

Spurlock Station Landfill Post-Closure Plan



East Kentucky Power Cooperative

Coal Combustion Residual Rule Compliance

**Revision 0
October 13, 2016**

Spurlock Station Landfill Post-Closure Plan

Prepared for

**East Kentucky Power Cooperative
Coal Combustion Residual Rule Compliance
Winchester, Kentucky**

**Revision 0
October 13, 2016**

Prepared by

**Burns & McDonnell Engineering Company, Inc.
Kansas City, Missouri**

COPYRIGHT © 2016 BURNS & McDONNELL ENGINEERING COMPANY, INC.

INDEX AND CERTIFICATION

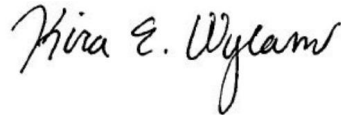
East Kentucky Power Cooperative Spurlock Station Landfill Post-Closure Plan

Report Index

<u>Chapter Number</u>	<u>Chapter Title</u>	<u>Number of Pages</u>
1.0	Introduction	1
2.0	Post-Closure Plan	3
3.0	Revisions and Amendments	1
4.0	Record of Revisions and Updates	1
Appendix A	Site Plan	1
Appendix B	Post-Closure Care Annual Inspection Checklist	6

Certification

I hereby certify, as a Professional Engineer in the Commonwealth of Kentucky, that the information in this document was assembled under my direct supervisory control. This report is not intended or represented to be suitable for reuse by the East Kentucky Power Cooperative or others without specific verification or adaptation by the Engineer.



Kira Wylam, P.E. (KY #30195)

Date: 10/13/2016

TABLE OF CONTENTS

	<u>Page No.</u>
1.0 INTRODUCTION	1-1
2.0 POST-CLOSURE PLAN	2-1
2.1 Post-Closure Compliance.....	2-1
2.2 Description of Post-Closure Activities	2-1
2.2.1 Groundwater Monitoring	2-2
2.2.2 Site Inspections	2-2
2.3 Post-Closure Contact	2-2
2.4 Property Use During Post-Closure Care Period.....	2-3
2.5 Completion of Post-Closure Care	2-3
3.0 REVISIONS AND AMENDMENTS.....	3-1
4.0 RECORD OF REVISIONS AND UPDATES.....	4-1
APPENDIX A – SITE PLAN	
APPENDIX B – POST-CLOSURE CARE ANNUAL INSPECTION CHECKLIST	

LIST OF ABBREVIATIONS

<u>Abbreviation</u>	<u>Term/Phrase/Name</u>
BMcD	Burns & McDonnell
CCR	Coal Combustion Residual
CFR	Code of Federal Regulations
EKPC	East Kentucky Power Cooperative
EPA	Environmental Protection Agency
KDEP	Kentucky Department of Environmental Protection
KPDES	Kentucky Pollutant Discharge Elimination System
KDWM	Kentucky Division of Waste Management
RCRA	Resource Conservation and Recovery Act
SAP	Sampling and Analysis Plan
U.S.C.	United States Code

1.0 INTRODUCTION

On April 17, 2015, the Environmental Protection Agency (EPA) issued the final version of the federal Coal Combustion Residual Rule (CCR Rule) to regulate the disposal of coal combustion residual (CCR) materials generated at coal-fired units. The rule will be administered as part of the Resource Conservation and Recovery Act (RCRA, 42 United States Code [U.S.C.] §6901 et seq.), using the Subtitle D approach.

East Kentucky Power Cooperative (EKPC) is subject to the CCR Rule and as such must develop a Post-Closure Plan per 40 Code of Federal Regulations (CFR) §257.104. According to §257.104(a), post-closure care is required for all CCR units which are closed by leaving CCR in place. This document serves as EKPC's Post-Closure Plan for the existing CCR Landfill (as defined in §257.53) at Spurlock Station. The Post-Closure Plan must contain the following per §257.104(d)(1):

- A description of post-closure care maintenance activities (and frequency of these activities) including the following:
 - Maintaining the integrity and effectiveness of the final cover system, including making repairs to the final cover as necessary to correct the effects of settlement, subsidence, erosion, or other events, and preventing run-on and run-off from eroding or otherwise damaging the final cover.
 - Maintaining the groundwater monitoring system and monitoring the groundwater in accordance with the requirements of §257.90 through §257.98.
 - For new CCR Landfills or any lateral expansion of a CCR Landfill, maintaining the integrity and effectiveness of the leachate collection and removal system and operating the leachate collection and removal system in accordance with the requirements of §257.70.
- The name, address, telephone number, and email address of the person or office to contact about the facility during the post-closure care period.
- A description of the planned uses of the property during the post-closure period.
 - Post-closure use of the property shall not disturb the integrity of the final cover, liner(s), or any other component of the containment system, or the function of the monitoring system unless necessary to comply with §257.104 or if the owner or operator of the CCR unit demonstrates that the disturbance (including any removal of CCR) will not increase the potential threat to human health or the environment.

2.0 POST-CLOSURE PLAN

Spurlock Station (Spurlock) is owned and operated by EKPC. Spurlock is a 1,346 net megawatt (MW) coal-fired power plant located in Mason County, approximately five miles northwest of Maysville, Kentucky. The Spurlock CCR Landfill (Landfill) is a special waste landfill permitted by the Kentucky Department of Environmental Protection (KDEP) Permit No. 081-00005. The Landfill is located on the west side of the plant site. The most recent design permit submittal prepared by Kenvirons, Inc. for the Landfill was reviewed and accepted by the Kentucky Division of Waste Management (KDWM) on March 28, 2003. The permit drawings reviewed appear to be in general accordance with conventional landfill design and permitting standards. The final grading plans included in the permit drawings can be found in Appendix A.

The Closure Plan was prepared by Burns & McDonnell per section §257.102(b)(1) of the Federal CCR Rule. The Landfill will be closed and capped in place as described in the Closure Plan and as permitted within Permit No. 081-00005. Permit drawings for landfill closure were prepared by Kenvirons, Inc. in 2012.

2.1 Post-Closure Compliance

Post-closure maintenance will be as described in Section §257.104(b) of the CCR Rule. This Section includes requirements for maintenance and inspection of the final cover and groundwater monitoring activities for a period of 30 years. The Landfill is an existing landfill and is not subject to the design criteria under §257.70 for new CCR landfills or lateral expansions of a CCR landfill. Therefore, the Landfill is exempt from the leachate collection and removal system criteria under §257.104(b)(2).

2.2 Description of Post-Closure Activities

Final cover inspection and maintenance will be conducted for a period of 30 years after the completion of closure of the Landfill. Inspection and maintenance activities will be monitored during annual inspections that will occur throughout the post-closure care period. Inspection activities are discussed further in Section 2.2.2. Groundwater monitoring will occur separate from the annual inspections and will be as described below. If, at the end of the 30-year post-closure care period, the Landfill is operating under an Assessment Monitoring Program in accordance with §257.95, EKPC will continue to conduct post-closure care until the Landfill returns to the Detection Monitoring Program in accordance with §257.95.

2.2.1 Groundwater Monitoring

EKPC will conduct sampling of the Landfill groundwater monitoring network per Section §257.90 through Section §257.98 of the CCR Rule for the entire 30 years of post-closure care. Should any of the sampling activities cause EKPC to enter into an Assessment Monitoring Program at the end of the 30-year post-closure care period, EKPC will continue monitoring the groundwater until they are able to return to a Detection Monitoring Program per Section §257.95. Sampling for compliance with the CCR Rule will be performed according to the Sampling and Analysis Plan (SAP) for groundwater monitoring at the Landfill.

2.2.2 Site Inspections

Site inspections will be performed annually during the post-closure care period to confirm that the integrity and effectiveness of the final cover system is maintained per Section §257.104(b)(1). Maintenance of the final cover will include making repairs to the final cover as necessary to correct the effects of settlement, subsidence, erosion, or other events, and preventing run-on and run-off from eroding or otherwise damaging the final cover. During the site inspections, EKPC will also inspect groundwater monitoring wells to confirm that they are in accordance with the Groundwater Monitoring Plan.

In order to verify these requirements are being met, EKPC will continue annual site inspections through the entirety of the post-closure care period. The annual inspections will include the inspection checklist located in Appendix B.

2.3 Post-Closure Contact

EKPC will designate and list a contact person during the post-closure care period per §257.104 (d)(ii). The following individual will be EKPC’s designated contact person for post-closure care at the Landfill:

Name	Jerry Purvis
Affiliation	Director of Environmental Affairs East Kentucky Power Cooperative
Address	4775 Lexington Road, Winchester, KY 40391
Phone No.	(859) 744-4812
Email	CCR@ekpc.coop

2.4 Property Use During Post-Closure Care Period

The Landfill will be utilized as grassland and wildlife areas during the post-closure care period. The property is located within a secured power plant facility, and will only be accessed during inspection and groundwater monitoring activities.

2.5 Completion of Post-Closure Care

No later than 60 days following the completion of the post-closure care period, a notification verifying that post-closure care has been completed will be prepared and placed in the facility's CCR Operating Record. The notification will include a certification by a qualified professional engineer in the Commonwealth of Kentucky that post-closure care has been completed in accordance with the written Closure Plan in effect and the requirements of §257.104.

3.0 REVISIONS AND AMENDMENTS

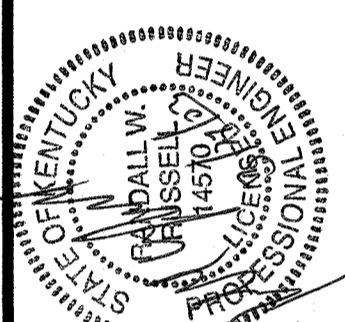
The initial Post-Closure Plan will be placed in the CCR Operating Record by October 17, 2016. The plan may be amended at any time, and is required to do be amended whenever there is a change in the operation of the CCR unit that would substantially affect the written plan in effect or whenever unanticipated events necessitate a revision of the written Post-Closure Plan after post-closure activities have commenced.

The Post-Closure Plan will be amended 60 days prior to a planned change in operation of the facility or the CCR unit, or no later than 60 days after an unanticipated event requires the need to revise the written Post-Closure Plan in effect. If a written Post-Closure Plan is revised after post-closure activities have commenced, the written Post-Closure Plan will be amended no later than 30 days following the triggering event. Each amendment to the written plan in effect will be certified by a qualified professional engineer in the Commonwealth of Kentucky. All amendments and revisions will be placed on the CCR public website within 30 days following placement in the facility's CCR Operating Record. A record of revisions made to this document is included in Section 4.0.

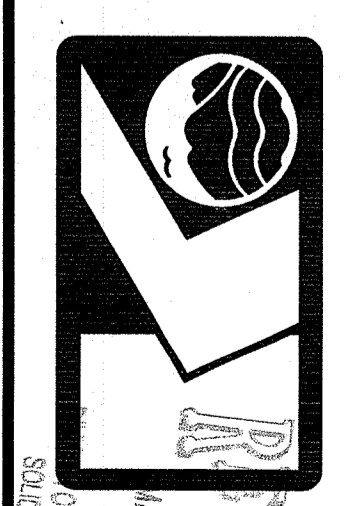
4.0 RECORD OF REVISIONS AND UPDATES

Revision Number	Date	Revisions Made	By Whom
0	10/13/2016	Issued for Initial Compliance	Burns & McDonnell

APPENDIX A – SITE PLAN

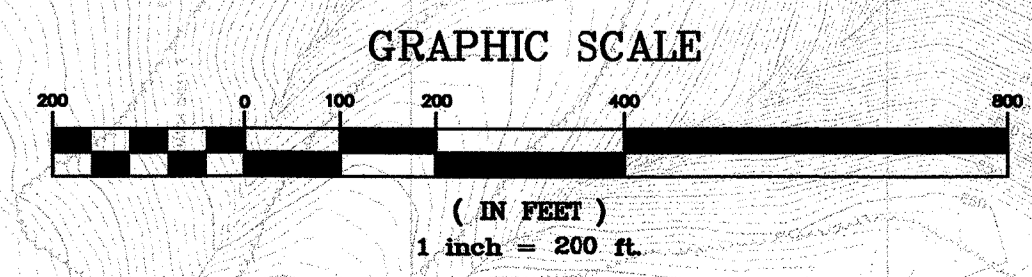
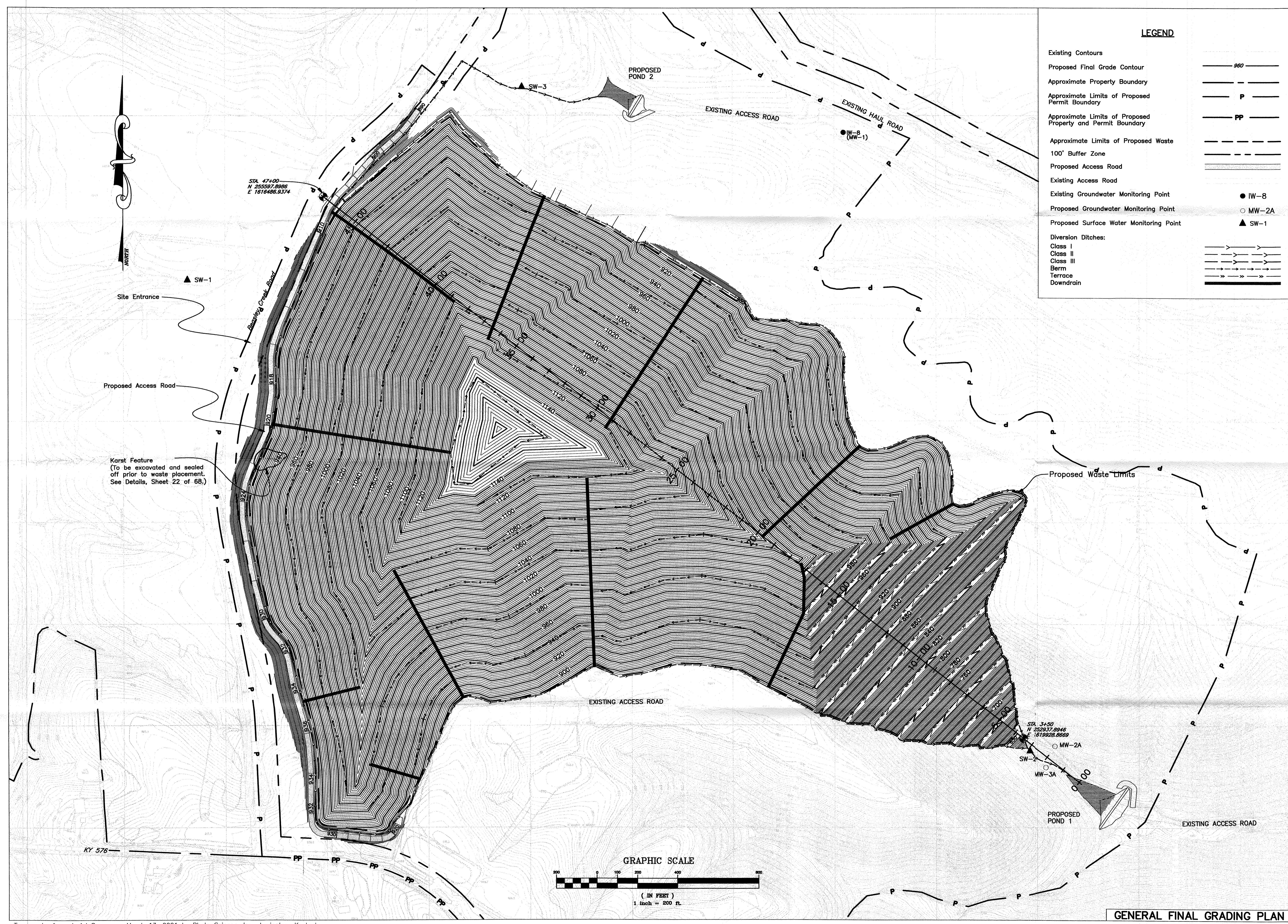


DRAWN BY: WJ II
CHECKED BY: STG
DATE: February, 2002
SCALE: 1" = 200'
REVISIONS:
9-29-02 Karst Buffer



LEGEND

Existing Contours	
Proposed Final Grade Contour	
Approximate Property Boundary	
Approximate Limits of Proposed Permit Boundary	
Approximate Limits of Proposed Property and Permit Boundary	
Approximate Limits of Proposed Waste 100' Buffer Zone	
Proposed Access Road	
Existing Access Road	
Existing Groundwater Monitoring Point	
Proposed Groundwater Monitoring Point	
Proposed Surface Water Monitoring Point	
Diversion Ditches:	
Class I	
Class II	
Class III	
Berm	
Terrace	
Downdrain	



GENERAL FINAL GRADING PLAN

Topography from Aerial Survey on March 13, 2001 by Photo Science, Inc., Lexington, Kentucky.

APPENDIX B – POST-CLOSURE CARE ANNUAL INSPECTION CHECKLIST

**Spurlock Station CCR Landfill
Post-Closure Care
Annual Inspection Checklist Form**

Facility Name:	
CCR Landfill Name / Designation #:	
Date of Inspection:	
Weather Conditions:	
Name of Qualified Inspector (performing inspection):	
Signature:	

Area	Condition Items	YES	NO	MONITOR *	Inspector Observations and Photo Number(s)
Landfill	Surface Cracking	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
	Misalignment	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
	Displacements (also referred to as slides, slumps, slips and sloughs)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
	Animal Burrows	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
	Slope Erosion (final cover)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
	Seepage	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
	Leachate Collection	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
	Lacking Vegetation	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

* Indicates condition to be monitored by inspector but no action is required at this time

**Spurlock Station CCR Landfill
 Post-Closure Care
 Annual Inspection Checklist Form**

Area	Condition Items	YES	NO	MONITOR *	Inspector Observations and Photo Number(s)
Landfill (Continued)	Liner Distress/Cracks/Holes (If Liner is Exposed)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
	Inadequate Slope Protection	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
	Woody Vegetation	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
	Debris	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
	Settlement (or depressions)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
	Signs of Vandalism	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
	Other (Describe)				

* Indicates condition to be monitored by inspector but no action is required at this time

**Spurlock Station CCR Landfill
Post-Closure Care
Annual Inspection Checklist Form**

Area	Condition Items	YES	NO	MONITOR *	Inspector Observations and Photo Number(s)
Drainage Channels	Signs of Piping and Other Internal Erosion	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
	Animal Burrows	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
	Woody Vegetation	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
	Signs of Seepage	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
	Inadequate Slope Protection	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
	Signs of Movement or Structural Damage	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
	Abnormal Discharge Discoloration	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
	Discharge of Sediment or Debris	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
	Channel Lining or Stone Cover Not Intact	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
	Discharge Pipe Damaged or Requiring Remedial Action	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
	Outlet/Overflow Structure Require Remedial Action	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
	Other (Describe)				

* Indicates condition to be monitored by inspector but no action is required at this time

**Spurlock Station CCR Landfill
Post-Closure Care
Annual Inspection Checklist Form**

Area	Condition Items	YES	NO	MONITOR *	Inspector Observations and Photo Number(s)
Sediment Pond 1 (KPDES Outfall Structure 008)	Signs of Piping and Other Internal Erosion	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
	Animal Burrows	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
	Woody Vegetation	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
	Signs of Seepage	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
	Inadequate Slope Protection	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
	Signs of Movement or Structural Damage	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
	Abnormal Discharge Discoloration	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
	Discharge of Sediment or Debris	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
	Stone Cover Not Intact	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
	Discharge Pipe Damaged or Requiring Remedial Action	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
	Outlet/Overflow Structure Require Remedial Action	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
	Other (Describe)				

* Indicates condition to be monitored by inspector but no action is required at this time

**Spurlock Station CCR Landfill
Post-Closure Care
Annual Inspection Checklist Form**

Area	Condition Items	YES	NO	MONITOR *	Inspector Observations and Photo Number(s)
Sediment Pond 2 (KPDES Outfall Structure 001)	Signs of Piping and Other Internal Erosion	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
	Animal Burrows	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
	Woody Vegetation	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
	Signs of Seepage	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
	Inadequate Slope Protection	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
	Signs of Movement or Structural Damage	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
	Abnormal Discharge Discoloration	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
	Discharge of Sediment or Debris	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
	Stone Cover Not Intact	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
	Discharge Pipe Damaged or Requiring Remedial Action	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
	Outlet/Overflow Structure Require Remedial Action	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
	Other (Describe)				

* Indicates condition to be monitored by inspector but no action is required at this time

**Spurlock Station CCR Landfill
Post-Closure Care
Annual Inspection Checklist Form**

		YES	NO
1.	<p>Per observation of the above items, are there remedial actions that need to take place. If yes, discuss below and attach photos:</p> <p>_____</p> <p>_____</p> <p>_____</p> <p>_____</p>	<input type="checkbox"/>	<input type="checkbox"/>
2.	<p>Per observations at time of inspection, are there conditions that would impede performing the recommended remedial actions or conditions that performing immediate remedial action could result in damage to the unit (i.e. adverse weather conditions/wet periods/etc.). If yes, discuss below and attach photos:</p> <p>_____</p> <p>_____</p> <p>_____</p> <p>_____</p>	<input type="checkbox"/>	<input type="checkbox"/>
3.	<p>Other concerns or comments:</p> <p>_____</p> <p>_____</p> <p>_____</p> <p>_____</p>	<input type="checkbox"/>	<input type="checkbox"/>

* Indicates condition to be monitored by inspector but no action is required at this time



CREATE AMAZING.

Burns & McDonnell World Headquarters
9400 Ward Parkway
Kansas City, MO 64114
O 816-333-9400
F 816-333-3690
www.burnsmcd.com