



Kentucky Energy and Environment Cabinet  
Department for Environmental Protection  
Division of Waste Management

**PERMIT**

**Facility:** **Duke Energy East Bend Station Special Waste Disposal Facility**  
6293 Beaver Rd  
Union, KY 41091

**Permittee:** **Duke Energy**  
139 E 4th St Rm EM740  
Cincinnati, OH 45202

**Agency Interest:** **Duke Energy KY East Bend**  
6293 Beaver Rd  
Union, KY 41091

The Division has issued the permit under the provisions of KRS Chapter 224 and regulations promulgated pursuant thereto. This permitted activity or activities are subject to all conditions and operating limitations contained herein. Issuance of this permit does not relieve the permittee from the responsibility of obtaining any other permits, licenses or approvals required by this Division or other state and local agencies.

No deviation from the plans and specifications submitted with your application or any condition specified herein is allowed, unless authorized in writing from the Division. Violation of the terms and conditions specified herein may render this permit null and void. All rights of inspection by representatives of the Division are reserved. Conformance with all applicable Waste Management Regulations is the responsibility of the permittee.

**Agency Interest ID #:** 176  
**Solid Waste Permit #:** SW00800006  
**County:** Boone

**Permitted Activities:**

Subject Item	Activity	Type	Status
ACTV004	Special Waste Landfill-Coal/00800006	Construction/Operation	Active
ACTV006	Special Waste Landfill-Coal/00800006	Construction/Operation	Active
ACTV008	Coal Combustion Residuals Surface Impoundment/00800006	Registered Permit by Rule	Active

Permit Number: SW00800006

Agency Interest ID: 176

PERMIT

**Acreage Summary:**

**Waste Disposal Area (in Acres):**

Activity	Disposal Area
Coal Combustion Residuals Surface Impoundment	53.40
Special Waste Landfill-Coal	162.00
Special Waste Landfill-Coal	203.70
<b>Total Disposal Area</b>	<b>419.10</b>
<b>Total Permitted Area</b>	<b>470.40</b>

**Cost Estimate Summary:**

Coverage Type	Cost Estimate	Effective	Comments
Closure	\$5,896,690.00	08/18/2016	Additional information can be found under Facility Information and/or Conditions
Post-Closure	\$1,154,833.00	08/18/2016	Additional information can be found under Facility Information and/or Conditions

**Financial Assurance Summary:**

The owner or operator shall maintain the following financial assurance approved by the Division in compliance with KRS Chapter 224.40-650, KRS Chapter 224.50-862, 401 KAR 45:080, and 401 KAR 48:310:

Instrument Type	Instrument Number	Amount	Date Received	Comments
Surety Bond	B8087915	\$10,000.00	05/17/1984	
Corporate Financial Test	0	\$2,700,892.00	07/14/2017	
Corporate Financial Test	1	\$4,427,734.00	07/14/2017	

**First Operational Permit Effective Date: 07/16/1982 -- ACTV0004, Inert Landfill Activity**

**Permit Effective Date: 07/16/1992**

**Permit Expiration Date: Life of Facility**

**Permit issued: 09/08/2017**



**Danny Anderson, P.E.  
Manager, Solid Waste Branch**

Permit Number: SW00800006

Agency Interest ID: 176

PERMIT

**Permit Conditions:**

**Facility Information and/or Conditions**

The closure cost estimate for ACTV0004 (East Landfill) is \$2,088,311.00 and the post-closure estimate is \$579,317.00. This estimate was approved on August 18, 2016 under APE20160004.

The closure cost estimate for ACTV0006 (West Landfill) is \$3,808,379.00 and the post-closure estimate is \$575,516.00. This estimate was approved under APE20070004 and updated under APE20160004.

**Subject Items**

**ACTV0004 - Special Waste Landfill-Coal**

**Standard Requirements:**

1. General: The owner or operator of a special waste facility shall comply with KRS Chapter 224 and 401 KAR Chapters 30, 40 and 45 for the construction and operation of special waste facilities. [KRS 224.50-760]
2. General: For construction and operation of the special waste landfill, the owner or operator shall comply with KRS Chapter 224.50-760, 401 KAR 45:030, 45:110 and the approved permit application(s). [401 KAR 45:110]
3. General: The owner or operator may only accept waste at the special waste landfill from the sources which are approved per 401 KAR 45:020, Section 2(1)(a), 45:030, Section 8(1)(a), and 45:110. [401 KAR 45:110]

**Variances, Alternate Specifications and Special Conditions:**

1. Wastestreams: The permittee may accept fly ash from the Zimmer Station Facility, Clermont Co., Moscow, Ohio. [401 KAR 45:110 Section 3(7)]
2. Wastestreams: The permittee may accept fly ash from the Miller Brewery Facility, Butler Co., Trenton, Ohio. [401 KAR 45:110 Section 3(7)]
3. Wastestreams: The permittee may accept special waste streams as described in the approved plans and applications from the East Bend Facility, Boone Co., Rabbit Hash, Kentucky. [401 KAR 45:110 Section 3(7)]
4. Wastestreams: The permittee may accept fly ash and dry FGD Waste from the City of Hamilton, Butler Co., Ohio. [401 KAR 45:110 Section 3(7)]
5. Wastestreams: The permittee may accept fly ash, bottom ash, and plastic for truck lining from the Miami Fort facility in Hamilton Co., North Bend, Ohio. [401 KAR 45:110 Section 3(7)]
6. Wastestreams: The permittee may accept gypsum from the Killen Station, Adams Co., Wrightsville, Ohio. [401 KAR 45:110 Section 3(7)]
7. Wastestreams: The Permittee may accept fly ash from the Jefferson Smurfit Facility, Butler Co., Middletown, Ohio. [401 KAR 45:110 Section 3(7)]

Permit Number: SW00800006

Agency Interest ID: 176

PERMIT

8. Wastestreams: The permittee may accept fly ash from Duke Energy Generation Services of St. Bernard, LLC, Butler Co., Cincinnati, Ohio. [401 KAR 45:110 Section 3(7)]
9. Wastestreams: The permittee may accept fly ash from the Spurlock Station, Mason Co., Maysville, Kentucky. The permittee may accept up to 60,000 tons annually, and additional information may be found in the approved application, APE20120005. [401 KAR 45:110 Section 3(7)]
10. Wastestreams: The permittee may accept fly ash from the Ghent Generating Station, Carroll Co., Ghent, Kentucky. The permittee may accept up to 100,000 tons annually and additional information may be found in the approved application, APE20140004. [401 KAR 45:110 Section 3(7)]
11. General: This Special Waste Landfill, known as the East Special Waste Landfill (ACTV0004), consists of 162 acres of disposal area and 185 acres of total permitted area. [401 KAR 45:110 Section 3(7)]
12. Wastestreams: The permittee may accept fly ash from Gallagher Generating Station, New Albany, Indiana and from the Clifty Creek Generating Station, Madison, Indiana. The permittee may accept up to 450 tons per day from both stations in accordance with the approved application, APE20160004. [401 KAR 45:110 Section 3(7)]
13. Financial Assurance: The maximum extent of operation includes the area of the landfill identified by an operating permit and for which the final cover Construction Progress Report has not yet been approved by the cabinet. The current maximum extent of operation for this East Special Waste Landfill (ACTV0004) is less than or equal to 115 acres. [401 KAR 45:080]
14. Groundwater Monitoring: The permittee shall submit a revised groundwater monitoring plan for the East Landfill and ash pond for DWM review by November 15, 2017. The revised plan shall consider present groundwater flow conditions at the site and the parameters reflected in the present permit. [401 KAR 45:140 Section 2, 401 KAR 45:160]
15. Wastestreams: The permittee may accept fly ash from the Beckjord Facility, Clermont Co., New Richmond, Ohio. [401 KAR 45:110 Section 3(7)]

**Approved Applications - The owner or operator shall comply with applicable statutes and regulations and the following approved applications:**

1. 06-07-82 - First Operational Permit for Inert Landfill (effective on 7-16-82)
2. 04-05-84 - Modification for Inert Landfill
3. 07-15-87 - Renewal for Inert Landfill
4. 03-01-96 - Permit Renewal - conversion to Special Waste (effective date 7-16-92)
5. 07-24-96 - Groundwater Monitoring Plan - LI1MOGW1
6. 01-16-97 - Modification Add/Delete Waste Sources - MOAD1
7. 11-12-97 - Modification Add/Delete Waste Sources - MOAD2
8. 11-27-00 - Modification Add/Delete Waste Sources - MOAD3
9. 11-22-04 - APE20040001 - Minor Modification - Add/Delete Modification
10. 04-05-05 - APE20040005 - Minor Modification - Add/Delete Modification
11. 06-07-05 - AIN20010001 - Groundwater Assessment Plan
12. 07-13-05 - APE20050001 - Minor Modification - Leachate Collection System

Permit Number: SW00800006

Agency Interest ID: 176

PERMIT

13. 12-12-05 - AIN20050001 - Groundwater Assessment Plan - East Landfill
14. 10-04-06 - APE20060001 - Permit Transfer (to Union Light, Heat, and Power Coop)
15. 10-04-06 - APE20060006 - Minor Modification - Change the Active Area from 40 Acres to 55 Acres
16. 12-06-06 - AIN20060001 - Groundwater Assessment Report - East Landfill
17. 02-16-07 - APE20070001 - Construction Progress Report - Cells P-15 & P16
18. 03-20-07 - APE20060007 - Permit Transfer (to Duke Energy Kentucky, Inc.)
19. 08-15-07 - APE20070003 - Minor Modification - Add Source (bottom ash and plastic for truck lining from Miami Fort)
20. 08-15-07 - APE20070007 - Minor Modification previously labeled as APE20070005 - Add Source (Gypsum from Killen Station)
21. 04-14-11 - CMN20100015 - Acceptance Letter Issued, Groundwater Assessment Report Update - Ash Pond and East Landfill
22. 07-06-12 - APE20120005 - Minor Modification - Add Source (Fly Ash from Spurlock Station)
23. 08-15-12 - AIN20110002 - Groundwater Assessment Report Update - East Landfill
24. 09-22-14 - APE20140004 - Minor Modification - Add Source (Fly Ash from Ghent Generating Station)
25. 05-06-15 - AIN20140003 - Revised Groundwater Assessment Plan - Site-Wide
26. 06-08-15 - AIN20150002 - Groundwater Assessment Report Update - East Landfill
27. 08-18-16 - APE20160004 - Minor Modification - Add Source (Fly Ash from Gallagher Generating Station & Clifty Creek Generating Station)
28. 08-18-16 - APE20150007 - Minor Modification - Chimney Drain, Waste Boundary, and Waste Placement Lift Thickness

## **ACTV0006 - Special Waste Landfill-Coal**

### **Standard Requirements:**

1. General: The owner or operator of a special waste facility shall comply with KRS Chapter 224 and 401 KAR Chapters 30, 40 and 45 for the construction and operation of special waste facilities. [KRS 224.50-760]
2. General: For construction and operation of the special waste landfill, the owner or operator shall comply with KRS Chapter 224.50-760, 401 KAR 45:030, 45:110 and the approved permit application(s). [401 KAR 45:110]
3. General: The owner or operator may only accept waste at the special waste landfill from the sources which are approved per 401 KAR 45:020, Section 2(1)(a), 45:030, Section 8(1)(a), and 45:110. [401 KAR 45:110]

### **Variances, Alternate Specifications and Special Conditions:**

1. Wastestreams: The permittee may accept fly ash from Gallagher Generating Station, New Albany, Indiana and from the Clifty Creek Generating Station, Madison, Indiana. The permittee may accept up to 450 tons per day from both stations in accordance with the approved application, APE20160004. [401 KAR 45:110 Section 3(7)]
2. Groundwater Monitoring: The permittee shall submit a revised groundwater monitoring plan for the West Landfill for DWM review by November 15, 2017. The revised plan shall consider present groundwater flow conditions at the site and the parameters reflected in the present permit. [401 KAR 45:140 Section 2, 401 KAR 45:160]

Permit Number: SW00800006

Agency Interest ID: 176

PERMIT

3. Wastestreams: The permittee may accept special waste streams as described in the approved plans and applications from the East Bend Facility, Boone Co., Rabbit Hash, Kentucky. These wastestreams include fixated FGD waste, bottom ash, and pond ash. [401 KAR 45:110 Section 3(7)]

4. Wastestreams: The permittee may accept fly ash from Duke Energy Generation Services of St. Bernard, LLC, Butler Co., Cincinnati, Ohio. [401 KAR 45:110 Section 3(7)]

5. Wastestreams: The permittee may accept fly ash, bottom ash, gypsum, pond ash, and waste water treatment solids from the Miami Fort facility in Hamilton Co., North Bend, Ohio. [401 KAR 45:110 Section 3(7)]

6. Wastestreams: The permittee may accept fly ash, bottom ash, gypsum, and waste water treatment solids from the Zimmer Station Facility, Clermont Co., Moscow, Ohio. [401 KAR 45:110 Section 3(7)]

7. Wastestreams: The permittee may accept gypsum from the Killen Station, Adams Co., Wrightsville, Ohio. [401 KAR 45:110 Section 3(7)]

8. Financial Assurance: The maximum extent of operation includes the area of the landfill identified by an operating permit and for which the final cover Construction Progress Report has not yet been approved by the cabinet. The proposed maximum extent of operation for this West Special Waste Landfill (ACTV0006) is less than or equal to 60 acres. [401 KAR 45:080]

9. Wastestreams: The permittee may accept fly ash from the Spurlock Station, Mason Co., Maysville, Kentucky. The permittee may accept up to 60,000 tons annually, and additional information may be found in the approved application, APE20120005. [401 KAR 45:110 Section 3(7)]

10. Wastestreams: The permittee may accept fly ash from the Ghent Generating Station, Carroll Co., Ghent, Kentucky. The permittee may accept up to 100,000 tons annually and additional information may be found in the approved application, APE20140004. [401 KAR 45:110 Section 3(7)]

11. Construction Requirements: The owner or operator shall proof-roll all sub-subgrade and subgrade areas in accordance with approved applications and permit. All proof-rolls shall be completed using a minimum 100,000 pound loaded four (4) tire scraper with a minimum capacity of 20 cubic yards or approved equivalency. The Solid Waste Branch must be notified at least 48 hours prior to proof-rolling of the final subgrade surface. [401 KAR 45:110 Section 2, 401 KAR 45:140]

12. General: This Special Waste Landfill, known as the West Special Waste Landfill (ACTV0006), consists of 203.7 acres of disposal area and 232 acres of total permitted area. [401 KAR 45:110 Section 3(7)]

13. Wastestreams: The permittee may accept fly ash, bottom ash, and pond ash from the Beckjord Facility, Clermont Co., New Richmond, Ohio. [401 KAR 45:110 Section 3(7)]

14. Wastestreams: The permittee may accept unfixated FGD Waste from the City of Hamilton, Butler Co., Ohio. [401 KAR 45:110 Section 3(7)]

**Approved Applications - The owner or operator shall comply with applicable statutes and regulations and the following approved applications:**

1. 12-08-2008 - APE20070004 - New Special Waste Activity - West Special Waste Landfill

Permit Number: SW00800006

Agency Interest ID: 176

PERMIT

2. 03-09-2011 - APE20100002 - Groundwater Monitoring Plan Modification - West Special Waste Landfill
3. 02-28-2012 - APE20110004 - Construction Progress Report - Floodplain Area Filling (2.1 acres)
4. 07-06-2012 - APE20120005 - Minor Modification - Add Source (Fly Ash from Spurlock Station)
5. 09-22-2014 - APE20140004 - Minor Modification - Add Source (Fly Ash from Ghent Generating Station)
6. 11-18-2015 - APE20150007 - Minor Modification - Updated Attachment 41 Construction Quality Control Plan
7. 06-13-2016 - APE20150008 - Minor Modification - Sediment Pond and Surface Water Controls
8. 08-18-2016 - APE20160004 - Minor Modification - Add Source (Fly Ash from Gallagher Generating Station & Clifty Creek Generating Station)
9. 10-27-2016 - APE20160007 - Minor Modification - Chimney Drain System
10. 03-23-2017 - APE20170002 - Minor Modification - Surface Water Monitoring Plan Revision
11. 09-08-2017 - APE20170005 - Construction Progress Report - Cell 1 (38.32 acres), Sediment Pond and Contact Water Ditch

## **ACTV0008 - Coal Combustion Residuals Surface Impoundment**

### **Variiances, Alternate Specifications and Special Conditions:**

1. General: The Coal Combustion Residuals Surface Impoundment has been upgraded from a Permit-by-Rule to a Registered Permit-by-Rule in accordance with the requirements of 401 KAR 45:060. [401 KAR 30:031, 401 KAR 45:060 Section 2]
2. General: The owner or operator of a special waste facility shall comply with KRS Chapter 224 and 401 KAR Chapters 30, 40 and 45 for the construction, operation, maintenance, and closure of special waste facilities. [KRS 224.50-760]

### **Approved Applications - The owner or operator shall comply with applicable statutes and regulations and the following approved applications:**

1. 10-04-06 - APE20060001 - Permit Transfer (to Union Light, Heat, and Power Coop)
2. 03-20-07 - APE20060007 - Permit Transfer (to Duke Energy Kentucky, Inc.)
3. 08-15-07 - AIN20070001 - Groundwater Assessment Plan - Ash Pond
4. 07-16-10 - AIN20080001 - Groundwater Assessment Report - Ash Pond
5. 04-14-11 - CMN20100015 - Acceptance Letter Issued, Groundwater Assessment Report Update - Ash Pond and East Landfill
6. 08-15-12 - AIN20110001 - Groundwater Assessment Report Update - Ash Pond
7. 05-06-15 - AIN20140003 - Revised Groundwater Assessment Plan - Site-Wide
8. 06-08-15 - AIN20150001 - Groundwater Assessment Report Update - Ash Pond

### **Financial Assurance**

## **ACTV0001 - Financial Assurance**

### **The following is a history of the financial assurance for this facility:**

1. 07-10-1987 - SB# B80-201654, \$83,000.00
2. 07-06-1992 - SB# B80-201654, \$539,900.00



Permit Number: SW00800006

Agency Interest ID: 176

PERMIT

3. 09-05-2001 - SB# B80-201654, \$564,102.00
4. 09-16-2002 - SB# B80-201654, \$577,534.00
5. 10-23-2003 - Financial Test, \$2,120,500.00
6. 10-31-2003 - SB# B80-201654 released
7. 05-15-2006 - Financial Test, \$2,259,062.00
8. 05-31-2007 - Financial Test, \$2,324,575.00
9. 07-30-2007 - Financial Test, \$2,324,575.00
10. 09-26-2011 - Financial Test, \$2,522,049.00
11. 12-16-2013 - Financial Test, \$2,598,255.00
12. 12-18-2015 - Financial Test, \$2,674,150.00
13. 05-17-1984 - SB# B-80-87915 - \$10,000.00
14. 07-14-2017 - Financial Test, \$2,700,892.00
15. 07-14-2017 - Financial Test, \$4,427,734.00

**Monitoring Conditions**

**GSTR0001 - Groundwater Monitoring - SW: Groundwater Monitoring Group - East Special Waste Landfill**

**Group Members:** STRC0001 - Well MW-1; STRC0002 - Well MW-3; STRC0003 - Well MW-4; STRC0004 - Well MW-5; STRC0005 - Well MW-6; STRC0006 - Well MW-6D; STRC0026 - Well P-7; STRC0028 - Well P-9; STRC0032 - Well MW-7; STRC0040 - Well MW-09; STRC0067 - Well MW-02A

**Standard Requirements:**

1. The owner or operator shall satisfy the requirements of 401 KAR 45:160 for all wastes and waste constituents contained in the site or facility. [401 KAR 45:160 Section 1]
2. The permittee shall monitor for other parameters as required by the cabinet. [401 KAR 45:160 Section 8(2)(c)]
3. The owner or operator shall monitor groundwater on the approved schedule at each approved groundwater monitoring location in accordance with 401 KAR 45:160, the permit, and the approved plans. A table summarizing the parameters to be monitored, their respective limits and monitoring frequency is included herein. [401 KAR 45:160, 401 KAR 45:140 Section 1(1)]
4. The owner or operator shall conduct statistical analysis of the groundwater data in accordance with 401 KAR 45:160 Section 6 and the approved applications. The statistical test chosen shall be conducted separately for each parameter in each well for each monitoring event. The results shall be maintained as part of the facility record throughout the operating and postclosure life of the facility. [401 KAR 45:160 Section 6, 401 KAR 45:140 Section 1(1)]
5. The groundwater analytical data and statistical analysis shall be submitted on forms provided by the cabinet, within sixty (60) days after sampling or 15 days of the completion of statistical analysis, whichever is sooner. [401 KAR 45:160 Section 4]
6. Groundwater monitoring wells shall be constructed and maintained in accordance with 401 KAR 45:160 Section 3, the permit, and the approved plans. [401 KAR 45:160 Section 3, 401 KAR 45:140 Section 1(1)]



Permit Number: SW00800006

Agency Interest ID: 176

PERMIT

7. No monitoring well construction, maintenance, or abandonment may be conducted without prior approval by the Division of Waste Management. [401 KAR 45:140 Section 1(1)]
8. Only a Kentucky Certified Monitoring Well Driller may construct or abandon monitoring wells. [401 KAR 6:320]
9. If the analysis of groundwater sample results indicates contamination (i.e., a statistical or MCL exceedence) as specified in 401 KAR 45:160 Section 5, the owner or operator shall notify the cabinet within (forty-eight) 48 hours of receiving the results and shall arrange to split samples no later than ten (10) days from the receipt of the results. [401 KAR 45:160 Section 5]
10. The owner or operator shall be required to prepare and submit a groundwater contamination assessment plan if laboratory analyses of one (1) or more public or private water supplies or monitoring wells at the site shows the presence of one (1) or more parameters above the maximum contaminant level (MCL) as specified in 401 KAR 30:031 or a statistically significant increase over background levels for parameters that have no MCL. [401 KAR 45:160 Section 5]
11. The owner or operator shall provide alternate water supplies to all affected parties within twenty-four (24) hours of notification of the cabinet that sample results indicate contamination of a drinking water supply if it has been determined that the special waste site or facility is the probable source of the contamination. [401 KAR 45:160 Section 3]
12. If required by the cabinet, groundwater contamination assessment and corrective action shall be performed in full compliance with all provisions of 401 KAR 45:160 Section 5. [401 KAR 45:160 Section 5]

**Variances, Alternate Specifications and Special Conditions:**

1. Groundwater Monitoring: The permittee shall determine the groundwater flow rate and direction in each monitored aquifer zone each time groundwater is sampled, and include one or more potentiometric surface maps in each semiannual monitoring report. [401 KAR 45:140 Section 1(8), 401 KAR 45:140 Section 2]
2. Monitoring: The permittee shall use SW-846 Test Methods for analysis of groundwater and surface water. If SW-846 Test Methods are unavailable, the permittee shall obtain advance approval from the Division of Waste Management prior to using alternate methods. [401 KAR 45:140 Section 2]
3. Groundwater Monitoring: The permittee shall measure "total recoverable metals" concentrations in measuring groundwater quality. Measurement of total recoverable metals captures both the particulate fraction and dissolved fraction of metals in groundwater. Groundwater samples shall not be field-filtered prior to analysis. [401 KAR 45:140 Section 2]
4. The owner or operator shall provide the division a minimum of ten (10) working days advance notice for all groundwater monitoring well construction and abandonment activities pursuant to 401 KAR 6:350 Section 12(2). [401 KAR 45:140 Section 2]

Permit Number: SW00800006

Agency Interest ID: 176

PERMIT

**GSTR0003 - Groundwater Monitoring - SW: Assessment Well Group - East Special Waste Landfill and Ash Pond**

**Group Members:** STRC0003 - Well MW-4; STRC0023 - Well P-4; STRC0024 - Well P-5; STRC0025 - Well P-6; STRC0026 - Well P-7; STRC0027 - Well P-8; STRC0028 - Well P-9; STRC0030 - Well MW-5D (Assessment); STRC0031 - Well MW-8D (Assessment); STRC0039 - Well MW-04D; STRC0041 - Well MW-10

**Standard Requirements:**

1. Groundwater monitoring wells shall be constructed and maintained in accordance with 401 KAR 45:160 Section 3, the permit, and the approved plans. [401 KAR 45:160 Section 3, 401 KAR 45:140 Section 1(1)]
2. No monitoring well construction, maintenance, or abandonment may be conducted without prior approval by the Division of Waste Management. [401 KAR 45:140 Section 1(1)]
3. Only a Kentucky Certified Monitoring Well Driller may construct or abandon monitoring wells. [401 KAR 6:320]

**Variances, Alternate Specifications and Special Conditions:**

1. The permittee shall monitor these wells for assessment purposes in accordance with the approved groundwater assessment plan. [401 KAR 45:140 Section 1(1)]
2. Monitoring: The permittee shall use SW-846 Test Methods for analysis of groundwater and surface water. If SW-846 Test Methods are unavailable, the permittee shall obtain advance approval from the Division of Waste Management prior to using alternate methods. [401 KAR 45:140 Section 2]
3. Groundwater Characterization: The groundwater assessment characterization list for the facility shall include the following parameters in accordance with 401 KAR 45:160 Section 7(2) and 40 CFR 257 Appendix III and Appendix IV: Antimony, Arsenic, Barium, Beryllium, Bicarbonate, Boron, Cadmium, Calcium, Carbonate, Chemical Oxygen Demand, Chloride, Chromium, Cobalt, Copper, Fluoride, Iron, Lead, Lithium, Magnesium, Mercury, Molybdenum, Nickel, pH, Potassium, Radium 226 and 228 Combined, Selenium, Sodium, Specific Conductance, Sulfate, Thallium, Total Dissolved Solids, Total Organic Carbon, and Zinc. [401 KAR 45:140 Section 2]
4. The owner or operator shall provide the division a minimum of ten (10) working days advance notice for all groundwater monitoring well construction and abandonment activities pursuant to 401 KAR 6:350 Section 12(2). [401 KAR 45:140 Section 2]

Permit Number: SW00800006

Agency Interest ID: 176

PERMIT

**GSTR0005 - Groundwater Monitoring - SW: Groundwater Observation Well Group - West Special Waste Landfill**

**Group Members:** STRC0033 - Well OW-105; STRC0034 - Well OW-106; STRC0035 - Well OW-104; STRC0036 - Well OW-103; STRC0037 - Well OW-102; STRC0038 - Well OW-101

**Standard Requirements:**

1. Groundwater monitoring wells shall be constructed and maintained in accordance with 401 KAR 45:160 Section 3, the permit, and the approved plans. [401 KAR 45:160 Section 3, 401 KAR 45:140 Section 1(1)]
2. No monitoring well construction, maintenance, or abandonment may be conducted without prior approval by the Division of Waste Management. [401 KAR 45:140 Section 1(1)]
3. Only a Kentucky Certified Monitoring Well Driller may construct or abandon monitoring wells. [401 KAR 6:320]

**Variances, Alternate Specifications and Special Conditions:**

1. The permittee shall monitor these wells for assessment purposes in accordance with the approved groundwater assessment plan. [401 KAR 45:140 Section 1(1)]
2. Monitoring: The permittee shall use SW-846 Test Methods for analysis of groundwater and surface water. If SW-846 Test Methods are unavailable, the permittee shall obtain advance approval from the Division of Waste Management prior to using alternate methods. [401 KAR 45:140 Section 2]
3. The owner or operator shall provide the division a minimum of ten (10) working days advance notice for all groundwater monitoring well construction and abandonment activities pursuant to 401 KAR 6:350 Section 12(2). [401 KAR 45:140 Section 2]

**GSTR0006 - Groundwater Monitoring - SW: Groundwater Monitoring Group - West Special Waste Landfill - Wells Proposed for Construction**

**Group Members:** STRC0046 - Well MW-205 (Proposed); STRC0047 - Well MW-206 (Proposed); STRC0048 - Well MW-207 (Proposed)

**Standard Requirements:**

1. Groundwater monitoring wells shall be constructed and maintained in accordance with 401 KAR 45:160 Section 3, the permit, and the approved plans. [401 KAR 45:160 Section 3, 401 KAR 45:140 Section 1(1)]
2. No monitoring well construction, maintenance, or abandonment may be conducted without prior approval by the Division of Waste Management. [401 KAR 45:140 Section 1(1)]
3. Only a Kentucky Certified Monitoring Well Driller may construct or abandon monitoring wells. [401 KAR 6:320]

Permit Number: SW00800006

Agency Interest ID: 176

PERMIT

**Variances, Alternate Specifications and Special Conditions:**

1. The permittee shall construct these wells in accordance with the approved plan. Upon completion of well construction, the permittee shall submit a monitoring well construction progress report to the Division of Waste Management for review. [401 KAR 45:140 Section 1(1)]
2. The owner or operator shall provide the division a minimum of ten (10) working days advance notice for all groundwater monitoring well construction and abandonment activities pursuant to 401 KAR 6:350 Section 12(2). [401 KAR 40:020 Section 2]

**GSTR0008 - Groundwater Monitoring - SW: Groundwater Monitoring Group - West Special Waste Landfill**

**Group Members:** STRC0051 - Well MW-201; STRC0052 - Well MW-202; STRC0053 - Well MW-204; STRC0054 - Well MW-208; STRC0055 - Well MW-203

**Standard Requirements:**

1. The owner or operator shall satisfy the requirements of 401 KAR 45:160 for all wastes and waste constituents contained in the site or facility. [401 KAR 45:160 Section 1]
2. The permittee shall monitor for other parameters as required by the cabinet. [401 KAR 45:160 Section 8(2)(c)]
3. The owner or operator shall monitor groundwater on the approved schedule at each approved groundwater monitoring location in accordance with 401 KAR 45:160, the permit, and the approved plans. A table summarizing the parameters to be monitored, their respective limits and monitoring frequency is included herein. [401 KAR 45:160, 401 KAR 45:140 Section 1(1)]
4. The owner or operator shall conduct statistical analysis of the groundwater data in accordance with 401 KAR 45:160 Section 6 and the approved applications. The statistical test chosen shall be conducted separately for each parameter in each well for each monitoring event. The results shall be maintained as part of the facility record throughout the operating and postclosure life of the facility. [401 KAR 45:160 Section 6, 401 KAR 45:140 Section 1(1)]
5. The groundwater analytical data and statistical analysis shall be submitted on forms provided by the cabinet, within sixty (60) days after sampling or 15 days of the completion of statistical analysis, whichever is sooner. [401 KAR 45:160 Section 4]
6. Groundwater monitoring wells shall be constructed and maintained in accordance with 401 KAR 45:160 Section 3, the permit, and the approved plans. [401 KAR 45:160 Section 3, 401 KAR 45:140 Section 1(1)]
7. No monitoring well construction, maintenance, or abandonment may be conducted without prior approval by the Division of Waste Management. [401 KAR 45:140 Section 1(1)]

Permit Number: SW00800006

Agency Interest ID: 176

PERMIT

8. Only a Kentucky Certified Monitoring Well Driller may construct or abandon monitoring wells. [401 KAR 6:320]
9. If the analysis of groundwater sample results indicates contamination (i.e., a statistical or MCL exceedence) as specified in 401 KAR 45:160 Section 5, the owner or operator shall notify the cabinet within (forty-eight) 48 hours of receiving the results and shall arrange to split samples no later than ten (10) days from the receipt of the results. [401 KAR 45:160 Section 5]
10. The owner or operator shall be required to prepare and submit a groundwater contamination assessment plan if laboratory analyses of one (1) or more public or private water supplies or monitoring wells at the site shows the presence of one (1) or more parameters above the maximum contaminant level (MCL) as specified in 401 KAR 30:031 or a statistically significant increase over background levels for parameters that have no MCL. [401 KAR 45:160 Section 5]
11. The owner or operator shall provide alternate water supplies to all affected parties within twenty-four (24) hours of notification of the cabinet that sample results indicate contamination of a drinking water supply if it has been determined that the special waste site or facility is the probable source of the contamination. [401 KAR 45:160 Section 3]
12. If required by the cabinet, groundwater contamination assessment and corrective action shall be performed in full compliance with all provisions of 401 KAR 45:160 Section 5. [401 KAR 45:160 Section 5]
13. The owner or operator shall provide the division a minimum of five (5) working days advance notice for all groundwater monitoring well construction and abandonment activities. [401 KAR 40:020 Section 2(4)]

**Variances, Alternate Specifications and Special Conditions:**

1. Groundwater Monitoring: The permittee shall determine the groundwater flow rate and direction in each monitored aquifer zone each time groundwater is sampled, and include one or more potentiometric surface maps in each semiannual monitoring report. [401 KAR 45:140 Section 1(8), 401 KAR 45:140 Section 2]
2. Monitoring: The permittee shall use SW-846 Test Methods for analysis of groundwater and surface water. If SW-846 Test Methods are unavailable, the permittee shall obtain advance approval from the Division of Waste Management prior to using alternate methods. [401 KAR 45:140 Section 2]
3. Groundwater Monitoring: The permittee shall measure "total recoverable metals" concentrations in measuring groundwater quality. Measurement of total recoverable metals captures both the particulate fraction and dissolved fraction of metals in groundwater. Groundwater samples shall not be field-filtered prior to analysis. [401 KAR 45:140 Section 2]

**GMNP0001 - Surface Water Monitoring - SW: Surface Water Monitoring Group - East Special Waste Landfill**

**Group Members:** MNPT0001 - Downstream Point SW-017

**Standard Requirements:**

1. The owner or operator shall monitor surface water in accordance with 401 KAR 45:160 Section 9 and the

Permit Number: SW00800006

Agency Interest ID: 176

PERMIT

approved surface water monitoring plan. A table summarizing the parameters to be monitored, their respective limits and the monitoring frequency is included herein. [401 KAR 45:160 Section 9]

2. Surface water corrective action shall be completed by the owner or operator as necessary to comply with 401 KAR 30:031. [401 KAR 45:160 Section 9, 401 KAR 30:031 Section 4]

3. Surface water analytical data shall be submitted in the compliance monitoring reports with all other permit-required environmental monitoring results. [401 KAR 45:160 Section 9]

**Variations, Alternate Specifications and Special Conditions:**

1. Monitoring: The permittee shall use SW-846 Test Methods for analysis of groundwater and surface water. If SW-846 Test Methods are unavailable, the permittee shall obtain advance approval from the Division of Waste Management prior to using alternate methods. [401 KAR 45:140 Section 2]

2. The owner or operator shall monitor surface water in accordance with 401 KAR 45:160 Section 9 and the approved surface water monitoring plan. A table summarizing the parameters to be monitored and monitoring frequency is included herein. [401 KAR 45:160 Section 9]

**GMNP0002 - Surface Water Monitoring - SW: Surface Water Monitoring Group - West Special Waste Landfill**

**Group Members:** MNPT0002 - Mon. Pt. SWMP-1; MNPT0003 - Mon. Pt. SWMP-2; MNPT0004 - Mon. Pt. SWMP-3

**Standard Requirements:**

1. Surface water corrective action shall be completed by the owner or operator as necessary to comply with 401 KAR 30:031. [401 KAR 45:160 Section 9, 401 KAR 30:031 Section 4]

2. Surface water analytical data shall be submitted in the compliance monitoring reports with all other permit-required environmental monitoring results. [401 KAR 45:160 Section 9]

**Variations, Alternate Specifications and Special Conditions:**

1. Monitoring: Surface water monitoring points SWMP-1, SWMP-2, and SWMP-3 are intended to monitor the West Special Waste Landfill. The permittee shall characterize and monitor these surface water monitoring points in accordance with the approved plan. Semiannual compliance monitoring parameters shall include Boron (Total), Chloride, Calcium (Total), Chemical Oxygen Demand, Total Dissolved Solids, Total Suspended Solids, Specific Conductance, pH, Sulfate, and Copper (Total). A table summarizing the parameters to be monitored and monitoring frequency is included herein. [401 KAR 45:160 Section 9]

2. Monitoring: The permittee shall use SW-846 Test Methods for analysis of groundwater and surface water. If SW-846 Test Methods are unavailable, the permittee shall obtain advance approval from the Division of Waste Management prior to using alternate methods. [401 KAR 45:140 Section 2]

Permit Number: SW00800006

Agency Interest ID: 176

PERMIT

Groundwater Monitoring Limits:

Subject Item	CAS Number	Parameter	Frequency	Lower Limit	Upper Limit	Units	Statistical Limit	Report Only
GSTR0001	7440-36-0	Antimony, Total (as Sb)	semiannually		0.006	mg/L		
GSTR0001	7440-38-2	Arsenic, Total (as As)	semiannually		0.010	mg/L		
GSTR0001	7440-39-3	Barium, Total (as Ba)	semiannually		2.0	mg/L		
GSTR0001	7440-41-7	Beryllium, Total	semiannually		0.004	mg/L		
GSTR0001		Boron, Total Recoverable	semiannually			mg/L	Yes	
GSTR0001	7440-43-9	Cadmium, Total (as Cd)	semiannually		0.005	mg/L		
GSTR0001	7440-70-2	Calcium	semiannually			mg/L	Yes	
GSTR0001		Carbon, Total Organic	semiannually			mg/L	Yes	
GSTR0001		Chemical Oxygen Demand (COD)	semiannually			mg/L	Yes	
GSTR0001	16887-00-6	Chloride	semiannually			mg/L	Yes	
GSTR0001	7440-47-3	Chromium	semiannually		0.1	mg/L		
GSTR0001	7440-48-4	Cobalt, Total	semiannually			mg/L	Yes	
GSTR0001	16984-48-8	Fluoride	semiannually		4.0	mg/L		
GSTR0001		Groundwater Elevation	semiannually			feet above mean sea level based on a USGS datum		Yes
GSTR0001	7439-89-6	Iron, Total (as Fe)	semiannually			mg/L	Yes	
GSTR0001	7439-92-1	Lead, Total (as Pb)	semiannually		0.015	mg/L		
GSTR0001		Lithium, (Total) as Li	semiannually			mg/L	Yes	
GSTR0001	7439-97-6	Mercury, Total (as Hg)	semiannually		0.002	mg/L		
GSTR0001	7439-98-7	Molybdenum, Total (as Mo)	semiannually			mg/L	Yes	
GSTR0001		Radium 226 + Radium 228, Total	semiannually		5.0	pCi/L		
GSTR0001	7782-49-2	Selenium, Total (as Se)	semiannually		0.05	mg/L		
GSTR0001	7440-23-5	Sodium, Total (as Na)	semiannually			mg/L	Yes	
GSTR0001		Solids, Total Dissolved	semiannually			mg/L	Yes	
GSTR0001		Specific Conductance	semiannually			umho/cm	Yes	
GSTR0001	14808-79-8	Sulfate	semiannually			mg/L	Yes	
GSTR0001		Temperature, Water Deg. Fahrenheit	semiannually			degrees Fahrenheit		Yes
GSTR0001	7440-28-0	Thallium, total [as Tl]	semiannually		0.002	mg/L		
GSTR0001		pH	semiannually			standard units	Yes	



Permit Number: SW00800006

Agency Interest ID: 176

PERMIT

Subject Item	CAS Number	Parameter	Frequency	Lower Limit	Upper Limit	Units	Statistical Limit	Report Only
GSTR0008		Boron, Total Recoverable	semiannually			mg/L	Yes	
GSTR0008	7440-70-2	Calcium	semiannually			mg/L	Yes	
GSTR0008	16887-00-6	Chloride	semiannually			mg/L	Yes	
GSTR0008	16984-48-8	Fluoride	semiannually		4.0	mg/L		
GSTR0008		Groundwater Elevation	semiannually			feet above mean sea level based on a USGS datum		Yes
GSTR0008		Solids, Total Dissolved	semiannually			mg/L	Yes	
GSTR0008	14808-79-8	Sulfate	semiannually			mg/L	Yes	
GSTR0008		Temperature, Water Deg. Fahrenheit	semiannually			degrees Fahrenheit		Yes
GSTR0008		pH	semiannually			standard units	Yes	

Permit Number: SW00800006

Agency Interest ID: 176

PERMIT

Surface Water Monitoring Limits:

Subject Item	CAS Number	Parameter	Frequency	Lower Limit	Upper Limit	Units	Statistical Limit	Report Only
GMNP0001		Carbon, Total Organic	semiannually			mg/L		Yes
GMNP0001		Chemical Oxygen Demand (COD)	semiannually			mg/L		Yes
GMNP0001	16887-00-6	Chloride	semiannually			mg/L		Yes
GMNP0001	7439-89-6	Iron, Total (as Fe)	semiannually			mg/L		Yes
GMNP0001	7440-23-5	Sodium	semiannually			mg/L		Yes
GMNP0001		Solids, Total	semiannually			mg/L		Yes
GMNP0001		Solids, Total Dissolved	semiannually			mg/L		Yes
GMNP0001		Solids, Total Suspended (TSS)	semiannually			mg/L		Yes
GMNP0001		Specific Conductance	semiannually			umho/cm		Yes
GMNP0001	14808-79-8	Sulfate	semiannually			mg/L		Yes
GMNP0001		pH	semiannually			standard units		Yes
GMNP0002		Boron, Total Recoverable	semiannually			mg/L		Yes
GMNP0002	7440-70-2	Calcium, total [as Ca]	semiannually			mg/L		Yes
GMNP0002		Chemical Oxygen Demand (COD)	semiannually			mg/L		Yes
GMNP0002	16887-00-6	Chloride	semiannually			mg/L		Yes
GMNP0002	7440-50-8	Copper, Total (as Cu)	semiannually			mg/L		Yes
GMNP0002		Solids, Total Dissolved	semiannually			mg/L		Yes
GMNP0002		Solids, Total Suspended (TSS)	semiannually			mg/L		Yes
GMNP0002		Specific Conductance	semiannually			umho/cm		Yes
GMNP0002	14808-79-8	Sulfate	semiannually			mg/L		Yes
GMNP0002		pH	semiannually			standard units		Yes