



**INITIAL RUN-ON AND RUN-OFF
CONTROL SYSTEM PLAN
Iatan CCR Landfill
Iatan Generating Station**

**20250 Hwy. 45 North
Weston, Missouri**

Kansas City Power & Light Company

October 17, 2016

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IATAN GENERATING STATION

CCR LANDFILL

**INITIAL RUN-ON RUN-OFF CONTROL SYSTEM PLAN REVISION
HISTORY**

Revision Number	Revision Date	Section Revised	Summary of Revisions

Revisions are accomplished in accordance with Section 5.

SECTION 1

BACKGROUND

The purpose of this CCR Run-on and Run Off Control System Plan (Plan) is to document, in accordance with the Coal Combustion Residuals Rule (CCR Rule),¹ how the run-on and run-off control systems for the Iatan Generating Station (Iatan) CCR landfill have been designed and constructed with recognized and generally accepted good engineering practices and to meet the applicable requirements of 40 CFR 257.81. The following sections provide background information on the facility and related regulatory requirements.

1.1 Facility Information

Name of Facility: Iatan Generating Station

Name of CCR Unit: CCR Landfill

Name of Operator: Kansas City Power & Light Company (KCP&L)

Facility Mailing Address: 20250 Hwy. 45, Weston, MO 64098

Location: Approximately five miles northwest of Weston, Missouri.

Facility Description: The Iatan Generating Station has two coal-fired units that produce fly ash, bottom ash, and gypsum. CCR not beneficially used is transported to the on-site landfill for disposal. Related landfill facilities include a groundwater monitoring system, storm water and leachate management systems, and haul/access roads. Phases I and II of the landfill have been constructed and are currently active. Phase III is under construction.

1.2 Regulatory Requirements

This Plan has been developed for the Iatan Generating Station CCR Landfill in accordance with 40 CFR 257.81 (c). The CCR Rule requires preparation of a Run-on and Run-off Control System Plan for all existing CCR landfills in operation as of October 19, 2015, the effective date of the CCR Rule. The plan must document how the run-on and run-off control systems have been designed and constructed to meet the

applicable requirements of 40 CFR 257.81, and must be supported by appropriate engineering calculations².

The owner or operator of a CCR unit must prepare a written Plan that includes the information specified in 40 CFR 257.81 (a) and (b). These items and the section of this plan responsive to each follows:

40 CFR 257.81 Run-on and Run-off Controls for CCR landfills

- (a) The owner or operator of an existing or new CCR landfill or any lateral expansion of a CCR landfill must design, construct, operate and maintain (Section 2):
 - (1) A run-on control system to prevent flow onto the active portion of the CCR unit during the peak discharge from a 24-hour, 25-year storm; and
 - (2) A run-off control system from the active portion of the CCR unit to collect and control at least the water volume resulting from a 24-hour, 25-year storm
- (b) Run-off from the active portion of CCR unit must be handled in accordance with the surface water requirements under §257.3-3 (Section 3).

Selected definitions from the CCR Rule are provided below.

Active portion means that part of the CCR unit that has received or is receiving CCR or non-CCR waste and that has not completed closure in accordance with §257.102.

Closed means placement of CCR in a CCR unit has ceased, and the owner or operator has completed closure of the CCR unit in accordance with § 257.102 and has initiated post-closure care in accordance with § 257.104.

CCR (coal combustion residuals) means fly ash, bottom ash, boiler slag, and flue gas desulfurization materials generated from burning coal for the purpose of generating electricity by electric utilities and independent power producers.

CCR Landfill means an area of land or an excavation that receives CCR and which is not a surface impoundment, an underground injection well, a salt dome formation, a salt bed formation, an underground or surface coal mine, or a cave. For purposes of this subpart, a CCR landfill also includes sand and gravel pits and quarries that receive CCR, CCR piles, and any practice that does not meet the definition of a beneficial use of CCR.

CCR Unit means any CCR landfill, CCR surface impoundment, or lateral expansion of a CCR unit, or a combination of more than one of these units, based on the context of the paragraph(s) in which it is used. This term includes both new and existing units, unless otherwise specified.

Qualified Professional Engineer means 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.

Run-off means any rainwater, leachate, or other liquid that drains over land from any part of a CCR landfill or lateral expansion of a CCR landfill.

Run-on means any rainwater, leachate, or other liquid that drains over land onto any part of a CCR landfill or lateral expansion of a CCR landfill.

SECTION 2

LANDFILL RUN-ON AND RUN-OFF CONTROLS

2.1 Design and Construction

The design for the Iatan CCR Landfill storm water run-on and run-off control system was completed in 2007 by Burns & McDonnell Engineering, Inc. (Burns & McDonnell).³ The design was developed and sealed by a professional engineer licensed in the State of Missouri and in accordance with the Missouri Department of Natural Resources (MDNR) rules for Utility Waste Landfills⁴. These rules require the run-on and run-off control systems for utility waste landfills to be based on the 24-hour, 25-year storm event. The MDNR reviewed and approved the design of the landfill and storm water management system in 2007.⁵

The storm water system design for the landfill consists of benches, berms, swales, channels, culverts, and letdown channels designed with typical slopes of between 0.5% and 25%; and a storm water run-off pond. The components of the storm water management system are constructed commensurate with landfill construction. A perimeter landfill berm surrounds the active landfill area, which includes Phases 1 and 2 of the three planned phases, which prevents run-on. Landfill runoff is routed to the landfill's stormwater pond before release through an NPDES-permitted outfall or reuse by the station.

2.2 Run-on Controls

The landfill, including the Phase I and II active areas, is designed and constructed within an elevated, engineered berm consisting of compacted cohesive soil material. The berm was constructed in accordance with the plans approved by the MDNR. The berm is constructed to a minimum elevation of 787.0 feet National Geodetic Vertical Datum (NGVD), 1929. The 100-year flood elevation of the nearby Missouri River is approximately 784.5 feet NGVD. Review of record construction documents and related surveys^{6, 7, 8} indicate the berm was constructed to planned elevations. Since the landfill berm system is approximately 2.4 feet above the 100-year flood, the run-on protection system exceeds the requirement to provide protection from run-on from the 24-hour, 25-year storm event.

2.3 Run-off Controls

The run-off control system consists of benches, berms, swales, channels, culverts and letdown channels, as well as a storm water pond. The storm water management system runoff components for Phases I and II were constructed in accordance with the plans approved by the MDNR⁵. The design basis for the sizing of these components was the 24-hour, 25-year storm event. The runoff controls are constructed during phased landfill construction events. Contained storm water is managed through the leachate collection system to the landfill leachate pond discharge via a NPDES-permitted outfall. Contact runoff water is routed to the landfill perimeter ditches to the landfill storm water pond for reuse at the plant or discharge via a NPDES-permitted outfall.

Table 1 presents the excess capacities of the storm water run-off system components for the design storm event.

Table 2-1 Run-off Control Protection*

Storm Water Management System Component	Calculated Excess Capacity/Parameter*	Units
Pond	34.3	acre-ft
Letdown Channels	0.7	feet freeboard
Culverts	0.0**	cubic feet per second
Berms-Landfill Top	1.7	feet freeboard
Berm/Ditch on 25% Sideslope	1.8	feet freeboard
Benches/Swales on 25% Sideslope	0.03	feet freeboard
Berm/Ditch at Landfill Base	1.7	feet freeboard

*For highest calculated flows for the final landfill design. Culverts have additional capacity when additional available headwater depths are considered.

** Additional flow capacity at the location with the highest flow is approximately 10 cubic feet per second, approximately 137% of design storm requirements.

The run-off protection system meets or exceeds the requirement to provide protection from run-off from the 24-hour, 25-year storm event.

SECTION 3

RUN-OFF CONTROL FOR §257.3-3

The run-off from the Iatan CCR Landfill's active area is routed to the unit's storm water pond or reused by the station and discharged via an NPDES-permitted outfall or reused by the station. Per the current NPDES permit, discharged water is tested for pollutants and the discharge meets the minimum regulatory requirements of the permit. Therefore, the facility does not cause a discharge of pollutants into waters of the United States that is in violation of the requirements of the NPDES under Section 402 of the Clean Water Act, and therefore meets the requirements of 40 CFR 257.81 (b).

SECTION 4

AMENDMENT OF RUN-ON AND RUN-OFF CONTROL PLAN

The owner or operator may amend the written run-off and run-on control system plan at any time provided the revised plan is placed in the facility's operating record as required by § 257.105(g)(3).

The owner or operator must amend the written run-on and runoff control system plan whenever there is a change in conditions that would substantially affect the written plan in effect. Additionally, the owner or operator of the CCR unit must prepare periodic run-on and runoff control system plans every five years. The date of completing the initial plan is the basis for establishing the deadline to complete the first subsequent plan.

The owner or operator may complete any required plan prior to the required deadline provided the completed plan is placed into the facility's operating record within a reasonable amount of time.

A written certification from a qualified professional engineer that the initial and any amendment of the written run-on and run-off control system plan meets the requirements of § 257.81 must be obtained. Plan changes will be documented using the Revision History which prefaces this Plan. Changes to this plan will be certified by a Qualified Professional Engineer.

SECTION 5

ENGINEERING CERTIFICATION

Pursuant to 40 CFR 257.81 (c) (5) and by means of this certification, I attest that:

- (i) I am a Qualified Professional Engineer licensed in the State of Missouri;
- (ii) I am familiar with the requirements of the CCR Rule (40 CFR 257);
- (iii) I, or my agent, have visited and examined the Iatan Generating Station landfill;
- (iv) I do hereby certify to the best of my knowledge, information, and belief that this Run-on and Run-off Control System Plan has been prepared in accordance with good engineering practice, including consideration of applicable industry standards, and with the requirements of the CCR Rule;
- (v) this Run-on and Run-off Control System Plan meets the requirements of 40 CFR 257.81 (c); and
- (vi) the pages certified herein include Pages i, ii, 1 through 7, altogether a total of 9 pages in a protected Adobe™ document.

Walter J. Martin, P.E.

Printed Name of Qualified Professional Engineer
1200 Main St, Kansas City, MO 64105, 816-556-2200

P.E. SEAL, STATE OF MISSOURI



SECTION 6

REFERENCES

1. U.S. Environmental Protection Agency, Standards for the Disposal of Coal Combustion Residuals in Landfills and Surface Impoundments, 40 CFR §257, Federal Register 80, Subpart D, April 17, 2015.
2. Kansas City Power & Light Company, Review of Iatan CCR Landfill Storm Water Plan Calculations, 2016.
3. Burns & McDonnell Engineering, Inc., Appendix J, Utility Waste Landfill Construction Permit Application for Kansas City Power & Light Company, Iatan Generating Station, Platte County, Missouri, January 2007.
4. Missouri Department of Natural Resources, Code of State Regulations, Rules of Department of Natural Resources, Division 80, Solid Waste Management, Chapter 11, Utility Waste Landfill, 1997.
5. Missouri Department of Natural Resources, Solid Waste Permit, Kansas City Power & Light Company, Iatan Generation Station Utility Waste Landfill, Solid Waste Disposal Area Construction Permit Number 0916501, Platte County, Missouri, Issue Date: July 16, 2007.
6. Burns & McDonnell Engineering Company, Inc., Iatan Utility Waste Landfill, Phase I Operating Permit Application, prepared for, Kansas City Power & Light Company, Kansas City, Missouri, October 2008.
7. Geotechnology, Inc., Construction Quality Assurance Report, Iatan Generating Station Utility Waste Landfill, Phase II-A Construction, January 20, 2016.
8. Geotechnology, Inc., Construction Quality Assurance Report, Iatan Generating Station Utility Waste Landfill, Phase II-B Construction, April 27, 2016.