.
12. A listing of key personnel involved with the project to include business contact information. This listing should include the Motiva representative for the project, the design engineer, the general contractor's representative on-site, the installer's representative on-site, master seamer, surveyor, and all staff providing CQC and CQA oversight.

13. Supporting documents for Construction Quality Assurance (reference condition V.D.) of this permit) to include all CQA forms, logs, layout drawings, and meeting minutes. This information is to be provided on compact disc only and bookmarked by section.
  14. Project photographs. These are to be provided on compact disc, sorted by date and labeled to include a description of the material or activity pictured.
- L. Motiva shall provide two paper copies of the final report and include the items listed in condition V.L. 1 – 12 of this permit. Motiva shall also provide two copies of the report on compact disks and include all items listed in V.L. of this permit. At a minimum, the documents on compact discs must be tabbed and/or bookmarked by major section to facilitate searching and retrieval of information.

## VI. Post-Closure Care

- A. After closure work has been completed and until the final post-closure permit is issued, Motiva shall provide for post-closure care of the Fly Ash Ponds in accordance with the requirements of the *Delaware Regulations Governing Solid Waste* to include financial assurance, access control, maintenance, environmental monitoring, leachate management, and land use.
- B. After closure work has been completed and until the final post-closure permit is issued, Motiva shall provide for post-closure care of the Fly Ash Ponds in accordance with conditions I, IV, V, VII, VIII and IX of this permit. The post-closure care requirements of this permit shall endure until the issuance of the final post-closure care permit or until the post-closure care period ends, whichever occurs first.
- C. Prior to the end of the post-closure care period, Motiva shall provide an Environmental Covenant to the Department for its review. The Environmental Covenant shall be prepared in accordance with the requirements of Delaware Code Title 7, Chapter 79, Subchapter II, and Motiva shall record the Environmental Covenant within 60 days of the Department's concurrence.
- D. No later than 30 days after the department's certification of closure, Motiva shall submit the final Post-Closure Plan for the Fly Ash Ponds. Motiva shall include inspection checklists to be used during the post-closure care period for periodic inspections. Motiva shall also include a stormwater monitoring plan that provides for semi annual monitoring of stormwater runoff from the Fly Ash Pond area. The Department will consider existing stormwater sampling plans if Motiva can demonstrate that those are adequate to monitor runoff from the Fly Ash Pond area. Motiva shall provide four paper copies of the final Post-Closure Plan along with a copy on compact disk(s) in a format suitable to the Department (the Department intends to provide public notification of the final Post-Closure Care Plan).

## VII. Reporting

- A. Annually, no later than March 31<sup>st</sup>, Motiva shall submit the following reports:
1. An updated cost estimate of closure and post-closure care for the facility and proof of financial assurance in accordance with Section 4.1.11 of the DRGSW.
  2. An Annual Environmental Monitoring Report. Motiva shall submit two paper copies and two copies on electronic media (such as compact disc) in a form acceptable to the Department. Motiva shall include the following information in the Annual Environmental Monitoring Report:
    - a. The Report shall include a dated title page, a page identifying the preparer including the signature and PG seal, and a detailed table of contents.
    - b. Narrative: Motiva shall include a discussion of findings, conclusions and recommendations based upon the environmental monitoring results. The narrative portion of the report shall address:
      - (1) Groundwater monitoring results, including whether the results indicate a contaminant release from the Fly Ash Ponds to groundwater, and any corrective measures taken or anticipated.
      - (2) Leak detection system and Fly Ash Ponds liquid monitoring results to include a discussion of the effectiveness of the liners and liquid collection systems.
      - (3) Recommendations for future monitoring, maintenance and modification needs for the groundwater monitoring wells or leak detection system.
    - c. Tabulation of all data listed below from the past and all preceding years. Data submitted shall include leak detection system flow and quality including field parameters, and groundwater elevation and quality data including field parameters.
    - d. Graphical presentations (quality versus time plots) of ground water and leak detection system liquid quality parameters pH, total dissolved solids, sulfate chloride, iron, sodium, and vanadium.
    - e. Graphical presentations (flow rate or volume versus time plots) of leak detection system flows.
    - f. Potentiometric maps for the surficial aquifer for April and October of the past year. These maps shall include an outline of the Fly Ash Pond locations and the western and northern property boundary.
    - g. A drawing showing all monitoring locations required by this permit.

B. Periodic Environmental Monitoring Reports. Within 60 days following the semiannual sampling events, Motiva shall submit the results of periodic monitoring of the groundwater and leak detection systems. Motiva shall provide these reports on electronic storage media only (such as compact disc) and in accordance with the following conditions:

1. Motiva shall provide the periodic environmental monitoring data in a format acceptable to the Department. At a minimum, the data must be tabbed and/or bookmarked by major section to facilitate searching and retrieval of information.
2. Each electronic media submittal shall be accompanied by a cover letter (paper), signed by the permittee. The cover letter shall state the monitoring reported in the submittal, report any concerns the permittee has about the monitoring results, or monitoring points (including damage and accessibility) and provide a table of contents or directory tree for the information provided via the electronic storage media.
3. Motiva shall submit two copies of the periodic environmental monitoring report for the Department's review and file (an original plus one copy).
4. Motiva shall include the following in each periodic environmental monitoring report on electronic media:
  - a. A description of the monitoring being reported.
  - b. A drawing showing all monitoring locations for the samples being reported.
  - c. The sampling results from the groundwater monitoring for quality.
  - d. The results of groundwater elevation monitoring.
  - e. A potentiometric map showing groundwater flow at the time of the sampling event.
  - f. The sampling results from the leak detection system monitoring and the liquid monitoring in the Fly Ash Ponds.
  - g. Year to date leak detection system flows including daily readings and weekly averages.
  - h. Copies of laboratory data sheets and chain-of-custody forms for each sample analyzed.

C. Additional Reports

1. Upon discovery, Motiva shall report to the Department any intentional or accidental deviation from this permit.
2. Upon discovery, Motiva shall notify the Department concerning damage to groundwater monitoring wells.
3. Quarterly in January, April, July, and October, Motiva shall provide a progress report detailing the efforts for preparing the Fly Ash Ponds for closure, including an updated schedule of activities.

4. Within 60 days of completion of each event, Motiva shall report the results of the annual cleaning and the annual inspection of the leachate collection pipes in the Leak Detection System of Fly Ash Pond 2.
5. As soon as practical, Motiva shall notify the Department in writing of a change made to the Emergency Coordinator contact information.
6. Upon discovery, Motiva shall report any damage done to control systems in Fly Ash Pond 2.

D. Emergency Reporting:

1. Motiva shall notify the Department immediately in the event of:
  - a. Fire or explosion involving the Fly Ash Ponds.
  - b. Receipt of prohibited waste at either Fly Ash Pond.
  - c. Spills from the Fly Ash Ponds exceeding 10 gallons.
  - d. Dike failure.
2. If any event listed in Section VI.D.1 of this permit occurs during business hours, Motiva shall report it to the Department's Solid and Hazardous Management Branch at 302-739-9403. At all other times, Motiva shall report the event to the Division of Air and Waste Management's TOLL-FREE 24-HOUR LINE 1-800-662-8802. When reporting an event to the toll-free line, Motiva shall disclose that the reporting is required in accordance with Permit SW-96/01 issued by the Department's Solid & Hazardous Waste Management Branch.
3. The Permittee shall submit a written notification to the Department no later than five business days following any event requiring "Emergency Reporting". The notification shall include the following:
  - a. Date and time of occurrence/discovery.
  - b. Date and time of reporting.
  - c. Agencies notified.
  - d. Materials and quantities involved.
  - e. Narrative describing how the incident occurred and the actions taken by the Permittee and other response personnel.
  - f. Report of injuries/damage.
  - g. Proposal for follow-up, repair, or remedial actions required and a schedule.

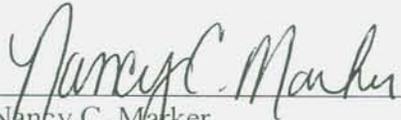
VIII. Recordkeeping

- A. The following information shall be recorded and maintained by the Permittee. This information must be available for inspection, with reasonable notice, by representatives of the Department:

1. All documents cited in condition I.B and I.C. of this permit.
2. Environmental monitoring records including sampling procedures, monitoring and analytical data, laboratory data sheets and chain of custody forms.
3. Reports required by this permit.
4. Deeds, leases, covenants, and any landuse agreements in effect.
5. Records of all complaints received by the Permittee concerning the Fly Ash Ponds or work to close the Fly Ash Ponds.
6. Records of all periodic inspections of the Fly Ash Ponds required by this permit to include inspections of the leak detection system, monitoring wells and dust control.
7. All environmental permits and approvals in effect for the Fly Ash Ponds or liquid pumped from the Fly Ash Ponds.
8. Records showing quantity of leachate pumped from the leak detection system daily.
9. Copies of field notes for each sample collected and analyzed for the sampling event(s) required by this permit.

**IX. Assessment of Corrective Measures**

- A. If the action leakage rate or the monitoring data indicate that a contaminant release to ground water or surface water has occurred, Motiva shall notify the Department within 7 days and proceed to re-sample for confirmation of a release. Within 90 days of a release, Motiva shall perform an assessment of corrective measures. This assessment shall include:
1. Identification of the nature and extent of the release (which may require construction and sampling of additional wells, geophysical surveys or other measures).
  2. Re-assessment of contaminant rate and potential contaminant receptors (wells and/or receiving streams).
  3. Evaluation of feasible corrective measures to:
    - a. Prevent exposure to potentially harmful levels of contaminants (exceeding performance standards).
    - b. Reduce, minimize or prevent further contaminant releases.
    - c. Reduce, minimize or prevent the off-site migration of contaminants.

  
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Nancy C. Marker  
Environmental Program Manager II  
Solid and Hazardous Waste Management Branch

5/29/09  
\_\_\_\_\_  
Date

Permit Synopsis

August 4, 2001: Extension until September 4, 2001, was granted as the permit application is under review by the Department.

September 4, 2001: Extension until November 4, 2001, was granted as the permit application is under review by the Department.

November 4, 2001: Extension until January 4, 2002, was granted by the Department due to the July 17, 2001, events.

January 4, 2002: Extension until March 4, 2002, was granted by the Department due to the July 17, 2001, events.

March 4, 2002: Extension until September 4, 2002, was granted by the Department due to the July 17, 2001, events.

September 4, 2002: Extension until December 4, 2002, was granted by the Department due to the July 17, 2001, events.

December 4, 2002: Extension until April 4, 2003, was granted by the Department, due to July 17, 2001 events.

April 4, 2003: Extension until August 4, 2003, was granted by the Department, due to July 17, 2001 events.

August 4, 2003: Extension until December 4, 2003, was granted by the Department, due to July 17, 2001 events.

December 4, 2003: Extension until January 16, 2004, was granted by the Department, to finalize permit for closure.

January 16, 2004: Extension until April 30, 2004, was granted by the Department, to finalize permit for closure. Specifically, this extension is granted to allow sufficient time to review and public notice the post-closure care plan for the closure permit.

April 30, 2004: Extensions until December 31, 2004, was granted by the Department, to finalize permit for closure. Specifically, this extension is granted to allow additional time to review and public notice the post-closure care plan and construction quality assurance plan for the closure permit.

Permit Synopsis (continued)

December 30, 2004: Permit SW-96/01 was extended to August 26, 2005 to allow Motiva additional time to evaluate the waste containment capability of Flyash pond 2 and to gather additional information for closure of Pond 1 in accordance with the *Scope of Work, October 8, 2004, Flyash Ponds*. The permit was also modified to clarify the monitoring, inspection, maintenance, operation and recordkeeping requirements of the permit (sections IV.B.1, IV.B.2.a, IV.E.8, and VII.B.&C.), and to require wildlife deterrents (section IV.E.9). Section IV.A.3.b was corrected to strikeout groundwater elevation monitoring of wells C14 through C20 which do not exist and to add groundwater elevation monitoring for wells C35, C36, and C37. Wells C35, C36, and C37 were also added to the semi-annual groundwater sampling requirement contained in section IV.A.3.c. Section VI.B.6 was added to require quarterly progress reports of closure activities. Also, the Motiva's name has been corrected in the heading of the permit, as well as in sections IV, V, and VI. The permit modification is considered minor in accordance with the *Delaware Regulations Governing Solid Waste*, Section 4.A.7.b and 4.A.7.d(2).

August 25, 2005: Permit SW-96/01 was extended to August 25, 2006 to allow Motiva to complete the evaluation of the pond for closure as required, to dewater the pond, and to resubmit a closure plan. The permit modification is considered minor in accordance with the *Delaware Regulations Governing Solid Waste*, Section 4.A.7.d(3).

August 22, 2006: The Solid & Hazardous Waste Management Branch extended permit SW-96/01 until August 27, 2007 to accommodate Motiva's plan to close both fly ash settling ponds 1 and 2. Motiva is no longer using either pond for disposal and permit condition IV.E.1. has been changed to incorporate that as a permit requirement. Permit condition V.A. was also modified to require Motiva to provide a closure plan and schedule by December 31, 2006. This permit modification is considered minor in accordance with the *Delaware Regulations Governing Solid Waste*, Section 4.A.7.d(3).

August 21, 2007: The Solid & Hazardous Waste Management Branch extended permit SW-96/01 through February 29, 2008 to provide Motiva time to submit additional information required by the Department in support of the closure of fly ash settling ponds 1 and 2. This permit modification is considered minor in accordance with the *Delaware Regulations Governing Solid Waste*, Section 4.A.7.d(3).

February 28, 2008: The Solid & Hazardous Waste Management Branch extended permit SW-96/01 through June 27, 2008 to allow the Branch time to review and comment on supplemental information provided Motiva on February 19, 2008. This permit modification is considered minor in accordance with the *Delaware Regulations Governing Solid Waste*, Section 4.1.7.4.3.

June 24, 2008: The Solid & Hazardous Waste Management Branch extended permit SW-96/01 through September 30, 2008 to allow the Branch time to review and comment on supplemental information provided by Motiva on February 19, 2008. This permit modification is considered minor in accordance with the *Delaware Regulations Governing Solid Waste*, Section 4.1.7.4.3.

September 29, 2008: The Solid & Hazardous Waste Management Branch extended permit SW-96/01 through September April 30, 2009 to allow the Branch time to review and comment on supplemental information provided by Motiva on February 19, 2008. This permit modification is considered minor in accordance with the *Delaware Regulations Governing Solid Waste*, Section 4.1.7.4.3.

Permit Synopsis (continued)

April 30, 2009: The Solid & Hazardous Waste Management Branch extended permit SW-96/01 through May 22, 2009 after receiving an extension request from Motiva. The Branch granted the extension to Motiva to allow the Permittee time to review the Draft Closure Permit. This permit modification is considered minor in accordance with the *Delaware Regulations Governing Solid Waste*, Section 4.1.7.4.3.

May 29, 2009: After reviewing the supplemental information provided by Motiva on February 19, 2008 and November 13, 2008, the Solid & Hazardous Waste Management Branch modified permit SW-96/01 to allow closure of the Fly Ash Ponds. This is a major modification of the permit.