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: December 12, 2022 Reconnaissance 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 December 12, 2022.

The purpose of the reconnaissance inspection at Cleveland-Cliffs Burns Harbor, LLC was to discuss and observe the ammonia treatment system, among other topics.

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: 2023.02.15 16:42:20 -06'00'

Ryan J. Bahr, Section 2 Supervisor
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

Ramelito Biscocho, Wastewater Inspector
Indiana Department of Environmental Management

Morgan Swanson, Environmental Engineer
Cleveland-Cliffs Burns Harbor

Vinod Barot, Senior Environmental Engineer
Cleveland-Cliffs Burns Harbor

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

Purpose:
Compliance Evaluation Reconnaissance 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:
December 12, 2022

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

Ramelito Biscocho, Indiana Department of Environmental Management 219-464-0233
Wastewater Inspector
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Facility Representatives:
Tom Maicher, Manager of the Environmental Plant 219-787-4961
Robert.maciel@ClevelandCliffs.com

Morgan Swanson, Environmental Engineer 219-787-2646
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Patrick Gorman, Operator
Patrick.gorman@ClevelandCliffs.com

Vinod Barot, Senior Environmental Engineer 219-787-2964
Vinod.barot@ClevelandCliffs.com

Report Prepared by:
Joan Rogers

Inspector Signature/Date: JOAN ROGERS Digitally signed by JOAN ROGERS Date: 2023.02.15 15:46:34 -06'00'

Approver Name and Title: Ryan Bahr, Supervisor, Section 2, WECAB

Approver Signature/Date: Ryan Bahr Digitally signed by Ryan Bahr Date: 16:42:00 -06'00'

1. BACKGROUND

The purpose of this report is to describe and document the reconnaissance inspection at the Cleveland Cliffs Burns Harbor facility on December 12, 2022. 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 January 1, 2022, and expires on December 31, 2026.

The inspection on December 12, 2022 was a Compliance Evaluation Reconnaissance Inspection to discuss the operations in the Reclamation Services Building (RSB) and observe the outfalls.

2. SITE INSPECTION

Site Entry and Opening Conference

Arrival Time:	9:00 A.M.
Presented credentials?	Yes.
Credentials presented to whom and at what time?	9:14 A.M. to Tom Maicher, Morgan Swanson, Pat Gorman, and Vinod Barot.
Was an opening conference held? With whom?	Yes. Mr. Maicher, Ms. Swanson, Mr. Gorman, and Mr. Barot.
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. Nick Ream, and Mr. Ramelito Biscocho, followed Ms. Swanson to the Environmental Services Building conference room from the main office after EPA and IDEM inspectors received their visitor badges. During the opening conference at 9:15 A.M., the inspection team explained that the focus of the inspection was to discuss the operations in the Reclamation Services Building (RSB) and observe the outfalls.

The discussion started with a question about the fingerprinting analysis that facility personnel were doing on the foam at Outfall 002 that was observed in a previous inspection and was misclassified in documents from Microbac. Facility personnel stated that there was no analysis back yet. Microbac sent the foam sample to another laboratory for fingerprinting and DNA analysis. They will inform the agencies when the results arrive.

On December 9, 2022, IDEM was notified by a ship captain that he noticed a sheen on the west side of his ship as he was parked along the CCBH dock. IDEM emergency responders went to the site. CCBH personnel also went to the dock, but they stated that they did not see any sheen.

Reclamation Services Building (RSB)

Inside the RSB, three processes to reclaim and separate solids from water are performed. CCBH calls these three processes “phases”. Here is a short description of each phase.

- In Phase I, the underflow from the Basic Oxygen Furnace (BOF) Thickeners flows to the Hi-Cap Thickener. The underflow from the Hi-Cap Thickener is squeezed and becomes the BOF sludge, which then flows to plate and frame filter presses. The overflow from the Hi-Cap Thickener flows into Outfall 111 and then to the Dirty Industrial Waste (DIW) which flows to the Secondary Wastewater Treatment Plant (SWTP).

  After the BOF sludge is pressed by the plate and frame filter presses, the solids go to the landfill while the liquids go to the Final Thickener.

- In Phase II, the blowdown from the Sinter Plant (aka the Recycle Plant), is first treated to neutralize the pH in a neutralization tank. After floc is added to the flow, it is sent to the Final Thickener. The underflow from the Final Thickener is conditioned and then sent to the plate and frame filter presses. The overflow from the Final Thickener goes to Outfall 111 and then to the Dirty Industrial Waste (DIW) which flows to the Secondary Wastewater Treatment Plant (SWTP).

  After the Final Thickener underflow is pressed by the plate and frame filter presses, the solids go to the landfill while the liquids go back to the Final Thickener.

  The Sinter Plant blowdown contains TCDF. Solids are added to the Final Thickener to remove the TCDF and samples are taken at Outfall 111 to confirm removal.

- In Phase III, the underflow from each Blast Furnace Thickeners goes to hydrocyclones which spin off the solids. There are four hydrocyclones for each blast furnace for a total of eight hydrocyclones in the RSB. The overflow from the hydrocyclones merges with the Sinter Plant Blowdown in the neutralization tank (Phase II). It then follows the same flow as the Sinter Plant blowdown. The underflow from the hydrocyclones goes to vacuum presses.

  After the hydrocyclone underflow is pressed by the vacuum presses, the solids are sent to the Sinter Plant for recycling while the liquids go to the Final Thickener. Note, the liquids do not go to the Final Thickener during the times of the year when the ammonia limits in the Permit are low, because this flow can add 160-170 pounds of ammonia per day.

EPA observed the Reclamation Service Building Operator – End of Turn Report for Turn 1 on 12/12/22. It included influent and effluent grab sample pH results at the Final Thickener. It also listed the turbidity results because turbidity is used to give immediate feedback for TCDF removal because the samples take a month to get results from the lab.

The Final Thickener will be taken down approximately one time per year for maintenance. The Final Thickener will be down for a few days at that time.

EPA and IDEM requested End of Turn reports for every Monday from October 1, 2022 through December 12, 2022 for all three shifts. Ms. Swanson sent those reports on December 13, 2022. EPA reviewed the reports and noted that on many of the reports, the question of whether the RSB I&II Operators filled out the new RSB Phase II Operators Turn Checklist was completed was left blank.

Facility Walkthrough

See Attachment A for the photolog of the photos taken during the facility walkthrough.
EPA and IDEM concluded the interview portion of the inspection and stated that they would like to observe the processes at the RSB and Outfall 002, Outfall 003, Outfall 011, and Outfall 001.

Final Thickener

The inspection team followed the CCBH personnel to the Final Thickener which is outside the RSB. The team arrived at the Final Thickener at 10:25 A.M. Mr. Gorman explained that ferric chloride is not being added to the Final Thickener since they are not operating the ammonia plant. When the ammonia plant is being operated, solids are reduced and need to be reintroduced at the Final Thickener to remove TCDF.

EPA observed the manhole where the flow from the Hi-Cap Thickener overflow and Final Thickener overflow merge. EPA also observed the auto-sampler for TCDF samples on the walkway over the Final Thickener.

Reclamation Services Building

Inside the RSB, EPA observed the cake from the vacuum presses that separate the solids from the liquids from the hydrocyclone underflows. The solids are returned to the Sinter Plant (aka Recycle Plant) and the liquids are sent to the Neutralization Tank. EPA observed four of the eight hydrocyclones that receive the underflow from the Blast Furnace Thickeners. The overflow from the Blast Furnace Thickeners goes to the Blast Furnace Pump Station and is recycled.

EPA also observed the vacuum pumps for the vacuum presses and the plate and frame filter presses. The last thing the inspection team observed in the RSB was Sampling Point 2 and the pH meter.

Outfall 003

EPA, IDEM and CCBH personnel then drove to Outfall 003 and arrived at 11:25 A.M. EPA observed that the water in Outfall 003 was clear.

Outfall 002

The inspectors followed the facility personnel to Outfall 002 and arrived at 11:42 A.M. Prior to the July inspection, Mr. Barot designed and installed a spray bar at the head of the outfall structure. The spray consisted of recirculated lake water and was intended to knock down the foam in the outfall. Since then, Mr. Barot designed and installed a second spray bar closer to the end of the outfall structure. This spray bar is intended to knock down any foam that escapes the first spray bar. Both spray bars run continuously and Mr. Barot checks on the spray bars daily.

There was no foam inside or outside the booms at Outfall 002 on the day of the inspection.

EPA and IDEM observed and documented material on the water near the shoreline outside of Outfall 002. It was very faint and did not have the rainbow coloring like an oil sheen.

Outfall 011

The inspection team followed the facility personnel to Outfall 011 and arrived at 12:17 P.M. In previous inspections, EPA and IDEM noted vegetation growing on the weirs of the lagoons. The vegetation was still present. In the sample building for Outfall 011, there was a warning on the ISCO sampler to change the pump tubing. According to the tag on the sample tubing, it was last changed on November 1, 2022, but the pump tubing was changed on November 28, 2022. The sampler was otherwise working properly and maintaining the proper temperature inside.

EPA and IDEM then noted that there was a sheen on the water at Outfall 011. This sheen had the appearance of an oil sheen. The sheen was continuous on the water flowing past Outfall 011. EPA documented the sheen with photographs.

EPA and IDEM then observed the overflows from the lagoons at 12:27 P.M. and observed that the sheen was present at that location, also. The overflow from the lagoons is upstream of Outfall 011.

Outfall 001

EPA and IDEM followed facility personnel to Outfall 001 and arrived there at 12:40 P.M. The auto-sampler in the sample building appeared to be functioning properly. The flow at Outfall 001 was 87,200 GPM at that time.

The inspection team could not observe a sheen on the fast flowing and turbulent water at Outfall 001.

Closing Conference

EPA and IDEM provided a closing conference to the facility personnel at Outfall 001. The areas of concern observed during the inspection were the sheen observed at the overflow from the lagoons and at Outfall 011 and the vegetation on the weirs from the lagoons.

EPA exited the facility at 1:05 P.M.

3. DOCUMENTS RECEIVED FROM FACILITY

- Reclamation Services Building Phase II process diagram.
- RSB process diagram via email on December 13, 2022.
- Reclamation Service Building Operator – End of Turn Reports for each Monday from October 1, 2022, through December 12, 2022, via email on December 13, 2022.

4. AREAS OF CONCERN

A. The sheen observed at the overflow from the lagoons and at Outfall 011 which is upstream of the external Outfall 001. There is no treatment after Outfall 011 which would prevent the sheen from exiting at Outfall 001.
B. The vegetation on the weirs from the lagoons is still present.

5. LIST OF ATTACHMENTS

A) Photolog

ATTACHMENT A
Cleveland-Cliffs Burns Harbor
EPA Inspection December 12, 2022
All photos taken by Joan Rogers, Environmental Scientist/Inspector, U.S. EPA
Camera: Samsung Galaxy S8

1: 20221212_103205
Description: Looking down into the manhole where the Hi-Cap Thickener overflow and Final Thickener overflow merge.
Location: Outfall 111.
Camera Direction: Down.
Date/Time: December 12, 2022/10:35 A.M.

2: 20221212_103316
Description: The TCDF sampling is taken from the Final Thickener. Note the auto-sampler on the walkway above the Final Thickener.
Location: Final Thickener.
Camera Direction: Southeast.
Date/Time: December 12, 2022/10:33 A.M.

3: 20221212_103622
Description: The Final Thickener is on the left and the Hi-Cap Thickener is on the right. Hi-Cap Thickener was being cleaned on the day of the inspection and was not in use.
Location: Final Thickener.
Camera Direction: Southwest.
Date/Time: December 12, 2022/10:36 A.M.

4: 20221212_104852
Description: The cake from the vacuum press from the hydrocyclone underflows. The cake goes to the Sinter Plant for recycling.
Location: Reclamation Services Building (RSB).
Date/Time: December 12, 2022/10:48 A.M.

5: 20221212_105005
Description: The underflow for each Blast Furnace Thickener goes to a tank and is then pumped to the hydrocyclones.
Location: RSB.
Camera Direction: Down.
Date/Time: December 12, 2022/10:50 A.M.

6: 20221212_105216
Description: The four (of eight total) hydrocyclones spin off the solids from the Blast Furnace Thickener underflows.
Location: RSB.
Date/Time: December 12, 2022/10:52 A.M.


7: 20221212_105356
Description: The four (of eight total) hydrocyclones spin off the solids from the Blast Furnace Thickener underflows.
Location: RSB.
Date/Time: December 12, 2022/10:53 A.M.

8: 20221212_105845
Description: Two vacuum pumps for the two vacuum presses that press the liquid from the hydrocyclone underflow.
Location: RSB.
Date/Time: December 12, 2022/10:58 A.M.

9: 20221212_110328
Description: Plate and frame filter presses are used to remove liquid from the basic oxygen furnace sludge and the Final Thickener underflow. Two plate and frame filter presses are run at a time.
Location: RSB.
Date/Time: December 12, 2022/11:03 A.M.

10: 20221212_111355
Description: The pH meter and sampling point 2 (SP2).
Location: RSB.
Date/Time: December 12, 2022/11:13 A.M.

11: 20221212_112249
Description: Brown air fumes observed on way to Outfall 003.
Location: Northern portion of the facility.
Camera Direction: Northeast.
Date/Time: December 12, 2022/11:22 A.M.

12: 20221212_112920
Description: There was no sheen observed at Outfall 003 on the day of the inspection.
Location: Outfall 003.
Camera Direction: Northwest.
Date/Time: December 12, 2022/11:29 A.M.

13: 20221212_114649
Description: Spray nozzles are intended to knock down any foam from Outfall 002 before it can leave the outfall structure.
Location: Outfall 002.
Camera Direction: East.
Date/Time: December 12, 2022/11:46 A.M.

14: 20221212_114811
Description: The external boom at Outfall 002. EPA did not observe any foam on the day of the inspection.
Location: Outfall 002.
Camera Direction: Southwest and down.
Date/Time: December 12, 2022/11:48 A.M.

15: 20221212_115054
Description: EPA observed material on the water near Outfall 002.
Location: South of Outfall 002.
Camera Direction: Southwest and down.
Date/Time: December 12, 2022/11:50 A.M.

16: 20221212_115318
Description: EPA observed material on the water near Outfall 002.
Location: South of Outfall 002.
Camera Direction: West and down.
Date/Time: December 12, 2022/11:53 A.M.

17: 20221212_122338
Description: Looking upstream at the water from Outfall 011.
Location: Outfall 011.
Camera Direction: West.
Date/Time: December 12, 2022/12:23 P.M.

18: 20221212_122346
Description: Looking downstream at the water from Outfall 011.
Location: Outfall 011.
Camera Direction: East.
Date/Time: December 12, 2022/12:23 P.M.

19: 20221212_122830
Description: The sheen was observed at the overflow wiers from the lagoons before Outfall 011.
Location: East side of the lagoons.
Camera Direction: Southwest.
Date/Time: December 12, 2022/12:28 P.M.

20: 20221212_125511
Description: Looking upstream, it was difficult to observe the sheen due to the velocity of the water at Outfall 001.
Location: Outfall 001.
Camera Direction: Northwest.
Date/Time: December 12, 2022/12:55 P.M.

21: 20221212_125557
Description: Looking downstream from Outfall 001, EPA could not discern a sheen due to the velocity of the water.
Location: Outfall 001.
Camera Direction: South.
Date/Time: December 12, 2022/12:55 P.M.