
2026 Spring Site Inspection

Keokuk Ferro-Sil Monofill (Closed)

Permit No. 56-SDP-17-91P

Engineers Project No. 7252-1/21-2007

Prepared for

Glencore, Ltd.

Prepared by

Klingner & Associates, P.C.

610 North 4th Street, Suite 100
Burlington, Iowa 52601

Date Prepared

March 30, 2026

	I HEREBY CERTIFY THAT THIS ENGINEERING DOCUMENT WAS PREPARED BY ME OR UNDER MY DIRECT PERSONAL SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF IOWA. 
	_____ Jessica A. Coca
	MY LICENSE RENEWAL DATE IS DEC. 31, 2026 IOWA REGISTRATION NUMBER: 25623
	PAGES OR SHEETS COVERED BY THIS SEAL: ALL DATE OF ISSUANCE: 3/30/2026

LANDFILL GENERAL OBSERVATIONS

An engineering inspection was conducted at the landfill on March 13, 2026. Conditions were partly cloudy, windy, and the temperature was around 40 degrees Fahrenheit. The landfill entrance gate was locked and access roads were well maintained with rock. Signage was installed at the entrance gate that provided the site and contact information. Groundwater well locations were accessible and in good condition. The most recent mowing was completed in May of 2024 with supplemental mowing performed in September of 2024 around the leachate lagoon. Mowing is anticipated to be completed later this spring. The vegetative cover is in good condition, some small cedars were noted to be growing on the cap that would be addressed by mowing. Observations were made around the slopes and base of the lagoon for any indication of leachate seepage. No evidence of leachate seeps or excessive moisture on the surface was observed.

The leachate pond level appeared to be normal. The area of the leachate line repair (2023) was walked. Some erosion is starting in the City right-of-way along Kindustry Park Road. No other areas of erosion were noted.

Permit Conditions

The site permit was issued on April 4, 2007, and permit amendments have been issued by letter. In a letter dated January 30th, 2018, the IDNR required a number of things including a) minor modifications to the sampling plan, b) regular sampling of the leachate pond, and c) a requirement to clean out the leachate collection lines every three years. These items were implemented in 2018.

The leachate collection lines were jetted in October of 2024 to confirm that the system is freely flowing into the leachate collection pond. Documentation of the jetting of the leachate collection lines was provided in the 2024 AWQR. Jetting of the lines is to be completed again in 2027.

Leachate System

An automatic pump system with a run timer and float system was installed on the site and has been operational since October 18th, 2017. The run time is checked periodically during site visits by CHEM-ECO Environmental and Klingner and recorded such that the leachate pumping quantities can be reported to the City of Keokuk and Iowa DNR in future reports.

The run time during the September 5, 2025 (Fall Inspection) visit was 4892 hours and 15 minutes. The pump hours on March 13, 2026 (Spring Inspection) were recorded to be 4924 Hours and 39 Minutes.

The total pumping between the Fall and Spring inspections was 124,416 gallons.

The run time readout is cumulative, so successive readings must be subtracted to find the difference at each period. The flow rate of the pump system is estimated to be approximately 64 GPM. Note that the estimated flow rate was decreased after flow measurements were taken using a doppler flow meter and additional flow calculations were performed at the request of the City of Keokuk during the Industrial Discharge Permitting process in 2023.

There currently is no plan to prepare a separate LCSPE report.

Month of Reading	Pump Hours	Elapsed Run Time (Hours)	Elapsed Run Time (Minutes)	Gallons Pumped (64 GPM)
September	4892.25	---	---	---
October	4892.25	0	0	0
November	4892.25	0	0	0
December	4919.85	27.6	1656	105,984
January	4919.85	0	0	0
February	4924.65	4.8	288	18,432
March (as of 3/13/26)	4924.65	0	0	0
Total Estimated Pumping September 2025 – March 2026			1944	124,416



Date 03/13/26 Inspected by JAC
 Eng Proj # 21-2007

CLOSED LANDFILL INSPECTION CHECKLIST

KEOKUK FERRO-SIL MONOFILL **LANDFILL CONTACT: STEVEN DEMASI, TWIN RIVERS HOLDING CO.**
PERMIT NUMBER 56-SDP-17-91P **PERMIT ISSUED APRIL 4, 2007, EXPIRES 4/4/2037**

Weather Conditions: 40F, Windy

GENERAL

1.) Landfill ID and contact info posted?	YES
2.) Is entrance gate locked?	YES
3.) Entrance Road Conditions	GOOD, some erosion on the slope toward the leachate lagoon

COVER

4.) Condition of Final Cover: Vegetation	GOOD. Landfill cap requires mowing to address cedar samplings
5.) Has topsoil been placed on the landfill?	YES.
6.) Has the landfill been properly graded and seeded?	YES.

EROSION

7.) Is drainage and erosion being controlled on the landfill?	YES
---	-----

LEACHATE

8.) Is there evidence of leachate on the surface of the landfill?	NO
9.) Are there any leachate flows leaving the site?	NONE OBSERVED
10.) Has the landfill submitted plans for a leachate collection/treatment system?	YES
11.) Has the approved leachate collection and treatment system been constructed?	YES
12.) Does the landfill have a permit to discharge leachate?	YES, TO SANITARY SEWER MANHOLE IN KINDUSTRY PARK. CITY OF KEOKUK.

LANDFILL GAS

13.) Is there evidence of landfill gas problems?	NO
--	----

MONITORING WELLS

14.) Are monitoring wells in good condition?	YES
15.) Are monitoring wells marked and identified?	YES

MISCELLANEOUS

16.) Is there evidence of open burning?	NO
17.) Is there evidence of open dumping, litter?	NO
18.) Is there evidence of rodents or insects as a result of improper landfilling operations?	NO

Additional Comments:

Small cedar saplings (less than 12" in height) are present on the landfill cap. Mowing is proposed for this spring to address the saplings on the cap and slopes.



Description	Erosion at road edge beginning near sanitary manhole in Kindustry Park	1
Date	3/13/2026	



Description	Looking south at Kindustry park road, erosion from road to creek beginning	2
Date	3/13/2026	



Description	Path of forccemain between Kindustry park road and venting structure	3
Date	3/13/2026	



Description	Path of forccemain just south of venting structure	4
Date	3/13/2026	



Description	Venting structure manhole	5
Date	3/13/2026	



Description	Looking north along forcemain route north of venting structure	6
Date	3/13/2026	



Description	Looking north along north end of force main repair area	7
Date	3/13/2026	



Description	Landfill entrance gate signage. Gate loked.	8
Date	3/13/2026	



Description	Looking east/southeast from edge of former tipping pad	9
Date	3/13/2026	



Description	Looking east from edge of former tipping pad	10
Date	3/13/2026	



Description	Looking north, toward entrance gate, from former tipping pad	11
Date	3/13/2026	



Description	Leachate collection area	12
Date	3/13/2026	



Description	South slope of landfill	13
Date	3/13/2026	



Description	Looking north from SW side of landfill	14
Date	3/13/2026	



Description	Looking north/northwest from SW side of landfill	15
Date	3/13/2026	



Description	Leachate collection area	16
Date	3/13/2026	



Description	Stormwater intakes on south side of landfill	17
Date	3/13/2026	



Description	Looking north across landfill from south side	18
Date	3/13/2026	



Description	Looking east along south side of landfill	19
Date	3/13/2026	



Description	SE slope of landfill	20
Date	3/13/2026	



Description	East slope of landfill	21
Date	3/13/2026	



Description	East slope of landfill, looking northeast	22
Date	3/13/2026	



Description	Looking north along east side of landfill	23
Date	3/13/2026	



Description	Looking north/northwest from east side of landfill	24
Date	3/13/2026	



Description	Looking west from east side of landfill	25
Date	3/13/2026	



Description	SE side of landfill	26
Date	3/13/2026	



Description	MW-11	27
Date	3/13/2026	



Description	Leachate collection line, cleanout, cap missing	28
Date	3/13/2026	



Description	MW12	29
Date	3/13/2026	



Description	MW13	30
Date	3/13/2026	



Description	Looking west across north side of landfill	31
Date	3/13/2026	



Description	Looking SW across landfill from north end	32
Date	3/13/2026	



Description	Looking SE across landfill from north end	33
Date	3/13/2026	



Description	Drive to leachate collection area	34
Date	3/13/2026	



Description	Drive adjacent to leachate collection area	35
Date	3/13/2026	



Description	Leachate lagoon	36
Date	3/13/2026	



Description	Dock at leachate lagoon	37
Date	3/13/2026	



Description	MW16	38
Date	3/13/2026	



Description	Slope on southwest side of leachate lagoon	39
Date	3/13/2026	



Description	Slope on southeast side of leachate lagoon	40
Date	3/13/2026	



Description	Looking north from east berm of leachate lagoon	41
Date	3/13/2026	



Description	MW14	42
Date	3/13/2026	



Description	Looking northeast from northeast corner of leachate collection area	43
Date	3/13/2026	



Description	MW15	44
Date	3/13/2026	