2021 Annual Landfill Inspection Report

Landfill

H.W. Pirkey Plant

Southwestern Electric Power Company

Hallsville, Texas

September 13, 2021

Prepared for: Southwestern Electric Power Company – H.W. Pirkey Plant

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(CCR Landfill)

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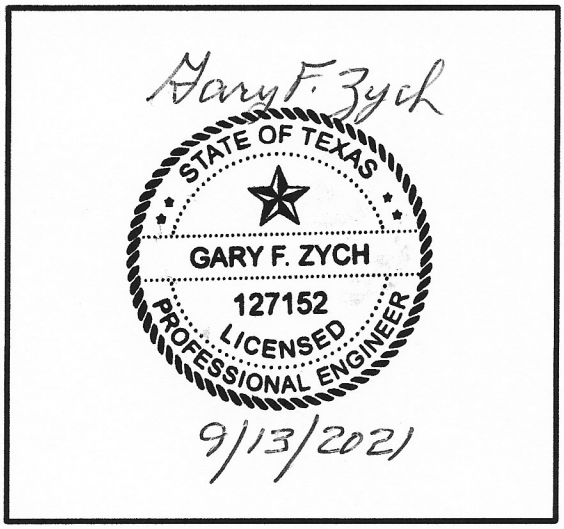

I certify to the best of my knowledge, information and belief the information contained in this report meets the requirements of 40 CFR § 257.84(b).

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1.0 INTRODUCTION

This report was prepared by AEP- Geotechnical Engineering Services (GES) section, in part, to fulfill requirements of 30 TAC 352.841 (40 CFR 257.84) and to provide the H.W. Pirkey Plant an evaluation of the facility.

Mr. Brett Dreger, P.E. performed the 2021 inspection of the Landfill at the H.W. Pirkey Plant. This report is a summary of the inspection and an assessment of the general condition of the facility. Mr. Ron Franklin of the plant was the facility contact. Also in attendance for the landfill inspection was Mr. Lane Roberts, P.E. with Akron Consulting LLC. The inspection was performed on August 18, 2021. Weather conditions were mostly cloudy with rain showers and the temperature was in the upper 70's to low 80's (°F). There was 0.08 inches of rainfall over the seven days prior to the inspection and 1.51 inches of rain on the day of inspection. Portions of the landfill had been recently mowed.

2.0 DESCRIPTION OF LANDFILL

The H.W. Pirkey Power Plant is located in southern Harrison County, approximately 6 miles southeast of Hallsville, Texas, as shown in Figure 1 – Vicinity Map in Attachment A. The CCR Landfill is located Southwest of the main plant, between the Sabine Mine coal pile to the north and the Landfill Run-off Pond to the South. The overall features of the landfill were categorized into the following components as a means of organizing the inspection and reporting:

- Closed Landfill Area (1984, 1987, 1993, 1995, 1997, 1999, and 2005 Cells)
- Inactive Landfill Areas (2012, 1985 Pond Cell and 1993 Cell)
- Active Landfill Disposal Areas (2015 Cell)
- Landfill Construction Area for 2018 Cell
- Storm Water Drainage Ditches

These features, including the approximate limits of each area, are shown on Figure 2 – Site Map in Attachment A. Selected photographs taken during the inspection and used to illustrate the visual observations presented in the report are presented in Attachment B. Additional inspection photos not included in the report can be made available to the Plant upon request.

In general, the southwestern area of the landfill (2015 Cell) is active. The remainder of the landfill area is considered closed and has a grass cover and closure turf material or is considered inactive and covered with rain flap material. The landfill was developed around an existing oil/gas well known as the Mohan well and is located near the eastern edge of the landfill. Perimeter ditches carry non-contact water to the surrounding natural drainage courses. Multiple catch basins collect and convey non-contact water via "let-down" piping systems. All contact water and leachate is directed towards the Landfill Run-off Pond. The four leachate collection discharge pipes outlet on the southern end of the landfill have been tied into one 24 inch drain line which is conveyed directly to the Landfill Runoff Pond. There are two parallel ditches on the western boundary of the landfill area, both for non-contact water off the landfill side slope and surrounding areas.

Material to be placed in the active portions of the landfill is hauled via dump trucks on a haul road, which runs along the north and western edge of the landfill area. The active portion of landfill area has vertical chimney drains, which connect to the leachate collection system. Surface water runoff from the active landfill areas is collected and routed to the Landfill Runoff Pond via the chimney drains.

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 have 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 occurred to the geometry of the landfill since the 2020 annual inspection. The only construction that has occurred since the 2020 annual inspection is the installation of a new 2020 and 2021 Cap and Cover Area with Closure Turf, along with the installation of additional rain flap, but neither of these activities changed the overall geometry of the landfill.

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

The total volume of ash disposed at the landfill as of August 2021 was estimated by Lane Roberts with Akron Consulting LLC as 15.75 million 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.
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. 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, decant or pipe spillways, or 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, temporary and final covers, drainage features, open cells, and appurtenances such as chimney drains etc.

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 B. Additional pictures taken during the inspection can be made available upon request.

Closed Landfill Areas (1984, 1987, 1993, 1995, 1997, 1999, and 2005 Cells)

1. In general, surface water runoff from the cap was draining as designed. There were no signs of erosion, undermining, scarps or sloughs in the surface vegetation covering the top and side slope areas.
2. The closed landfill areas were observed to have a thick stand of grass cover over the majority of the capped area. The landfill cover of cells 1984, 1987, 1993, 1995, 1999 and 2005 were well vegetative with a few minor tire ruts as a result of mowing activities. Most of these disturbed areas were the result of mowing under wet conditions.
3. There were no signs of settlement, signs of movement or distress of the landfill area. Access roads on top and adjacent to the landfill area were in good condition.
4. Minor brush and some cattails were observed to be growing in the perimeter ditches and around the energy dissipater structures for the "let down" piping on the eastern edge of the landfill area.

Most of the perimeter ditches indicated positive flowing water without obstruction as a result of recent rain event.

5. There is ponded water in the downstream end of the perimeter ditch on the north side of the landfill. However, a pump and piping system had recently been installed to pump this water into non-contact water perimeter ditches on the west side of the landfill.

Inactive Landfill Disposal Areas (2012, 1985 Pond Cell and 1993 Cell)

6. All of the leachate outlet pipes from the 1985 pond cell, 1993 cell and the 2012 cell have been extended along the south perimeter ditch to one point and tied into a 24-inch diameter leachate pipe that discharges directly into the landfill pond. These pipe extensions were buried and the perimeter ditch areas covered with soil, closure turf and rain flap material to protect non-contact water runoff from exposure to ash materials.

7. A temporary soil cover consisting of a red clay material has been placed for an erosion protection measure on a portion of the side slopes of the 2012 cell. The soil cover has been seeded but most of the area still has no vegetative cover and there is sediment buildup in the ditches. In addition, minor erosion rills have developed in the bare soils cover due to lack of vegetation. In addition to the soils cover, other adjacent areas of the 2012 cell, 1985 pond cell and 1993 cell have been covered with closure turf material or with a 20-mil geo-membrane rain flap material for erosion protection.

8. The final Cap and Cover system of the remaining top portions of the 2012 cell consists of Closure Turf material.

9. The area around groundwater interceptor drain manhole on the southern side of the landfill has been recently graded. The check valve drain line leading from the manhole has been extended and is open allowing water to discharge directly into the landfill pond. The area surrounding the manhole and check valve drain line needs to be vegetated for erosion protection.

Active Landfill Disposal Areas (2015 Cell)

10. During the inspection, some of the active disposal area (2015 Cell) had been covered with 12 inches of temporary soil cover to reduce the amount of contact water going to the landfill runoff pond. The active disposal area used for waste placement has been reduced to approximately 3 acres. The chimney drains appear to be functioning as designed, but there was evidence of pooling water around the drains from a recent rain event. In general, the chimney drain consists of placing bottom ash in a 10-feet diameter circle around a perforated vertical drainpipe wrapped in filter fabric that is connected to the leachate discharge pipes.

11. The waste is being placed and graded in such a manner that any runoff from the active landfill area is collected, contained and drained through the chimney drain system. There is no direct contact water runoff into the pond area.

12. The lower slopes of the 2015 active cell have been covered with a final Cap and Cover system consisting of Closure Turf material with rock lined benches and perimeter ditches.

2018 Landfill Cell Construction

13. The construction of the 2018 Landfill Cell bottom liner system is complete. Final grading outside the cell area is complete and the perimeter ditches are functioning. Once the leachate

collection system is installed and a protective cover layer is in place, the cell will be ready for accepting CCR waste.

14. Based on the current conditions, storm water runoff from the liner area and perimeter ditches is considered non-contact water and is diverted around the landfill runoff pond.

Storm Water Drainage Ditches

15. The concrete slope protection and the two 36-inch-diameter culverts, which discharged leachate and contact water from the south side perimeter ditches into the Landfill Runoff Pond has been removed. All of the leachate outlet pipes form the 1985 pond cell, 1993 cell, 2012 cell and the 2015 cell have been extended along the south perimeter ditch to one point and tied into a 24-inch diameter leachate pipe that discharges directly into the landfill pond. These pipe extensions were buried and the south perimeter ditch areas covered with a combination of soil, closure turf and rain flap materials to protect non-contact water runoff from exposure to ash materials.
16. A non-contact water ditch runs along the eastern edge of the landfill area. The vegetation along this ditch was good with some areas being slightly overgrown with cattails. There was no evidence of erosion, obstructions or poor drainage conditions. There was flowing water without obstruction in the ditches at the time of inspection due to recent rain event.
17. A non-contact water ditch runs along the toe of the western edge of the landfill area and is lined with final Cap and Cover Closure Turf material. Runoff from the lower outside slope of the 2015 cell Closure Turf is collected into this ditch and then discharges into a non-contact water ditch that goes around the landfill pond. There was flowing water in the ditch at the time of inspection due to recent rain event.
18. A non-contact storm water ditch runs along the outer western edge of the landfill is lined with a geomembrane material. Runoff from the 2005 Cell is collected into a 36-inch-diameter conduit and this conduit discharges into the non-contact water ditch. An earthen berm armored with riprap material has been placed at the end of the non-contact water ditch to divert flow away from the toe area of the Landfill Runoff Storm Water Pond Dam. Several small holes about 2 inches in diameter have been cut into the geomembrane to allow any trapped groundwater under the geomembrane to drain and prevent floating of the geomembrane liner. There was water flowing in this ditch at the time of inspection due to recent rain event.

4.5 CHANGES THAT EFFECT 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 and the active cell, inactive cells, closed areas, and storm water ditches are in good condition. The Plant is performing regular maintenance and inspections as required. Several maintenance items have been noted and are described in Section 5.2.

5.2 MAINTENANCE ITEMS

The following maintenance items were identified during the visual inspection, see site map for locations. Contact GES for specific recommendations regarding repairs:

1) Repair the erosion rills, re-seed and mulch the temporary soil cover on the lower portion of the 2012 cell near the 1985 pond area on the south side.

2) Remove the brush and/or cattails growing around the outlets of the "let down" piping on the east side of the landfill. Establish grass cover on any disturbed areas.

3) Remove any excess brush and cattails from the perimeter ditches around east and western sides of the landfill. Establish grass cover on any disturbed areas.

4) Seed and mulch the recently graded areas on the south side of the landfill near the ground water interceptor drain manhole and toe areas of the 2015 cell.

5) Operate the check valve drain in the ground water interceptor manhole periodically to maintain its function.

6) Install proper erosion and sediment controls on the recently graded areas on the south side of the landfill to minimize the amount of sediment build up in the storm water runoff ditches.

5.3 ITEMS TO MONITOR

The following items were identified during the visual inspection as items to be monitored:

- None identified as part of this inspection.

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 or during any of the periodic 7-day inspections.

A deficiency is defined as either:

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

If any of these conditions occur before the next annual inspection contact AEP Geotechnical Engineering immediately.

ATTACHMENT A

Figure 1 – Vicinity Map
Figure 2 – Landfill Site Map

FIGURE 1 - VICINITY MAP

CCR LANDFILL, H.W. PIRKEY POWER PLANT, HALLSVILLE, TX

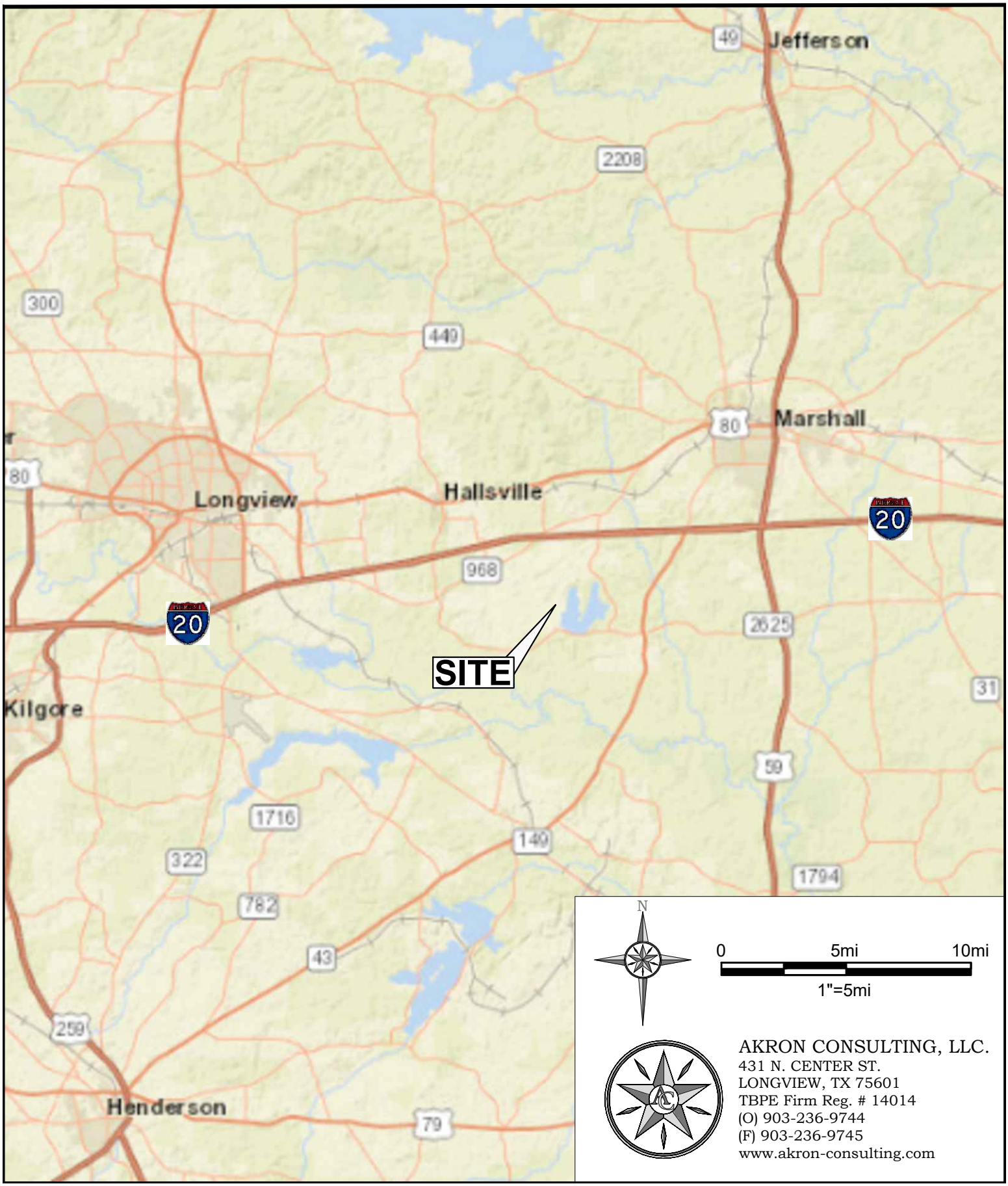

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FIGURE 2
PIRKEY LANDFILL
SITE MAP

ATTACHMENT B

Figure 3 – Inspection Photograph Location Map
Inspection Photographs

FIGURE 3 - INSPECTION PHOTOGRAPH LOCATION MAP

CCR LANDFILL, H.W. PIRKEY POWER PLANT, HALLSVILLE, TX

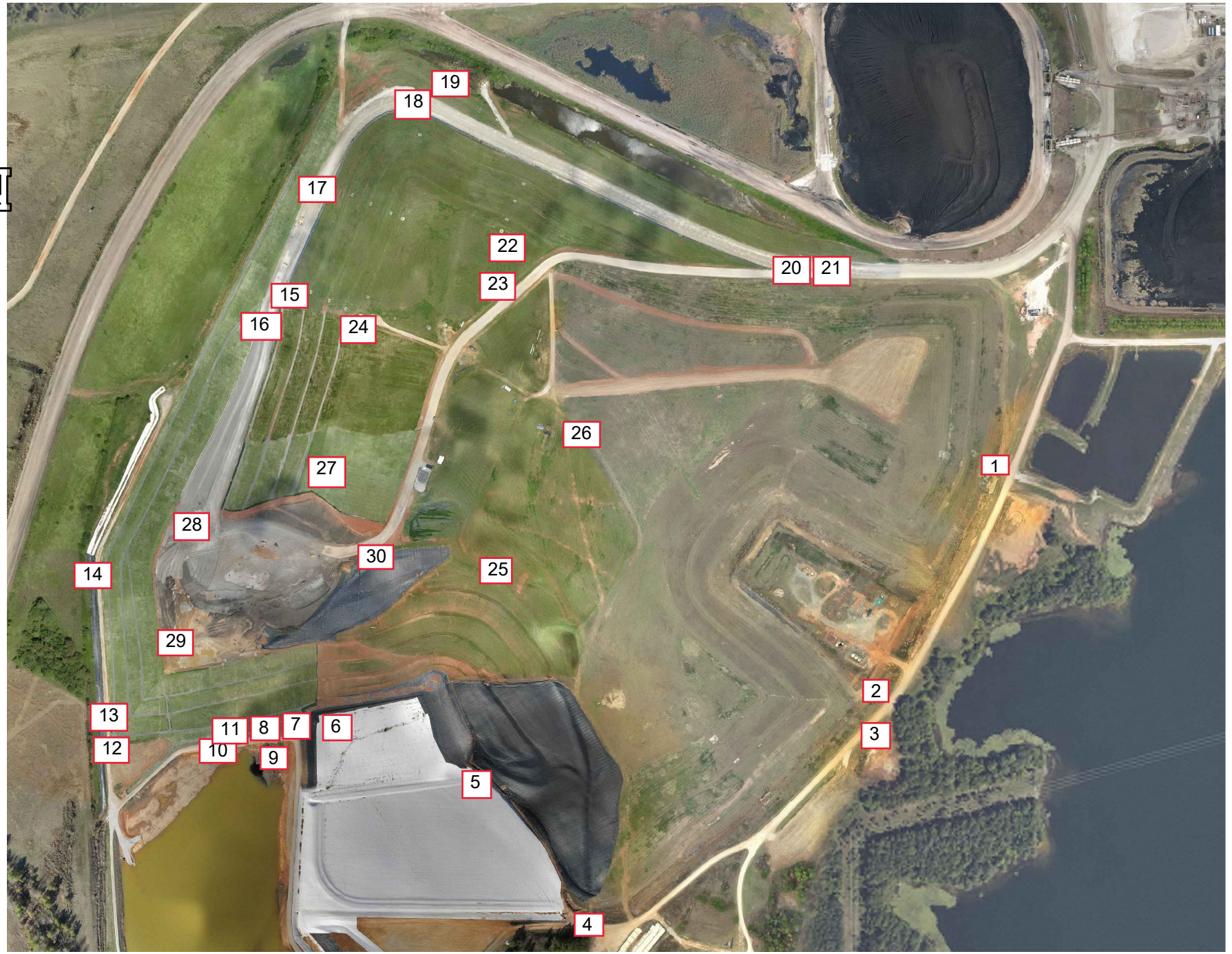

Photo # 1	
View of the storm water let-down pipe on the east side of the landfill area.	
Photo # 2	
View of the non-contact-water perimeter ditch and side slope conditions around the Mohan Well site on the east side of the landfill area. Notice the standing water from recent rains.	
Photo # 3	
View of the non-contact water perimeter ditch and side slope conditions on the east side of landfill area.	

Photo # 4	
View of the non-contact water perimeter ditch on the south side of landfill between the 1993 and 2018 cell.	

Photo # 5	
View of the rain flap material covering the 1985 pond area between the 1993 and 2018 cells.	

Photo # 6	
View of the temporary soil cover on the 2012 cell side slopes. Need to establish vegetation to control erosion.	

Photo # 7	
View of the non-contact water perimeter ditch between the 2012, 2015 and 2018 cells. Notice the sediment in the flowing water.	
Photo # 8	
View of groundwater interceptor drain manhole cover and the check valve drain box. Area needs to be vegetated.	
Photo # 9	
View of the 24-inch diameter leachate pipe and 12-inch diameter ground water interceptor pipe coming out of southern end of landfill into the landfill pond.	

Photo # 10	
Landfill Cover – View of recently graded area on the south side of the 2015 cell area. Area needs to be vegetated.	
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View of the rock channel letdown ditch on the cap and cover closure turf of the 2015 cell.	
Photo # 12	
View of cap and cover closure turf material with typical bench area with rip rap lining.	

Photo # 13	
View of cap and cover closure turf material with typical bench area with rip rap lining.	
Photo # 14	
View of the non-contact water perimeter ditch on the west side of landfill. Vegetation is growing over liner material covered with silt.	
Photo # 15	
View of the old haul road on west side of landfill where the old cap and cover vegetation meets the new closure turf material. This section of haul road will be closed with final cap and cover.	

Photo # 16	
Typical condition of the western slopes with closure turf material	
Photo # 17	
Typical condition of the western slopes with closure turf material and non-contact water perimeter ditch.	
Photo # 18	
Typical condition of the vegetative cover over the northern side slope areas.	

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Typical condition of the northern slope areas below the haul road. Notice the ponded water at the downstream end of the perimeter ditch.	
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Typical condition of the vegetative cover over the southern and eastern areas of the landfill cap.	
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Typical condition of the vegetative cover over the northern and eastern areas of the landfill cap.	
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View of the cap and cover closure turf material over the 2012 cell area.	

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