

2021 Annual Landfill Inspection Report

CCR Landfill

Flint Creek Plant

Southwestern Electric Power Company

Gentry, AK

August 2021

Prepared for: Southwestern Electric Power Company – Flint Creek Plant

Prepared by: American Electric Power Service Corporation

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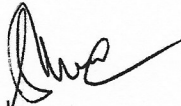
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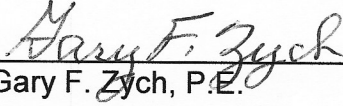
Flint Creek Plant

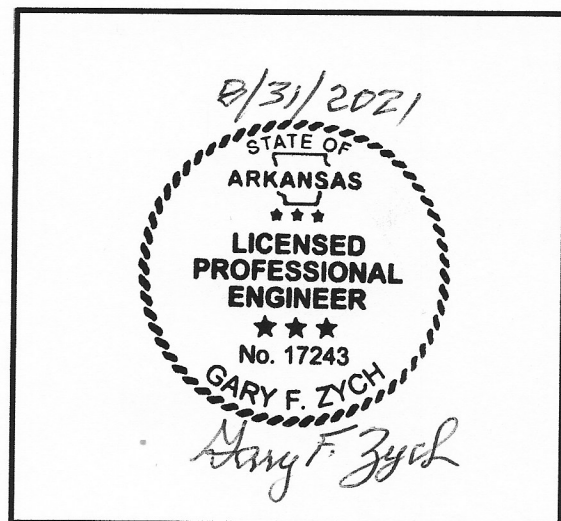
CCR Landfill

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I certify to the best of my knowledge, information and belief the information contained in this report meets the requirements of 40 CFR § 257.84(b).

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1.0 INTRODUCTION

This report was prepared by AEP- Geotechnical Engineering Services (GES) section, in part, to fulfill requirements of 40 CFR 257.84 and to provide the Flint Creek Plant an evaluation of the facility.

Landfill facility is located northeast of the Flint Creek Power Plant. Figure 1 – Site Location Map at Appendix A illustrates the location of the landfill facility. Shah Baig, P.E. performed the 2021 inspection of the Landfill at the Flint Creek Plant. This report is a summary of the inspection and an assessment of the general condition of the facility. Scott Carney of the Flint Creek Plant facilitated the inspection of the landfill facility. The inspection was performed on August 4 and 5, 2021. Weather conditions were sunny, light breeze, visibility was good, and the temperature was in the high 80's (°F). No rain was reported in the last 7 days of the inspection.

2.0 DESCRIPTION OF LANDFILL

Figure 2 included in Appendix A illustrates major components of the landfill facility that includes waste placement active and inactive areas, leachate collection pond, contact water pond, and stormwater pond.

At the time of the landfill inspection, limited operational activities were performed in the active landfill area. The waste placement and operational activities were performed in accordance with the approved permit. Landfill areas outside slopes of the current active fill area or below the intermediate geomembrane liner were covered with the permanent soil cap.

The overall features of the landfill were categorized into the following components as a means of organizing the inspection and reporting:

- Active Landfill Disposal Area
- Inactive Landfill Areas
- Leachate Collection/Contact Water Pond
- Storm Water Drainage Ditches
- Closed Areas

The Active Landfill Disposal Area is currently where waste is being placed.

Inactive Landfill Areas consists for the remaining portions of the landfill. The intermediate geomembrane liner is exposed until the areas are required for disposal capacity.

3.0 REVIEW OF AVAILABLE INFORMATION (257.84(b)(1)(i))

A review of available information regarding the status and condition of the Landfill which include files available in the operating record, such as design and construction information, previous 7 day inspection reports, and previous annual inspections has been conducted. Based on the review of the data there were no signs of actual or potential structural weakness or adverse conditions.

4.0 INSPECTION (257.84(b)(1)(ii))

4.1 CHANGES IN GEOMETRY SINCE LAST INSPECTION (257.84(b)(2)(i))

No modifications have been made to the geometry of the Landfill since the last annual inspection. The geometry of the landfill has remained essentially unchanged, except for the change in topography of the active disposal area.

4.2 VOLUME (257.84(b)(2)(ii))

The total volume of CCR disposed at the landfill as of the inspection date of was estimated to be 1,548,859 (1,525,328 last inspection + 23,531 to date) cubic yards.

4.3 DEFINITIONS OF VISUAL OBSERVATIONS AND DEFICIENCIES

This summary of the visual observations uses terms to describe the general appearance or condition of an observed item, activity or structure. The meaning of these terms is as follows:

Good: A condition or activity that is generally better or slightly better than what is minimally expected or anticipated from a design or maintenance point of view.

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| Fair/ Satisfactory: | A condition or activity that generally meets what is minimally expected or anticipated from a design or maintenance point of view. |
| Poor: | A condition or activity that is generally below what is minimally expected or anticipated from a design or maintenance point of view. |
| Minor: | A reference to an observed item (e.g., erosion, seepage, vegetation, etc.) where the current maintenance condition is below what is normal or desired, but which is not currently causing concern from a structure safety or stability point of view. |
| Significant: | A reference to an observed item (e.g. erosion, seepage, vegetation, etc.) where the current maintenance program has neglected to improve the condition. Usually conditions that have been identified in the previous inspections, but have not been corrected. |
| Excessive: | A reference to an observed item (e.g., erosion, seepage, vegetation, etc.) where the current maintenance condition is above or worse than what is normal or desired, and which may have affected the ability of the observer to properly evaluate the structure or particular area being observed or which may be a concern from a structure safety or stability point of view. |

This document also uses the definition of a “deficiency” as referenced in the CCR rule section §257.84(b)(5) Inspection Requirements for CCR Landfills. This definition has been assembled using the CCR rule preamble as well as guidance from MSHA, “Qualifications for Impoundment Inspection” CI-31, 2004. These guidance documents further elaborate on the definition of deficiency. Items not defined by deficiency are considered maintenance or items to be monitored.

A “deficiency” is some evidence that a landfill has developed a problem that could impact the structural integrity of the landfill. There are four general categories of deficiencies. These four categories are described below:

1. Uncontrolled Seepage (Leachate Outbreak)
Leachate outbreak is the uncontrolled release of leachate from the landfill.
2. Displacement of the Embankment
Displacement of the embankment is large scale movement of part of the landfill or perimeter berm. Common signs of displacement are cracks, scraps, bulges, depressions, sinkholes and slides.
3. Blockage of Control Features

Blockage of Control Features is the restriction of flow at spillways, culverts, or leachate pipes drains.

4. Erosion

Erosion is the gradual movement of surface material by water, wind or ice. Erosion is considered a deficiency when it is more than a minor routine maintenance item.

4.4 VISUAL INSPECTION (257.84(b)(1)(ii))

A visual inspection of the Landfill was conducted to identify any signs of distress or malfunction of the landfill and appurtenant structures. Specific items inspected included all structural elements of the landfill perimeter berms, final covers, drainage features, leachate/contact water ponds, and the open cell.

Overall, the facility is in good condition. The landfill is functioning as intended with no signs of potential structural weakness or conditions which are disrupting to the safe operation of the landfill. Inspection photos are included in Attachment A. Additional pictures taken during the inspection are available upon request.

1. The perimeter berm and the south side slope was in fair condition (Photograph Nos. 1 and 2). There was slight excessive vegetative cover over the entire exterior south slopes. Recently, markers (Photograph No. 1) were set in the south ditch for monitoring the depth of waste in order to avoid any spillage overtopping the berm. The waste was noticed to be slightly encroaching the berm (Photograph No. 3). There was no erosion or displacement of the berm observed during the inspection.
2. The drainage pipe culvert at the southwest corner (Photograph No. 4) appeared clear and was not obstructed. Slightly excessive vegetation was noticed around the pipe culvert.
3. The southeast exterior slopes are fairly steep but appeared stable (Photograph No. 5). Typical condition of the eastern slope of closed landfill with clay cap is shown in Photograph No. 6. Overall, the slope was in good and stable condition. Slightly excessive vegetation growth and small bushes were present.

4. A fabriform drainage ditch and a pipe culvert is located at the northeast corner to the landfill (Photograph No. 7). The fabriform was in good condition and stable condition. Pipe culvert was free of obstruction and no standing water was noticed. Scattered excessive grown vegetation was found in this area.
5. Typical condition of the north landfill slope that has final cover and certified is illustrated in Photograph No. 8. The condition of these slopes was good. There were no observed erosion gullies, sloughs, or other signs of movement of these areas. All areas had adequate vegetative cover. The vegetation is well established but the grass was slightly high. Fabriform letdown channel is located at the north slope (Photograph No. 9), appeared in good, stable, and functional condition.
6. The inactive areas of the landfill consists of northern portion of the landfill (Areas 2-4). The exposed geomembrane (Photograph Nos. 10 and 11) was observed only from the perimeter of the cells. There was no apparent significant damage to the exposed geomembrane based on the observation from the perimeter.
7. The active area of the landfill is illustrated in Photograph Nos. 11 and 12. There was no ponding of water on the surface of the inactive areas. The areas drain to the perimeter stormwater channels. No ponding of water was observed on the surface. The material in the Cell is separated from the inactive areas by a low splitter berm. Limited disposal activities were taking place at the time of the inspection. There was no erosion of the CCR material in the active area. No slopes of the Active Area have or require any temporary cover at the time of the inspection. Stormwater runoff from this area is directed into the Contact Water pond via the concrete lined ditches.
8. Photograph No, 13 illustrates stormwater ditch that conveys runoff from the landfill inactive area to the stormwater pond. The ditch partially lined by fabriform appeared in good functional condition as designed.
9. The north perimeter contact water ditch is illustrated in Photograph Nos. 14 and 15. The ditch was in good condition. Water was flowing through the pipe culvert to the contact water pond. The ditch is in good and stable condition, positive flow, and without any obstruction.

10. The south perimeter contact water ditch is illustrated in Photograph Nos. 16 and 17. The ditch was in good condition. The ditch partially is lined with concrete. The ditch is in good and stable condition, no standing water was noticed, and without any obstruction to flow.
11. Photograph No. 18 illustrates overflow discharge pipe structure located in the southwest of the contact water pond. The structure appeared functioning as designed. Photograph No. 19 shows the emergency spillway located at the south dike. The emergency spillway was in good condition and appeared free from any obstruction to flow. Overall view of the contact water pond is illustrated in Photograph No. 20. The contact water pond dikes appeared in good and stable condition with good concrete cover. The pond appeared functioning as designed.
12. Leachate pond is shown in Photograph No. 21. Repair was performed at the leachate pond to remove trapped water under the bottom liner. Photograph No. 21 illustrates the geotextile fabric pulled aside and the bottom HDPE liner is cut out and the bottom clay liner is exposed. Photograph No. 22 shows repair work in progress around the leachate pipe. Photograph No. 23 illustrates completion of repair work and the geotextile fabric reinstalled on the top.
13. Photograph Nos. 24 and 25 shows the stormwater pond that is located to the northwest of the landfill. Incised slopes of the pond were stable but excessive vegetation was noticed. The overflow discharge pipe structure (Photograph No. 26) appeared to be in good and functional condition.

4.5 CHANGES THAT AFFECT STABILITY OR OPERATION (257.84(b)(2)(iv))

Based on interviews with plant personnel and field observations there were no changes to the Landfill since the last annual inspection that would affect the stability of the Landfill.

5.0 SUMMARY OF FINDINGS

5.1 GENERAL OBSERVATIONS

The following general observations were identified during the visual inspection:

- 1) In general the landfill is functioning as intended. All areas of the facility are in good

condition.

- 2) The Plant is performing inspections as required.
- 3) The issue related to the waste spillage that occurred on the south side of the active landfill area is properly mitigated by regularly monitoring with markers so that the CCR waste is removed before levels are close to the top of the berm.
- 4) The leachate collection pond repair was started and completed during the week of the inspection.

5.2 MAINTENANCE ITEMS

The following specific maintenance items were identified during this inspection.

- 1) Excessive grass/vegetation should be mowed and this activity on regular basis at least 2-3 times during the year to facilitate inspections and keep woody vegetation to minimum.
- 2) As planned additional HDPE liner as a rainflap in the upper section of the slope at the leachate pond shall be installed. Geotextile fabric and the liner should be anchored at the crest of the dikes using the existing anchors bolts.
- 3) The exposed waste on the south side of the landfill shall be properly monitored and contained so that it does not spill over the berm. Any accumulation of the waste in the ditch should be immediately removed and placed in the landfill.

5.3 ITEMS TO MONITOR

1. Continue to monitor the exposed waste surfaces of the active landfill to avoid severe erosion and spillages outside the landfill waste limits.
2. A complete inspection and walk down of the Areas 2-4 is recommended, prior to the construction and placement of CCR to ensure the integrity of the liner. (Photos 10 & 11).

5.4 DEFICIENCIES (257.84(b)(2)(iii))

There were no signs of structural weakness or disruptive conditions that were observed at the time of the inspection that would require additional investigation or remedial action. There were no deficiencies noted during this inspection.

There was, however, a noted deficiency pertaining to the leachate pond discovered in January 2021. Water was present between the clay liner and HDPE liner in the bottom area of the leachate pond. The deficiency was addressed in August 2021 by repairing, removing, and replacing engineering components (clay liner, HDPE liner, geotextile, and leachate pipe boots) of the leachate pond in accordance with the permit design drawings and QAQC Plan.

A deficiency is defined as either:

1. Uncontrolled seepage (leachate breakout),
2. Displacement of the embankment,
3. Blockage of control feature, or
4. Erosion, more than minor maintenance.

APPENDIX A

- **Figure 1 – Site Location Map**
- **Figure 2 – Landfill Facility Map**

Figure 1 – Site Location Map
Flint Creek Landfill, Gentry, AR

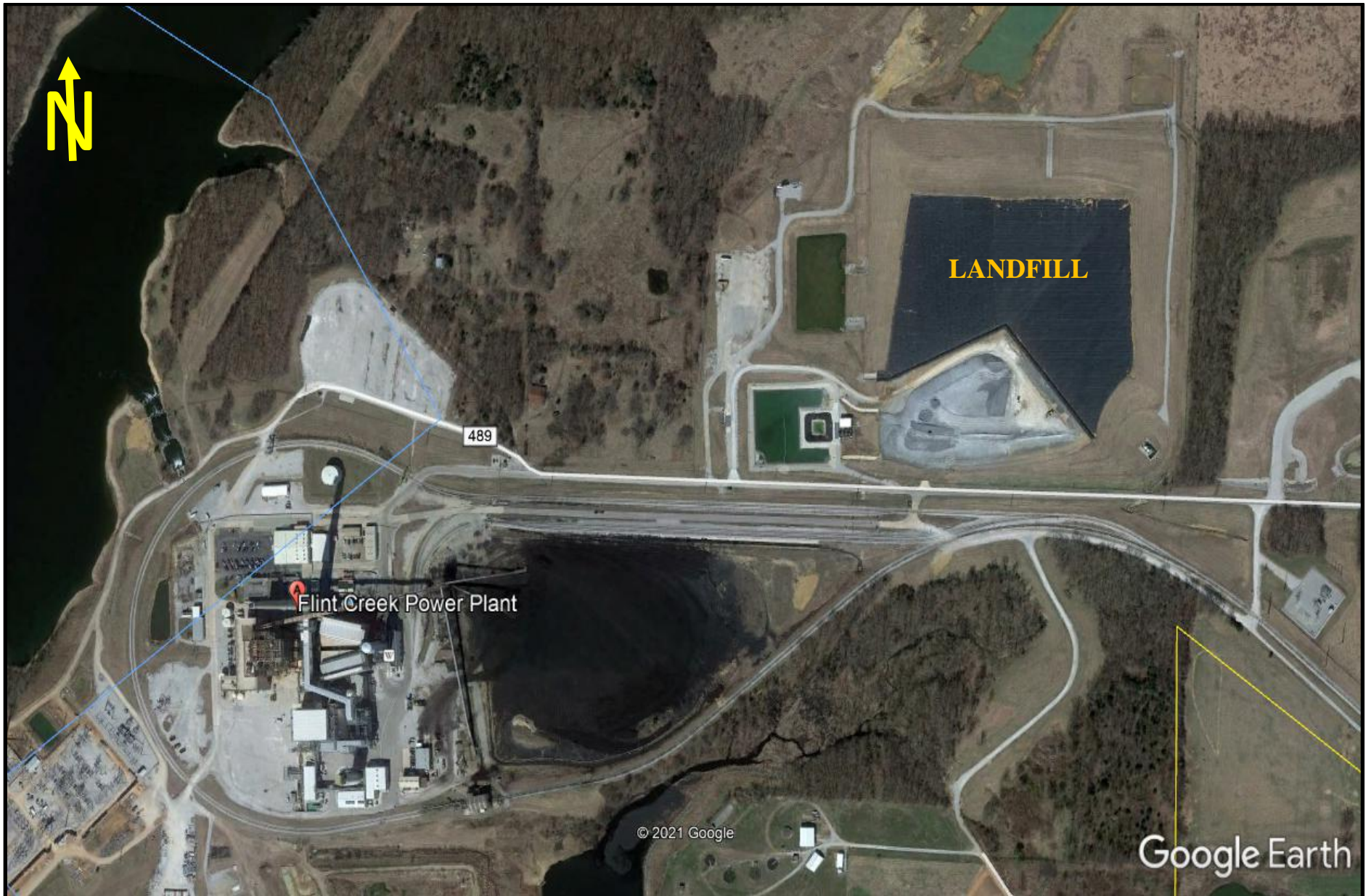


Figure 2 – Landfill Facility Map
Flint Creek Landfill, Gentry, AR



APPENDIX B




▪ **Figure 3 – Inspection Photograph Location Map**




▪ **Inspection Photographs**

Figure 3 – Inspection Photograph Location Map
Flint Creek Landfill, Gentry, AR



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| <p>PHOTO #1 The south side of the landfill (looking west).</p> |  <p>A photograph showing a wide view of the south side of the landfill. In the foreground, there is a grassy slope. In the middle ground, a fence runs across the frame. In the background, industrial buildings and a tall smokestack are visible under a cloudy sky. A yellow box with the text 'Ash Markers' and two black arrows points to small markers in the grass on the right side of the image.</p> |
| <p>PHOTO #2 Lower section of the south slope (looking west).</p> |  <p>A photograph showing a closer view of the lower section of the south slope. The foreground is dominated by tall, green grass. A fence runs along the edge of the slope. In the background, a train of freight cars is visible on tracks, and industrial buildings and a smokestack are in the distance.</p> |
| <p>PHOTO #3 The active area of the Area 1 of the landfill (looking west).</p> |  <p>A photograph showing the active area of Area 1 of the landfill. The foreground is a gravel path. To the right, there is a large, sloping pile of grey ash. In the background, industrial buildings and a smokestack are visible.</p> |

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| <p>PHOTO #4 The drainage ditch and a pipe culvert.</p> |  <p>A photograph showing a drainage ditch filled with grey gravel. A yellow arrow points to a pipe culvert partially obscured by green grass. In the background, there is a paved road, utility poles, and industrial buildings under a clear sky.</p> |
| <p>PHOTO #5 The southeast corner of the landfill outer slope.</p> |  <p>A wide-angle photograph of a grassy landfill slope. In the lower-left foreground, there are two large, cylindrical concrete structures. The slope rises towards the right, and the sky is blue with scattered white clouds.</p> |
| <p>PHOTO #6 This photograph illustrates typical condition of the east slope.</p> |  <p>A photograph showing a gravel-lined drainage ditch running along the edge of a grassy landfill slope. The slope is covered in green grass and some weeds. In the background, there is a dense line of green trees under a cloudy sky.</p> |

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| <p>PHOTO #7</p> <p>Fabriform line drainage ditch and pipe culvert.</p> |  |
| <p>PHOTO #8</p> <p>The north slope of the landfill.</p> |  |
| <p>PHOTO #9</p> <p>Fabriform lined drainage channel.</p> |  |

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| <p>PHOTO #10</p> <p>Typical view of the intermediate liner.</p> |  |
| <p>PHOTO #11</p> <p>Active area Inactive area of the landfill.</p> |  |
| <p>PHOTO #12</p> <p>Active area of the landfill.</p> |  |

PHOTO #13

Drainage channel at the southwest corner of the intermediate liner area.



PHOTO #14

Contact water north concrete drainage ditch.



PHOTO #15

Drainage ditch pipe culvert to the contact water pond.



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| <p>PHOTO #16</p> <p>South contact water drainage ditch.</p> |  |
| <p>PHOTO #17</p> <p>South drainage ditch pipe culvert to the contact water pond.</p> |  |
| <p>PHOTO #18</p> <p>Overflow discharge structure.</p> |  |

PHOTO #19

Emergency spillway
at the contact water
pond.



PHOTO #20

Overall view of the
contact water pond.



PHOTO #21

Leachate pond
bottom liner
removed for repair.



PHOTO #22

Leachate pond repair activities in progress.



PHOTO #23

Leachate pond repair activities complete.



PHOTO #24

Stormwater pond (looking east slope).



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| <p>PHOTO #25</p> <p>Overall view of the Stormwater pond (looking north).</p> |  A wide-angle photograph of a large, dark, rectangular stormwater pond. The pond is surrounded by lush green vegetation, including tall grasses and shrubs in the foreground. In the background, there is a line of trees under a clear blue sky with a few light clouds. |
| <p>PHOTO #26</p> <p>Stormwater pond overflow pipe.</p> |  A photograph showing a close-up of a stormwater pond's overflow pipe. The pipe is a concrete structure with a gravel bed at its base, leading into the pond. In the background, there is a paved area with a white pickup truck, a yellow forklift, and a small industrial building. The area is bordered by a fence and trees. |