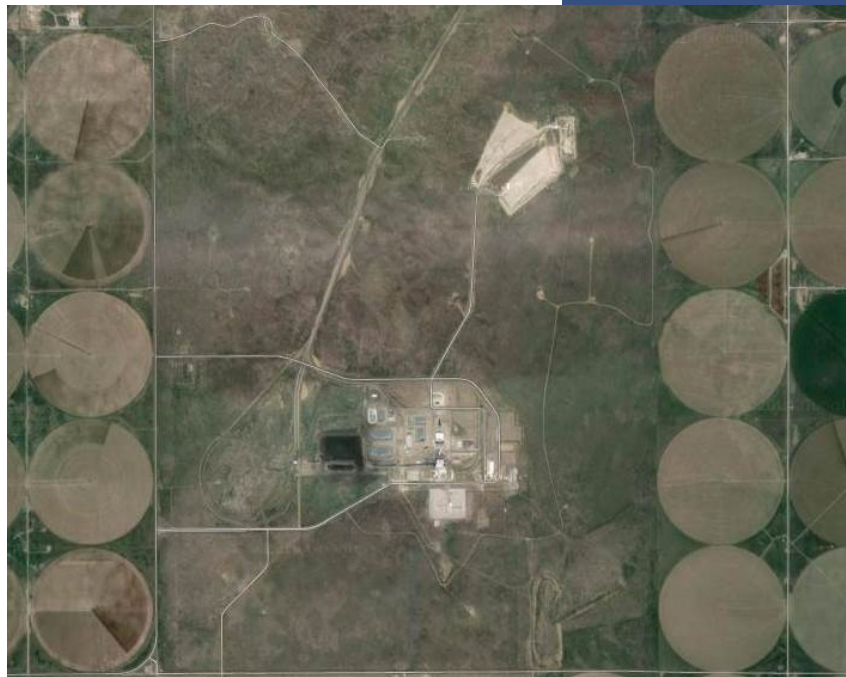




***2022 Annual Report 257.90(e)
Sunflower Electric Power Corporation
Holcomb Common Facilities, LLC***



Prepared for:



***AEC File No. 22116:4908
January 20, 2023***

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ATTEST

In our professional judgment and to the best of our knowledge, the results and conclusions presented in this document are accurate, and the document has been prepared using sound scientific methods.

ALLIED ENVIRONMENTAL CONSULTANTS, INC.



Paul R. Clark, P.G.
Project Manager



Theodore B. Francis, P.E.
Project Engineer





1.0 EXECUTIVE SUMMARY

Sunflower operated the CCR unit pursuant to the detection monitoring program under Code of Federal Regulations (CFR) Title 40 Section 257.94.

In the Spring 2022 event, there were no detections of Appendix III constituents above the statistical prediction limits which indicates no statistically significant increase (SSI) above background for the event. In the Fall 2022 event there were three (3) exceedances over the prediction limits indicating SSIs for the event. A summary of the SSIs for the Fall 2022 event is shown in Table 1-1.

Table 1-1: Fall 2022 Event - Exceedances of Prediction Limits

Well	Parameter	Concentration	Prediction Limit	Location ¹	Action
H-4	Chloride	56.6 mg/L	53 mg/L	Up-gradient	None
H-5	Calcium	80.4 mg/L	66.99 mg/L	Side-gradient	ASD ²
H-6	Sulfate	35.1 mg/L	34.21 mg/L	Down-gradient	ASD ²

Note 1: Location relative to landfill and groundwater flow direction

Note 2: ASD – Alternate Source Demonstration

In accordance with 40 CFR 257.94(e), Sunflower is pursuing an “Alternate Source Demonstration” (ASD) due to the increases in wells H-5 and H-6. If the ASD is not successful, the Site will enter the Assessment Monitoring Program in accordance with 40 CFR 257.95. Regulation provides conflicting timing requirements for the ASD, with the ASD to be provided in the Annual Report (due by January 31) and within 90 days of the detection of the SSI. The SSI was identified in the Fall 2022 Event Report dated November 29, 2022. Sunflower will complete the ASD within 90 days of Fall 2022 Event Report (by February 27, 2023) and place in the operating record alongside this Annual Report.

The facility has been in detection monitoring since April 18, 2018, as required under the CCR Rule and has not required corrective measures to date.

*_*_*_*_*

2.0 APPLICABILITY UNDER 40 CFR 257.90

2.1 CCR UNIT SUBJECT TO 40 CFR § 257.90(a)

The Sunflower Electric Holcomb Landfill is a coal combustion residual (CCR) landfill subject to the requirements described under the 40 CFR §257.90 through §257.98.

2.2 ANNUAL REPORTING 40 CFR § 257.90(e)

40 CFR §257.91 requires the installation of a groundwater monitoring system and 40 CFR §257.93 requires that groundwater sampling and analysis be conducted prior to October 17, 2017. As required in §257.94 the status of the groundwater monitoring is provided herein.

*_*_*_*_*

3.0 DATA FOR 2022

3.1 *SITE MAP 40 CFR § 257.90(e)(1)*

Appendix A, Figure 1 provides a map showing the unit and upgradient and downgradient monitoring wells. This information is also provided in the Monitoring Well Installation Report which is included in the facility's operating record as required by §257.105(h)(2).

3.2 *WELL NETWORK STATUS 40 CFR § 257.90(e)(2)*

Sunflower did not install or decommission any monitoring wells during 2022. The Monitoring Well Installation Report included in the facility's operating record is current with the wells present at the landfill.

3.3 *MONITORING WELL DATA 40 CFR § 257.90(e)(3)*

As required in §257.94(b), Sunflower collected semiannual samples from all background and downgradient monitoring wells. Table 1 in Appendix B summarizes the related information including the sample names, dates, and analytical results.

3.4 *MONITORING PROGRAM STATUS 40 CFR § 257.90(e)(4)*

2022 was the fifth year of the detection monitoring program for Sunflower as shown in Appendix B, Table 1. As described in Section 1.0 there were three wells that exceeded the prediction limits in the Fall event; however, it is believed the detections are likely from natural variations in groundwater quality or from an unidentified upgradient/off-site source.

The detection above prediction limits in the upgradient well (H-4) does not meet the criteria for corrective action or ASD as it does not represent the quality of groundwater passing the waste boundary of the CCR Unit [40 CFR 257.91(b)(2)]. Furthermore, due to outlier removal, H-4 does not have enough data for a parametric analysis and the prediction limit was the highest previous detection.

Sunflower is pursuing an ASD in accordance with 40 CFR 257.94(e) due to the increases demonstrated in wells H-5 and H-6.

3.5 *OTHER INFORMATION 40 CFR § 257.90(e)(5)*

The 2022 Annual Report serves as the report for this CCR Unit and documents all activities that Sunflower conducted to comply with §257.90 through §257.94. None of the activities referenced in §257.90 through §257.98 are relevant to the activities completed in 2022 beyond the provisions of §257.90(e).

*_*_*_*_*

4.0 RECORDKEEPING 40 CFR§ 257.90(f)

To comply with the recordkeeping requirements:

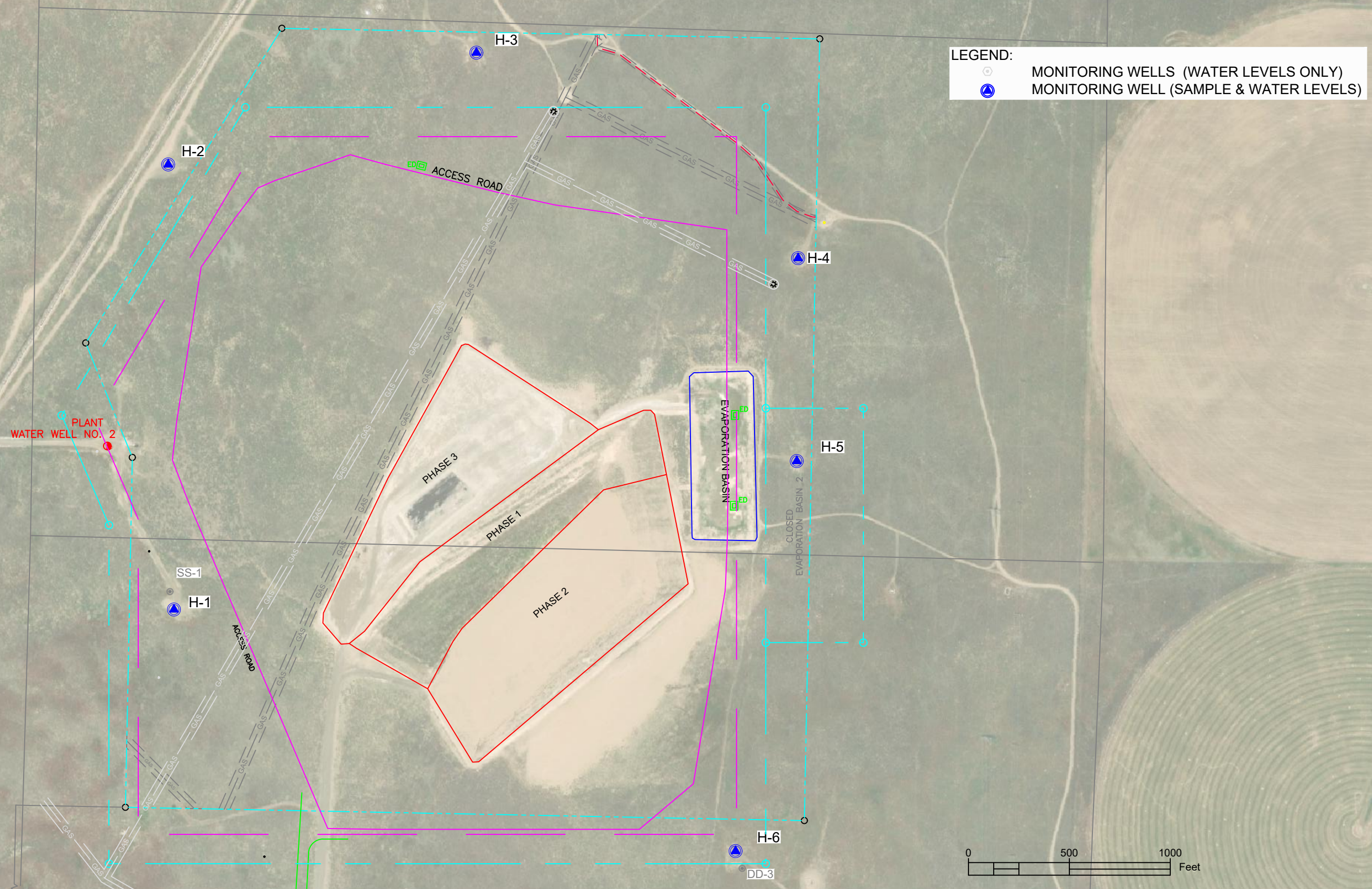
- The Annual Report must be placed in the facility's operating record, as required by §257.105(h)(1).
- Sunflower will notify the KDHE within 30 days of the Annual Report being placed in the facility's operating record, as required by §257.106(d).
- Sunflower will post the Annual Report on their CCR website within 30 days of the Annual Report being placed in the facility's operating record, as required by §257.107(d).

*_*_*_*_*

APPENDIX A

SITE MAP - HOLCOMB COMMON FACILITIES, LLC

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LEGEND:
 ○ MONITORING WELLS (WATER LEVELS ONLY)
 ● MONITORING WELL (SAMPLE & WATER LEVELS)

SUNFLOWER ELECTRIC
 HOLCOMB, KANSAS PLANT
 INDUSTRIAL LANDFILL



PROJECT: 22116-0:4908
 SCALE: AS_SHOWN
 DATE: 12/28/2022
 DWN BY: SMB
 CHKD BY: TBF

LANDFILL SITE MAP
 HOLCOMB COMMONS FACILITY, LLC

FIGURE
 1

APPENDIX B

DATA SUMMARY - HOLCOMB COMMON FACILITIES, LLC

Table 1: Summary of 2022 Analytical Results
 Sunflower Electric Power Corporation
 Holcomb Common Facilities, LLC.

Location	Measure Point Elevation (TOC) *	Sample Date	Depth to Water (BTOC)	Groundwater Elevation (ft. AMSL)	Field Parameters				Detection Monitoring Appendix III Constituents						
					Temperature (deg F)	Conductivity (µS/cm)	Turbidity (NTU)	pH (su)	Boron, Total (µg/L)	Calcium, Total (µg/L)	Chloride (mg/L)	Fluoride (mg/L)	Sulfate (mg/L)	TDS (mg/L)	
Up-Gradient	H-2	2914.71	4/26/2022	200.50	2,714.21	66.0	1698.0	0.41	7.66	ND (150)	360,000	85	ND (0.5)	1,100	1,700
			10/18/2022	206.60	2,708.11	58.4	2175.0	10.20	7.14	60.6	372,000	91.8	0.330	1,100	1,750
	H-3	2905.93	4/26/2022	191.70	2,714.23	66.0	2000.0	2.29	7.30	ND (150)	340,000	81	ND (1.0)	1,200	1,900
			10/18/2022	198.20	2,707.73	58.4	2360.0	23.00	7.13	55.2	343,000	91.7	0.276	1,220	1,990
	H-4	2901.66	4/26/2022	192.30	2,709.36	66.0	1206.0	0.45	7.39	ND (150)	230,000	50	ND (0.5)	660	1,100
			10/18/2022	198.70	2,702.96	60.1	1590.0	2.07	7.18	33.9	169,000	56.6	0.348	661	1,160
Down-Gradient	H-1	2924.54	4/26/2022	220.90	2,703.64	66.0	407.2	0.54	7.67	ND (150)	49,000	4	ND (0.5)	26	240
			10/18/2022	227.10	2,697.44	59.0	397.0	0.85	7.65	41.0	50,200	4.54	0.570	32.6	244
	H-5	2896.67	4/26/2022	189.50	2,707.17	66.0	455.5	0.30	7.54	ND (150)	63,000	10	ND (0.5)	45	280
			10/18/2022	194.70	2,701.97	61.7	651.0	2.37	7.30	29.3	80,400	22.0	0.515	145	426
	H-6	2940.37	4/26/2022	240.40	2,699.97	66.0	460.6	0.44	7.55	ND (150)	69,000	10	ND (0.5)	29	300
			10/18/2022	244.20	2,696.17	62.4	449.0	2.23	7.41	25.4	51,400	10.3	0.573	35.1	276

Notes & Abbreviations Key:

* Measuring point elevation at top of well casing, based on Sunflower on-site datum

TOC - Top of Casing

BTOC - below top of casing

ft. AMSL - Feet Above Mean Sea Level

deg F - Degrees Fahrenheit

µS/cm - microSeimens per centimeter

NTU - Nephelometric Turbidity Units

su - standard units

µg/L - micrograms per Liter

mg/L - milligrams per Liter

APPENDIX C

**REGULATORY CROSS
REFERENCE- HOLCOMB COMMON FACILITIES, LLC**

REGULATORY CROSS REFERENCE
2022 Annual Report
Sunflower Electric Power Corporation
Holcomb Common Facilities, LLC.

Regulatory Citation	Annual Report Section or Compliance Narrative
<p>§257.90 Applicability. (a)</p> <p>(a) All CCR landfills, CCR surface impoundments, and lateral expansions of CCR units are subject to the groundwater monitoring and corrective action requirements under §§257.90 through 257.98.</p>	<p>See Annual Report, Section 2.1</p>
<p>§257.90 Applicability. (b)(1)(i)</p> <p>(b) <i>Initial timeframes - (1) Existing CCR landfills and existing CCR surface impoundments.</i> No later than October 17, 2017, the owner or operator of the CCR unit must be in compliance with the following groundwater monitoring requirements:</p> <p>(b)(i) Install the groundwater monitoring system as required by §257.91;</p>	<p>Sunflower installed the required groundwater monitoring system in 2016. Sunflower has placed installation reports and certifications in the operating record.</p>
<p>§257.90 Applicability. (b)(1)(ii)</p> <p>(b)(ii) Develop the groundwater sampling and analysis program to include selection of the statistical procedures to be used for evaluating groundwater monitoring data as required by §257.93;</p>	<p>Sunflower has prepared a groundwater sampling and analysis plan with accompanying statistical procedures as required by this subsection.</p>
<p>§257.90 Applicability. (b)(1)(iii)</p> <p>(b)(iii) Initiate the detection monitoring program to include obtaining a minimum of eight independent samples for each background and downgradient well as required by §257.94(b); and</p>	<p>Sunflower completed the collection and analysis of a minimum of eight independent samples in 2017 for all wells at the subject landfill.</p>
<p>§257.90 Applicability. (b)(1)(iv)</p> <p>(b)(iv) Begin evaluating the groundwater monitoring data for statistically significant increases over background levels for the constituents listed in appendix III of this part as required by §257.94.</p>	<p>Sunflower has begun to evaluate the data using the procedures described in the groundwater sampling and analysis plan.</p>

Regulatory Citation	Annual Report Section or Compliance Narrative
<p>§257.90 Applicability. (b)(2)</p> <p>(2) <i>New CCR landfills, new CCR surface impoundments, and all lateral expansions of CCR units.</i> Prior to initial receipt of CCR by the CCR unit, the owner or operator must be in compliance with the groundwater monitoring requirements specified in paragraph (b)(1)(i) and (ii) of this section. In addition, the owner or operator of the CCR unit must initiate the detection monitoring program to include obtaining a minimum of eight independent samples for each background well as required by §257.94(b).</p>	<p>The subject landfill pre-dates the CCR regulations. This subsection does not apply to the subject facility at this time.</p>
<p>§257.90 Applicability. (c)</p> <p>(c) Once a groundwater monitoring system and groundwater monitoring program has been established at the CCR unit as required by this subpart, the owner or operator must conduct groundwater monitoring and, if necessary, corrective action throughout the active life and post-closure care period of the CCR unit.</p>	<p>Sunflower initiated a post-background detection monitoring in 2018.</p>
<p>§257.90 Applicability. (d)</p> <p>(d) In the event of a release from a CCR unit, the owner or operator must immediately take all necessary measures to control the source(s) of releases so as to reduce or eliminate, to the maximum extent feasible, further releases of contaminants into the environment. The owner or operator of the CCR unit must comply with all applicable requirements in §§257.96, 257.97, and 257.98.</p>	<p>Sunflower will respond accordingly should a release occur at this facility.</p>

Regulatory Citation	Annual Report Section or Compliance Narrative
<p>§257.90 Applicability. (e)</p> <p>(e) <i>Annual groundwater monitoring and corrective action report.</i> For existing CCR landfills and existing CCR surface impoundments, no later than January 31, 2018, and annually thereafter, the owner or operator must prepare an annual groundwater monitoring and corrective action report. For new CCR landfills, new CCR surface impoundments, and all lateral expansions of CCR units, the owner or operator must prepare the initial annual groundwater monitoring and corrective action report no later than January 31 of the year following the calendar year a groundwater monitoring system has been established for such CCR unit as required by this subpart, and annually thereafter. For the preceding calendar year, the annual report must document the status of the groundwater monitoring and corrective action program for the CCR unit, summarize key actions completed, describe any problems encountered, discuss actions to resolve the problems, and project key activities for the upcoming year. For purposes of this section, the owner or operator has prepared the annual report when the report is placed in the facility's operating record as required by §257.105(h)(1). At a minimum, the annual groundwater monitoring and corrective action report must contain the following information, to the extent available:</p>	<p>(see below for Annual report content requirements)</p>
<p>§257.90 Applicability. (e)(1)</p> <p>(1) A map, aerial image, or diagram showing the CCR unit and all background (or upgradient) and downgradient monitoring wells, to include the well identification numbers, that are part of the groundwater monitoring program for the CCR unit;</p>	<p>See Annual Report, Section 3.1.</p>
<p>§257.90 Applicability. (e)(2)</p> <p>(2) Identification of any monitoring wells that were installed or decommissioned during the preceding year, along with a narrative description of why those actions were taken;</p>	<p>See Annual Report, Section 3.2.</p>
<p>§257.90 Applicability. (e)(3)</p> <p>(3) In addition to all the monitoring data obtained under §§257.90 through 257.98, a summary including the number of groundwater samples that were collected for analysis for each background and downgradient well, the dates the samples were collected, and whether the sample was required by the detection monitoring or assessment monitoring programs;</p>	<p>See Annual Report, Section 3.3.</p>

Regulatory Citation	Annual Report Section or Compliance Narrative
<p>§257.90 Applicability. (e)(3)</p> <p>(4) A narrative discussion of any transition between monitoring programs (e.g., the date and circumstances for transitioning from detection monitoring to assessment monitoring in addition to identifying the constituent(s) detected at a statistically significant increase over background levels); and</p>	<p>See Annual Report, Section 3.4</p>
<p>§257.90 Applicability. (e)(3)</p> <p>(5) Other information required to be included in the annual report as specified in §§257.90 through 257.98.</p>	<p>See Annual Report, Section 3.5</p>

§257.90 Applicability. (e)

See Annual Report, Section 1.0

(6) A section at the beginning of the annual report that provides an overview of the current status of groundwater monitoring and corrective action programs for the CCR unit. At a minimum, the summary must specify all of the following:

(i) At the start of the current annual reporting period, whether the CCR unit was operating under the detection monitoring program in § 257.94 or the assessment monitoring program in § 257.95;

(ii) At the end of the current annual reporting period, whether the CCR unit was operating under the detection monitoring program in § 257.94 or the assessment monitoring program in § 257.95;

(iii) If it was determined that there was a statistically significant increase over background for one or more constituents listed in appendix III to this part pursuant to § 257.94(e):

(A) Identify those constituents listed in appendix III to this part and the names of the monitoring wells associated with such an increase; and

(B) Provide the date when the assessment monitoring program was initiated for the CCR unit.

(iv) If it was determined that there was a statistically significant level above the groundwater protection standard for one or more constituents listed in appendix IV to this part pursuant to § 257.95(g) include all of the following:

(A) Identify those constituents listed in appendix IV to this part and the names of the monitoring wells associated with such an increase;

(B) Provide the date when the assessment of corrective measures was initiated for the CCR unit;

(C) Provide the date when the public meeting was held for the assessment of corrective measures for the CCR unit; and

(D) Provide the date when the assessment of corrective measures was completed for the CCR unit.

(v) Whether a remedy was selected pursuant to § 257.97 during the current annual reporting period, and if so, the date of remedy selection; and

(vi) Whether remedial activities were initiated or are ongoing pursuant to § 257.98 during the current annual reporting period.

<p>§257.90 Applicability. (f)</p> <p>(f) The owner or operator of the CCR unit must comply with the recordkeeping requirements specified in §257.105(h), the notification requirements specified in §257.106(h), and the internet requirements specified in §257.107(h).</p>	<p>See Annual Report, Section 4.0</p>
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Source - [80 FR 21468, Apr. 17, 2015, as amended at 81 FR 53516, Aug. 28, 2020]