UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 5
77 WEST JACKSON BOULEVARD
CHICAGO, IL 60604-3590

REPLY TO ATTENTION OF
ECW-15J

VIA EMAIL

Mr. Tom Maicher
Environmental Manager
Cleveland Cliffs Burns Harbor
250 West U.S. Highway 12
Burns Harbor, IN 46304

Subject: April 19, 2021 Inspection Report for Cleveland Cliffs Burns Harbor,
NPDES Permit Number IN0000175

Dear Mr. Maicher:

Enclosed, please find a copy of the U.S. Environmental Protection Agency Inspection Report that describes, and documents the activities at Cleveland Cliffs Burns Harbor, LLC on April 19, 2021.

The purpose of the inspection at Cleveland Cliffs Burns Harbor, LLC was to document the facility's compliance with its NPDES permit.

On April 20, 2021, IDEM and EPA received the scans of the sample log data for Outfall 001 that CCBH personnel stated would be sent following the inspection.

If you have any questions or concerns regarding this letter, or the inspection report, please contact Joan Rogers at (312) 886-2785 or at rogers.joan@epa.gov.

Sincerely,

RYAN BAHR Digitally signed by RYAN BAHR
Date: 2021.06.08 13:14:57 -05'00'

Ryan J. Bahr,
Chief, Section 2
Water Enforcement and Compliance Assurance Branch

Enclosure

cc: Nicholas Ream, Environmental Engineer
Indiana Department of Environmental Management

Jason House, Branch Chief of Wastewater Compliance
Indiana Department of Environmental Management

CWA COMPLIANCE EVALUATION INSPECTION REPORT
U.S. ENVIRONMENTAL PROTECTION AGENCY, REGION 5

Purpose:
Compliance Evaluation Inspection

Facility:
Cleveland Cliffs Burns Harbor, LLC
250 US-12
Burns Harbor, Indiana 46304
Porter County
41.625, -87.117

NPDES Permit Number:
IN0000175

Date of Inspection:
April 19, 2021

EPA Representatives:
Joan Rogers, Environmental Scientist 312-886-2785
Rogers.joan@epa.gov

State Representatives:
Nicholas Ream, Indiana Department of Environmental Management 219-730-1691
Wastewater Inspector
nream@idem.IN.gov

Robert Lugar, Indiana Department of Environmental Management 317-234-6019
RLugar@idem.IN.gov

Facility Representatives:
Tom Maicher, Manager of the Environmental Plant 219-787-4961
Robert.maciel@ClevelandCliffs.com

Morgan Swanson, Environmental Engineer 219-787-2646
Morgan.swanson@ClevelandCliffs.com

Cary Mathias, Regional Waste Manager 330-659-9124
Cary.mathias@ClevelandCliffs.com

Patrick Gorman, Operator
Patrick.gorman@ClevelandCliffs.com

Rick Balunda, Operations Manager
Balunda.Rick@ClevelandCliffs.com

Courtney Zunica –Notetaker for Cleveland Cliffs Burns Harbor

Report Prepared by:
Joan Rogers

Inspector Signature: JOAN ROGERS Digitally signed by JOAN ROGERS Date: 2021.06.08 10:54:53 -05'00'

Approver Name and Title: _Ryan Bahr, Chief, Section 2, WECAB

Approver Signature/Date: RYAN BAHR Digitally signed by RYAN BAHR Date: 2021.06.08 13:11:56 -05'00'

1. BACKGROUND

The purpose of this report is to describe and document the discussion and site inspection at the Cleveland Cliffs Burns Harbor facility on April 19, 2021. This inspection was performed pursuant to Section 308(a) of the Federal Water Pollution Control Act, as amended. This was a joint inspection by EPA and the Indiana Department of Environmental Management (IDEM).

The Cleveland Cliffs Burns Harbor (CCBH) facility is one of the largest fully integrated steel mills in North America, with the capacity to produce approximately 5 million tons of raw steel per year. They operate under NPDES Permit No. IN0000175, which was issued on May 27, 2016 and expires on June 30, 2021. A permit renewal application has been submitted to IDEM. The facility was previously owned by ArcelorMittal and was known as ArcelorMittal Burns Harbor.

The inspection on April 19, 2021 was a Compliance Evaluation Inspection to document compliance with the facility's permit.

EPA and IDEM also requested the following documents to be sent prior to the inspection (if possible):

a. February 2021 analytical results and associated Chain-of Custody reports.
b. Most recent flow meter calibration records.
c. Sludge disposal records for February 2021.
d. DMRs and MMRs for January and February 2021.
e. Any additional ammonia analysis from the Storm Water Ditch sampling.
f. Any new information regarding sludge depths or analysis of the sludge in the lagoons.
g. Information regarding cyanide destruction and ammonia stripping within the blast furnace recycle system.
h. Information regarding the elevated, although not over permit limits, cyanide results for the January 24 - February 2, 2021 timeframe.

A notification requesting these documents and information was sent to CCBH on April 13, 2021.

2. SITE INSPECTION

Site Entry and Opening Conference

Arrival Time:	8:30 A.M.
Presented credentials?	Yes.
Credentials presented to whom and at what time?	8:30 A.M. to Morgan Swanson. 9:00 A.M. to Tom Maicher, Cary Mathias, Pat Gorman and Courtney Zunica.
Was an opening conference held? With whom?	Yes. Ms. Swanson, Mr. Maicher, Mr. Mathias, Mr. Gorman and Ms. Zunica.
If photographs or documents were taken, does the facility consider any to be Confidential Business Information (CBI)?	No.
Which information does the facility consider to be CBI?	None.
EPA vehicle parked in approved location?	Yes.
Location where EPA vehicle was parked?	Environmental Services Building.

EPA inspector, Ms. Joan Rogers, and IDEM inspectors Mr. Bob Lugar and Mr. Nick Ream followed Ms. Swanson to the Environmental Services Building conference room from the main office where EPA and IDEM inspectors received their visitor badges. The inspection team explained that the purpose of the inspection was to document compliance with the NPDES permit, obtain information and view the locations at the facility requested in the April 13, 2021 notification. The inspection team discussed safety considerations with the facility personnel.

Ammonia Treatment Process

The conversation began with a description of ammonia treatment from the Blast Furnace Recycle System (BFRS) blowdown. Currently, the facility is utilizing a cooling tower to remove ammonia from the BFRS blowdown. Facility representatives commented that it has experienced a lot of solids build-up in the cooling tower. They plan to install equipment to remove the hardness before the flow goes to the cooling tower. The equipment is already ordered for rental through the summer, when the Permit's ammonia limits are lower. They will observe the process over the next couple of summers, demobilizing the system for the winter because it isn't freeze-proof.

Mr. Mathias stated that because of the solids in the blowdown, the ammonia reduction is 50%, at best, in the cooling tower. They stated that it is only removing about half of the hardness in blowdown with the system they currently have. This hardness is from calcium carbonate. The other half is from sulfates and they believe they need soda ash to assist in that removal. They plan to introduce soda ash after the chlorine dioxide (ClO_2) system that is designed for cyanide destruction. The flow will then go through two cooling towers before flowing to the Secondary Wastewater Treatment Plant (SWTP) and then out through Outfalls 011 and 001.

An additional plan to remove solids from the Reclamation Services Building (RSB) thickener underflow with a centrifuge and then send the centrate back to the BFRS will also provide more ammonia removal from the final effluent because that flow will now go through ammonia removal during blowdown before flowing to the Secondary Wastewater Treatment Plant (SWTP) and then out through Outfalls 011 and 001.

Lagoon Soundings

In November 2020, CCBH conducted surveys of the lagoon depths and have new soundings from those surveys. Using the unit of Cubic Yards Dry (CYD), the soundings were used to calculate the current water volume capacities of the influent channel, Cell 1 (South Cell), Cell 2 (North Cell), and the effluent channel. The current capacities in each location were compared to the design capacities. From the 2020-12-23 WWTP Lagoon Hydrographic Survey drawings provided to EPA and IDEM, there is significant reduction in capacity in the influent and effluent channels and each cell's capacity is reduced by approximately 30% of the design capacity.

CCBH is most concerned about the influent channel capacity. The design capacity was 37,887 CYD and currently there is only 8,421 CYD of water volume left. They consider this a pinch point of the lagoon system and have begun developing plans to dredge the influent channel. Since the influent channel cannot be isolated from the whole system, like the cells could be, CCBH is carefully considering how to dredge the influent channel without causing permit exceedances.

Storm Water Ditch

EPA and IDEM asked if there had been any additional testing for ammonia on the Storm Water Ditch. CCBH stated that there has been. They decided that testing for ammonia only wasn't giving them enough data. They added some instrumentation on April 2, 2021 to also test for temperature and conductivity. The instruments sample the water in the Storm Ditch every two minutes. They plan to download the data every 20 days and they recently downloaded the first batch of data and are in the process of reviewing the results. They plan to install these instruments from the SWTP all the way to Outfall 011. Meanwhile, they are still taking composite samples for ammonia from certain stretches along the Storm Water Ditch.

Additionally, they redid the ammonia mass balance with the Sinter Plant running. The Sinter Plant was not operating during the last ammonia mass balance testing. A report will be generated once the calculations are complete.

Cyanide Elevations from January 24 – February 2, 2021

During review of daily sample analysis reports, EPA noted that during the period from January 24, 2021 through February 2, 2021, the level of total cyanide at Outfalls 011 and 001 were elevated. The data from the sample analysis from that time frame are:

Date	Outfall 011 Total Cyanide (mg/L)	Outfall 001 Total Cyanide (mg/L)
1/24/21	0.0054	<0.0040
1/25/21	0.0090	0.0056
1/26/21	0.010	0.0068
1/27/21	0.018	0.0094
1/28/21	0.018	0.012
1/29/21	0.014	0.011
1/30/21	0.015	0.011
1/31/21	0.0086	0.0058
2/1/21	0.0077	<0.0040
2/2/21	0.0076	0.0056
2/3/21	0.0080	0.0054
2/4/21	0.0062	0.0041
2/5/21	0.0076	0.050
2/6/21	0.0050	0.0042

Although they never reached a level that would exceed a permit limit, EPA and IDEM were interested to know if there were any production changes or problems that caused the elevated levels of cyanide.

CCBH personnel stated that they have not identified anything different in the production during that timeframe. Mr. Mathias pointed out that 0-4 ppm variability is normal in their operations. Mr. Gorman stated that the facility observed that the total cyanide in the Cold Well also went up to 2 ppm during that time period. The facility doesn't take any additional actions until the samples in the Cold Well are at 4 ppm. Once the level of cyanide in the Cold Well reaches 4 ppm for two sample periods, the facility personnel increase the sampling frequency to every two hours. If the cyanide levels persist for two of those samples, the facility utilizes the ClO2 to destruct the cyanide. The level of cyanide in the Cold Well did not reach a point where ClO2 was needed.

Mr. Mathias stated that the facility gets about 85% reduction in cyanide with the use of the ClO2. The Agencies were provided a hard copy from the report for the ClO2 system titled Preliminary Pilot with Field Data that shows the percentage of cyanide removal using the ClO2.

Facility Walkthrough

See Attachment A for the photolog of the photos taken during the facility walkthrough.

After the interview and discussion in the conference room, EPA and IDEM began the walkthrough of the facility. At 11:14 A.M., Ms. Rogers, Mr. Ream, and Mr. Lugar inspected the lab. In the lab, they observed that the log for the refrigerator temperature was maintained and showed that the refrigerator temperature was in the proper range. The thermometer was properly kept in water inside the refrigerator. Additionally, all the buffers were not expired.

At 11:29 A.M., the inspection team traveled to the Cooling Towers and observed the equipment in the control room. In the control room, facility personnel use colorimetric tests for cyanide and ammonia. They use a dilution for the ammonia testing because the test only reads to 10 mg/L and there is usually 140 mg/L in the water. Operators perform the ammonia and cyanide tests every eight-hour shift. The operators report to their supervisors who create a report that Mr. Gorman reads.

EPA and IDEM inspectors observed the control screen. The facility was not currently feeding ClO2 to the system because the cyanide levels were too low.

EPA and IDEM inspection team then accompanied the facility personnel outside and observed the Cooling Towers. All five of the BFRS cooling towers have been rehabbed and there are now two cooling towers for ammonia reduction. The inspection team also saw the area next to the cooling towers where the new ammonia treatment will be installed.

EPA and IDEM then observed Outfall 111. This is an internal outfall for water from the Hi-Cap Thickener and the RSB Final Thickener effluents. Currently, these flows go to the Dirty Industrial Wastewater (DIW) pipe which takes the flow to the SWTP. As mentioned in the Ammonia Treatment Processes section above, in the future, the plan is to divert these flows to a centrifuge to remove solids. The solids will be landfilled and the centrate will be piped back into the BFRS. When the water leaves the BFRS through the blowdown, it will be treated for ammonia.

At 12:07 P.M., EPA and IDEM inspectors drove to and observed Outfall 003. The water in the bermed area was clear.

At 12:27 P.M., EPA and IDEM inspectors drove to and observed the Deerfield Retention Basin. The level of the water in the basin on the day of the inspection was 80” and the basin has a capacity of 144” to the top of the berm.

At 12:53 P.M., EPA and IDEM inspectors drove to Outfall 002 and observed that the water was clear. There was a small amount of scum and debris along the back wall of the outfall.

At 1:20 P.M., EPA and IDEM inspectors drove to the SWTP. CCBH Operations Manager, Mr. Rick Balunda, joined the inspection team. They began their inspection of the SWTP on the Cold Mill side. EPA and IDEM observed that there was oil on the effluent in the clarifiers. Mr. Balunda stated that he thought there was not enough solids in the influent to “grab” the oil and grease and that was the reason for the oil on the effluent.

EPA and IDEM also observed a clarifier that was empty for cleaning. There were solids built up in the corners of the square clarifier. Mr. Balunda stated that this is a typical problem with square clarifiers and the sludge built up in the corners needs to be cleaned periodically. EPA and IDEM also observed vegetative growth on the weirs of one of the clarifiers.

On the Hot Mill side of the SWTP, EPA and IDEM observed that there was also an oil sheen on the effluent in the clarifiers on this side of the plant. Ms. Rogers asked Mr. Balunda if there would be a problem running the SWTP in the future if the facility reduces solids from the waste stream even further. Mr. Balunda stated that it wouldn't be a problem because he could use his Return Activated Sludge (RAS) to reseed if needed.

EPA observed the sample data from the cyanide testing done at the SWTP during the time period of elevated cyanide from January 25, 2021 to February 3, 2021. During this timeframe, SWTP personnel had increased the monitoring frequency. Mr. Balunda stated that when the level reaches 3 ppm, he reports that and ClO2 treatment was supposed to begin. None of the samples showed elevated cyanide over 3 ppm. Mr. Gorman thought that the trigger level was 4 ppm, but Mr. Balunda believed it to be 3 ppm.

EPA and IDEM inspectors left the plant and traveled to Outfalls 011 and 001, arriving at Outfall 011 at 2:30 P.M. On the way to Outfall 011, EPA observed the influent channel to the lagoons. Clearing of the brush alongside the influent channel had already begun in preparation for the dredging. EPA observed that the water was clear at Outfall 011. In the sample building for Outfall 011, the temperature of the reagent refrigerator and the temperature of the sample refrigerator were both 3°C and the log entries were complete.

EPA and IDEM inspectors arrived at Outfall 001 at 2:44 P.M. The water was clear at Outfall 001. In the sample building, EPA and IDEM noted that the screen on the auto-sampler showed that the temperature in the sampler was -0.5°C, but the thermometer inside read 8°C. The thermometer was in water inside the auto sampler. EPA and IDEM looked for the logbook for the temperature observations, but it was not in the sample building. EPA and IDEM requested that the log entries be submitted electronically.

EPA and IDEM provided a brief closing conference at Outfall 001.

3. LIST OF DOCUMENTS RECEIVED FROM FACILITY

- Preliminary Pilot with Field Data (1 page) with percent destruction of cyanide after use of ClO2.
- 2020-12-23 - WWTP Lagoon Hydrographic Survey (provided on April 16, 2021).
- January and February 2021 DMRs and MROs (provided on April 16, 2021).
- Calibration logs and flow records for all Outfalls (provided on April 16, 2021).
- Sludge disposal records (provided on April 16, 2021).
- Outfall 001 Sample Log Entries 20210413-20210419 (provided on April 20, 2021).

4. AREAS OF CONCERN

A. Influent channel is a pinch point for flow to the lagoons due to buildup of sludge in the channel.
B. Oil sheen observed in the clarifier effluent in both sides of the SWTP.
C. Algae on weirs on the Cold Mill side of the SWTP.
D. Temperature readout on the auto-sampler at Outfall 001 is out of range.

5. LIST OF ATTACHMENTS

A) Photolog
B) 2020-12-23 – WWTP Lagoon Hydrographic Survey
C) Preliminary Pilot with Field Data.
D) Outfall 001 Log entries.

ATTACHMENT A

Attachment A - Photolog
Cleveland Cliffs Burns Harbor - Inspection April 19, 2021

Photo taken by Nick Ream, IDEM Wastewater Inspector
Description: Area near the cooling towers.
Location: Near the Cooling Towers
Camera Direction: Southwest
Date/Time: April 19, 2021 / Approximately 11:50 A.M.

The remaining photos were taken by EPA inspector, Joan Rogers, with an Olympus Tough TG-4 camera.

1: P4190001
Description: Outfall 111 is an internal outfall for Hi-Cap Thickener and RSB Thickener effluent flows.
Location: Near the BFRS
Camera Direction: Down
Date/Time: April 19, 2021 / 12:01 A.M.

2: P4190002
Description: Deerfield Retention Basin was designed for leachate for the 75-acre landfill.
Location: South of the Deerfield Landfill.
Camera Direction: Southeast
Date/Time: April 19, 2021 / 12:36 P.M.

3: P4190003
Description: Deerfield Retention Basin.
Location: South of the Deerfield Landfill.
Camera Direction: South
Date/Time: April 19, 2021 / 12:36 P.M.

4: P4190004
Description: Deerfield Retention Basin.
Location: South of the Deerfield Landfill.
Camera Direction: Southwest
Date/Time: April 19, 2021 / 12:36 P.M.

5: P4190005
Description: Pump station for the leachate from the Deerfield Landfill to the Deerfield Retention Basin.
Location: South of the Deerfield Landfill.
Camera Direction: Northeast
Date/Time: April 19, 2021 / 12:39 P.M.

6: P4190006
Description: Oil sheen observed on the effluent from the claifiers in the Cold Mill side of the SWTP.
Location: Clarifier in the Cold Mill side of the SWTP.
Camera Direction: Down
Date/Time: April 19, 2021 / 1:37 P.M.

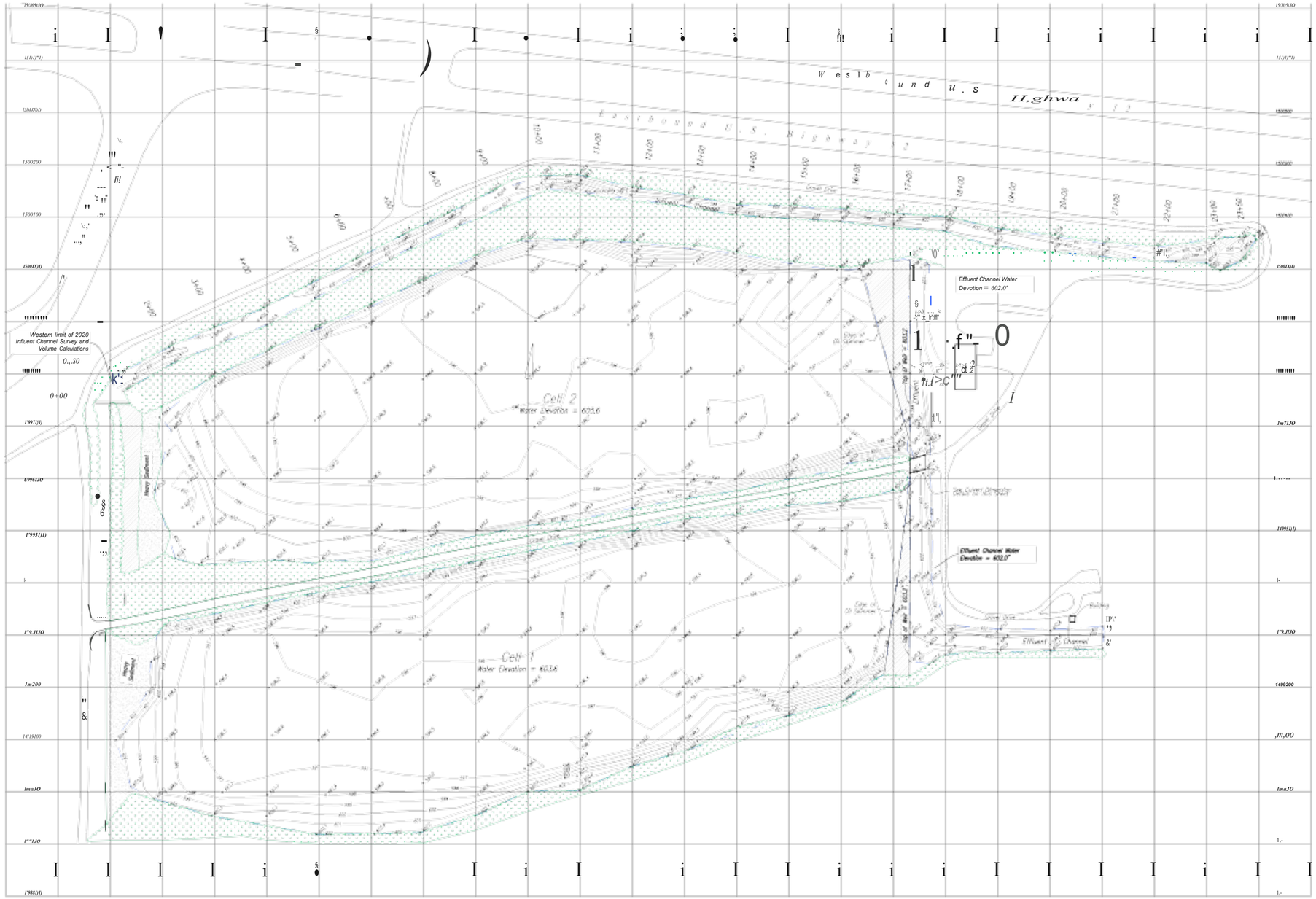
7: P4190007
Description: Clarifier is empty for cleaning. Note the build-up of sludge in the corners of the clarifier. This is a typical problem for square clarifiers, according to CCBH operator, Mr. Balunda.
Location: Clarifier in the Cold Mill side of the SWTP.
Camera Direction: North
Date/Time: April 19, 2021 / 1:38 P.M.

8: P4190008
Description: There was vegetative growth on the weirs of the clarifiers in the Cold Mill side of the SWTP.
Location: Cold Mill side of the SWTP.
Camera Direction: West
Date/Time: April 19, 2021 / 1:41 P.M.

9: P4190009
Description: Readout of the auto-sampler at Outfall 001 shows that the internal temperature is -0.5°C.
Location: Inside the sample building at Outfall 001.
Date/Time: April 19, 2021 / 2:48 P.M.

10: P4190010
Description: Duplicate photo of the readout of the auto-sampler at Outfall 001 shows that the internal temperature is -0.5°C.
Location: Inside the sample building at Outfall 001.
Date/Time: April 19, 2021 / 2:48 P.M.

ATTACHMENT B



Vicinity Map

Not to Scale

Sediment Volumes		
Influent	2020 vs. Design	12,JSSCYO
	2020 vs. 2012	I,419CYD
Cell 1	2020 vs. Design	46,812 CYD
	2020 vs. 2012	23,201CYD
Cell 2	2020 vs. Design	51,650 CYD
	2020 vs. 2012	29,978CYD
Effluent	2020 vs. Design	1,929CYD
	2020 vs. 2012	173CYD

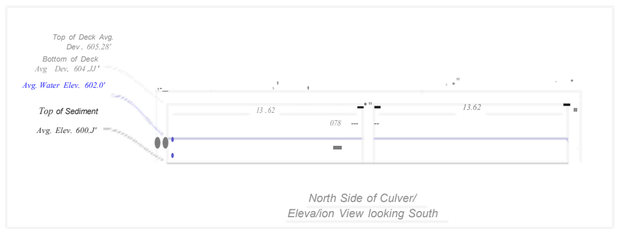
Water Volumes		
Influent	Water Elev. vs 2020	8,421 CYD
	Water Elev. vs 2012	12,271 CYD
	Water Elev. vs Design	37,887 CYD
Ce/11	Water Elev. vs 2020	150,524CYD
	Water Elev. vs 2012	114,IIICYD
	Water Elev. vs Design	210,619 CYD
Cell 2	Water Elev. vs 2020	148,813CYD
	WaterElev. vs2012	179,73SCYD
	Water Elev. vs Design	219,691CYD
Effluent	Water Elev. vs 2020	3,273CYD
	Water Elev. vs 2012	3,491 CYD
	Water Elev. vs Design	6,298 CYD

Legend

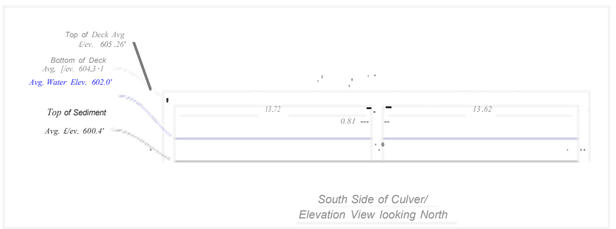
- Limits of Survey
- Intermediate Contour (1' Interval)
- Index Contour (5' Interval)
- 600 Contour Lobel
- Spot Elevation
- CD Areas of Vegetation
- Areas Inaccessible During Survey
- Area of Heavy Sediment Deposits (Not accessible)
- Grovel Roadway

Notes:

1. Survey was performed using a Jon Boat, Argo ATV, and Trimble RIO GNSS Cellular Real Time Kinematic (RTK) CPS for position and elevation.
2. Average water elevation for each lagoon during survey was recorded at 603.6 ft.
3. Average water elevation in the effluent channel was recorded at 6020 ft.
4. Spot elevations are shown on a 100- foot grid and at other perimeter locations.
5. Fieldwork was completed on December 2, 2020.
6. All roadways and buildings shown hereon were taken from aerial photography and were not located in the field. They are intended for reference only
7. All control and coordinate values shown hereon are relative to the Cleveland- Cliffs Burns Harbor Plant Datums.
8. The elevation of the site benchmark was taken from surveys performed by Cole and Associates (now DLZ)
9. Stationing shown is relative to that shown on previous DLZ surveys.
10. Check and verify all points in the field prior to use.
11. The limits of the 2020 survey were defined by the limits of the vegetation in each area as shown.



North Side of Culver/ Elevation View looking South



South Side of Culver/ Elevation View looking North

DLZ INDUSTRIAL,LLC
316 TECH DRIVE, BURNS HARBOR, INDIANA 46304
TELEPHONE (219) 764-4700 FAX (219) 764-4156

Burns Harbor — Indiana

Cleveland-Cliffs Burns Harbor Waste Water Treatment Plant Lagoon

Hydrographic Survey December 2020

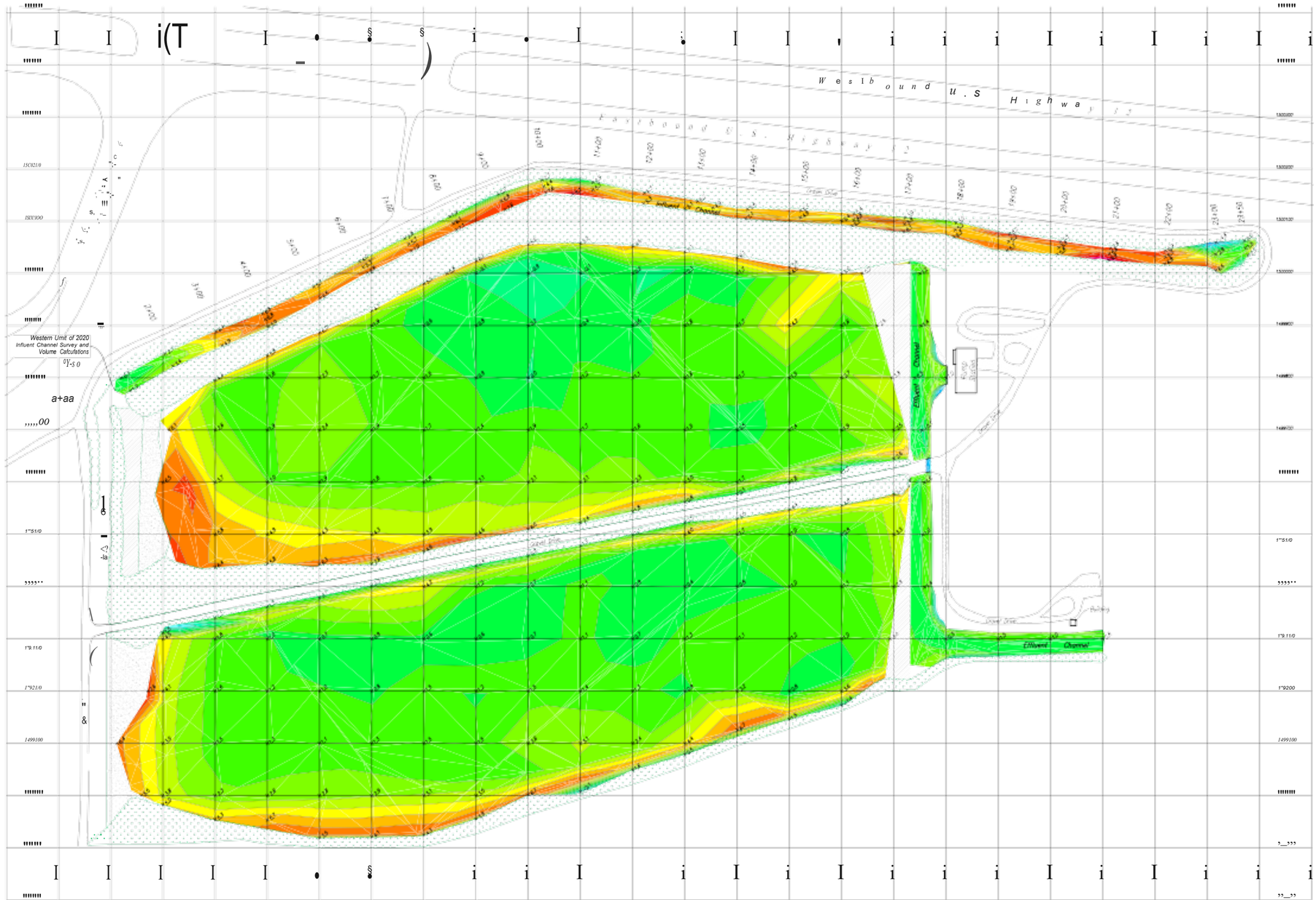
DRAWN: DSW	CHK'D: AMB
DESIGNED:	APPRV'D:BON
DATE: December 23, 2020	
SCALE: 1" = 100'	
PROJECT NUMBER	2050-3578-70

NO.	REVISION	BY	DATE

700 0 700 200

SCALE: 1" - 100'

SHEET 1
OF 2
DRAWING NUMBER
3578HY



100 0 100 200

SCALE: 1" = 100'

Depth Deviation Table			
Number	Lower Limit	Upper Limit	Color
	-9	-8	
2	-8	-7	
3	-7	-6	
4	-6	-5	
5	-5	-4	
6	-4	-3	
7	-3	-2	
8	-2	-1	
9	-1	0	
10	0	1	
11	1	2	
12	2	3	
13	3	4	
14	4	5	
15	5	6	
16	6	7	
17	7	8	
18	8	9	
19	9	10	

Legend

- Depth Deviation
- Areas Inaccessible During Survey
- Area of Sediment Deposits
- Grovel Roadway
- Areas of Vegetation

Notes:

1. The depth deviations shown hereon are relative to the difference between a surface model generated for original lagoon bottom and this survey (Sheet 1).
2. An original lagoon bottom surface model was generated based on information taken from General Plant Effluent Terminal Lagoon drawings provided by the Client. these include the following: 30 - 198. 30-199. 30-LO. 30-K98. 30- K99. 30 - KO. 19416. 19417, 19418. 19427.
3. Depth deviations are shown on a 100 - foot grid and at other perimeter locations.
4. Fieldwork was completed on December 2, 2020.
5. All roadways and buildings shown hereon were token from aerial photography and were not located in the field. They are intended for reference only.
7. All control and coord!note values shown hereon are relative to the Cleveland- Cliffs Burns Harbor Plant Datums.
8. The depth deviation table indicates the ranges for the color bonding represented on the drawing.
9. Areas denoted with a negative depth deviation ore lower than original lagoon bottom, conversely, areas denoted with a positive depth deviation are hil]her than the original lagoon bottom.
10. Stationing shown is relative to that shown on previous DLZ surveys.

DLZ

S&A DLZ INDUSTRIAL,LLC
316 TECH DRIVE, BURNS HARBOR, INDIANA 46304
TELEPHONE (219) 764-4700 FAX (219) 764-4156

Burns Harbor — Indiana

Cleveland-Cliffs Burns Harbor
Waste Water Treatment Plan Lagoon

Hydrographic Survey Depth Deviations
December 2020

DRAWN: CSM CHK'D. AMH
DESIGNED: - APPR'd: BDH
DATE: December 23, 2020
SCALE: 1" = 100'
PROJECT NUMBER
2050-3578-70

NO.	REVISION	BY	DATE

SHEET 2
OF 2
DRAWING NUMBER
3578HY

ATTACHMENT C

Attachment C

PRELIMINARY PILOT WITH FIELD DATA

Chemetrics Data

Date	Time	BFCWPS Cold Well CN^- (ppm)	Cell 6 Outlet CN^- (ppm)	Cell 4 Outlet CN^- (ppm)	% Removal Cell 6	% Removal Cell 4	ClO_2 (ppm)	Ratio ClO_2:CN^-
08/12/20	23	14.00	4.00	5.00	85.7	89.3	83	6
08/13/20	1	7.00	2.00	5.00	71.4	85.7	83	12
08/13/20	3	8.00	2.00	3.00	75.0	87.5	85	11
08/13/20	5	6.00	2.00	3.00	66.7	83.3	87	15
08/13/20	7	3.00	2.00	3.00	75.0	80.0	105	35
08/13/20	9	3.00	0.75	1.50	33.3	93.3	95	32
08/13/20	11	2.00	2.00	1.00	70.0	90.0	95	48
08/13/20	13	2.00	0.60	1.00	80.0	80.0	110	55
08/13/20	15	2.00	0.40	1.00	85.0	97.5	95	48
08/13/20	17	1.00	0.30	0.60	60.0	90.0	65	65
08/13/20	19	5.10	0.40	0.20	96.1	98.0	75	15
08/13/20	21	1.50	0.20	0.20	86.7	80.0	70	47
08/13/20	23	1.10	0.20	0.40	86.4	63.6	65	59
Average		4.28	1.30	1.92	**74.7**	**86.0**	**85.6**	**34.2**

Certified Data

Date	CW CN^- (ppm)	C6 CN^- (ppm)	% removal
08/07/2020 04:30	0.18	0.04	78.89
08/07/2020 05:30	0.07	0.00	100.00
08/07/2020 06:12	0.06	0.00	100.00
08/07/2020 06:40	0.09	0.08	8.99
08/07/2020 08:15	0.07	0.00	100.00
08/07/2020 00:00	0.06	0.00	100.00
08/07/2020 09:48	0.19	0.00	100.00

Not CBI

ATTACHMENT D

Attachment D

Earlyman Worksheet - Burns Harbor Environmental

ArcelorMittal

Date Obtained: 4/19/21

24-hour Sampling Period: _____

Technician: B. Otto

FLOW DATA

	Sample Time	Todays Integrator	Factor		Daily Flow	
002	0620	1521617	0.005	(MGD)	002	MGD
001	0520	6953.0802	0.001	(MGD)	001	MGD
011	0449	74517900	0.001	(MGD)	011	MGD
031	0537	40259293	0.0001	(MGD)	031	MGD
WPL			1	(GD)	WPL	GD
WAL 1	SD	30752948	1	(GD)	WAL 1	GD
WAL 2	0603	17651097	1	(GD)	WAL 2	GD
WAL 3	0603	14954502	1	(GD)	WAL 3	GD
J Box	0442		1	(GD)	Water Cannon	MGD
WWII	0547		1	(GD)	999	MGD
DIW 131						
003						
RSB	0650					
BFTC	0625					
BFTD	0631					
999	0638					
Mixed Liquid BFCWPS Cold Well	0540					
	0658					

pH Data

	Max	Min	Instr	Lab
999				8.2
002			8.4	8.2
001			8.2	8.2
011			8.3	8.5
RSB				8.8
WPL			SP	—
WAL 1			7.9	9.0
WAL 2			8.9	9.0
WAL 3				

Temperature Data

	Max	Min	Inst	Grab	Refrig
999				47.0	
002			61.5	62.1	3.0
001			63.2	61.8	3.5
011			67.3	67.0	3.0

	Max	Min	Avg
WPL			
WAL 1			
WAL 2			
WAL 3			

Seal Pot Level

Max Barometric Pressure

Max Formation Pressure

Waste Ammonia Liquor / Waste Pickle Liquor Pressure Data

	Injection Pressure Max	Injection Pressure Avg	Injection Pressure Min	Annulus Pressure Avg	Annulus Pressure Min	Annulus at Min Differ.	Inj. Press at Min Differ.	Min Differ.
WPL								
WAL 1								
WAL 2								
WAL 3								

	Formation Pressure	Inj. Press. WAL 1	Inj. Press. WAL 2	Inj. Press. WAL 3
0600				
1200				
1800				
2400				

	In Calibration Temp	In Calibration pH	Composite Sample	Surface Oil	Oil Boom	Grease
	+/- 2 deg F	+/-0.3 SU				
002	(Y) N	(Y) N	(Y) N	Y (N)	(Y) N	
011	(Y) N	(Y) N	(Y) N	Y (N)		
Lagoon:				Y (N)	(Y) N	
001	(Y) N	(Y) N	(Y) N	Y (N)		
WAL		(Y) N				
Ditch				Y (N)	(Y) N	
003				Y (N)		Y (N)

Comments: _____

*All daily automatic data is 12:00am sampling period day to 12:00am obtained date CST Non - Day light savings.

**Temperature and pH data are not 2-hour sustained values.

Env. 9x Rev. 12 05/01/14 (TK)

Earlyman Worksheet - Burns Harbor Environmental

ArcelorMittal

Date Obtained: 4/18/21 24-hour Sampling Period: 4/17/21 Technician: D. FARRIS

Sample Time

002	0800
001	0645
011	0619
031	
WPL	
WAL 1	0752
WAL 2	
WAL 3	
J Box	
WWII	
DIW 131	
003	
RSB	
BFTC	
BFTD	
999	
Mixed Liquid BFCWPS Cold Well	

FLOW DATA

	Todays Integrator	Factor		Daily Flow	
002	148 1852	0.005	(MGD)	002	MGD
001	69416889	0.001	(MGD)	001	MGD
011	74450075	0.001	(MGD)	011	MGD
031	40253856	0.0001	(MGD)	031	MGD
WPL		1	(GD)	WPL	GD
WAL 1	30752948	1	(GD)	WAL 1	GD
WAL 2	17548454	1	(GD)	WAL 2	GD
WAL 3	14814183	1	(GD)	WAL 3	GD
LWPS Dewatering		1	(GD)	Water Cannon	MGD
				999	MGD

pH Data

	Max	Min	Instr	Lab
999				
002			8.3	8.2
001			8.2	8.1
011			8.1	8.2
RSB				
WPL			8.9	
WAL 1			8.9	
WAL 2				
WAL 3				

Temperature Data

	Max	Min	Inst	Grab	Refrig
				47.0	
999			61.5	61.1	3.0
002			58.8	59.2	1.8
001			66.1	66.0	2.5
011					
RSB					
WPL					
WAL 1					
WAL 2					
WAL 3					

Seal Pot Level

Max Barometric Pressure

Max Formation Pressure

Waste Ammonia Liquor / Waste Pickle Liquor Pressure Data

	Injection Pressure Max	Injection Pressure Avg	Injection Pressure Min	Annulus Pressure Avg	Annulus Pressure Min	Annulus at Min Differ.	Inj. Press at Min Differ.	Min Differ.
WPL								
WAL 1								
WAL 2								
WAL 3								

	Formation Pressure	Inj. Press. WAL 1	Inj. Press. WAL 2	Inj. Press. WAL 3
0600				
1200				
1800				
2400				

	In Calibration Temp	In Calibration pH	Composite Sample	Surface Oil	Oil Boom	Grease
	+/- 2 deg F	+/-0.3 SU				
002	G N	G N	Y N	Y N	Y N	
011	G N	G N	Y N	Y N	Y N	
Lagoon 001	G N	G N	Y N	Y N		
WAL Ditch 003		Y N		Y N	Y N	Y N

Comments:

*All daily automatic data is 12:00am sampling period day to 12:00am obtained date CST Non - Day light savings.

**Temperature and pH data are not 2-hour sustained values.

Earlyman Worksheet - Burns Harbor Environmental

ArcelorMittal

Date Obtained: 4/17/21 24-hour Sampling Period: 4/16/21 Technician: D. FARRIS

FLOW DATA

	Sample Time	Today's Integrator	Factor		Daily Flow	
002	0820	1459125	0.005	(MGD)		MGD
001	0655	69284586	0.001	(MGD)		MGD
011	0620	74527091	0.001	(MGD)		MGD
031		40248120	0.0001	(MGD)		MGD
WPL			1	(GD)		GD
WAL 1	0754	30752948	1	(GD)		GD
WAL 2		17426138	1	(GD)		GD
WAL 3		14652799	1	(GD)		GD
J Box		LWPS Dewatering	1	(GD)	Water Cannon	MGD
WWII					888	MGD
DIW 131						
003						
RSB						
BFTC						
BFTD						
999						
Mixed Liquid BFCW/PS Cold Well						

pH Data

	Max	Min	Inst	Lab
999				
002			8.4	8.3
001			8.1	8.0
011			7.9	8.0
RSB				
WPL				
WAL 1			8.9	
WAL 2			8.9	
WAL 3				

Temperature Data

	Max	Min	Inst	Grab	Refrig
				47.0	
999			60.8	60.6	3.2
002			60.6	60.1	1.6
001			60.5	60.3	3.4
011					
RSB					
WPL					
WAL 1					
WAL 2					
WAL 3					

Seal Pot Level

Max Barometric Pressure

Max Formation Pressure

Waste Ammonia Liquor / Waste Pickle Liquor Pressure Data

	Injection Pressure Max	Injection Pressure Avg	Injection Pressure Min	Annulus Pressure Avg	Annulus Pressure Min	Annulus at Min Differ.	Inj. Press at Min Differ.	Min Differ.
WPL								
WAL 1								
WAL 2								
WAL 3								

	Formation Pressure	Inj. Press. WAL 1	Inj. Press. WAL 2	Inj. Press. WAL 3
0600				
1200				
1800				
2400				

	In Calibration Temp (+/- 2 deg F)	In Calibration pH (+/-0.3 SU)	Composite Sample	Surface Oil	Oil Boom	Grease
002	Y (N)	Y (N)	Y (N)	Y (N)	Y (N)	
011	Y (N)	Y (N)	Y (N)	Y (N)		
Lagoon				Y (N)	Y (N)	
001	Y (N)	Y (N)	Y (N)	Y (N)		
WAL		Y (N)				
Ditch				Y (N)	Y (N)	
003				Y (N)		Y (N)

Comments:

*All daily automatic data is 12:00am sampling period day to 12:00am obtained date CST Non - Day light savings.

**Temperature and pH data are not 2-hour sustained values.

Env. 9x Rev. 12 05/01/14 (TK)

Earlyman Worksheet - Burns Harbor Environmental

ArcelorMittal

Date Obtained: 4/16/21 24-hour Sampling Period: _____ Technician: B. Otto

FLOW DATA

	Sample Time	Todays Integrator	Factor		Daily Flow	
002	0722	13945 79	0.005	(MGD)		MGD
001	0615	69167458	0.001	(MGD)		MGD
011	0551	74292571	0.001	(MGD)		MGD
031	0625	40242006	0.0001	(MGD)		MGD
WPL			1	(GD)		GD
WAL 1	SD	30752948	1	(GD)		GD
WAL 2	0650	17321355	1	(GD)		GD
WAL 3	0650	14490526	1	(GD)		GD
J Box	8540	LWPS Dewatering	1	(GD)	Water Cannon	MGD
WWII	0639				999	MGD
DIW 131						
003						
RSB	0821					
BFTC	0750					
BFTD	0756					
999	0807					
Mixed Liquid BFDWPS Coic Well	0628 0830					

pH Data

	Max	Min	Instr	Lab
999				8.3
002			8.3	8.4
001			8.1	8.0
011			8.1	8.2
RSB				9.2
WPL				
WAL 1			SD	—
WAL 2			8.9	9.3
WAL 3			8.9	9.3

Temperature Data

	Max	Min	Inst	Grab	Refrig
999				46.5	
002			60.4	60.3	3.0
001			60.6	58.9	3.0
011			64.0	64.1	3.0
WPL					
WAL 1					
WAL 2					
WAL 3					

Seal Pot Level

Max Barometric Pressure

Max Formation Pressure

Waste Ammonia Liquor / Waste Pickle Liquor Pressure Data

	Injection Pressure Max	Avg	Min	Annulus Pressure Avg	Min	Annulus at Min Differ.	Inj. Press at Min Differ.	Min Differ.
WPL								
WAL 1								
WAL 2								
WAL 3								

	Formation Pressure	Inj. Press. WAL 1	Inj. Press. WAL 2	Inj. Press. WAL 3
0600				
1200				
1800				
2400				

	In Calibration Temp	pH	Composite Sample	Surface Oil	Oil Boom	Grease
	+/- 2 deg F	+/-0.3 SU				
002	(Y) N	(Y) N	(Y) N	Y (N)	(Y) N	
011	(Y) N	(Y) N	(Y) N	Y (N)		
Lagoon				Y (N)	(Y) N	
001	(Y) N	(Y) N	(Y) N	Y (N)		
WAL		Y (N)				
Ditch				Y (N)	(Y) N	
003				Y (N)		Y (N)

Comments: _____

*All daily automatic data is 12:00am sampling period day to 12:00am obtained date CST Non - Day light savings.

**Temperature and pH data are not 2-hour sustained values.

Env. 9x Rev. 12 05/01/14 (TK)

Earlyman Worksheet - Burns Harbor Environmental

ArcelorMittal

Date Obtained: 4/15/21 | 24-hour Sampling Period: _____ | Technician: D. OHo

FLOW DATA

	Sample Time	Totalizer Integrator	Factor		Daily Flow	
002	0740	1352578	0.005	(MGD)	_____	MGD
001	0635	690453 30	0.001	(MGD)	_____	MGD
011	0600	742177 84	0.001	(MGD)	_____	MGD
031	—	40236355	0.0001	(MGD)	_____	MGD
WPL	—	—	1	(GD)	_____	GD
WAL 1	—	307529 48	1	(GD)	_____	GD
WAL 2	—	17211511	1	(GD)	_____	GD
WAL 3	—	14311322	1	(GD)	_____	GD
J Box	0538	LWPS Dewatering	—	1 (GD)	Water Cannon	_____ MGD
WWB	—				999	_____ MGD
DW 131	—					
003	—					
RSB	0822					
BFTC	—					
BFTD	—					
999	0505					
Mixed Liquid BFCWPS	0653 *					
Cold Well	—					

pH Data

	Max	Min	Instr	Lab
999				8.3
002			8.3	8.2
001			8.1	8.0
011			8.1	8.2
RSB				9.6

Temperature Data

	Max	Min	Inst	Grab	Rating
999				46.2	
002			59.0	55.8	2.0
001			60.1	58.6	2.0
011			63.1	63.7	3.5

	Max	Min	Avg	Seal Pot Level
WPL				
WAL 1				
WAL 2	5.9			
WAL 3	5.9			

Max Barometric Pressure: _____

Max Formation Pressure: _____

Waste Ammonia Liquor / Waste Pickle Liquor Pressure Data

	Injection Pressure Max	Injection Pressure Avg	Injection Pressure Min	Annulus Pressure Avg	Annulus Pressure Min	Annulus at Min Differ.	Inj. Press at Min Differ.	Min Differ.
WPL								
WAL 1								
WAL 2								
WAL 3								

	Formation Pressure	Inj. Press. WAL 1	Inj. Press. WAL 2	Inj. Press. WAL 3
0600				
1200				
1800				
2400				

	In Calibration Temp	In Calibration pH	Composite Sample	Surface Oil	Oil Boom	Grease
	+/- 2 deg F	+/-0.3 SU				
002	(Y) N	(Y) N	(Y) N	Y (N)	(Y) N	
011	(Y) N	(Y) N	(Y) N	Y (N)		
Lagoon				Y (N)	(Y) N	
001	(Y) N	(Y) N	(Y) N	Y (N)		
WAL		Y N				
Ditch				Y (N)	(Y) N	
003				Y (N)		Y (N)

Comments: _____

*All daily autom atic data is 12:00am sampling period day to 12:00am obtained date CST Non - Day light savings.

**Temperature and pH data are not 2-hour sustained values.

Env. 9x Rev. 12 05/01/14 (TK)

Earlyman Worksheet - Burns Harbor Environmental

ArcelorMittal

Date Obtained: 4/13/21 24-Hour Sampling Period: _____ Technician: B. O'Hara

FLOW DATA

	Sample Time	Today's Integrator	Factor	Daily Flow
002	0704	12668832	0.001 (MGD)	002 _____ MGD
001	0628	68513513	0.001 (MGD)	001 _____ MGD
011	0552	74103887	0.001 (MGD)	011 _____ MGD
031	—	40223874	0.0001 (MGD)	031 _____ MGD
WPL	0723	45768566	1 (GD)	WPL _____ GD
WAL 1	—	30752948	1 (GD)	WAL 1 _____ GD
WAL 2	—	16992540	1 (GD)	WAL 2 _____ GD
WAL 3	—	13985733	1 (GD)	WAL 3 _____ GD
J Box	0541	LWPS Dewatering _____	1 (GD)	Water Cannon _____ MGD
WWII	—			999 _____ MGD
DW 131	—			
003	—			
RSB	0738			
BFTC	—			
BFTD	—			
999	0728			
Mixed Liquid BFCWPS	0642			
Cold Well	—			

pH Data

	Max	Min	Instr	Lab	Max	Min	Instr	Grab	Rating
999				8.2				46.9	
002			8.3	8.1			60.6	60.5	3.0
001			8.0	7.9			63.6	62.8	2.0
011			8.2	8.3			66.7	67.7	3.0
RSB				9.2					

Temperature Data

	Max	Min	Avg	Seal Pot Level	Max Barometric Pressure
WPL					_____
WAL 1		—			Max Formation Pressure
WAL 2		9.0			_____
WAL 3		9.0			

Waste Ammonia Liquor / Waste Pickle Liquor Pressure Data

	Injection Pressure Max	Injection Pressure Avg	Injection Pressure Min	Annulus Pressure Avg	Annulus Pressure Min	Annulus at Min Differ.	Inj. Press at Min Differ.	Min Differ.	Formation Pressure	Inj. Press. WAL 1	Inj. Press. WAL 2	Inj. Press. WAL 3
WPL									0600			
WAL 1									1200			
WAL 2									1800			
WAL 3									2400			

	In Calibration Temp	In Calibration pH	Composite Sample	Surface Oil	Oil Boom	Grease
	+/- 2 deg F	+/-0.3 SU				
002	(Y) N	(Y) N	(Y) N	Y (N)	(Y) N	
011	(Y) N	(Y) N	(Y) N	Y (N)		
Lagoon				Y (N)	(Y) N	
001	(Y) N	(Y) N	(Y) N	Y (N)		
WAL		Y N				
Ditch				Y (N)	(Y) N	
003				Y (N)		Y (N)

Comments: _____

*All daily automatic data is 12:00am sampling period day to 12:00am obtained date CST Non - Day light savings.

**Temperature and pH data are not 2-hour sustained values.

Env. 9x Rev. 12 05/01/14 (TK)