Appendix E
Exhibit Log

Exhibit 1
March 2022 Permit Renewal Application – Attachment 1

ATTACHMENT 1
Cleveland-Cliffs Indiana Harbor East
Addendum to Form 2C – Part II. Description of Sources to Outfalls

A general description of sources to each outfall is provided below along with long term average flows and maximum monthly flows. Detailed water system schematics are provided as Figures 2-01 to 2-14 to this application.

Outfall 011

The discharge from Outfall 011 is comprised of non-contact cooling water (low volume sources, including sinter plant) and storm water run-off. The outfall formerly received non-contact cooling water from the No. 2 AC Power Station and boiler blowdown prior to shut down of the No. 2 AC Power Station. There is no wastewater treatment associated with Outfall 011. Outfall 011 discharges to the Indiana Harbor Turning Basin. The non-contact cooling water is chlorinated for zebra mussel control, then dechlorinated prior to discharge. A detailed water system schematic is provided as Figure 2-01 to this application. The average Outfall 011 flow since shut down of the No. 2 AC Power Station has been approximately 0.5 MGD (October 2018 – November 2021).

Outfall 014

Outfall 014 is the main discharge from the Terminal Treatment Plant – West. The discharge from Outfall 014 is comprised of the blowdown from the Main Plant Recycle System. The system includes process and cooling water from hot forming operations (80" hot strip mill); pickling operations (No. 5 pickle line, continuous anneal line); cold rolling mills (80" tandem mills; Nos.28 and 29 temper mills); alkaline cleaning; No. 5 hot dip galvanizing line; treated sanitary wastewaters; and storm water. The non-contact cooling water is chlorinated for zebra mussel control, then dechlorinated prior to discharge. Outfall 014 discharges to the Indiana Harbor Turning Basin. Detailed water system schematics are provided as Figures 2-01, 2-04, 2-08, and 2-13 to this application.

Long Term Average Flow Rate:	8.71 mgd	(September 2017 to November 2021)
Maximum Monthly Average Flow Rate:	24.8 mgd	(September 2017 to November 2021)

Outfall 018

The discharge from Outfall 018 is comprised of non-contact cooling water; treated effluents from the No. 4 Steel Plant (BOF), Vacuum Degasser (RHOB), and No. 1 Continuous Caster (internal Outfall 618); treated effluents from the No. 7 Blast Furnace gas scrubber system (internal Outfall 518); cooling tower blowdown and discharges from the No. 5 Boiler House; service water directed through the former No. 4 AC Power Station, cooling tower blowdown from CokEnergy co-generating facility, storm water run-off and non-contact cooling water and storm water run-off from the Indiana Harbor Coke Company. The non-contact cooling water is chlorinated for zebra mussel control, then dechlorinated prior to discharge. Outfall 018 discharges to the Indiana Harbor Turning Basin. Detailed water system schematics are provided as Figures 2-01, 2-02, 2-03, 2-05, 2-06, and 2-07 to this application.

Process water and blowdown treatment for the No. 4 Steel Plant (BOF), the Vacuum Degasser (RHOB) and No. 1 Continuous Caster are described under Outfall 618.

Process water and blowdown treatment for the No. 7 Blast Burnace is described under Outfall 518.

Long Term Average Flow Rate:	20.4 mgd	(September 2017 to November 2021)
Maximum Monthly Average Flow Rate:	25.4 mgd	(September 2017 to November 2021)

Outfall 518

Outfall 518 is the internal outfall for the No. 7 Blast Furnace gas scrubbing system. Treated wastewaters are limited and monitored prior to mixing with non-contact cooling water and storm water for discharge through Outfall 018. Detailed water system schematics are provided as Figures 2-01, 2-02, and 2-03 to this application.

The gas cleaning system for the No. 7 Blast Furnace is a high rate process water recycle system that supplies water to clean the blast furnace off-gas through a high energy wet scrubber. Dirty water from the Bishoff gas scrubber is treated through two large diameter thickeners and a cooling tower and then recycled back to the scrubber. Blowdown from the scrubber system is sent to the No. 7 Blast Furnace Lafarge slag granulation system. The thickener underflow is dewatered in a recessed chamber filter press. Filtrate is returned to the thickeners and dry cake is sent off site for disposal.

Excess water from the No. 7 Lafarge slag granulation system is sent to the No. 7 blast furnace blowdown treatment plant, which consists of pH adjustment, cyanide precipitation and alkaline chlorination. The discharge from the No. 7 Blast Furnace blowdown treatment system constitutes Outfall 518.

Long Term Average Flow Rate:	0.115 mgd	(September 2017 to November 2021)
Maximum Monthly Average Flow Rate:	0.250 mgd	(September 2017 to November 2021)

Outfall 618

Outfall 618 is the internal outfall for the No. 4 Steel Plant (BOF), the Vacuum Degasser (RHOB) and the No. 1 Continuous Caster process water systems. Treated wastewaters are limited and monitored prior to mixing with non-contact cooling water and discharge to Indiana Harbor via Outfall 018. Detailed water system schematics are provided as Figures 2-01, 2-07, 2-08 and 2-09 to this application.

The gas cleaning system for No. 4 Steel Plant (BOF) is a high rate process water recycle system that suppliers water to clean BOF off-gas through four venturi scrubbers. Gas cleaning water is treated in large diameter thickeners for solids removal and most of the water is returned directly back to the venturi scrubbers. The remainder of the water is blown down to the No. 4 Steel Plant blowdown filtration facility for treatment prior to discharge to Outfall 618. The thickener underflow is dewatered in a recessed chamber filter press. Filtrate is returned to the thickeners and dry cake is returned to the steel making process via the briquetting plant or disposed of off site.

The RHOB water system is a high rate process water recycle system that supplies contact cooling water to the (vacuum degasser) barometric condensers. Discharge from the condensers returns to a cooling tower and is then recycled back to the condensers. A side stream of water is treated through two inclined plate separators (Lamella clarifiers) for solids removal and then returned to the system. The underflow from the separators is discharge to the No. 4 Steel Plant Grit Boxes (thickeners). This discharge is the only blowdown from the RHOB water treatment system.

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The No. 1 Continuous Caster water system is a high rate recycle system that supplies water to the No. 1 Slab Caster and scarfer for machine cooling sprays, roll cooling, scale breaking and flume flushing. A separate system for machine and mold cooling consisting of non-contact cooling tower and heat exchangers blows down to the caster system. Treatment consists of a scale pit with oil and scale recovery, a cooling tower, and high rate multi-media filtration. A small amount of water is blown down from the caster system to the No. 4 Steel Plant Treatment and Recycle System.

The No. 4 Steel Plant Treatment and Recycle System treats the combined blowdown from the No. 4 Steel Plant (BOF), the No. 1 Continuous Caster and RHOB through high rate multi-media filters prior to discharge at Outfall 618. Blowdown the filtration facility is from the overflow of the No. 4 Steel Plant thickeners.

Long Term Average Flow Rate:	0.361 mgd	(September 2017 – November 2021)
Maximum Monthly Average Flow Rate:	0.717 mgd	(September 2017 – November 2021)

Terminal Treatment Plant - West (TTPW)

A detailed water system schematic is provided as Figure 2-04 to this application. TTPW consists of two scalping tanks and two settling basins and a cooling tower. Most of the effluent from the TTPW is discharged to the No. 6 Pump House and is then recycled back to the mills as process and cooling water. The remaining water is the only blowdown from the Main Plant Recycle System and constitutes the discharge from Outfall 014.

Terminal Treatment Plant - North (TTPN)

A detailed water system schematic is provided as Figure 2-14 to this application. TTPN is comprised of settling basins (scalping tanks) and a cooling tower located at the north end of the cold strip mill. The discharge from TTPN is recycled directly back to the mill as process and cooling water. TTPN receives process and cooling water from the finishing end of the No. 3 Cold Strip Mill Complex (80” Tandem Mill, No. 29 Tandem Mill, No. 5 Galvanizing). Overflow from TTPN is directed to a storm water retention basin, from which there is no discharge to surface waters.

Terminal Treatment Plant - East (TTPE)

A detailed water system schematic is provided as Figure 2-13 to this application. TTPE consists of two scalping tanks and three settling basins and a cooling tower. All of the effluent from TTPE is discharged to the No. 6 Pump house and is then recycled back to the mills as process and cooling water. The following operations discharge to TTPE:

- The 80” hot strip mill is equipped with four scalping tanks and four large diameter clarifiers for preliminary removal of heavy solids and oil prior to discharge to the TTPE scale pits.

- No. 3 Cold Strip Mill process wastewaters (cold rolling, alkaline cleaning and hot coating line) are treated in a clarifier and a dissolved air floatation unit to remove emulsified oils and then are combined with 80” hot strip mill wastewater for additional treatment in large diameter clarifiers prior to discharge to the TTPE scalping tanks.

- Pickling rinse water from the No. 5 Pickle Line is neutralized with caustic at the No. 3 Cold Strip Mill neutralization facility prior to discharge to the TTPE scalping tanks. Rinse water from the CAL line discharges directly to the TTPE scalping tanks.

Solids from the scale pits and settling basins are removed by either dragouts or clam shell buckets for disposal.

Exhibit 2
Example Onsite Lab pH Logs

pH Analysis Log Sheet
CH1-W-032 Revision 19
11/1/2021 SB

Date: 10-3-22

Analyst: MM

Slope: 91.6
(Acceptable range: 90-110)

Traceable Thermometer:

SN: 210399232

Exp: 5/12/2023

*Temperature determined by traceable thermometer: 20.4

*Temperature determined by temperature probe: 20.4

*Temperature difference must be ≤ 1.5°C

Buffer	Allowable Range	Manufacturer	Lot Number	pH	Temperature (°C)
4.0	**3.90 – 4.10**	ERA	050122m	4.03	20.3
7.0	**6.90 – 7.10**	ERA	270422m	7.01	20.4
10.0	**9.90 – 10.10**	ERA	160921m	10.02	20.5

NOTE: Analyze samples within 15 minutes of collection.
011 & 014 pH must be between 6.0 – 9.0

Location	Time Sample Was Taken	Time Sample Was Analyzed	pH	Temperature (°C)	Values Used for Average (✓)
pH 7			7.01	20.4	
014	608	620	7.44	20.5	
			7.51	20.5	✓
			7.51	20.6	✓
Average pH (Reported Value):			7.5		
pH 7			7.01	20.4	
011	610	620	7.23	20.0	✓
			7.21	20.1	✓
Average pH (Reported Value):			7.2		
pH 7			7.01	20.4	

REVIEWED
10/4/22 SB

pH Analysis Log Sheet
CH1-W-032 Revision 19
11/1/2021 SB

Date: 10-10-22

Analyst: MM

Slope: 91.9
(Acceptable range: 90-110)

Traceable Thermometer:

SN: 210399232

Exp: 5/12/2023

*Temperature determined by traceable thermometer: 21.3

*Temperature determined by temperature probe: 21.3

*Temperature difference must be ≤ 1.5°C

Buffer	Allowable Range	Manufacturer	Lot Number	pH	Temperature (°C)
4.0	3.90 – 4.10	ERA	050122m	4.02	21.6
7.0	6.90 – 7.10	ERA	270422m	7.01	21.3
10.0	9.90 – 10.10	ERA	160921m	10.03	21.5

NOTE: Analyze samples within 15 minutes of collection.
011 & 014 pH must be between 6.0 – 9.0

Location	Time Sample Was Taken	Time Sample Was Analyzed	pH	Temperature (°C)	Values Used for Average (✓)
pH 7			7.01	21.3	
014	603	612	7.33	20.6	
			7.52	20.6	✓
			7.53	20.5	✓
Average pH (Reported Value):			7.5		
pH 7			7.01	21.3	
011	607	612	7.69	19.0	✓
			7.71	19.1	✓
Average pH (Reported Value):			7.7		
pH 7			7.01	21.3	

REVIEWED
10/11/22 JB

pH Analysis Log Sheet
CH1-W-032 Revision 19
11/1/2021 SB

Date: 10-24-22

Analyst: MM

Slope: 91.4
(Acceptable range: 90-110)

Traceable Thermometer:

SN: 210399232

Exp: 5/12/2023

*Temperature determined by traceable thermometer: 20.6

*Temperature determined by temperature probe: 20.6

*Temperature difference must be ≤ 1.5°C

Buffer	Allowable Range	Manufacturer	Lot Number	pH	Temperature (°C)
4.0	3.90 – 4.10	ERA	050122m	4.02	21.0
7.0	6.90 – 7.10	ERA	270422m	7.01	20.6
10.0	9.90 – 10.10	ERA	160921m	10.02	20.7

NOTE: Analyze samples within 15 minutes of collection.
011 & 014 pH must be between 6.0 – 9.0

Location	Time Sample Was Taken	Time Sample Was Analyzed	pH	Temperature (°C)	Values Used for Average (✓)
pH 7			7.01	20.6	
014	610	621	7.49	21.3	✓
			7.53	21.3	
			7.48	21.3	✓
Average pH (Reported Value):			7.5		
pH 7			7.01	20.6	
011	614	621	7.59	20.6	
			7.66	20.5	✓
			7.68	20.5	✓
Average pH (Reported Value):			7.7		
pH 7			7.01	20.6	

REVIEWED
10/31/22 SB

Exhibit 3
Example Microbac Chain of Custody

MICROBAC®

CHAIN OF CUSTODY RECORD

Number

Instructions on back

TO BE COMPLETED BY MICROBAC

Lab Report Address		Invoice Address		Turnaround Time	
Client Name:	Cleveland-Cliffs (ArcelorMittal)	Client Name:		[X] Routine (5 to 7 business days) [ ] RUSH* (notify lab)	Temperature Upon Receipt (°C) Therm ID
Address:	3210 Watling St	Address:			Holding Time
City, State, Zip:	East Chicago, IN 46312	City, State, Zip:		(needed by)	Samples Received on Ice? Yes No N/A
Contact:	Samantha Banks	Contact:		Report Type	Custody Seals Intact? Yes No N/A
Telephone No.:	219.399.6708	Telephone No.:		[ ]Results Only [ ]Level 1 [ ]Level 2 [ ]Level3 [ ]Level 4 [ ]EDD	
Send Report via:	[ ] Mail [ ] Fax [X] e-mail (address)	samantha.banks@clevelandcliffs.com	Send Invoice via:	[ ] Mail [ ] Fax [ ] e-mail (address)	
Project:		Location:	PO No.:	Compliance Monitoring? [x] Yes [ ] No (NPDES) Agency/Program	
Sampled by (PRINT):		Sampler Signature:		Sampler Phone No.:	

* Matrix Types: Soil/Solid (S), Sludge, Oil, Wipe, Drinking Water (DW), Groundwater (GW), Surface Water (SW), Waste Water (WW), Other (specify)

** Preservative Types: (1) HNO3, (2) H2SO4, (3) HCl, (4) NaOH, (5) Zinc Acetate, (6) Methanol, (7) Sodium Bisulfate, (8) Sodium Thiosulfate, (9) Hexane, (U) Unpreserved

REQUESTED ANALYSIS

Lab ID	Client Sample ID	Date Collected	Time Collected	No. of Containers	Matrix	Grab / Comp	Preserv Types **	Lead	Zinc	Sampler Initials
	014	10-25-22	4:00am	1	Aq	C	1	X	X	JJ
	018	10-25-22	4:32 am	1	Aq	C	1	X	X	JJ
	518	10-25-22	4:13 am	1	Aq	C	1	X	X	JJ
	618	10-25-22	4:06 am	1	Aq	C	1	X	X	JJ
	014	10-26-22	4:00 am	1	Aq	C	1	X	X	JJ
	018	10-26-22	4:13 am	1	Aq	C	1	X	X	JJ
	518	10-26-22	4:28 am	1	Aq	C	1	X	X	JJ
	618	10-26-22	4:24 am	1	Aq	C	1	X	X	JJ
	014	10-27-22	5:40am	1	Aq	C	1	X	X	MM

Possible Hazard Identification [ ] Hazardous [ ] Non-Hazardous [ ] Radioactive

Sample Disposition [x] Dispose as appropriate [ ] Return [ ] Archive

Comments

Relinquished By (signature)	Date/Time	Received By (signature)	Date/Time
		Luis Palacios	10-28-22 7:00 AM
Relinquished By (signature)	Date/Time	Received By (signature)	Date/Time
Luis Palacios	10-28-22 9:20AM		
Relinquished By (signature)	Date/Time	Received By (signature)	Date/Time
			10/28/22 0920

Exhibit 4
August 2022 Laboratory Sample Refrigerator Logs

Refrigerator Temperatures Room 122

Temperature control range: 2.0 - 6.0 °C

Sample Refrigerator Thermometer SN: 210970505

Expiration Date: 11-11-23

Standards and Reagents Refrigerator Thermometer SN: 200482680

Expiration Date: 11-2-22

Month: August **Year:** 2022

Date	Samples Only	Standards & Reagents	Note	Initials
1	4.4	4.5		JJ
2	5.2	4.2		JJ
3	4.7	5.8		JJ
4	4.8	4.4		JJ
5	4.5	5.8		MM
6				
7				
8	4.3	5.8		JJ
9	3.8	5.4		JJ
10	4.6	5.8		JJ
11	4.4	4.0		JJ
12	4.0	4.3		JJ
13				
14				
15	4.3	3.8		JJ
16	4.7	4.1		JJ
17	4.4	4.1		JJ
18	3.8	4.1		JJ
19	3.4	4.2		JJ
20				
21				
22	3.4	4.1		JJ
23	3.5	4.3		JJ
24	4.2	4.4		JJ
25	4.0	4.4		JJ
26	4.2	4.4		JJ
27				
28				
29	4.3	4.9		JJ
30	4.7	4.9		JJ
31	4.8	4.2		JJ

Refrigerator Temperatures Room 125

Temperature control range: 2.0 - 6.0 °C

Sample Refrigerator Thermometer SN: 210970534

Expiration Date: 11-11-23

Month: August **Year:** 2022

Date	Samples Only	Standards & Reagents	Note	Initials
1	5.0			JJ
2	5.3			JJ
3	5.8			JJ
4	5.8			JJ
5	5.6			MM
6				
7				
8	5.2			JJ
9	5.7			JJ
10	6.4			JJ
11	4.5			JJ
12	4.0			JJ
13				
14				
15	4.0			JJ
16	5.5			JJ
17	5.3			JJ
18	6.0			JJ
19	5.4			JJ
20				
21				
22	6.1			JJ
23	5.5			JJ
24	5.7			JJ
25	5.4			JJ
26	5.6			JJ
27				
28				
29	5.6			JJ
30	5.8			JJ
31	5.3			JJ

Exhibit 5
Facility SWPPP Excerpts for Limestone Storage Near Outfall 018

The following sub-sections describe the activities that take place and the materials found in each of the Plant 2 storm water drainage basins and the engineering controls and BMPs that have been implemented to manage storm water runoff.

5.2.1. Drainage Area SW-1

Drainage area SW-1 is located west of the 7 BF conveyor hopper, on the northwest side of the Turning Basin. In drainage area SW-1, coils, slabs, billets, and scrap metal is unloaded from barges and transferred to rail cars. The materials are unloaded from barges or ships by crane to be transferred to the steel producing shops.

The dockside storage areas in SW-1 are uncovered and exposed to precipitation. The unloaded materials in addition to the slag piled in the drainage area are not permanently stored and the chances of contact with storm water are limited. The potential pollutants of concern are metals, oil, and grease. Cleaning the dock area regularly to keep it free of scattered scrap metal and maintaining the dock grade away from the Turning Basin are adequate BMPs to limit storm water contamination for the scrap metal loading area (see Table 5b). No significant spills or leaks have occurred within the past three years (Table 4b).

5.2.2. Drainage Area SW-2

SW-2 is located adjacent to and directly east of SW-1. At the east end of SW-1, self-unloading cargo ships unload iron ore to the 7 BF conveyor hopper where it is transferred to the ore storage field outside the drainage area. Scale is also stored in this drainage area. These cargo ships are equipped with a conveyor boom that unloads materials directly into the 7 BF conveyor hopper.

Storm water in this area is directed away from the dock face by a wide swale and culvert into a storm water retention basin. There is no significant storm water discharge from SW-2. Appropriate storm water management controls that have been implemented within SW-2 are given in Table 5c

There is no permanent material storage in the SW-2 drainage area. No significant spills or leaks have occurred within the past three years (Table 4c). Dockside refueling of the cargo ships is also provided by tanker trucks.

5.2.3. Drainage Area SW-3

SW-3 is also located on the north side of the Turning Basin, adjacent to and directly east of SW-2. In SW-3, self-unloading cargo ships unload limestone to temporary stockpiles where it is transferred to the lime storage field outside the drainage area. These cargo ships are equipped with a conveyor boom that can be moved over the dock and unload materials into stockpiles. Front-end loaders are used to load limestone from the stockpiles to the conveyor hoppers located on No. 6 Dock. No significant spills or leaks have occurred within the past three years (Table 4d). Dockside refueling of the cargo ships is also provided by tanker trucks.

Materials stored in the Plant 2, SW-3 drainage area are exposed to storm water (see Table 3). Limestone is continually stock piled along No. 6 Dock. Because of the tremendous volume and size of the material stock piles, all stock piles are uncovered and exposed. The stock piles are located adjacent to the dock where material is unloaded from the cargo ships, stored, and then transferred to other areas within the facility that do not discharge storm water runoff to waters of the United States.

Storm water runoff from this drainage area does not have a defined outfall. Therefore, discharges into the Turning Basin occur as diffuse sheet flow. Storm water from this drainage area potentially contributes suspended solids to the Turning Basin. Other potential pollutants of concern are limestone and metals.

The pile size and the semi-continuous operations of loading, unloading, distributing, and consolidating the materials render covering the piles impracticable. Appropriate storm water management controls that have been implemented within SW-3 are given in Table 5d. Indiana Harbor East employs proper material unloading and loading practices. The storage piles are consolidated to reduce the potential for contact with storm water.

The following engineering controls have been implemented to minimize storm water pollution during storm events:

- Storage piles are located at least 15 feet away from the dock face to reduce the potential for storm water runoff.
- A slag berm lined by concrete highway barriers exists along at the east end of SW-3 to prevent storm water discharge.
- At the west end of SW-3, the dock is sloped away from the Turning Basin and toward a storm water retention basin.

5.2.4. Drainage Area SW-4

SW-4 is also located on the north side of the Turning Basin, in the general area of outfall 018 and drains the upper portion of the perimeter road.

There is no permanent material handling or storage in drainage area SW-4. No significant spills or leaks have occurred within the past three years (Table 4e).

Storm water management practices that have been implemented within SW-4 are given in Table 5e. Good housekeeping practices from road cleaning provide adequate protection against storm water contamination. Indiana Harbor East will continue to implement its Fugitive Dust Management Program to reduce airborne releases of particulate matter greater than 10 micrometers in size. This program will continue to involve street sweeping activities to clean spillage and control particulate emissions. A swale was created on the north side of the road to direct storm water away from the Turning Basin.

TABLE 3d
Materials Inventory
SW - 3

Instructions: List all materials used, stored, or produced on site that have a potential to contribute pollutants to storm water runoff or have been exposed to storm water during the last three years.

Material	Purpose	Quantity (Units)	Method of Storage	Likelihood of contact with storm water. If yes describe reason	Describe Material Management Practice. (e.g. covered, bermed, drummed)
Lime Stone	Raw Material	750,000 tons	Pile	Unlikely due to grading, berms, highway barricades, and retention basin	Engineering controls, BMP's described in SWPPP text.
Slag	By-product	100,000 tons	Pile	Unlikely due to grading, berms, highway barricades, and retention basin	Engineering controls, BMP's described in SWPPP text.
Mobile Equipment	Equipment	Incidental	Tank	Unlikely due to grading, berms, highway barricades, and retention basin	Engineering controls, BMP's described in SWPPP text.