Cleveland-Cliffs Burns Harbor LLC

Phase 2 Ammonia-N Mass Balance Study

January 26, 2022

Prepared for:

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Cleveland-Cliffs Burns Harbor LLC
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Executive Summary

Cleveland-Cliffs Burns Harbor LLC conducted a mass balance study for process water sources of ammonia-N to Wastewater Pumping Station No. 2 during the period July 6 to July 23, 2021. AM/PM grabs samples for ammonia-N were collected at 23 sampling locations on nine sampling, accounting for 414 ammonia-N laboratory determinations.

Principal findings from the Phase 2 mass balance study:

- Approximately 24% ammonia-N removal was observed from Recycle Plant main stack scrubber water across the Reclamation Services Building process water treatment system. This is likely attributable to evolution of ammonia-N to the atmosphere under alkaline conditions.

- Blast Furnace Gas Seal 19 on the main blast furnace gas main at the Power Station was found to be a notable source of ammonia-N to WWPS-2, accounting for approximately 18% of the ammonia-N loading to WWPS-2 during the study period.

- The mass balance assessment at WWPS-2 was exceptional with a relative per cent difference of less than 5% between contributing sources of ammonia-N to WWPS-2 (average 194.7 lbs/day) and ammonia-N measured at WWPS-2 (average 204.3 lbs/day). This demonstrates all significant sources of ammonia-N to WWPS-2 were accounted for.

Introduction

Cleveland-Cliffs Burns Harbor LLC (CCBH) is a fully integrated steel mill located on Lake Michigan in Northwest Indiana with capacity to produce more than 5 million tons/year of semi-finished and finished flat-rolled steel products. Water for process and non-contact cooling applications is withdrawn from Lake Michigan through cooling water intake structures comprising two off-shore intake cribs, two 108" diameter intake tunnels and two intake pumping stations. Treated process water, non-contact cooling water and site storm water are discharged to the East Branch of the Little Calumet River through Outfalls 011 and 001. Outfall 002 discharges non-contact cooling water and site storm water to the East Arm of Burns Harbor. See Figure 1.

Soon after it acquired the Burns Harbor Plant in December 2020, Cleveland-Cliffs voluntarily committed to achieve best available technology (BAT) effluent limits for the Burns Harbor C and D blast furnaces derived from 40 CFR Part 420. In so doing, Cleveland-Cliffs will forego Section 301(g) variances for ammonia-N (Outfall 001) and total phenols (Outfall 011) that have been in effect since 1988. As part of that effort CCBH has been conducting studies to support the planned blast furnace process water treatment system upgrades. The Phase 2 ammonia-N mass balance study is one of those studies.

Ammonia-N is a key blast furnace process water pollutant for design of BAT process water treatment systems. This is a report for the CCBH Phase 2 ammonia-N mass balance study that was focused on internal process water streams that discharge to Wastewater Pump Station No. 2 (WWPS-2). The prior CCBH Phase 1 ammonia-N mass balance study was a broader plant-wide study that attempted mass balances around internal and end-of-pipe process water treatment systems and Outfall 001. The results of the Phase 1 study have been reported separately.

WWPS-2 conveys partially treated and untreated process waters from the following process and utility operations to the Burns Harbor Secondary Wastewater Treatment Plant (SWTP):

Recycle Plant
C and D Blast Furnaces
Basic Oxygen Furnaces
Vacuum Degasser
Continuous Casters
110" Plate Mill
Power Station
Reclamation Services Building
Deerfield Landfill

Figure 2 is a simplified schematic diagram showing the contributing process water sources to WWPS-2 and Phase 2 study sample locations.

Phase 2 Ammonia-N Mass Balance Study Objectives

- Quantify sources of ammonia-N to the Reclamation Services Building (RSB) and WWPS-2
- Assess removal of ammonia-N across the RSB treatment system
- Attempt a mass balance for ammonia-N at WWPS-2

Phase 2 Ammonia-N Mass Balance Study Plan and Conduct of the Study

<u>Sampling and Analysis Plan</u>

The sampling and analysis plan for the Phase 2 study called for collection of AM/PM grab samples on nine sampling days at the identified sample stations. Temperature, pH and specific conductance were measured in the field when each grab sample was collected. Samples were analyzed for ammonia-N by EPA Method 350.1, Revision 2. Where available, measured process water flow rates were obtained. Otherwise, best engineering estimates of flow were used for this study.

Samples were collected during the period July 6 to July 23, 2021 on July 6, 7. 9, 16 and 19 to 23, 2021.

Burns Harbor Operations During the Phase 2 Study

Each of the iron and steel manufacturing processes listed above were operated throughout the Phase 2 study period except as noted below:

- The 110" Plate Mill was idle on July 6, 2021.
- The Recycle Plant was idle during the afternoon of July 23, 2021 and intermittently on a short-term basis for other periods.

Out of the ordinary throughout the Phase 2 study was CCBH operation of a temporary BAT blast furnace recycle system (BFRS) blowdown treatment system for ammonia-N at the blast furnace closed water pumping station (BFCWPS). As part of that project, ammonia-N bearing process water from the RSB hydrocyclone overheads (RSB HC OHDs) was recovered to the BFRS. This was accomplished with rental centrifuges for solids separation from the RSB HC OHDs. The clear water was returned to the BFRS and treated as part of the BFRS blowdown in the temporary BAT treatment system.

Phase 2 Ammonia-N Mass Balance Study Results

Phase 2 study field measurements and analytical data for ammonia-N are presented in Attachment A in the form of spreadsheet summaries. Table 1 presents summaries of measured ammonia-N concentrations at each sample station.

Ammonia-N Concentration Data Assessment

There were 414 ammonia-N analytical results reported for the Phase 2 study. Review of reported ammonia-N concentration data presented in Attachment A shows what appear to be unrepresentative ammonia-N concentration data at three sample stations.

Sample Station	Sample Date and Time	Suspect Data (mg/L)	Sample Station Data Without Suspect Data (mg/L)	Notes
SP-2	07/16/21 AM	0.47	Range: 3.32 to 5.65 Median: 4.89	Suspect outlier data out of range. No known Recycle Plant process reason for low value in main stack scrubber water.
110-1	07/19/21 PM	1.12	Range: 0.035 to < 0.01 Median: < 0.01	Suspect outlier data out of range. No known process sources of ammonia-N at 110" Plate Mill.
WWPS-2	07/19/21 PM	J 0.025	Range: 0.47 to 3.14 Median: 0.95	Suspect outlier data out of range. Process water sources of ammonia-N to DIW and WWPS-2 on sample date.

The analytical laboratory reported no unusual circumstances regarding the suspect data. Notwithstanding, the suspect data were not included in Phase 2 study mass loading calculations and assessments. This consideration is based on process knowledge and the degrees to which the suspect data are not representative.

There are other sample station ammonia-N data sets in Attachment A with wide data ranges and what might appear to be unrepresentative data (i.e., BF-2 Cell 4; BF-2 Tank 4; PS-6 Seal 19). These data sets were not edited. The range of ammonia-N concentration at the BF-2 sample stations reflect variable performance of the temporary BFRS BAT blowdown treatment system. PS-6 Seal 19 data were not edited because of the high variability exhibited throughout the Phase 2 study which may have been influenced by blast furnace and gas cleaning operations.

Attachment B presents process water flow data and calculated mass loadings of ammonia-N at each sample station. Table 2 presents summaries of calculated daily mass ammonia-N mass loadings at each sample station.

As expected, ammonia-N was not found in process waters from the following steelmaking and hot rolling operations significantly above Lake Michigan background levels measured in Burns Harbor service water:

Basic Oxygen Furnaces
Vacuum Degasser
Continuous Casters
110" Plate Mill

Ammonia-N Removal from Across the RSB Treatment System

Only Recycle Plant main stack scrubber water was treated in the RSB final thickener during the Phase 2 study, a departure from the norm. The RSB HC OHDs were diverted from the RSB final thickener and returned to the BFRS as noted above. This provided the opportunity to assess ammonia-N removal across the RSB treatment system for isolated Recycle Plant main stack scrubber water.

Sample Station		Maximum	Average	Median	Minimum
Ammonia-N Concentrations (mg/L)					
SP-2	Recycle Plant main stack scrubber	5.65	4.59	4.89	3.32
RSB-4	RSB final thickener overflow	4.36	3.53	3.50	2.55
Ammonia-N Mass Loadings (lbs/day)					
SP-2	Recycle Plant main stack scrubber	177.4	143.6	153.2	103.9
RSB-4	RSB final thickener overflow	136.5	109.6	110.6	79.6

Note: An unrepresentative reported minimum ammonia-N concentration for SP-2 (0.47 mg/L) was not included when calculating in the above SP-2 ammonia-N mass loadings. See Tables 1 and 2 and discussion of analytical results above.

On average, approximately 24% of the ammonia-N contained in the Recycle Plant main stack scrubber water was removed through the RSB treatment process, most likely through evolution to the atmosphere.

Power Station Blast Furnace Gas Seals

There are 13 blast furnace gas seals located at the Power Station that are operated to prevent release of blast furnace gas to the atmosphere. Containment of blast furnace gas prior to combustion at the Power Station is a critical safety item because blast furnace gas is rich in carbon monoxide.

The blast furnace gas seals were included in the Phase 2 study because of the potential for transfer of ammonia-N from blast furnace gas to the seal water. Each gas seal is flooded with approximately 50 gpm of Lake Michigan service water. The seal water is discharged to the DIW sewer on a once-through basis. Twelve seals are of the same basic design and are in service at the Power Station boilers. There is also a gas seal (Seal 19) on the main blast furnace gas header that serves the Power Station.

Seal 19 and four other gas seals were sampled. Phase 2 study results show Seal 19 had notable ammonia-N mass loadings whereas the other gas seals did not. For purposes of this assessment, Seal 19 was considered separately. Data obtained for Seals 7, 8, 14 and 17 were applied to the gas seals not sampled.

Sample Station		Maximum	Average	Median	Minimum
Ammonia-N Concentrations (mg/L)					
PS-2	BF Gas Seal 7	0.30	0.13	0.09	< 0.01
PS-3	BF Gas Seal 8	0.93	0.39	0.38	0.12
PS-4	BF Gas Seal 14	3.13	0.79	0.68	0.21
PS-5	BF Gas Seal 17	0.17	0.03	0.02	< 0.01
PS-6	BF Gas Seal 19	98.0	52.0	52.5	34.4
Ammonia-N Mass Loadings (lbs/day)					
PS-2	BF Gas Seal 7	0.18	0.07	0.05	< 0.01
PS-3	BF Gas Seal 8	0.56	0.23	0.23	0.07
PS-4	BF Gas Seal 14	1.88	0.47	0.41	0.12
PS-5	BF Gas Seal 17	0.10	0.02	< 0.01	< 0.01
PS-6	BF Gas Seal 19	58.9	36.0	46.3	1.50

WWPS-2 Ammonia-N Mass Balance Assessment

Table 3 presents the results of the WWPS-2 ammonia-N mass balance assessment. The overall approach was to calculate daily mass loadings from each contributing source and compare the sum of the daily average source ammonia-N mass loadings with the daily average mass loading determined at WWPS-2. The assessment was constructed with the following elements:

Process Water Flow Rates

- Where available, measured daily average process water flows were obtained for the nine Phase 2 sampling days from the Burns Harbor iHistorian data management system:
  - SP-1 Ore Dock dewatering water at the Recycle Plant
  - SP-2 Recycle Plant main stack scrubber water at the RSB
  - RSB-1 C Furnace thickener underflow at the RSB

- RSB-2 D Furnace thickener underflow at the RSB
- BF-2 (Cell 4) BFRS blowdown at the BFCWPS
- BF-2 (Tank 4) Temporary BFRS BAT blowdown at BFCWPS (Ramboll flow data)
- LL-1 Deerfield Landfill leachate

- Best engineering estimates of process water flows were developed with knowledge of plant process engineers and/or from Burns Harbor engineering drawings:
  - RSB-3 Hydrocyclone Overheads
  - RSB-4 RSB final thickener overflow (same as SP-2)
  - Coal Injection process/cooling water
  - BOF-1 BOF off-gas treatment and recycle system blowdown
  - BOF-2 RSB Hi-Cap thickener overflow (slurry from BOF-1)
  - VD-1 Vacuum Degasser process water
  - CC-1 Combined Continuous Caster process water and cooling water blowdowns
  - 110-1 110" Plate Mill
  - PS 1 to PS-6 Power Station blast furnace gas seals

Average flow at WWPS-2 was estimated as the sum of contributing average water flows.

Ammonia-N Concentrations

- Measured average ammonia-N concentrations were used for contributing flow sources where flows are discharged directly to the DIW sewer leading to WWPS-2:
  - RSB-4, BF-2 (Cell 4), BOF-1, BOF-2, VD-1, 110-1, PS-6, LL-1
- The average Lake Michigan service water ammonia-N concentration was used for coal injection process water/cooling water
- The average CC-1 ammonia-N concentration from the No. 1 Continuous Caster was applied to the combined No. 1 and No. 2 Continuous Caster process water and cooling water flows that discharge to the DIW sewer.
- Average ammonia-N concentrations from PS-2 to PS-5 were applied to other Power Station blast furnace gas seals that were not sampled.

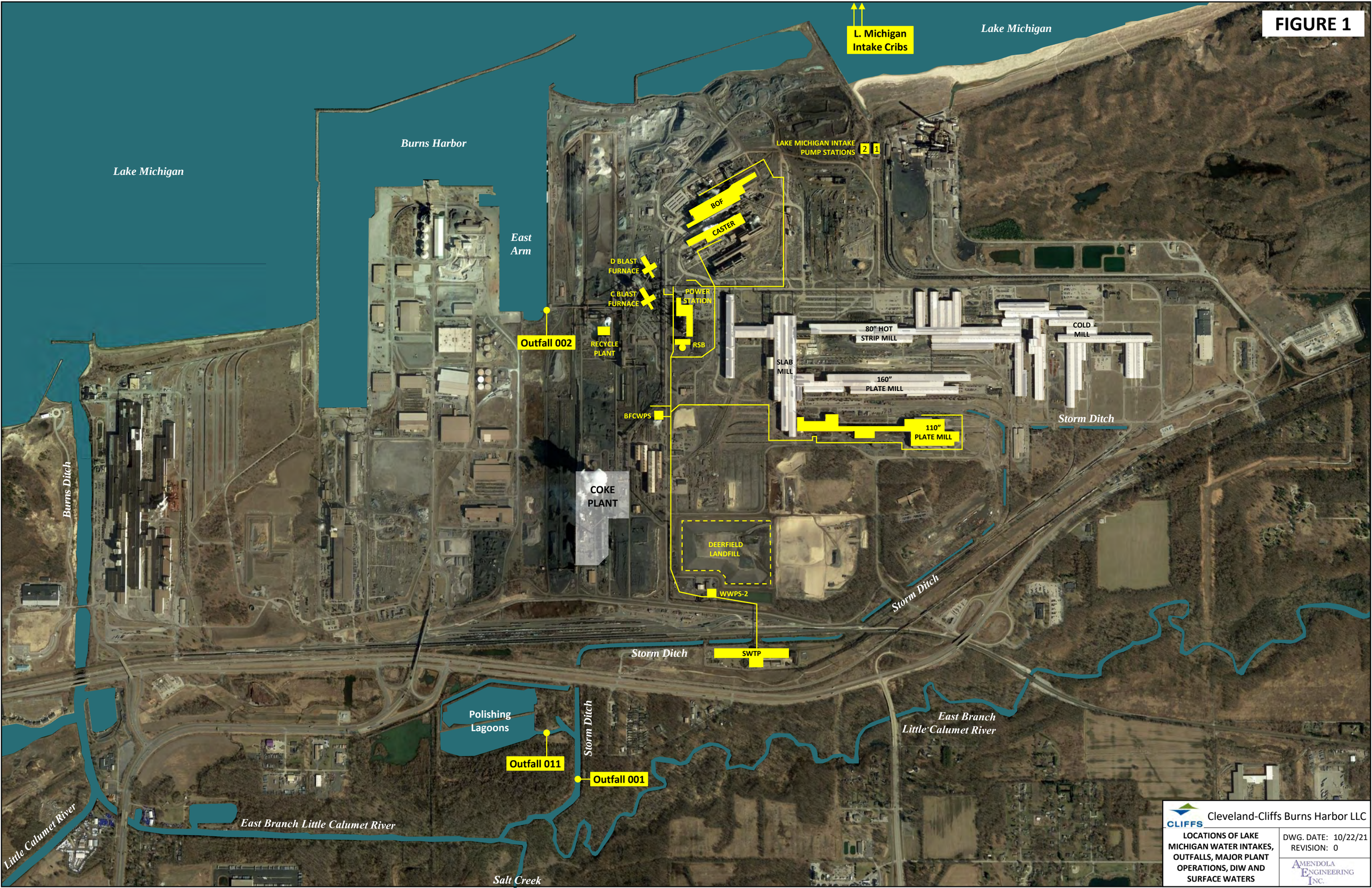
WWPS-2 Mass Balance Results

See Table 3:

Average Ammonia-N Source Mass Loadings to WWPS-2	194.7 lbs/day
Average WWPS-2 Ammonia-N Mass Loading:	204.3 lbs/day
Relative Per Cent Difference	4.8%

Agreement between the average source loadings and the average WWPS-2 mass loading is exceptional and not often seen in mass balance studies of this type. The results confirm that all significant sources of ammonia-N to WWPS-2 were accounted for during the Phase 2 study period.

FIGURE 1



Cleveland-Cliffs Burns Harbor LLC

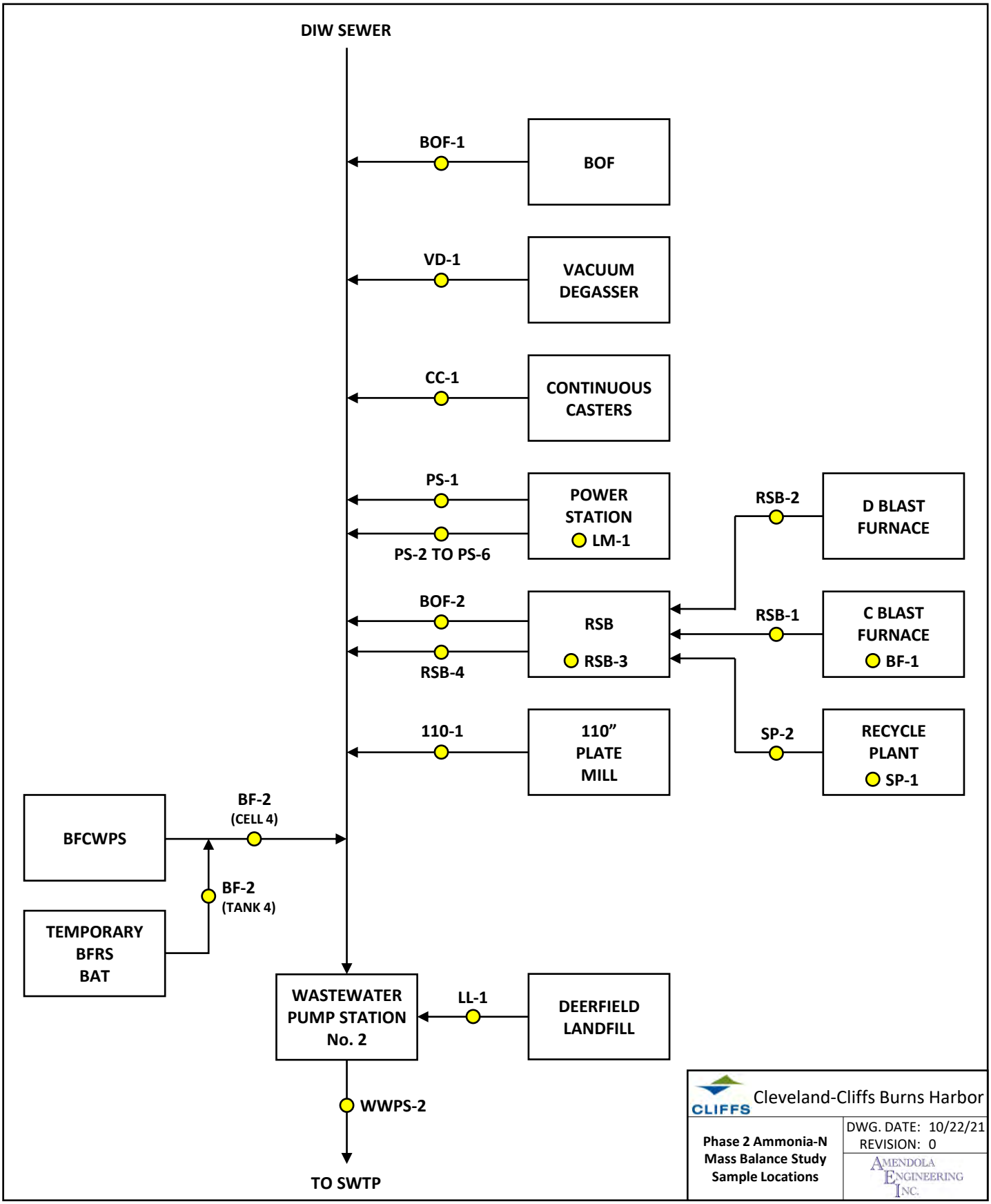
LOCATIONS OF LAKE MICHIGAN WATER INTAKES, OUTFALLS, MAJOR PLANT OPERATIONS, DIW AND SURFACE WATERS

DWG. DATE: 10/22/21
REVISION: 0

Amendola Engineering Inc.

FIGURE 2

Cleveland-Cliffs Burns Harbor LLC
Phase 2 Ammonia-N Mass Balance Study
Sample Locations



Cleveland-Cliffs Burns Harbor LLC
Phase 2 Ammonia-N Mass Balance Study: RSB and WWPS-2

Table 1: Ammonia-N Concentrations

Sample Stations		Ammonia-N (mg/L)			
		Maximum	Average	Median	Minimum
LM-1	Lake Michigan Service Water	0.117	0.025	0.016	< 0.010
SP-1	Ore Dock Dewatering Water to RP Scrubber	6.00	5.74	5.75	5.45
SP-2	Recycle Plant Main Stack Scrubber to RSB	5.65	4.36	4.87	0.472
RSB-1	C Blast Furnace Thickener Underflow to RSB	106	76.5	81.8	20.7
RSB-2	D Blast Furnace Thickener Underflow to RSB	101	78.4	83.4	54.2
RSB-3	Hydrocyclone Overheads to BFRS	64.1	52.0	55.0	35.8
RSB-4	RSB Final Thickener Overflow to DIW Sewer	4.36	3.50	3.53	2.55
BF-1	C Blast Furnace Gas Seal	0.335	0.078	0.039	< 0.010
BF-2 Cell 4	BFRS Blowdown – Cell 4 to DIW Sewer	40.0	8.91	4.60	0.389
BF-2 Tank 4	BFRS blowdown – Tank 4 (Temporary BAT System)	37.7	3.31	0.142	< 0.010
BOF-1	BOF Off-Gas Recycle System Blowdown to DIW Sewer	0.146	0.092	0.088	0.057
BOF-2	BOF Hi-Cap Thickener Overflow at RSB to DIW Sewer	1.33	0.544	0.379	< 0.010
VD-1	Vacuum Degasser Discharge to DIW Sewer	0.063	0.025	0.020	< 0.010
CC-1	No. 2 Continuous Caster Filter Backwash to DIW	0.060	0.027	0.021	< 0.010
110-1	110” Plate Mill Discharge to DIW Sewer	1.12	0.076	< 0.010	< 0.010
PS-1	Combined Power Station Discharge to DIW Sewer	1.13	0.441	0.421	0.045
PS-2	BF Gas Seal 7 at Power Station	0.304	0.113	0.087	< 0.010
PS-3	BF Gas Seal 8 at Power Station	0.926	0.391	0.382	0.120
PS-4	BF Gas Seal 14 at Power Station	3.13	0.786	0.677	0.208
PS-5	BF Gas Seal 17 at Power Station	0.168	0.032	0.021	< 0.010
PS-6	BF Gas Seal 19 at Power Station	98.0	59.9	77.0	2.50
LL-1	Deerfield Landfill Leachate to WWPS-2	69.0	52.0	52.5	34.4
WWPS-2	Wastewater Pump Station No. 2	3.14	0.968	0.933	0.025

Note: Although the analytical laboratory reported no unusual circumstances, yellow-highlighted concentration data are suspect based on process knowledge and assessment of same sample station data. Yellow-highlighted data were not considered for calculating ammonia-N mass loadings for this report.

Cleveland-Cliffs Burns Harbor LLC
Phase 2 Ammonia-N Mass Balance Study: RSB and WWPS-2

Table 2: Ammonia-N Mass Loadings – Process Water Sources to WWPS-2

Sample Stations		Ammonia-N (lbs/day)			
		Maximum	Average	Median	Minimum
LM-1	Lake Michigan Service Water	--	--	--	--
SP-1	Ore Dock Dewatering Water to RP Scrubber	13.6	13.0	13.1	12.0
SP-2	Recycle Plant Main Stack Scrubber to RSB	177	144	153	104
RSB-1	C Blast Furnace Thickener Underflow to RSB	96.8	69.2	73.1	19.2
RSB-2	D Blast Furnace Thickener Underflow to RSB	86.2	66.3	71.1	44.9
RSB-3	Hydrocyclone Overheads to BFRS	231	188	198	129
RSB-4	RSB Final Thickener Overflow to DIW Sewer	136	110	111	80.6
BF-1	C Blast Furnace Gas Seal	1.2	0.3	0.1	< 0.1
BF-2 Cell 4	BFRS Blowdown – Cell 4 to DIW Sewer	36.9	6.1	2.3	0.2
BF-2 Tank 4	BFRS blowdown – Tank 4 (Temporary BAT System)	48.3	6.1	0.4	< 0.1
BOF-1	BOF Off-Gas Recycle System Blowdown to DIW Sewer	0.7	0.4	0.4	0.3
BOF-2	BOF Hi-Cap Thickener Overflow at RSB to DIW Sewer	2.9	1.2	0.8	< 0.1
VD-1	Vacuum Degasser Discharge to DIW Sewer	1.1	0.4	0.3	0.2
CC-1	No. 2 Continuous Caster Filter Backwash to DIW	0.2	0.1	< 0.1	< 0.1
110-1	110” Plate Mill Discharge to DIW Sewer	2.6	1.1	0.7	0.7
PS-1	Combined Power Station Discharge to DIW Sewer	27.2	10.6	10.1	1.1
PS-2	BF Gas Seal 7 at Power Station	0.2	< 0.1	< 0.1	< 0.1
PS-3	BF Gas Seal 8 at Power Station	0.6	0.2	0.2	< 0.1
PS-4	BF Gas Seal 14 at Power Station	1.9	0.5	0.4	0.1
PS-5	BF Gas Seal 17 at Power Station	0.1	< 0.1	< 0.1	< 0.1
PS-6	BF Gas Seal 19 at Power Station	58.9	36.0	46.3	1.5
LL-1	Deerfield Landfill Leachate to WWPS-2	158	26.9	1.2	0.0

Note: See report text and Table 1 note regarding suspect ammonia-N concentrations for sample stations SP-2, 110-1 and WWPS-2.

Cleveland-Cliffs Burns Harbor LLC
Phase 2 Ammonia-N Mass Balance Study: RSB and WWPS-2

Table 3: WWPS-2 Ammonia-N Mass Balance

Sample Station	Process and Cooling Water Sources to DIW Sewer	Average Flow to DIW Sewer (gpm)	Average Ammonia (mg/L)	Average Ammonia-N (lbs/day)
RSB-3	RSB Hydrocyclone OHDs (to 54”/60” BFRS sewer during Phase 2 study)	0	52.0	0
RSB-4	RSB final thickener overflow	2,605	3.50	109.5
BF-1	C & D Blast Furnace gas seals (discharged to 54”/60” BFRS sewer)	0	0.078	0
BF-2 Cell 4	BFRS Blowdown (Cell 4)	44	8.91	4.7
--	Coal Injection	1,200	0.025	0.4
BOF-1	Basic Oxygen Furnace off-gas treatment and recycle system blowdown	400	0.092	0.4
BOF-2	RSB Hi-Cap thickener overflow	180	0.092	0.2
VD-1	Vacuum Degasser	1,400	0.025	0.4
CC-1	Continuous Casters (CC-1 concentration applied to Caster flows to DIW)	1,771	0.027	0.6
110-1	110” Plate Mill	6,300	0.015	1.1
PS-1	Power Station combined discharge to DIW sewer	2,000	0.441	10.6
PS 2 to PS 5	Power Station blast furnace gas seals 7, 8, 14 & 17 (applied to other seals)	600	0.330	2.4
PS-6	Power Station blast furnace gas seal 19	50	59.9	36.0
LL-1	Deerfield Landfill Leachate (intermittent flow during Phase 2 study)	51	46.3	28.4
	Total	16,601	--	194.7
WWPS-2	Wastewater Pump Station No. 2	16,601	1.02	204.3

Cleveland-Cliffs Burns Harbor LLC
Second Ammonia-N Mass Balance Study
Phase 2: Intake, Process Wastewater Discharges to WWPS-2 and Landfill Leachate

Amendola Engineering, Inc.
October 22, 2021

ATTACHMENT A
pH Measurement Results (s.u.)

Sinter Plant Down
110" Plate Mill Down

Sample Name		07/06/21		07/07/21		07/09/21		07/16/21		07/19/21		07/20/21		07/21/21		07/22/21		07/23/21	
		Grab 1 of 2		Grab 2 of 2		Grab 1 of 2		Grab 2 of 2		Grab 1 of 2		Grab 2 of 2		Grab 1 of 2		Grab 2 of 2		Grab 1 of 2		Grab 2 of 2	
Phase 2	(Phase 1)	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result
LM-1	(RSB-1)		8.4		8.2		8.0		8.1		8.0		8.0		7.9		8.0		7.6		7.6		7.5		7.5		7.8		8.0		8.1		8.2		7.7		7.7
SP-1	(RSB-2)		7.7		7.6		7.7		7.8		7.4		7.5		7.9		7.9		7.6		7.7		8.0		8.0		8.0		8.3		8.1		8.2		7.8		7.7
SP-2	(RSB-3)		7.2		7.0		7.1		7.3		7.1		7.1		7.1		8.1		5.6		5.3		7.3		5.2		5.5		5.6		5.6		5.7		6.8		6.7
RSB-1	(RSB-4)		9.8		10.9		10.7		11.0		10.6		10.7		11.2		11.1		12.0		11.5		11.0		11.0		11.6		11.7		11.5		11.3		11.4		11.2
RSB-2	(RSB-5)		8.1		7.8		8.1		7.5		7.7		7.7		9.6		9.4		9.9		10.1		9.5		9.4		9.8		9.9		9.1		9.1		10.1		10.3
RSB-3	(RSB-6)		9.0		8.6		8.2		8.2		8.3		8.3		8.6		8.4		8.1		9.1		8.6		8.3		8.7		8.8		8.1		8.1		8.9		8.7
RSB-4	(RSB-7)		9.0		8.7		9.0		8.1		8.8		8.8		8.8		8.5		5.8		5.9		8.3		8.7		5.6		5.7		5.7		5.6		6.8		6.2
BF-1	-		8.0		8.4		8.5		8.5		8.6		8.2		10.2		10.7		11.2		10.6		10.6		10.1		8.9		8.9		10.8		10.7		9.9		9.1
BF-2 - Cell 4			7.9		7.8		8.0		7.7		7.7		7.4		7.7		7.3		8.0		7.9		7.6		7.3		7.5		7.5		8.1		8.1		7.6		7.6
BF-2 - T-4 Effluent			8.9		8.9		8.9		8.7		9.0		8.7		8.3		8.5		8.2		8.6		8.5		8.4		8.3		8.1		8.1		8.0		8.1		8.2
BOF-1	-		10.1		10.9		10.6		10.8		10.5		10.9		8.8		10.2		10.0		10.7		10.6		10.4		9.9		9.7		10.8		10.7		10.5		10.6
BOF-2	(RSB-8)		11.7		11.8		11.5		12.1		11.4		11.1		10.3		11.4		11.2		11.8		11.4		11.2		11.3		11.1		11.1		11.2		11.6		11.5
VD-1	-		8.0		8.4		8.8		8.8		8.7		8.3		11.5		8.1		8.1		8.8		8.2		8.1		8.5		8.4		8.8		8.9		8.1		8.4
CC-1	-		8.7		8.5		8.6		8.1		8.2		8.2		8.2		8.4		8.4		8.6		8.0		8.1		8.6		8.4		8.8		8.7		8.9		8.9
110-1	-		8.3		8.2		8.0		7.9		7.8		8.3		8.6		8.0		8.7		8.1		8.4		8.5		8.7		8.5		8.8		8.6		8.8		8.7
PS-1	-		8.3		8.2		8.1		7.9		8.3		8.0		8.0		7.5		7.7		8.4		8.0		7.9		8.0		7.9		8.4		8.3		7.4		7.5
PS-2 - Seal 7			7.1		7.6		7.6		7.4		7.4		7.4		7.4		7.3		7.2		7.9		7.6		7.2		7.6		7.6		7.7		7.6		7.4		7.4
PS-3 - Seal 8			7.4		7.9		7.8		8.0		7.7		7.7		7.6		7.2		7.5		7.4		7.6		7.4		7.5		7.6		7.5		7.5		7.5		7.6
PS-4 - Seal 14			7.4		7.6		7.7		7.7		7.7		7.6		7.2		7.7		7.5		7.6		7.5		7.4		7.7		7.5		7.9		7.8		7.4		7.6
PS-5 - Seal 17			8.3		8.2		8.2		7.8		8.0		8.0		7.9		7.1		7.8		8.1		8.0		7.7		7.2		7.3		7.7		7.6		7.7		7.5
PS-6 - Seal 19			6.9		7.2		7.3		7.5		7.1		7.1		7.1		10.8		7.1		7.4		7.3		7.2		7.4		7.2		7.9		7.4		7.1		7.3
LL-1	-		11.2		10.5		10.7		10.0		10.2		10.4		10.9		8.6		10.4		11.1		10.9		11.0		11.2		11.4		10.5		10.3		11.0		11.1
WWPS-2	(WWPS-2)		9.3		9.1		9.2		9.4		8.9		9.0		8.9		8.0		8.6		8.9		8.7		8.7		8.6		8.7		8.8		8.6		8.8		8.9

Cleveland-Cliffs Burns Harbor LLC
Second Ammonia-N Mass Balance Study
Phase 2: Intake, Process Wastewater Discharges to WWPS-2 and Landfill Leachate

Amendola Engineering, Inc.
October 22, 2021

ATTACHMENT A
Temperature Measurement Results (°C)

Sinter Plant Down
110" Plate Mill Down

Sample Name		07/06/21		07/07/21		07/09/21		07/16/21		07/19/21		07/20/21		07/21/21		07/22/21		07/23/21	
Phase 2	(Phase 1)	Grab 1 of 2 Q	Grab 1 of 2 Result	Grab 2 of 2 Q	Grab 2 of 2 Result	Grab 1 of 2 Q	Grab 1 of 2 Result	Grab 2 of 2 Q	Grab 2 of 2 Result	Grab 1 of 2 Q	Grab 1 of 2 Result	Grab 2 of 2 Q	Grab 2 of 2 Result	Grab 1 of 2 Q	Grab 1 of 2 Result	Grab 2 of 2 Q	Grab 2 of 2 Result	Grab 1 of 2 Q	Grab 1 of 2 Result	Grab 2 of 2 Q	Grab 2 of 2 Result
LM-1	(RSB-1)		25.0		33.8		22.5		22.5		22.3		22.8		22.2		22.0		22.9		22.6		20.8		22.5		22.5		22.8		22.7		22.9		23.1		23.7
SP-1	(RSB-2)		20.5		36.0		19.7		20.1		20.0		19.2		19.9		41.0		19.7		20.7		19.4		20.2		16.6		19.8		20.1		20.5		18.4		18.9
SP-2	(RSB-3)		38.6		42.0		41.3		23.8		41.5		41.4		41.0		25.6		41.8		41.4		41.5		41.4		30.1		41.8		41.9		41.8		41.7		41.3
RSB-1	(RSB-4)		36.5		36.7		34.6		34.8		35.8		34.5		35.8		36.0		40.4		35.5		38.4		37.9		35.9		36.4		35.1		39.7		40.8		40.9
RSB-2	(RSB-5)		41.7		36.4		39.6		39.9		40.4		39.7		40.1		40.9		41.8		40.3		44.7		41.7		40.8		41.3		40.7		41.8		42.3		41.9
RSB-3	(RSB-6)		34.4		35.7		29.9		30.2		30.5		30.4		30.3		30.4		28.9		30.7		34.4		31.2		30.2		30.8		30.8		30.9		31.7		31.5
RSB-4	(RSB-7)		37.6		40.8		40.7		40.6		41.1		40.8		40.2		41.1		40.8		40.8		36.3		40.7		41.4		41.4		40.8		40.9		41.9		41.4
BF-1	-		22.6		35.7		22.6		23.0		22.9		23.0		22.5		22.9		24.6		22.4		22.6		23.2		22.9		23.1		22.9		30.1		21.7		22.0
BF-2 - Cell 4			35.3		34.0		34.9		35.4		35.3		34.3		35.1		25.3		36.3		35.6		34.9		35.4		35.5		35.8		35.9		35.9		34.6		34.7
BF-2 - T-4 Effluent			38.5		34.2		35.3		35.8		34.8		35.1		25.3		35.7		35.8		35.1		25.1		35.7		35.9		35.6		36.1		36.3		34.1		34.1
BOF-1	-		38.0		36.7		33.5		33.7		32.6		33.1		35.8		34.6		34.7		34.1		28.7		34.4		34.1		34.1		34.2		34.5		36.2		36.6
BOF-2	(RSB-8)		37.6		37.2		34.4		35.2		34.7		34.9		33.9		35.2		34.5		34.7		32.3		35.6		35.0		35.4		35.1		35.4		35.5		35.7
VD-1	-		25.9		35.1		25.6		26.1		26.0		25.3		34.3		25.7		24.7		25.6		20.7		25.1		19.2		25.1		25.9		26.1		26.4		26.7
CC-1	-		31.0		34.5		25.2		25.8		25.0		25.1		25.8		29.7		25.3		26.1		24.6		24.9		25.8		25.7		26.1		26.3		24.3		24.4
110-1	-		24.4		30.0		30.3		31.1		29.9		30.8		29.9		24.3		28.9		30.4		29.3		29.8		30.4		31.0		29.1		29.7		30.2.		31.0
PS-1	-		27.8		32.2		25.3		25.8		26.1		24.9		24.1		23.6		23.7		24.8		23.6		24.4		22.3		22.7		22.3		22.8		21.6		21.9
PS-2 - Seal 7			26.4		31.8		23.5		24.1		24.1		23.7		23.7		23.4		23.1		23.7		21.4		24.0		21.6		21.9		21.2		21.7		21.3		22.1
PS-3 - Seal 8			25.7		31.5		23.1		23.7		24.3		23.3		23.4		23.4		22.1		24.0		21.3		23.7		21.6		22.1		21.4		21.6		21.5		21.8
PS-4 - Seal 14			25.0		31.7		23.4		25.3		24.0		23.8		23.5		24.1		23.2		23.1		21.2		23.9		21.5		22.1		21.2		21.7		21.2		21.9
PS-5 - Seal 17			24.6		31.5		24.7		24.2		25.7		24.4		24.4		27.2		23.8		24.9		21.5		24.3		21.9		22.5		21.1		21.5		21.9		21.8
PS-6 - Seal 19			30.9		31.9		33.8		34.1		30.8		26.2		29.3		17.2		29.9		29.7		34.9		32.6		33.2		34.1		34.1		34.7		33.8		34.4
LL-1	-		20.0		29.9		17.3		17.8		18.1		18.0		17.1		30.1		17.8		17.8		16.3		17.0		16.6		17.2		16.6		16.9		16.2		16.7

Cleveland-Cliffs Burns Harbor LLC
Second Ammonia-N Mass Balance Study
Phase 2: Intake, Process Wastewater Discharges to WWPS-2 and Landfill Leachate

Amendola Engineering, Inc.
October 22, 2021

ATTACHMENT A
Specific Conductivity Measurement Results (µmhos/cm)

Sinter Plant Down
110" Plate Mill Down

Sample Name Phase 2	(Phase 1)	07/06/21		07/07/21		07/09/21		07/16/21		07/19/21		07/20/21		07/21/21		07/22/21		07/23/21	
		Grab 1 of 2	Grab 2 of 2	Grab 1 of 2	Grab 2 of 2	Grab 1 of 2	Grab 2 of 2	Grab 1 of 2	Grab 2 of 2	Grab 1 of 2	Grab 2 of 2	Grab 1 of 2	Grab 2 of 2	Grab 1 of 2	Grab 2 of 2	Grab 1 of 2	Grab 2 of 2	Grab 1 of 2	Grab 2 of 2
		Q Result	Q Result	Q Result	Q Result	Q Result	Q Result	Q Result	Q Result	Q Result	Q Result	Q Result	Q Result	Q Result	Q Result	Q Result	Q Result	Q Result	Q Result
LM-1	(RSB-1)	387	266	432	441	465	427	477	456	373	480	438	421	402	427	480	481	413	431
SP-1	(RSB-2)	1,980	2,030	2,120	2,150	2,090	2,090	2,060	1,220	1,920	2,180	2,120	1,940	1,992	1,890	2,160	2,170	1,920	2,000
SP-2	(RSB-3)	1,216	1,295	1,194	427	1,201	1,212	1,205	453	1,159	1,210	1,540	1,291	1,477	1,312	1,215	1,233	1,241	1,216
RSB-1	(RSB-4)	1,991	3,280	2,480	2,230	2,040	2,120	2,250	2,310	3,810	2,250	2,950	2,330	2,950	2,710	2,350	2,340	3,110	3,120
RSB-2	(RSB-5)	2,460	2,380	2,300	2,320	2,190	2,220	2,110	2,140	3,450	2,150	2,550	2,260	2,760	2,700	2,300	2,310	3,120	3,120
RSB-3	(RSB-6)	1,948	1,222	1,279	1,184	1,472	1,414	1,140	1,224	990	1,148	181	1,404	973	980	1,155	1,160	1,236	1,184
RSB-4	(RSB-7)	1,038	1,065	974	919	922	913	904	916	882	910	1,402	1,012	1,220	1,212	930	934	918	923
BF-1	-	421	465	480	496	453	462	440	466	821	450	426	474	433	440	460	462	428	411
BF-2 - Cell 4		2,750	3,150	3,790	3,880	3,860	3,550	3,620	2,580	2,660	3,580	2,390	3,510	3,120	3,090	3,570	3,590	2,860	2,810
BF-2 - T-4 Effluent		3,910	3,590	3,850	3,900	3,930	376	472	3,400	2,320	3,500	3,330	3,230	3,010	3,060	3,710	3,740	2,710	2,740
BOF-1	-	559	1,334	1,688	1,515	1,712	1,523	6,410	1,631	1,417	1,722	1,980	1,610	1,808	1,677	1,730	1,790	1,818	1,840
BOF-2	(RSB-8)	3,640	4,330	5,290	5,180	4,980	4,990	1,714	5,030	4,970	5,220	6,530	6,100	4,910	5,210	5,210	5,340	4,860	4,920
VD-1	-	405	451	450	433	417	391	5,190	981	462	492	453	455	464	470	482	490	438	441
CC-1	-	817	1,002	964	899	938	937	988	242	1,112	980	815	962	1,012	1,022	922	954	1,012	1,101
110-1	-	451	475	444	242	464	404	421	170	406	440	455	781	414	434	440	442	407	448
PS-1	-	432	431	176	178	181	417	162	413	416	250	459	452	436	421	180	402	418	422
PS-2 - Seal 7		449	185	429	430	390	430	417	231	422	445	448	447	444	439	447	435	417	438
PS-3 - Seal	-	442	452	241	244	264	220	262	180	381	310	457	461	439	439	272	418	426	434
PS-4 - Seal	-	442	451	177	180	196	188	185	469	443	217	459	449	437	441	194	427	401	428
PS-5 - Seal	-	468	442	450	455	458	431	463	401	453	410	445	450	441	431	474	436	413	419
PS-6 - Seal 19		1,338	643	172	177	174	371	390	2,100	382	380	2,360	2,020	453	448	410	429	714	733
LL-1	-	2,050	2,060	2,110	2,180	2,020	2,100	2,120	717	2,220	2,420	2,230	2,310	2,320	2,420	2,250	2,140	2,020	2,090

Cleveland-Cliffs Burns Harbor LLC
Second Ammonia-N Mass Balance Study
Phase 2: Intake, Process Wastewater Discharges to WWPS-2 and Landfill Leachate

Amendola Engineering, Inc.
October 22, 2021

ATTACHMENT A
Ammonia-N Results (mg/L)

Sinter Plant Down
110" Plate Mill Down

Sample Name		07/06/21		07/07/21		07/09/21		07/16/21		07/19/21		07/20/21		07/21/21		07/22/21		07/23/21	
		Grab 1 of 2	Grab 2 of 2	Grab 1 of 2	Grab 2 of 2	Grab 1 of 2	Grab 2 of 2	Grab 1 of 2	Grab 2 of 2	Grab 1 of 2	Grab 2 of 2	Grab 1 of 2	Grab 2 of 2	Grab 1 of 2	Grab 2 of 2	Grab 1 of 2	Grab 2 of 2	Grab 1 of 2	Grab 2 of 2
Phase 2	(Phase 1)	Q Result	Q Result	Q Result	Q Result	Q Result	Q Result	Q Result	Q Result	Q Result	Q Result	Q Result	Q Result	Q Result	Q Result	Q Result	Q Result	Q Result	Q Result
LM-1	(RSB-1)	J 0.022	U 0.010	U 0.010	J 0.031	J 0.024	J 0.014	U 0.010	U 0.010	0.038	J 0.017	0.041	U 0.010	0.117	J 0.011	J 0.015	J 0.023	0.037	J 0.012
SP-1	(RSB-2)	5.600	5.600	5.850	5.600	5.750	5.850	6.000	5.800	5.450	5.780	5.450	5.950	5.850	5.750	5.750	5.750	5.700	5.750
SP-2	(RSB-3)	3.370	3.320	3.450	3.640	3.340	3.480	0.472	5.150	5.500	5.650	5.650	5.550	5.300	5.100	4.840	4.740	4.980	4.890
RSB-1	(RSB-4)	56.000	51.900	53.300	55.900	20.700	64.500	77.900	55.700	84.200	94.700	99.900	95.800	79.300	88.500	97.000	96.800	106.000	99.500
RSB-2	(RSB-5)	54.200	56.100	59.900	57.000	68.200	66.700	68.300	74.200	91.900	90.800	101.000	100.000	84.500	83.000	94.300	83.700	88.900	87.800
RSB-3	(RSB-6)	39.400	35.800	38.000	38.200	48.100	49.100	51.100	55.500	61.300	64.100	56.700	56.400	60.300	62.300	54.400	53.100	56.300	56.400
RSB-4	(RSB-7)	2.900	2.860	2.740	2.880	2.550	2.660	4.340	4.240	3.980	4.300	3.980	3.900	4.360	4.190	3.060	2.990	3.540	3.520
BF-1	-	0.033	0.032	U 0.010	J 0.015	J 0.019	J 0.029	J 0.030	0.046	J 0.017	0.063	0.044	0.051	0.097	J 0.019	0.331	0.335	0.117	0.116
BF-2 - Cell 4		40.000	25.800	0.389	0.444	1.020	1.010	4.180	4.020	3.970	23.200	5.600	6.100	4.560	8.150	4.640	4.520	11.500	11.200
BF-2 - T-4 Effluent		7.750	9.700	0.236	0.208	0.077	0.065	U 0.010	1.710	0.464	0.037	0.017	0.824	0.711	37.700	U 0.010	J 0.015	0.056	0.039
BOF-1	-	0.091	0.081	0.072	0.128	0.130	0.106	0.088	0.146	0.117	0.092	0.069	0.059	0.057	0.074	0.088	0.091	0.071	0.089
BOF-2	(RSB-8)	0.361	0.341	0.326	0.292	0.353	0.350	0.365	0.392	0.489	U 0.010	0.624	0.684	0.324	0.585	1.300	1.330	0.830	0.841
VD-1	-	0.063	J 0.020	0.048	U 0.010	J 0.019	J 0.023	J 0.026	U 0.010	J 0.027	U 0.010	0.040	U 0.010	J 0.013	U 0.010	J 0.019	0.036	0.045	J 0.014
CC-1	-	0.054	J 0.024	J 0.011	0.047	J 0.010	U 0.010	U 0.010	J 0.010	U 0.010	U 0.010	0.054	J 0.020	0.034	J 0.022	0.060	0.055	0.037	U 0.010
110-1	-	J 0.012	U 0.010	J 0.022	J 0.016	J 0.010	U 0.010	U 0.010	U 0.010	J 0.025	1.120	0.035	U 0.010	J 0.020	U 0.010	U 0.010	U 0.010	J 0.021	U 0.010
PS-1	-	0.461	0.119	0.045	0.213	0.056	0.163	0.269	1.040	0.446	0.088	0.422	0.420	0.413	1.130	0.881	0.902	0.438	0.440
PS-2 - Seal 7		0.304	0.072	J 0.018	0.239	U 0.010	0.085	0.052	0.079	0.111	0.050	0.158	0.107	0.090	0.044	J 0.012	0.151	0.210	0.235
PS-3 - Seal 8		0.120	0.133	0.269	0.181	0.429	0.149	0.313	0.245	0.429	0.173	0.556	0.540	0.458	0.334	0.454	0.926	0.700	0.622
PS-4 - Seal 14		0.519	0.244	0.208	0.214	0.259	0.743	0.482	0.485	0.633	0.691	0.890	0.984	3.130	0.805	1.240	1.210	0.754	0.663
PS-5 - Seal 17		J 0.027	0.034	0.168	J 0.029	J 0.016	0.034	U 0.010	J 0.023	J 0.012	U 0.010	0.060	J 0.015	0.055	U 0.010	0.036	J 0.019	U 0.010	U 0.010
PS-6 - Seal 19		15.800	2.500	38.100	22.000	15.000	14.400	31.200	47.600	86.000	89.800	97.500	98.000	68.000	87.000	89.500	88.500	93.500	94.000
LL-1	-	44.600	43.400	45.200	45.100	45.200	45.800	60.500	62.000	50.000	54.500	54.000	53.000	52.000	34.400	56.500	53.000	68.000	69.000
WWPS-2	(WWPS-2)	3.140	1.440	0.700	0.620	0.474	0.567	1.100	0.964	1.080	J 0.025	0.912	0.953	0.878	1.090	0.733	0.741	1.010	1.000

Qualifiers (Q)

J Analyte is present at an estimated concentration between the MDL and Report Limit
U Analyzed but not detected above the MDL

Cleveland-Cliffs Burns Harbor LLC
Second Ammonia-N Mass Balance Study
Phase 2: Intake, Process Wastewater Discharges to WWPS-2 and Landfill Leachate

Amendola Engineering, Inc.
October 22, 2021

ATTACHMENT B
Flows (gpm)

Sample Name Phase 2	(Phase 1)	07/06/21 gpm	07/07/21 gpm	07/09/21 gpm	07/16/21 gpm	07/19/21 gpm	07/20/21 gpm	07/21/21 gpm	07/22/21 gpm	07/23/21 gpm
LM-1	(RSB-1)	-	-	-	-	-	-	-	-	-
SP-1	(RSB-2)	196	194	184	188	184	184	185	190	191
SP-2	(RSB-3)	2,603	2,602	2,596	2,612	2,610	2,613	2,605	2,597	2,607
RSB-1	(RSB-4)	70	75	77	77	73	76	76	76	76
RSB-2	(RSB-5)	69	70	71	70	71	71	73	69	69
RSB-3	(RSB-6)	300	300	300	300	300	300	300	300	300
RSB-4	(RSB-7)	2,603	2,602	2,596	2,612	2,610	2,613	2,605	2,597	2,607
BF-1	-	300	300	300	300	300	300	300	300	300
BF-2 - Cell 4		77	34	56	31	45	32	42	67	43
BF-2 - T-4 Effluent		240	240	240	283	191	101	107	112	99
BOF-1	-	400	400	400	400	400	400	400	400	400
BOF-2	(RSB-8)	180	180	180	180	180	180	180	180	180
VD-1	-	1,400	1,400	1,400	1,400	1,400	1,400	1,400	1,400	1,400
CC-1	-	300	300	300	300	300	300	300	300	300
110-1	-	6,300	6,300	6,300	6,300	6,300	6,300	6,300	6,300	6,300
PS-1	-	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000
PS-2 - Seal 7		50	50	50	50	50	50	50	50	50
PS-3 - Seal 8		50	50	50	50	50	50	50	50	50
PS-4 - Seal 14		50	50	50	50	50	50	50	50	50
PS-5 - Seal 17		50	50	50	50	50	50	50	50	50
PS-6 - Seal 19		50	50	50	50	50	50	50	50	50
LL-1	-	29	44	2	0	0	0	254	106	0
WWPS-2	(WWPS-2)	13,539	13,510	13,484	13,473	13,485	13,475	13,731	13,600	13,480
Other flows to WWPS-2										
Coal injection		1,200	1,200	1,200	1,200	1,200	1,200	1,200	1,200	1,200
Remaining seals		400	400	400	400	400	400	400	400	400
Remaining casters		1,471	1,471	1,471	1,471	1,471	1,471	1,471	1,471	1,471
WWPS-2 Total		16,610	16,581	16,555	16,544	16,556	16,546	16,802	16,671	16,551

Cleveland-Cliffs Burns Harbor LLC
Second Ammonia-N Mass Balance Study
Phase 2: Intake, Process Wastewater Discharges to WWPS-2 and Landfill Leachate

Amendola Engineering, Inc.
October 22, 2021

ATTACHMENT B
Ammonia-N Results (lb/D)

Sinter Plant Down
110" Plate Mill Down

Sample Name Phase 2	(Phase 1)	07/06/21 Grab 1 of 2 Q	07/06/21 Grab 1 of 2 Result	07/06/21 Grab 2 of 2 Q	07/06/21 Grab 2 of 2 Result	07/07/21 Grab 1 of 2 Q	07/07/21 Grab 1 of 2 Result	07/07/21 Grab 2 of 2 Q	07/07/21 Grab 2 of 2 Result	07/09/21 Grab 1 of 2 Q	07/09/21 Grab 1 of 2 Result	07/09/21 Grab 2 of 2 Q	07/09/21 Grab 2 of 2 Result	07/16/21 Grab 1 of 2 Q	07/16/21 Grab 1 of 2 Result	07/16/21 Grab 2 of 2 Q	07/16/21 Grab 2 of 2 Result	07/19/21 Grab 1 of 2 Q	07/19/21 Grab 1 of 2 Result	07/19/21 Grab 2 of 2 Q	07/19/21 Grab 2 of 2 Result	07/20/21 Grab 1 of 2 Q	07/20/21 Grab 1 of 2 Result	07/20/21 Grab 2 of 2 Q	07/20/21 Grab 2 of 2 Result	07/21/21 Grab 1 of 2 Q	07/21/21 Grab 1 of 2 Result	07/21/21 Grab 2 of 2 Q	07/21/21 Grab 2 of 2 Result	07/22/21 Grab 1 of 2 Q	07/22/21 Grab 1 of 2 Result	07/22/21 Grab 2 of 2 Q	07/22/21 Grab 2 of 2 Result	07/23/21 Grab 1 of 2 Q	07/23/21 Grab 1 of 2 Result	07/23/21 Grab 2 of 2 Q	07/23/21 Grab 2 of 2 Result
LM-1	(RSB-1)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SP-1	(RSB-2)		13.19		13.19		13.64		13.06		12.71		12.93		13.55		13.10		12.05		12.78		12.05		13.16		13.01		12.78		13.13		13.13		13.08		13.20
SP-2	(RSB-3)		105.41		103.85		107.87		113.81		104.19		108.56		-		161.65		172.50		177.21		177.41		174.27		165.91		159.65		151.04		147.92		156.01		153.19
RSB-1	(RSB-4)		47.11		43.66		48.04		50.38		19.15		59.68		72.08		51.54		73.86		83.07		91.24		87.49		72.42		80.82		88.59		88.41		96.81		90.87
RSB-2	(RSB-5)		44.94		46.52		50.39		47.95		58.19		56.91		57.45		62.42		78.41		77.47		86.17		85.32		74.13		72.81		78.19		69.40		73.71		72.80
RSB-3	(RSB-6)		142.04		129.06		136.99		137.71		173.40		177.01		184.22		200.08		220.99		231.08		204.41		203.32		217.38		224.59		196.11		191.43		202.96		203.32
RSB-4	(RSB-7)		90.71		89.46		85.67		90.05		79.55		82.98		136.22		133.08		124.83		134.86		124.97		122.46		136.48		131.16		95.50		93.31		110.90		110.27
BF-1	-		0.12		0.12		0.04		0.05		0.07		0.10		0.11		0.17		0.06		0.23		0.16		0.19		0.35		0.07		1.19		1.21		0.42		0.42
BF-2 - Cell 4			36.87		23.78		0.16		0.18		0.68		0.68		1.55		1.49		2.13		12.46		2.13		2.32		2.28		4.07		3.74		3.64		5.97		5.81
BF-2 - T-4 Effluent			22.35		27.98		0.68		0.60		0.22		0.19		0.03		5.82		1.06		0.08		0.02		1.00		0.91		48.34		0.01		0.02		0.07		0.05
BOF-1	-		0.44		0.39		0.35		0.62		0.62		0.51		0.42		0.70		0.56		0.44		0.33		0.28		0.27		0.36		0.42		0.44		0.34		0.43
BOF-2	(RSB-8)		0.78		0.74		0.71		0.63		0.76		0.76		0.79		0.85		1.06		0.02		1.35		1.48		0.70		1.27		2.81		2.88		1.80		1.82
VD-1	-		1.06		0.34		0.81		0.16		0.32		0.38		0.44		0.16		0.45		0.16		0.67		0.16		0.22		0.16		0.32		0.61		0.75		0.24
CC-1	-		0.19		0.08		0.04		0.17		0.04		0.04		0.04		0.04		0.04		0.04		0.20		0.07		0.12		0.08		0.21		0.20		0.13		0.04
110-1	-		0.89		0.74		1.66		1.20		0.76		0.74		0.74		0.74		1.87		-		2.64		0.74		1.52		0.74		0.74		0.74		1.57		0.74
PS-1	-		11.08		2.86		1.08		5.12		1.33		3.92		6.47		24.99		10.72		2.12		10.14		10.09		9.93		27.16		21.17		21.68		10.53		10.57
PS-2 - Seal 7			0.18		0.04		0.01		0.14		0.01		0.05		0.03		0.05		0.07		0.03		0.09		0.06		0.05		0.03		0.01		0.09		0.13		0.14
PS-3 - Seal 8			0.07		0.08		0.16		0.11		0.26		0.09		0.19		0.15		0.26		0.10		0.33		0.32		0.28		0.20		0.27		0.56		0.42		0.37
PS-4 - Seal 14			0.31		0.15		0.12		0.13		0.16		0.45		0.29		0.29		0.38		0.42		0.53		0.59		1.88		0.48		0.75		0.73		0.45		0.40
PS-5 - Seal 17			0.02		0.02		0.10		0.02		0.01		0.02		0.01		0.01		0.01		0.01		0.04		0.01		0.03		0.01		0.02		0.01		0.01		0.01
PS-6 - Seal 19			9.49		1.50		22.89		13.22		9.01		8.65		18.75		28.60		51.67		53.96		58.58		58.88		40.86		52.27		53.78		53.17		56.18		56.48
LL-1	-		15.44		15.02		23.84		23.79		1.15		1.16		0.00		0.00		0.00		0.00		0.00		0.00		158.72		105.00		72.10		67.64		0.00		0.00
WWPS-2	(WWPS-2)		626.72		287.41		139.48		123.54		94.30		112.80		218.69		191.65		214.86		-		181.33		189.48		177.27		220.07		146.85		148.45		200.88		198.89