

**ANNUAL INSPECTION REPORT
EXISTING COAL COMBUSTION RESIDUE (CCR) LANDFILL
MUSCATINE POWER & WATER**

REPORT DATE: DECEMBER 23, 2016

A. Rule Requirement – Federal CCR Rule §257.84(b)

Under §257.84(b)(1) existing CCR landfills and any lateral expansion of a CCR landfill must be inspected on a periodic basis by a Qualified Professional Engineer to ensure that the design, construction, operation, and maintenance of the CCR unit is consistent with recognized and generally accepted good engineering standards.

B. Documents Used to Review Status and Conditions – §257.84(b)(i)

1. This facility is regulated under Iowa Department of Natural Resources Sanitary Disposal Project Permit No. 70-SDP-06-82P which was issued on August 9, 2010 and expires on August 9, 2020 and the following permit amendments:

Amendment	Date	Purpose
#1	03/23/11	- Incorporate Plugging Record for MW-16.
#2	02/13/12	- Incorporate field tile slope drain extension-2011. - Authorization to construct Phase II expansion.
#3	05/08/12	- Incorporate Plugging Records for MW-15, MW-18, MW-19, and MW-20. - Work plan requirement to replace these wells.
#4	10/24/12	- Incorporate Construction Documentation Report for Phase II Development. - Authorization to place CCR in Phase II area. - Incorporate Plugging Record for MW-14. - Incorporate construction documentation for MW-14A, MW-15A, and MW-18A. - Revise Permit Special Provision #3a pertaining to the HMSP.
Unnumbered	05/22/13	- Deleting the requirement for submittal of a Semiannual Water Quality Report to DNR.
#5	07/29/13	- Incorporate the Updated HMSP.
#6	09/04/15	- Revise Permit Special Provision #3d relating to constituent monitoring requirements. - Revise Permit Special Provision #3e relating to Method Detection Limits.
#7	04/19/16	- Re-designates MW-21 as a downgradient groundwater monitoring point.
#8	08/22/16	- Incorporate construction documentation for LPZ-1 – LPZ-4.
#9	10/14/16	- Removes the requirement to filter groundwater samples and analyze as dissolved metals. Special Provision #3f is removed from the permit. - Allows final cover to be comprised of an 18" thick compacted clay layer overlain by a 1' thick uncompacted vegetation soil layer. - Sets January 31 as the Annual Report (AWQR) submittal date.

The following variances have also been issued:

Variance	Date	Purpose
#1	01/25/93	- From having a certified landfill operator on duty during all hours of operation.
#2	07/08/94	- From methane monitoring and reporting requirements incorporated in Permit X.2.j.
#3	10/14/16	- From sample filtration and dissolved metals analysis (IAC 103.1(2)f) - From a 2' thick compacted clay layer in the site's final cover (IAC 103.1(5)b). An 18" compacted clay layer is approved; the 1' thick uncompacted vegetation layer is still required.

2. Water discharge from this facility is regulated under Iowa Department of Natural Resources National Pollutant Discharge Elimination System (NPDES) Permit No. 7000109 which was issued on January 19, 2010 and expired on January 18, 2015. An application for permit renewal was submitted to DNR on July 18, 2014. This permit requires monitoring of specified constituents at the Farm Pond discharge outfall.

**ANNUAL INSPECTION REPORT
EXISTING COAL COMBUSTION RESIDUE (CCR) LANDFILL
MUSCATINE POWER & WATER**

3. Landfill Development, Plans and Specifications, and Reports

	Title
STATE	
11/01/91	-Closure/Post Closure Plan. Original date 11/01/91, revised January 1996 and December 2009
11/21/91	-Supporting Documentation Plans and Specifications (DOPS).
01/29/93	-Supplemental Plan Sheet 16.
Various	-Supplemental information dated 10/02/08, 12/17/09, and 03/30/10.
1/17/12	-CCR Landfill Cell Development – Phase II
11/25/15	-Annual Groundwater and Surface Water Monitoring Report (next due 1/31/16)
11/25/15	-Leachate Control System Performance Evaluation Report (next due 1/31/16)
FEDERAL	
10/19/15	-CCR Fugitive Dust Prevention and Control Plan
12/23/16	-Initial Annual Inspection Report
05/18/16	-Groundwater Monitoring System and Sampling and Analysis Program
10/17/16	-Run-on and Run-off Control System Plan
10/17/16	-Closure and Post-Closure Plan
12/19/16	-Annual CCR Fugitive Dust Control Report
12/23/16	-Annual Inspection Report (this document)

C. Visual Inspection of the CCR Landfill – §257.84(b)(ii)

The existing landfill was visually reviewed by a Qualified Professional Engineer to identify signs of distress or malfunction of the CCR unit. The review was assisted by MP&W staff.

CCR Unit Location: SW½, Section 16, T76N R3W, Muscatine County, Iowa

Date of Inspection: September 14, 2016

Weather: Partly cloudy, 77 degrees, wind estimate 10-15 mph)

Field Observation By: Jon Scharf, P.E., HR Green, Inc.,
Iowa License: No. 20806, renewal date: 12/31/16

Others Present: Greg Brennan – HR Green, Inc.
Mike Avesing, Jean Brewster, Scott Clester, Matt Hepker – MP&W

D. Inspection Report – §257.84(b)(2)

§257.84(b)(2)(i)

The basic geometry of the structure is unchanged since the previous annual inspection, except for the planned disposal of CCR waste in the current Phase II fill area.

§257.84(b)(2)(ii)

The approximate volume of CCR contained in the unit at the time of the inspection was 790,000 cubic yards. This is derived using the Fee-Exempt Material Quarterly Reports to DNR to estimate the volume placed since the previous annual inspection. This value will be updated annually.

**ANNUAL INSPECTION REPORT
EXISTING COAL COMBUSTION RESIDUE (CCR) LANDFILL
MUSCATINE POWER & WATER**

§257.84(b)(2)(iii)

There are no obvious appearances of an actual or potential structural weakness of the CCR unit. There are no known existing conditions that are disrupting or have the potential to disrupt the operation and safety of the CCR unit.

§257.84(b)(2)(iv)

There are no known change(s) which may have affected the stability or operation of the CCR unit since the previous annual inspection.

Other Comments

Based on the review there is no apparent distress or malfunction of the CCR unit.

- Development and Operations
 - Proceeding in accordance with approved plans and specifications, including fill areas, slopes, height, access roads, monitoring wells, etc.
 - Operated in accordance with existing permits and amendments.
- Fugitive Dust Prevention and Control
 - Dust is effectively controlled as described in the *CCR Fugitive Dust Prevention and Control Plan* dated October 19, 2015 and in the Annual CCR Fugitive Dust Control Report.
- Groundwater Monitoring System
 - The groundwater monitoring system appears operational from a visual review. The current system operates under Iowa Administrative Code (IAC) Chapter 103 and the permit and amendments listed above.
 - Under state rule IAC 103 annual sampling of both groundwater monitoring wells and surface water points was completed in October 2016. This event will be summarized in an *Annual Groundwater and Surface Water Monitoring Report* due to DNR annually by January 31.
 - Under federal rule Part 257.93 groundwater sampling events at monitoring wells were also completed in June, August, October, and December 2016. These events are underway to establish background groundwater quality for evaluation under the federal CCR rule.
- Leachate Collection System
 - The system appeared to be operating as last described in the *Annual Leachate Control System Performance Evaluation Report* dated November 25, 2015. During this inspection, there were no apparent changes to this operation. The system will be evaluated again in the annual report to DNR by January 31, 2016.
 - A recommendation to flush the manholes on top of Phase I to assess for blockage was completed in June 2016 with no apparent blockages observed. Additional manhole or leachate line cleaning is not recommended.
 - A previous recommendation to install 4 new leachate piezometers in Phase I area to replace the existing 4 leachate piezometers (LPZ-1 through LPZ-4) was completed in July 2016. The piezometers are functioning as designed.

**ANNUAL INSPECTION REPORT
EXISTING COAL COMBUSTION RESIDUE (CCR) LANDFILL
MUSCATINE POWER & WATER**

- Erosion Control
 - The transition area for surface runoff between Phase II and the leachate control pond was reshaped and reinforced with fly ash boulders in 2014. Two hundred (200) tons of rock rip rap were also placed in June 2015 to further reinforce the drainage area. This area continues to be stable in 2016.
 - Rip rap was observed placed along a minor drainage feature in the north portion of Phase I, just northeast of Lift Station 'A'. This feature appeared stable during the inspection.
 - The north and east portion of Phase I is covered and has excellent vegetation established.

- Storm water
 - Surface water runoff to the control pond had been slightly inhibited by 'CCR delta' deposits that were beginning to accumulate upslope of the northeast corner of the pond. Excavation of this material was completed in August/September 2016 and the excavated material was placed back on the landfill. This area was observed to be clear during this inspection and surface water was effectively routed to the pond.

A copy of this report will be placed in the operating record as required under §257.105(g)(9).

Under §257.84(c) Muscatine Power & Water intends to comply with the recordkeeping requirements specified in §257.105(g)(9), the notification requirements specified in §257.106(g)(7), and the public internet site requirements specified in § 257.107(g)(7).

As required under §257.84(b)(4), the deadline for completing the next annual inspection report is established as no later than one year following the Report Date on this document.

**ANNUAL INSPECTION REPORT
EXISTING COAL COMBUSTION RESIDUE (CCR) LANDFILL
MUSCATINE POWER & WATER**

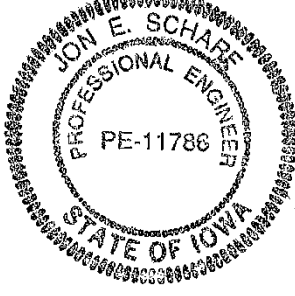
CERTIFICATION

ANNUAL INSPECTION REPORT

CCR LANDFILL

Permit No. #70-SDP-06-82P-CCR

**MUSCATINE POWER & WATER
MUSCATINE, IOWA**

	I hereby certify that this engineering document was prepared by me or under my direct personal supervision and that I am a duly licensed Professional Engineer under the laws of the State of Iowa.
	<i>Jon E. Scharf</i> _____ Date: <u>12/7/16</u>
	Jon E. Scharf, P.E.
	License No. 11786
	My renewal date is December 31, 2017
Pages or sheets covered by this seal: ENTIRE DOCUMENT	

Prepared By:

Name: Gregory J. Brennan, P.H.G., P.G.
Certified Professional Hydrogeologist
Licensed Professional Geologist

Signature: *Gregory J. Brennan*

Date: December 7, 2016

HR Green, Inc.
8710 Earhart Lane SW
Cedar Rapids, IA 52404
Phone: (319) 841-4000; Fax: (319) 841-4012