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To: [Sager, John E - DNR](#); [Bannister, Trevor A - DNR](#); [DeVenecia, Eric R - DNR](#)
Subject: Summary of results through 5/10/2018
Date: Friday, May 11, 2018 8:46:09 AM
Attachments: [Summary of SW analytical Results - 051018 for WDNR.xlsx](#)

See attached.

Should have another update late this morning.

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Table 1
Summary of Analytical Results - Pond 2/3
Husky Energy Refinery - Surface Water
Superior, Wisconsin

Sample Location:	Pond 2/3	Pond 2/3	Pond 2/3	Pond 2/3	Pond 2/3	Pond 2/3	Pond 2/3	Pond 2/3	
Sample ID:	Pond 2/3	SW-042918-KJ-08	SW-043018-JT-07	DUP-043018-JT-01	SW-050218-RE-09	Dup-050218-01	SW-050418-JT-07	SW-050618-JT-07	
Sample Date:	4/29/2018	4/29/2018	4/30/2018	4/30/2018	5/2/2018	5/2/2018	5/4/2018	5/6/2018	
Parameters	Units			Duplicate		Duplicate			
Volatiles									
1,1,1,2-Tetrachloroethane	ug/L	-	ND (0.14)	ND (0.14)	ND (0.14)	ND (0.14)	ND (0.14)	-	ND (0.14)
1,1,1-Trichloroethane	ug/L	-	ND (0.15)	ND (0.15)	ND (0.15)	ND (0.15)	ND (0.15)	-	ND (0.15)
1,1,2,2-Tetrachloroethane	ug/L	-	ND (0.19)	ND (0.19)	ND (0.19)	ND (0.19)	ND (0.19)	-	ND (0.19)
1,1,2-Trichloroethane	ug/L	-	ND (0.22)	ND (0.22)	ND (0.22)	ND (0.22)	ND (0.22)	-	ND (0.22)
1,1-Dichloroethane	ug/L	-	ND (0.14)	ND (0.14)	ND (0.14)	ND (0.14)	ND (0.14)	-	ND (0.14)
1,1-Dichloroethene	ug/L	-	ND (0.18)	ND (0.18)	ND (0.18)	ND (0.18)	ND (0.18)	-	ND (0.18)
1,1-Dichloropropene	ug/L	-	ND (0.18)	ND (0.18)	ND (0.18)	ND (0.18)	ND (0.18)	-	ND (0.18)
1,2,3-Trichlorobenzene	ug/L	-	ND (0.14)	ND (0.14)	ND (0.14)	ND (0.14)	ND (0.14)	-	ND (0.14)
1,2,3-Trichloropropane	ug/L	-	ND (0.66)	ND (0.66)	ND (0.66)	ND (0.66)	ND (0.66)	-	ND (0.66)
1,2,4-Trichlorobenzene	ug/L	-	ND (0.18)	ND (0.18)	ND (0.18)	ND (0.18)	ND (0.18)	-	ND (0.18)
1,2,4-Trimethylbenzene	ug/L	-	0.44 J	0.24 J	0.22 J	ND (0.14)	ND (0.14)	-	ND (0.14)
1,2-Dibromo-3-chloropropane (DBCP)	ug/L	-	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)	-	ND (1.0)
1,2-Dibromoethane (Ethylene dibromide)	ug/L	-	ND (0.24)	ND (0.24)	ND (0.24)	ND (0.24)	ND (0.24)	-	ND (0.24)
1,2-Dichlorobenzene	ug/L	-	ND (0.21)	ND (0.21)	ND (0.21)	ND (0.21)	ND (0.21)	-	ND (0.21)
1,2-Dichloroethane	ug/L	-	ND (0.32)	ND (0.32)	ND (0.32)	ND (0.32)	ND (0.32)	-	ND (0.32)
1,2-Dichloropropane	ug/L	-	ND (0.62)	ND (0.62)	ND (0.62)	ND (0.62)	ND (0.62)	-	ND (0.62)
1,3,5-Trimethylbenzene	ug/L	-	ND (0.18)	ND (0.18)	ND (0.18)	ND (0.18)	ND (0.18)	-	ND (0.18)
1,3-Dichlorobenzene	ug/L	-	ND (0.16)	ND (0.16)	ND (0.16)	ND (0.16)	ND (0.16)	-	ND (0.16)
1,3-Dichloropropane	ug/L	-	ND (0.13)	ND (0.13)	ND (0.13)	ND (0.13)	ND (0.13)	-	ND (0.13)
1,4-Dichlorobenzene	ug/L	-	ND (0.10)	ND (0.10)	ND (0.10)	ND (0.10)	ND (0.10)	-	ND (0.10)
2,2-Dichloropropane	ug/L	-	ND (0.40)	ND (0.40)	ND (0.40)	ND (0.40)	ND (0.40)	-	ND (0.40)
2-Butanone (Methyl ethyl ketone) (MEK)	ug/L	-	ND (2.4)	ND (2.4)	ND (2.4)	ND (2.4)	ND (2.4)	-	ND (2.4)
2-Chlorotoluene	ug/L	-	ND (0.20)	ND (0.20)	ND (0.20)	ND (0.20)	ND (0.20)	-	ND (0.20)
2-Phenylbutane (sec-Butylbenzene)	ug/L	-	ND (0.12)	ND (0.12)	ND (0.12)	ND (0.12)	ND (0.12)	-	ND (0.12)
4-Chlorotoluene	ug/L	-	ND (0.13)	ND (0.13)	ND (0.13)	ND (0.13)	ND (0.13)	-	ND (0.13)
4-Methyl-2-pentanone (Methyl isobutyl ketone) (MIBK)	ug/L	-	ND (0.55)	ND (0.55)	ND (0.55)	ND (0.55)	ND (0.55)	-	ND (0.55)
Acetone	ug/L	-	ND (8.8)	ND (8.8)	ND (8.8)	ND (8.8)	ND (8.8)	-	ND (8.8)
Allyl chloride	ug/L	-	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)	-	ND (1.0)
Benzene	ug/L	-	1.0	0.94 J	1.0	ND (0.34)	ND (0.34)	-	ND (0.34)
Bromobenzene	ug/L	-	ND (0.16)	ND (0.16)	ND (0.16)	ND (0.16)	ND (0.16)	-	ND (0.16)
Bromodichloromethane	ug/L	-	0.95 J	0.58 J	0.61 J	0.67 J	0.67	-	ND (0.20)
Bromoform	ug/L	-	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)	-	ND (1.0)
Bromomethane (Methyl bromide)	ug/L	-	ND (1.5)	ND (1.5)	ND (1.5)	ND (1.5)	ND (1.5)	-	ND (1.5)
Carbon tetrachloride	ug/L	-	ND (0.20)	ND (0.20)	ND (0.20)	ND (0.20)	ND (0.20)	-	ND (0.20)
Chlorobenzene	ug/L	-	ND (0.14)	ND (0.14)	ND (0.14)	ND (0.14)	ND (0.14)	-	ND (0.14)
Chlorobromomethane	ug/L	-	ND (0.38)	ND (0.38)	ND (0.38)	ND (0.38)	ND (0.38)	-	ND (0.38)
Chloroethane	ug/L	-	ND (0.44)	ND (0.44)	ND (0.44)	ND (0.44)	ND (0.44)	-	ND (0.44)
Chloroform (Trichloromethane)	ug/L	-	2.8	1.8	1.9	1.3 J	1.3 J	-	0.77 J
Chloromethane (Methyl chloride)	ug/L	-	ND (1.1)	ND (1.1)	ND (1.1)	ND (1.1)	ND (1.1)	-	ND (1.1)
cis-1,2-Dichloroethene	ug/L	-	ND (0.20)	ND (0.20)	ND (0.20)	ND (0.20)	ND (0.20)	-	ND (0.20)
cis-1,3-Dichloropropene	ug/L	-	ND (0.12)	ND (0.12)	ND (0.12)	ND (0.12)	ND (0.12)	-	ND (0.12)
Cymene (p-Isopropyltoluene)	ug/L	-	ND (0.14)	ND (0.14)	ND (0.14)	ND (0.14)	ND (0.14)	-	1.6
Dibromochloromethane	ug/L	-	0.18 J	ND (0.13)	ND (0.13)	ND (0.13)	ND (0.13)	-	ND (0.13)
Dibromomethane	ug/L	-	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	-	ND (0.50)
Dichlorodifluoromethane (CFC-12)	ug/L	-	ND (0.31)	ND (0.31)	ND (0.31)	ND (0.31)	ND (0.31)	-	ND (0.31)

Table 1
Summary of Analytical Results - Pond 2/3
Husky Energy Refinery - Surface Water
Superior, Wisconsin

Sample Location: Pond 2/3
Sample ID: SW-050818-JT-07
Sample Date: 5/8/2018

Parameters	Units	
Volatiles		
1,1,1,2-Tetrachloroethane	ug/L	ND (0.14)
1,1,1-Trichloroethane	ug/L	ND (0.15)
1,1,2,2-Tetrachloroethane	ug/L	ND (0.19)
1,1,2-Trichloroethane	ug/L	ND (0.22)
1,1-Dichloroethane	ug/L	ND (0.14)
1,1-Dichloroethene	ug/L	ND (0.18)
1,1-Dichloropropene	ug/L	ND (0.18)
1,2,3-Trichlorobenzene	ug/L	ND (0.14)
1,2,3-Trichloropropane	ug/L	ND (0.66)
1,2,4-Trichlorobenzene	ug/L	ND (0.18)
1,2,4-Trimethylbenzene	ug/L	ND (0.14)
1,2-Dibromo-3-chloropropane (DBCP)	ug/L	ND (1.0)
1,2-Dibromoethane (Ethylene dibromide)	ug/L	ND (0.24)
1,2-Dichlorobenzene	ug/L	ND (0.21)
1,2-Dichloroethane	ug/L	ND (0.32)
1,2-Dichloropropane	ug/L	ND (0.62)
1,3,5-Trimethylbenzene	ug/L	ND (0.18)
1,3-Dichlorobenzene	ug/L	ND (0.16)
1,3-Dichloropropane	ug/L	ND (0.13)
1,4-Dichlorobenzene	ug/L	ND (0.10)
2,2-Dichloropropane	ug/L	ND (0.40)
2-Butanone (Methyl ethyl ketone) (MEK)	ug/L	ND (2.4)
2-Chlorotoluene	ug/L	ND (0.20)
2-Phenylbutane (sec-Butylbenzene)	ug/L	ND (0.12)
4-Chlorotoluene	ug/L	ND (0.13)
4-Methyl-2-pentanone (Methyl isobutyl ketone) (MIBK)	ug/L	ND (0.55)
Acetone	ug/L	ND (8.8)
Allyl chloride	ug/L	ND (1.0)
Benzene	ug/L	1.4
Bromobenzene	ug/L	ND (0.16)
Bromodichloromethane	ug/L	ND (0.20)
Bromoform	ug/L	ND (1.0)
Bromomethane (Methyl bromide)	ug/L	ND (1.5)
Carbon tetrachloride	ug/L	ND (0.20)
Chlorobenzene	ug/L	ND (0.14)
Chlorobromomethane	ug/L	ND (0.38)
Chloroethane	ug/L	ND (0.44)
Chloroform (Trichloromethane)	ug/L	0.62 J
Chloromethane (Methyl chloride)	ug/L	ND (1.1)
cis-1,2-Dichloroethene	ug/L	ND (0.20)
cis-1,3-Dichloropropene	ug/L	ND (0.12)
Cymene (p-Isopropyltoluene)	ug/L	3.1
Dibromochloromethane	ug/L	ND (0.13)
Dibromomethane	ug/L	ND (0.50)
Dichlorodifluoromethane (CFC-12)	ug/L	ND (0.31)

Table 1
Summary of Analytical Results - Pond 2/3
Husky Energy Refinery - Surface Water
Superior, Wisconsin

Sample Location:	Pond 2/3	Pond 2/3	Pond 2/3	Pond 2/3	Pond 2/3	Pond 2/3	Pond 2/3	Pond 2/3	
Sample ID:	Pond 2/3	SW-042918-KJ-08	SW-043018-JT-07	DUP-043018-JT-01	SW-050218-RE-09	Dup-050218-01	SW-050418-JT-07	SW-050618-JT-07	
Sample Date:	4/29/2018	4/29/2018	4/30/2018	4/30/2018	5/2/2018	5/2/2018	5/4/2018	5/6/2018	
Parameters	Units			Duplicate		Duplicate			
Dichlorofluoromethane	ug/L	-	ND (0.38)	ND (0.38)	ND (0.38)	ND (0.38)	ND (0.38)	-	ND (0.38)
Ethyl ether	ug/L	-	ND (1.3)	ND (1.3)	ND (1.3)	ND (1.3)	ND (1.3)	-	ND (1.3)
Ethylbenzene	ug/L	-	ND (0.14)	ND (0.14)	ND (0.14)	ND (0.14)	ND (0.14)	-	ND (0.14)
Hexachlorobutadiene	ug/L	-	ND (0.48)	ND (0.48)	ND (0.48)	ND (0.48)	ND (0.48)	-	ND (0.48)
Isopropyl benzene	ug/L	-	ND (0.17)	ND (0.17)	ND (0.17)	ND (0.17)	ND (0.17)	-	ND (0.17)
Methyl tert butyl ether (MTBE)	ug/L	-	ND (0.40)	ND (0.40)	ND (0.40)	ND (0.40)	ND (0.40)	-	ND (0.40)
Methylene chloride	ug/L	-	ND (1.2)	ND (1.2)	ND (1.2)	ND (1.2)	ND (1.2)	-	ND (1.2)
Naphthalene	ug/L	-	ND (0.42)	ND (0.42)	ND (0.42)	ND (0.42)	ND (0.42)	-	ND (0.42)
N-Butylbenzene	ug/L	-	ND (0.13)	ND (0.13)	ND (0.13)	ND (0.13)	ND (0.13)	-	ND (0.13)
N-Propylbenzene	ug/L	-	ND (0.15)	ND (0.15)	ND (0.15)	ND (0.15)	ND (0.15)	-	ND (0.15)
Styrene	ug/L	-	ND (0.14)	ND (0.14)	ND (0.14)	ND (0.14)	ND (0.14)	-	ND (0.14)
tert-Butylbenzene	ug/L	-	ND (0.15)	ND (0.15)	ND (0.15)	ND (0.15)	ND (0.15)	-	ND (0.15)
Tetrachloroethene	ug/L	-	ND (0.16)	ND (0.16)	ND (0.16)	ND (0.16)	ND (0.16)	-	ND (0.16)
Tetrahydrofuran	ug/L	-	ND (4.3)	ND (4.3)	ND (4.3)	ND (4.3)	ND (4.3)	-	ND (4.3)
Toluene	ug/L	-	1.1	0.85 J	0.86 J	ND (0.17)	ND (0.17)	-	ND (0.17)
trans-1,2-Dichloroethene	ug/L	-	ND (0.21)	ND (0.21)	ND (0.21)	ND (0.21)	ND (0.21)	-	ND (0.21)
trans-1,3-Dichloropropene	ug/L	-	ND (0.14)	ND (0.14)	ND (0.14)	ND (0.14)	ND (0.14)	-	ND (0.14)
Trichloroethene	ug/L	-	ND (0.18)	ND (0.18)	ND (0.18)	ND (0.18)	ND (0.18)	-	ND (0.18)
Trichlorofluoromethane (CFC-11)	ug/L	-	ND (0.13)	ND (0.13)	ND (0.13)	ND (0.13)	ND (0.13)	-	ND (0.13)
Trifluorotrchloroethane (CFC-113)	ug/L	-	ND (0.28)	ND (0.28)	ND (0.28)	ND (0.28)	ND (0.28)	-	ND (0.28)
Vinyl chloride	ug/L	-	ND (0.096)	ND (0.096)	ND (0.096)	ND (0.096)	ND (0.096)	-	ND (0.096)
Xylenes (total)	ug/L	-	ND (0.24)	ND (0.24)	ND (0.24)	ND (0.24)	ND (0.24)	-	ND (0.24)
Semi-Volatiles									
1,2,4-Trichlorobenzene	ug/L	-	ND (4.6)	ND (43.6)	ND (45.3)	ND (21.5)	ND (21.7)	-	-
1,2-Dichlorobenzene	ug/L	-	ND (3.8)	ND (36.6)	ND (38.0)	ND (18.0)	ND (18.2)	-	-
1,2-Diphenylhydrazine	ug/L	-	ND (1.4)	ND (13.4)	ND (13.9)	ND (6.6)	ND (6.6)	-	-
1,3-Dichlorobenzene	ug/L	-	ND (4.5)	ND (43.0)	ND (44.6)	ND (21.2)	ND (21.4)	-	-
1,4-Dichlorobenzene	ug/L	-	ND (3.7)	ND (35.4)	ND (36.8)	ND (17.4)	ND (17.6)	-	-
1-Methylnaphthalene	ug/L	-	ND (2.3)	ND (21.8)	ND (22.6)	ND (10.7)	ND (10.8)	-	-
2,2'-Oxybis(1-chloropropane) (bis(2-Chloroisopropyl) ether)	ug/L	-	ND (1.5)	ND (14.1)	ND (14.6)	ND (6.9)	ND (7.0)	-	-
2,4,5-Trichlorophenol	ug/L	-	ND (1.2)	ND (11.4)	ND (11.8)	ND (5.6)	ND (5.7)	-	-
2,4,6-Trichlorophenol	ug/L	-	ND (1.2)	ND (11.4)	ND (11.8)	ND (5.6)	ND (5.7)	-	-
2,4-Dichlorophenol	ug/L	-	ND (1.7)	ND (16.2)	ND (16.8)	ND (8.0)	ND (8.0)	-	-
2,4-Dimethylphenol	ug/L	-	ND (3.1)	ND (29.4)	ND (30.5)	ND (14.5)	ND (14.6)	-	-
2,4-Dinitrophenol	ug/L	-	ND (2.7)	ND (25.5)	ND (26.5)	ND (12.6)	ND (12.7)	-	-
2,4-Dinitrotoluene	ug/L	-	ND (1.5)	ND (13.9)	ND (14.4)	ND (6.8)	ND (6.9)	-	-
2,6-Dinitrotoluene	ug/L	-	ND (0.70)	ND (6.6)	ND (6.9)	ND (3.3)	ND (3.3)	-	-
2-Chloronaphthalene	ug/L	-	ND (2.4)	ND (23.1)	ND (24.0)	ND (11.4)	ND (11.5)	-	-
2-Chlorophenol	ug/L	-	ND (1.2)	ND (11.7)	ND (12.2)	ND (5.8)	ND (5.8)	-	-
2-Methylnaphthalene	ug/L	-	ND (2.7)	ND (26.0)	ND (27.0)	ND (12.8)	ND (12.9)	-	-
2-Methylphenol	ug/L	-	ND (2.1)	ND (19.7)	ND (20.4)	ND (9.7)	ND (9.8)	-	-
2-Nitroaniline	ug/L	-	ND (1.7)	ND (15.9)	ND (16.5)	ND (7.8)	ND (7.9)	-	-
2-Nitrophenol	ug/L	-	ND (1.8)	ND (17.4)	ND (18.1)	ND (8.6)	ND (8.7)	-	-
3&4-Methylphenol	ug/L	-	ND (1.1)	ND (10.7)	ND (11.1)	ND (5.3)	ND (5.3)	-	-
3,3'-Dichlorobenzidine	ug/L	-	ND (1.3)	ND (12.5)	ND (13.0)	ND (6.2)	ND (6.2)	-	-

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Husky Energy Refinery - Surface Water
Superior, Wisconsin

Sample Location: Pond 2/3
Sample ID: SW-050818-JT-07
Sample Date: 5/8/2018

Parameters	Units	
Dichlorofluoromethane	ug/L	ND (0.38)
Ethyl ether	ug/L	ND (1.3)
Ethylbenzene	ug/L	ND (0.14)
Hexachlorobutadiene	ug/L	ND (0.48)
Isopropyl benzene	ug/L	ND (0.17)
Methyl tert butyl ether (MTBE)	ug/L	ND (0.40)
Methylene chloride	ug/L	ND (1.2)
Naphthalene	ug/L	ND (0.42)
N-Butylbenzene	ug/L	ND (0.13)
N-Propylbenzene	ug/L	ND (0.15)
Styrene	ug/L	ND (0.14)
tert-Butylbenzene	ug/L	ND (0.15)
Tetrachloroethene	ug/L	ND (0.16)
Tetrahydrofuran	ug/L	ND (4.3)
Toluene	ug/L	ND (0.20)
trans-1,2-Dichloroethene	ug/L	ND (0.21)
trans-1,3-Dichloropropene	ug/L	ND (0.14)
Trichloroethene	ug/L	ND (0.18)
Trichlorofluoromethane (CFC-11)	ug/L	ND (0.13)
Trifluorotrchloroethane (CFC-113)	ug/L	ND (0.28)
Vinyl chloride	ug/L	ND (0.096)
Xylenes (total)	ug/L	ND (0.24)

Semi-Volatiles	Units	
1,2,4-Trichlorobenzene	ug/L	-
1,2-Dichlorobenzene	ug/L	-
1,2-Diphenylhydrazine	ug/L	-
1,3-Dichlorobenzene	ug/L	-
1,4-Dichlorobenzene	ug/L	-
1-Methylnaphthalene	ug/L	-
2,2'-Oxybis(1-chloropropane) (bis(2-Chloroisopropyl) ether)	ug/L	-
2,4,5-Trichlorophenol	ug/L	-
2,4,6-Trichlorophenol	ug/L	-
2,4-Dichlorophenol	ug/L	-
2,4-Dimethylphenol	ug/L	-
2,4-Dinitrophenol	ug/L	-
2,4-Dinitrotoluene	ug/L	-
2,6-Dinitrotoluene	ug/L	-
2-Chloronaphthalene	ug/L	-
2-Chlorophenol	ug/L	-
2-Methylnaphthalene	ug/L	-
2-Methylphenol	ug/L	-
2-Nitroaniline	ug/L	-
2-Nitrophenol	ug/L	-
3&4-Methylphenol	ug/L	-
3,3'-Dichlorobenzidine	ug/L	-

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Superior, Wisconsin

Sample Location:	Pond 2/3	Pond 2/3	Pond 2/3	Pond 2/3	Pond 2/3	Pond 2/3	Pond 2/3	Pond 2/3
Sample ID:	Pond 2/3	SW-042918-KJ-08	SW-043018-JT-07	DUP-043018-JT-01	SW-050218-RE-09	Dup-050218-01	SW-050418-JT-07	SW-050618-JT-07
Sample Date:	4/29/2018	4/29/2018	4/30/2018	4/30/2018	5/2/2018	5/2/2018	5/4/2018	5/6/2018
Parameters	Units			Duplicate		Duplicate		
3-Nitroaniline	ug/L	-	ND (1.3)	ND (12.5)	ND (13.0)	ND (6.2)	ND (6.2)	-
4,6-Dinitro-2-methylphenol	ug/L	-	ND (1.7)	ND (15.8)	ND (16.3)	ND (7.8)	ND (7.8)	-
4-Bromophenyl phenyl ether	ug/L	-	ND (2.5)	ND (23.9)	ND (24.8)	ND (11.8)	ND (11.9)	-
4-Chloro-3-methylphenol	ug/L	-	ND (1.6)	ND (15.4)	ND (16.0)	ND (7.6)	ND (7.7)	-
4-Chloroaniline	ug/L	-	ND (2.1)	ND (19.8)	ND (20.5)	ND (9.7)	ND (9.8)	-
4-Chlorophenyl phenyl ether	ug/L	-	ND (1.7)	ND (15.9)	ND (16.5)	ND (7.8)	ND (7.9)	-
4-Nitroaniline	ug/L	-	ND (2.2)	ND (21.2)	ND (22.0)	ND (10.5)	ND (10.6)	-
4-Nitrophenol	ug/L	-	ND (2.8)	ND (26.7)	ND (27.7)	ND (13.2)	ND (13.3)	-
Acenaphthene	ug/L	-	ND (2.0)	ND (19.5)	ND (20.2)	ND (9.6)	ND (9.7)	-
Acenaphthylene	ug/L	-	ND (1.8)	ND (17.6)	ND (18.3)	ND (8.7)	ND (8.8)	-
Anthracene	ug/L	-	ND (1.4)	ND (13.4)	ND (13.9)	ND (6.6)	ND (6.6)	-
Benzo(a)anthracene	ug/L	-	ND (1.4)	ND (13.2)	ND (13.7)	ND (6.5)	ND (6.5)	-
Benzo(a)pyrene	ug/L	-	ND (1.9)	ND (17.8)	ND (18.5)	ND (8.8)	ND (8.9)	-
Benzo(b)fluoranthene	ug/L	-	ND (1.9)	ND (17.9)	ND (18.6)	ND (8.8)	ND (8.9)	-
Benzo(g,h,i)perylene	ug/L	-	ND (2.3)	ND (21.8)	ND (22.6)	ND (10.7)	ND (10.8)	-
Benzo(k)fluoranthene	ug/L	-	ND (1.9)	ND (18.2)	ND (18.9)	ND (9.0)	ND (9.1)	-
bis(2-Chloroethoxy)methane	ug/L	-	ND (1.5)	ND (14.0)	ND (14.5)	ND (6.9)	ND (7.0)	-
bis(2-Chloroethyl)ether	ug/L	-	ND (1.2)	ND (11.7)	ND (12.2)	ND (5.8)	ND (5.8)	-
bis(2-Ethylhexyl)phthalate (DEHP)	ug/L	-	ND (5.0)	ND (47.6)	ND (49.4)	ND (23.4)	ND (23.7)	-
Butyl benzylphthalate (BBP)	ug/L	-	ND (1.9)	ND (18.4)	ND (19.1)	ND (9.1)	ND (9.2)	-
Carbazole	ug/L	-	ND (1.2)	ND (11.4)	ND (11.8)	ND (5.6)	ND (5.7)	-
Chrysene	ug/L	-	ND (1.9)	ND (18.1)	ND (18.8)	ND (8.9)	ND (9.0)	-
Dibenz(a,h)anthracene	ug/L	-	ND (2.3)	ND (22.4)	ND (23.2)	ND (11.0)	ND (11.1)	-
Dibenzofuran	ug/L	-	ND (1.8)	ND (16.7)	ND (17.3)	ND (8.2)	ND (8.3)	-
Diethyl phthalate	ug/L	-	ND (1.5)	ND (14.6)	ND (15.2)	ND (7.2)	ND (7.3)	-
Dimethyl phthalate	ug/L	-	ND (1.4)	ND (13.1)	ND (13.5)	ND (6.4)	ND (6.5)	-
Di-n-butylphthalate (DBP)	ug/L	-	ND (1.5)	ND (14.0)	ND (14.5)	ND (6.9)	ND (7.0)	-
Di-n-octyl phthalate (DnOP)	ug/L	-	ND (2.2)	ND (21.2)	ND (22.0)	ND (10.5)	ND (10.6)	-
Fluoranthene	ug/L	-	ND (1.6)	ND (15.3)	ND (15.9)	ND (7.6)	ND (7.6)	-
Fluorene	ug/L	-	ND (1.6)	ND (14.9)	ND (15.5)	ND (7.3)	ND (7.4)	-
Hexachlorobenzene	ug/L	-	ND (2.3)	ND (22.4)	ND (23.2)	ND (11.0)	ND (11.1)	-
Hexachlorobutadiene	ug/L	-	ND (3.5)	ND (33.1)	ND (34.3)	ND (16.3)	ND (16.4)	-
Hexachloroethane	ug/L	-	ND (3.7)	ND (35.5)	ND (36.9)	ND (17.5)	ND (17.7)	-
Indeno(1,2,3-cd)pyrene	ug/L	-	ND (2.2)	ND (20.9)	ND (21.7)	ND (10.3)	ND (10.4)	-
Isophorone	ug/L	-	ND (1.3)	ND (12.0)	ND (12.5)	ND (5.9)	ND (6.0)	-
Naphthalene	ug/L	-	ND (2.6)	ND (24.7)	ND (25.6)	ND (12.1)	ND (12.3)	-
Nitrobenzene	ug/L	-	ND (1.4)	ND (13.4)	ND (13.9)	ND (6.6)	ND (6.6)	-
N-Nitrosodimethylamine	ug/L	-	ND (1.1)	ND (10.7)	ND (11.1)	ND (5.3)	ND (5.3)	-
N-Nitrosodi-n-propylamine	ug/L	-	ND (1.1)	ND (10.5)	ND (10.9)	ND (5.2)	ND (5.2)	-
N-Nitrosodiphenylamine	ug/L	-	ND (1.2)	ND (11.3)	ND (11.7)	ND (5.6)	ND (5.6)	-
Pentachlorophenol	ug/L	-	ND (2.8)	ND (27.2)	ND (28.2)	ND (13.4)	ND (13.5)	-
Phenanthrene	ug/L	-	ND (1.1)	ND (10.2)	ND (10.6)	ND (5.0)	ND (5.1)	-
Phenol	ug/L	-	ND (1.3)	ND (12.0)	ND (12.5)	ND (5.9)	ND (6.0)	-
Pyrene	ug/L	-	ND (1.6)	ND (15.4)	ND (16.0)	ND (7.6)	ND (7.7)	-

PFAS

Table 1
Summary of Analytical Results - Pond 2/3
Husky Energy Refinery - Surface Water
Superior, Wisconsin

Sample Location: Pond 2/3
Sample ID: SW-050818-JT-07
Sample Date: 5/8/2018

Parameters	Units	
3-Nitroaniline	ug/L	-
4,6-Dinitro-2-methylphenol	ug/L	-
4-Bromophenyl phenyl ether	ug/L	-
4-Chloro-3-methylphenol	ug/L	-
4-Chloroaniline	ug/L	-
4-Chlorophenyl phenyl ether	ug/L	-
4-Nitroaniline	ug/L	-
4-Nitrophenol	ug/L	-
Acenaphthene	ug/L	-
Acenaphthylene	ug/L	-
Anthracene	ug/L	-
Benzo(a)anthracene	ug/L	-
Benzo(a)pyrene	ug/L	-
Benzo(b)fluoranthene	ug/L	-
Benzo(g,h,i)perylene	ug/L	-
Benzo(k)fluoranthene	ug/L	-
bis(2-Chloroethoxy)methane	ug/L	-
bis(2-Chloroethyl)ether	ug/L	-
bis(2-Ethylhexyl)phthalate (DEHP)	ug/L	-
Butyl benzylphthalate (BBP)	ug/L	-
Carbazole	ug/L	-
Chrysene	ug/L	-
Dibenz(a,h)anthracene	ug/L	-
Dibenzofuran	ug/L	-
Diethyl phthalate	ug/L	-
Dimethyl phthalate	ug/L	-
Di-n-butylphthalate (DBP)	ug/L	-
Di-n-octyl phthalate (DnOP)	ug/L	-
Fluoranthene	ug/L	-
Fluorene	ug/L	-
Hexachlorobenzene	ug/L	-
Hexachlorobutadiene	ug/L	-
Hexachloroethane	ug/L	-
Indeno(1,2,3-cd)pyrene	ug/L	-
Isophorone	ug/L	-
Naphthalene	ug/L	-
Nitrobenzene	ug/L	-
N-Nitrosodimethylamine	ug/L	-
N-Nitrosodi-n-propylamine	ug/L	-
N-Nitrosodiphenylamine	ug/L	-
Pentachlorophenol	ug/L	-
Phenanthrene	ug/L	-
Phenol	ug/L	-
Pyrene	ug/L	-

PFAS

Table 1
Summary of Analytical Results - Pond 2/3
Husky Energy Refinery - Surface Water
Superior, Wisconsin

Sample Location:	Pond 2/3	Pond 2/3	Pond 2/3	Pond 2/3	Pond 2/3	Pond 2/3	Pond 2/3	Pond 2/3
Sample ID:	Pond 2/3	SW-042918-KJ-08	SW-043018-JT-07	DUP-043018-JT-01	SW-050218-RE-09	Dup-050218-01	SW-050418-JT-07	SW-050618-JT-07
Sample Date:	4/29/2018	4/29/2018	4/30/2018	4/30/2018	5/2/2018	5/2/2018	5/4/2018	5/6/2018
Parameters	Units			Duplicate		Duplicate		
Fluorotelomer sulfonic acid (4:2)	ng/L	-	ND (10)	ND (10)	ND (10)	ND (10)	ND (10)	-
N-Ethyl perfluorooctane sulfonamidoacetic acid	ng/L	-	ND (10)	ND (10)	ND (10)	ND (10)	ND (10)	-
N-Methyl-perfluorooctane sulfonamide	ng/L	-	ND (10)	ND (10)	ND (10)	ND (10)	ND (10)	-
Perfluorhexanoic acid (PFHxA)	ng/L	-	180	280	280	520	520	-
Perfluorobutane sulfonic acid (PFBS)	ng/L	-	20	20	20	20	20	-
Perfluorobutanoic acid (PFBA)	ng/L	-	80	110	100	170	160	-
Perfluorodecanesulfonic acid (PFDS)	ng/L	-	ND (10)	ND (10)	ND (10)	ND (10)	ND (10)	-
Perfluorodecanoic acid (PFDA)	ng/L	-	30	50	50	30	40	-
Perfluorododecanoic acid (PFDoA)	ng/L	-	ND (10)	ND (10)	ND (10)	ND (10)	ND (10)	-
Perfluoroheptane sulfonic acid (PFHpS)	ng/L	-	10	20	20	ND (10)	ND (10)	-
Perfluoroheptanoic acid (PFHpA)	ng/L	-	40	90	90	130	130	-
Perfluorohexane sulfonic acid (PFHxS)	ng/L	-	160	400	350	150	160	-
Perfluorohexane sulfonic acid (PFHxS) - Branched	ng/L	-	20	40	40	20	30	-
Perfluorohexane sulfonic acid (PFHxS) - Linear	ng/L	-	130	360	310	130	130	-
Perfluorononane sulfonic acid (PFNS)	ng/L	-	ND (10)	ND (10)	ND (10)	ND (10)	ND (10)	-
Perfluorononanoic acid (PFNA)	ng/L	-	20	60	60	30	30	-
Perfluorooctane sulfonamide (FOSA)	ng/L	-	ND (10)	ND (10)	ND (10)	ND (10)	ND (10)	-
Perfluorooctane sulfonic acid (PFOS)	ng/L	-	720^{cde}	1120^{cde}	980^{cde}	340^{cde}	320^{cde}	-
Perfluorooctane sulfonic acid (PFOS) - Branched	ng/L	-	290	680	580	130	140	-
Perfluorooctane sulfonic acid (PFOS) - Linear	ng/L	-	420	440	390	200	180	-
Perfluorooctanoic acid (PFOA)	ng/L	-	90^{cd}	390^{cd}	330^{cd}	250^{cd}	250^{cd}	-
Perfluoropentane sulfonic acid (PFPeS)	ng/L	-	20	20	20	20	20	-
Perfluoropentanoic acid (PFPeA)	ng/L	-	70	100	100	200	200	-
Perfluorotetradecanoic acid (PFTeA)	ng/L	-	ND (10)	ND (10) I	ND (10) I	ND (10) I	ND (10) I	-
Perfluorotridecanoic acid (PFTrDA)	ng/L	-	ND (10)	ND (10)	ND (10)	ND (10)	ND (10)	-
Perfluoroundecanoic acid (PFUnA)	ng/L	-	ND (10)	ND (10)	ND (10)	ND (10)	ND (10)	-
Sodium 1H,1H,2H,2H-perfluorodecane sulfonate (8:2)	ng/L	-	1040	1540	1280	1190	970	-
Sodium 1H,1H,2H,2H-perfluorooctane sulfonate (6:2)	ng/L	-	2970	9210	8950	4510 E	4170 E	-
Metals								
Arsenic	ug/L	-	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)
Barium	ug/L	-	32.4	40.4	40.2	35.5	35.4	34.8
Cadmium	ug/L	-	ND (0.46)	ND (0.46)	ND (0.46)	ND (0.46)	ND (0.46)	ND (0.46)
Calcium	ug/L	27400	-	-	-	-	-	-
Chromium	ug/L	-	0.91 J	1.1 J	0.78 J	0.76 J	0.72 J	ND (0.50)
Iron	ug/L	522	-	-	-	-	-	-
Lead	ug/L	-	ND (3.0)	ND (3.0)	ND (3.0)	ND (3.0)	ND (3.0)	ND (3.0)
Magnesium	ug/L	8390	-	-	-	-	-	-
Manganese	ug/L	62.4	-	-	-	-	-	-
Mercury	ug/L	-	ND (0.062)	ND (0.062)	ND (0.062)	ND (0.062)	ND (0.062)	ND (0.062)
Selenium	ug/L	-	ND (6.4)	ND (6.4)	ND (6.4)	ND (6.4)	ND (6.4)	ND (6.4)
Silver	ug/L	-	ND (0.27)	ND (0.27)	ND (0.27)	ND (0.27)	ND (0.27)	ND (0.27)
Petroleum Hydrocarbons								
Total Petroleum Hydrocarbons - Gasoline Range Organics	ug/L	-	ND (8.9)	ND (8.9)	ND (8.9)	ND (8.9)	18.0 J	ND (8.9)
Total Petroleum Hydrocarbons (C10-C28) DRO	mg/L	-	0.56	0.79	0.74	0.49	0.34	0.42

Table 1
Summary of Analytical Results - Pond 2/3
Husky Energy Refinery - Surface Water
Superior, Wisconsin

Sample Location: Pond 2/3
Sample ID: SW-050818-JT-07
Sample Date: 5/8/2018

Parameters	Units	
Fluorotelomer sulfonic acid (4:2)	ng/L	-
N-Ethyl perfluorooctane sulfonamidoacetic acid	ng/L	-
N-Methyl-perfluorooctane sulfonamide	ng/L	-
Perfluorhexanoic acid (PFHxA)	ng/L	-
Perfluorobutane sulfonic acid (PFBS)	ng/L	-
Perfluorobutanoic acid (PFBA)	ng/L	-
Perfluorodecanesulfonic acid (PFDS)	ng/L	-
Perfluorodecanoic acid (PFDA)	ng/L	-
Perfluorododecanoic acid (PFDoA)	ng/L	-
Perfluoroheptane sulfonic acid (PFHpS)	ng/L	-
Perfluoroheptanoic acid (PFHpA)	ng/L	-
Perfluorohexane sulfonic acid (PFHxS)	ng/L	-
Perfluorohexane sulfonic acid (PFHxS) - Branched	ng/L	-
Perfluorohexane sulfonic acid (PFHxS) - Linear	ng/L	-
Perfluorononane sulfonic acid (PFNS)	ng/L	-
Perfluorononanoic acid (PFNA)	ng/L	-
Perfluorooctane sulfonamide (FOSA)	ng/L	-
Perfluorooctane sulfonic acid (PFOS)	ng/L	-
Perfluorooctane sulfonic acid (PFOS) - Branched	ng/L	-
Perfluorooctane sulfonic acid (PFOS) - Linear	ng/L	-
Perfluorooctanoic acid (PFOA)	ng/L	-
Perfluoropentane sulfonic acid (PFPeS)	ng/L	-
Perfluoropentanoic acid (PFPeA)	ng/L	-
Perfluorotetradecanoic acid (PFTeA)	ng/L	-
Perfluorotridecanoic acid (PFTrDA)	ng/L	-
Perfluoroundecanoic acid (PFUnA)	ng/L	-
Sodium 1H,1H,2H,2H-perfluorodecane sulfonate (8:2)	ng/L	-
Sodium 1H,1H,2H,2H-perfluorooctane sulfonate (6:2)	ng/L	-
Metals		
Arsenic	ug/L	ND (5.2)
Barium	ug/L	ND (37.1)
Cadmium	ug/L	ND (0.46)
Calcium	ug/L	-
Chromium	ug/L	ND (0.50)
Iron	ug/L	-
Lead	ug/L	ND (3.0)
Magnesium	ug/L	-
Manganese	ug/L	-
Mercury	ug/L	ND (0.062)
Selenium	ug/L	ND (6.4)
Silver	ug/L	ND (0.27)
Petroleum Hydrocarbons		
Total Petroleum Hydrocarbons - Gasoline Range Organics	ug/L	24.7 J
Total Petroleum Hydrocarbons (C10-C28) DRO	mg/L	0.45

Table 1
Summary of Analytical Results - Pond 2/3
Husky Energy Refinery - Surface Water
Superior, Wisconsin

Sample Location:	Pond 2/3	Pond 2/3	Pond 2/3	Pond 2/3	Pond 2/3	Pond 2/3	Pond 2/3	Pond 2/3	
Sample ID:	Pond 2/3	SW-042918-KJ-08	SW-043018-JT-07	DUP-043018-JT-01	SW-050218-RE-09	Dup-050218-01	SW-050418-JT-07	SW-050618-JT-07	
Sample Date:	4/29/2018	4/29/2018	4/30/2018	4/30/2018 Duplicate	5/2/2018	5/2/2018 Duplicate	5/4/2018	5/6/2018	
Parameters	Units								
Total Petroleum Hydrocarbons (C24-C36) Motor Oil	mg/L	-	0.19	0.34	0.34	0.21	0.22	0.18	0.22
General Chemistry									
Alkalinity, total (as CaCO3)	mg/L	109	-	-	-	-	-	-	-
Chloride	mg/L	22.9	-	-	-	-	-	-	-
Hardness	ug/L	103000	-	-	-	-	-	-	-
Oil and grease	mg/L	-	ND (1.5)	ND (1.5)	ND (1.5)	ND (1.5)	ND (1.4)	ND (1.4)	ND (1.6)
Sulfate	mg/L	-	5.4	6.0	6.0	7.6	7.4	7.8	7.4
Total dissolved solids (TDS)	mg/L	178	-	-	-	-	-	-	-
Total organic carbon (TOC)	mg/L	8.9	-	-	-	-	-	-	-
Total suspended solids (TSS)	mg/L	6.0 J	-	-	-	-	-	-	-

Notes:

- mg/L - milligrams per litre
- ng/L - nanogram per liter
- ug/L - micrograms per litre
- ND (0.25) - not detected at the associated reporting limit
- E - concentration exceeds calibration range
- I - matrix interference with internal standard
- J - estimated concentration
- ^a - Selected aquatic life protection surface water screening criteria (reg or permit)
- ^b - selected Human Health surface water screening criteria (reg or permit)
- ^c - Minnesota Department of Health. Human Health-Based Water Guidance, Drinking water health-based values (HBV)
- ^d - USEPA 2016. Drinking Water Health Advisory
- ^e - Rule 57 Water Quality Values for Surface Water Assessment, Section Michigan Department of Environmental Quality (DEQ) Non-drink values

90 - concentration exceeds the indicated standard

Table 1
Summary of Analytical Results - Pond 2/3
Husky Energy Refinery - Surface Water
Superior, Wisconsin

Sample Location: Pond 2/3
Sample ID: SW-050818-JT-07
Sample Date: 5/8/2018

Parameters	Units	
Total Petroleum Hydrocarbons (C24-C36) Motor Oil	mg/L	0.17
General Chemistry		
Alkalinity, total (as CaCO3)	mg/L	-
Chloride	mg/L	-
Hardness	ug/L	-
Oil and grease	mg/L	ND (1.5)
Sulfate	mg/L	7.2
Total dissolved solids (TDS)	mg/L	-
Total organic carbon (TOC)	mg/L	-
Total suspended solids (TSS)	mg/L	-

Notes:

- mg/L - milligrams per litre
- ng/L - nanogram per liter
- ug/L - micrograms per litre
- ND (0.25) - not detected at the associated reporting limit
- E - concentration exceeds calibration range
- I - matrix interference with internal standard
- J - estimated concentration
- ^a - Selected aquatic life protection surface water screening criteria (reg or permit)
- ^b - selected Human Health surface water screening criteria (reg or permit)
- ^c - Minnesota Department of Health. Human Health-Based Water Guidance, Drinking water health-based values (HBV)
- ^d - USEPA 2016. Drinking Water Health Advisory
- ^e - Rule 57 Water Quality Values for Surface Water Assessment, Section Michigan Department of Environmental Quality (DEQ) Non-drink values
- 90 - concentration exceeds the indicated standard

Table 2
Summary of Analytical Results - Pond 4
Husky Energy Refinery - Surface Water
Superior, Wisconsin

Sample Location:	Pond 4	Pond 4	Pond 4	Pond 4	Pond 4	Pond 4	Pond 4	Pond 4
Sample ID:	Pond 4	SW-042918-KJ-07	DUP-042918-KJ-01	SW-043018-JT-06	SW-050218-RE-08	SW-050418-JT-06	Dup-050418-JT-01	SW-050618-JT-06
Sample Date:	4/29/2018	4/29/2018	4/29/2018	4/30/2018	5/2/2018	5/4/2018	5/4/2018	5/6/2018
Parameters	Units		Duplicate				Duplicate	
Volatiles								
1,1,1,2-Tetrachloroethane	ug/L	-	ND (0.14)	ND (0.14)	ND (0.14)	ND (0.14)	-	ND (0.14)
1,1,1-Trichloroethane	ug/L	-	ND (0.15)	ND (0.15)	ND (0.15)	ND (0.15)	-	ND (0.15)
1,1,2,2-Tetrachloroethane	ug/L	-	ND (0.19)	ND (0.19)	ND (0.19)	ND (0.19)	-	ND (0.19)
1,1,2-Trichloroethane	ug/L	-	ND (0.22)	ND (0.22)	ND (0.22)	ND (0.22)	-	ND (0.22)
1,1-Dichloroethane	ug/L	-	ND (0.14)	ND (0.14)	ND (0.14)	ND (0.14)	-	ND (0.14)
1,1-Dichloroethene	ug/L	-	ND (0.18)	ND (0.18)	ND (0.18)	ND (0.18)	-	ND (0.18)
1,1-Dichloropropene	ug/L	-	ND (0.18)	ND (0.18)	ND (0.18)	ND (0.18)	-	ND (0.18)
1,2,3-Trichlorobenzene	ug/L	-	ND (0.14)	ND (0.14)	ND (0.14)	ND (0.14)	-	ND (0.14)
1,2,3-Trichloropropane	ug/L	-	ND (0.66)	ND (0.66)	ND (0.66)	ND (0.66)	-	ND (0.66)
1,2,4-Trichlorobenzene	ug/L	-	ND (0.18)	ND (0.18)	ND (0.18)	ND (0.18)	-	ND (0.18)
1,2,4-Trimethylbenzene	ug/L	-	2.0	1.8	0.47 J	ND (0.14)	-	ND (0.14)
1,2-Dibromo-3-chloropropane (DBCP)	ug/L	-	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)	-	ND (1.0)
1,2-Dibromoethane (Ethylene dibromide)	ug/L	-	ND (0.24)	ND (0.24)	ND (0.24)	ND (0.24)	-	ND (0.24)
1,2-Dichlorobenzene	ug/L	-	ND (0.21)	ND (0.21)	ND (0.21)	ND (0.21)	-	ND (0.21)
1,2-Dichloroethane	ug/L	-	ND (0.32)	ND (0.32)	ND (0.32)	ND (0.32)	-	ND (0.32)
1,2-Dichloropropane	ug/L	-	ND (0.62)	ND (0.62)	ND (0.62)	ND (0.62)	-	ND (0.62)
1,3,5-Trimethylbenzene	ug/L	-	1.0	0.93 J	1.1	0.63	-	ND (0.18)
1,3-Dichlorobenzene	ug/L	-	ND (0.16)	ND (0.16)	ND (0.16)	ND (0.16)	-	ND (0.16)
1,3-Dichloropropane	ug/L	-	ND (0.13)	ND (0.13)	ND (0.13)	ND (0.13)	-	ND (0.13)
1,4-Dichlorobenzene	ug/L	-	ND (0.10)	ND (0.10)	ND (0.10)	ND (0.10)	-	ND (0.10)
2,2-Dichloropropane	ug/L	-	ND (0.40)	ND (0.40)	ND (0.40)	ND (0.40)	-	ND (0.40)
2-Butanone (Methyl ethyl ketone) (MEK)	ug/L	-	ND (2.4)	ND (2.4)	ND (2.4)	ND (2.4)	-	ND (2.4)
2-Chlorotoluene	ug/L	-	ND (0.20)	ND (0.20)	ND (0.20)	ND (0.20)	-	ND (0.20)
2-Phenylbutane (sec-Butylbenzene)	ug/L	-	ND (0.12)	ND (0.12)	ND (0.12)	ND (0.12)	-	ND (0.12)
4-Chlorotoluene	ug/L	-	ND (0.13)	ND (0.13)	ND (0.13)	ND (0.13)	-	ND (0.13)
4-Methyl-2-pentanone (Methyl isobutyl ketone) (MIBK)	ug/L	-	ND (0.55)	ND (0.55)	ND (0.55)	ND (0.55)	-	ND (0.55)
Acetone	ug/L	-	9.5 J	ND (8.8)	9.7 J	11.6 J	-	ND (8.8)
Allyl chloride	ug/L	-	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)	-	ND (1.0)
Benzene	ug/L	-	7.5	6.8	7.6	ND (0.34)	-	ND (0.34)
Bromobenzene	ug/L	-	ND (0.16)	ND (0.16)	ND (0.16)	ND (0.16)	-	ND (0.16)
Bromodichloromethane	ug/L	-	ND (0.20)	ND (0.20)	ND (0.20)	0.58 J	-	ND (0.20)
Bromoform	ug/L	-	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)	-	ND (1.0)
Bromomethane (Methyl bromide)	ug/L	-	ND (1.5)	ND (1.5)	ND (1.5)	ND (1.5)	-	ND (1.5)
Carbon tetrachloride	ug/L	-	ND (0.20)	ND (0.20)	ND (0.20)	ND (0.20)	-	ND (0.20)
Chlorobenzene	ug/L	-	ND (0.14)	ND (0.14)	ND (0.14)	ND (0.14)	-	ND (0.14)
Chlorobromomethane	ug/L	-	ND (0.38)	ND (0.38)	ND (0.38)	ND (0.38)	-	ND (0.38)
Chloroethane	ug/L	-	ND (0.44)	ND (0.44)	ND (0.44)	ND (0.44)	-	ND (0.44)
Chloroform (Trichloromethane)	ug/L	-	ND (0.46)	ND (0.46)	0.77 J	1.0 J	-	ND (0.46)
Chloromethane (Methyl chloride)	ug/L	-	ND (1.1)	ND (1.1)	ND (1.1)	ND (1.1)	-	ND (1.1)
cis-1,2-Dichloroethene	ug/L	-	ND (0.20)	ND (0.20)	ND (0.20)	ND (0.20)	-	ND (0.20)
cis-1,3-Dichloropropene	ug/L	-	ND (0.12)	ND (0.12)	ND (0.12)	ND (0.12)	-	ND (0.12)
Cymene (p-Isopropyltoluene)	ug/L	-	0.60 J	0.54 J	0.62 J	0.66	-	ND (0.14)
Dibromochloromethane	ug/L	-	ND (0.13)	ND (0.13)	ND (0.13)	ND (0.13)	-	ND (0.13)
Dibromomethane	ug/L	-	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	-	ND (0.50)
Dichlorodifluoromethane (CFC-12)	ug/L	-	ND (0.31)	ND (0.31)	ND (0.31)	ND (0.31)	-	ND (0.31)

Table 2
Summary of Analytical Results - Pond 4
Husky Energy Refinery - Surface Water
Superior, Wisconsin

Sample Location: Pond 4
Sample ID: SW-050818-JT-06
Sample Date: 5/8/2018

Parameters	Units	
Volatiles		
1,1,1,2-Tetrachloroethane	ug/L	ND (0.14)
1,1,1-Trichloroethane	ug/L	ND (0.15)
1,1,2,2-Tetrachloroethane	ug/L	ND (0.19)
1,1,2-Trichloroethane	ug/L	ND (0.22)
1,1-Dichloroethane	ug/L	ND (0.14)
1,1-Dichloroethene	ug/L	ND (0.18)
1,1-Dichloropropene	ug/L	ND (0.18)
1,2,3-Trichlorobenzene	ug/L	ND (0.14)
1,2,3-Trichloropropane	ug/L	ND (0.66)
1,2,4-Trichlorobenzene	ug/L	ND (0.18)
1,2,4-Trimethylbenzene	ug/L	ND (0.14)
1,2-Dibromo-3-chloropropane (DBCP)	ug/L	ND (1.0)
1,2-Dibromoethane (Ethylene dibromide)	ug/L	ND (0.24)
1,2-Dichlorobenzene	ug/L	ND (0.21)
1,2-Dichloroethane	ug/L	ND (0.32)
1,2-Dichloropropane	ug/L	ND (0.62)
1,3,5-Trimethylbenzene	ug/L	ND (0.18)
1,3-Dichlorobenzene	ug/L	ND (0.16)
1,3-Dichloropropane	ug/L	ND (0.13)
1,4-Dichlorobenzene	ug/L	ND (0.10)
2,2-Dichloropropane	ug/L	ND (0.40)
2-Butanone (Methyl ethyl ketone) (MEK)	ug/L	ND (2.4)
2-Chlorotoluene	ug/L	ND (0.20)
2-Phenylbutane (sec-Butylbenzene)	ug/L	ND (0.12)
4-Chlorotoluene	ug/L	ND (0.13)
4-Methyl-2-pentanone (Methyl isobutyl ketone) (MIBK)	ug/L	ND (0.55)
Acetone	ug/L	ND (8.8)
Allyl chloride	ug/L	ND (1.0)
Benzene	ug/L	ND (0.34)
Bromobenzene	ug/L	ND (0.16)
Bromodichloromethane	ug/L	ND (0.20)
Bromoform	ug/L	ND (1.0)
Bromomethane (Methyl bromide)	ug/L	ND (1.5)
Carbon tetrachloride	ug/L	ND (0.20)
Chlorobenzene	ug/L	ND (0.14)
Chlorobromomethane	ug/L	ND (0.38)
Chloroethane	ug/L	ND (0.44)
Chloroform (Trichloromethane)	ug/L	ND (0.46)
Chloromethane (Methyl chloride)	ug/L	ND (1.1)
cis-1,2-Dichloroethene	ug/L	ND (0.20)
cis-1,3-Dichloropropene	ug/L	ND (0.12)
Cymene (p-Isopropyltoluene)	ug/L	ND (0.14)
Dibromochloromethane	ug/L	ND (0.13)
Dibromomethane	ug/L	ND (0.50)
Dichlorodifluoromethane (CFC-12)	ug/L	ND (0.31)

Table 2
Summary of Analytical Results - Pond 4
Husky Energy Refinery - Surface Water
Superior, Wisconsin

Sample Location:	Pond 4	Pond 4	Pond 4	Pond 4	Pond 4	Pond 4	Pond 4	Pond 4
Sample ID:	Pond 4	SW-042918-KJ-07	DUP-042918-KJ-01	SW-043018-JT-06	SW-050218-RE-08	SW-050418-JT-06	Dup-050418-JT-01	SW-050618-JT-06
Sample Date:	4/29/2018	4/29/2018	4/29/2018	4/30/2018	5/2/2018	5/4/2018	5/4/2018	5/6/2018
Parameters	Units		Duplicate				Duplicate	
Dichlorofluoromethane	ug/L	-	ND (0.38)	ND (0.38)	ND (0.38)	ND (0.38)	-	ND (0.38)
Ethyl ether	ug/L	-	ND (1.3)	ND (1.3)	ND (1.3)	ND (1.3)	-	ND (1.3)
Ethylbenzene	ug/L	-	0.65 J	0.61 J	0.20 J	ND (0.14)	-	ND (0.14)
Hexachlorobutadiene	ug/L	-	ND (0.48)	ND (0.48)	ND (0.48)	ND (0.48)	-	ND (0.48)
Isopropyl benzene	ug/L	-	0.31 J	0.27 J	ND (0.17)	ND (0.17)	-	ND (0.17)
Methyl tert butyl ether (MTBE)	ug/L	-	ND (0.40)	ND (0.40)	ND (0.40)	ND (0.40)	-	ND (0.40)
Methylene chloride	ug/L	-	ND (1.2)	ND (1.2)	ND (1.2)	ND (1.2)	-	ND (1.2)
Naphthalene	ug/L	-	1.1 J	1.0 J	0.69 J	ND (0.42)	-	ND (0.42)
N-Butylbenzene	ug/L	-	ND (0.13)	ND (0.13)	ND (0.13)	ND (0.13)	-	ND (0.13)
N-Propylbenzene	ug/L	-	0.17 J	ND (0.15)	ND (0.15)	ND (0.15)	-	ND (0.15)
Styrene	ug/L	-	ND (0.14)	ND (0.14)	ND (0.14)	ND (0.14)	-	ND (0.14)
tert-Butylbenzene	ug/L	-	ND (0.15)	ND (0.15)	ND (0.15)	ND (0.15)	-	ND (0.15)
Tetrachloroethene	ug/L	-	ND (0.16)	ND (0.16)	ND (0.16)	ND (0.16)	-	ND (0.16)
Tetrahydrofuran	ug/L	-	ND (4.3)	ND (4.3)	ND (4.3)	ND (4.3)	-	ND (4.3)
Toluene	ug/L	-	7.4	6.6	4.7	ND (0.17)	-	ND (0.17)
trans-1,2-Dichloroethene	ug/L	-	ND (0.21)	ND (0.21)	ND (0.21)	ND (0.21)	-	ND (0.21)
trans-1,3-Dichloropropene	ug/L	-	ND (0.14)	ND (0.14)	ND (0.14)	ND (0.14)	-	ND (0.14)
Trichloroethene	ug/L	-	ND (0.18)	ND (0.18)	0.22 J	0.38 J	-	ND (0.18)
Trichlorofluoromethane (CFC-11)	ug/L	-	ND (0.13)	ND (0.13)	ND (0.13)	ND (0.13)	-	ND (0.13)
Trifluorotrichloroethane (CFC-113)	ug/L	-	ND (0.28)	ND (0.28)	ND (0.28)	ND (0.28)	-	ND (0.28)
Vinyl chloride	ug/L	-	ND (0.096)	ND (0.096)	ND (0.096)	ND (0.096)	-	ND (0.096)
Xylenes (total)	ug/L	-	5.3	4.6	2.2 J	ND (0.24)	-	ND (0.24)
Semi-Volatiles								
1,2,4-Trichlorobenzene	ug/L	-	ND (4.6)	ND (4.4)	ND (45.3)	ND (22.4)	-	-
1,2-Dichlorobenzene	ug/L	-	ND (3.9)	ND (3.7)	ND (38.0)	ND (18.8)	-	-
1,2-Diphenylhydrazine	ug/L	-	ND (1.4)	ND (1.3)	ND (13.9)	ND (6.9)	-	-
1,3-Dichlorobenzene	ug/L	-	ND (4.6)	ND (4.3)	ND (44.6)	ND (22.1)	-	-
1,4-Dichlorobenzene	ug/L	-	ND (3.8)	ND (3.6)	ND (36.8)	ND (18.2)	-	-
1-Methylnaphthalene	ug/L	-	ND (2.3)	ND (2.2)	ND (22.6)	ND (11.2)	-	-
2,2'-Oxybis(1-chloropropane) (bis(2-Chloroisopropyl) ether)	ug/L	-	ND (1.5)	ND (1.4)	ND (14.6)	ND (7.2)	-	-
2,4,5-Trichlorophenol	ug/L	-	ND (1.2)	ND (1.1)	ND (11.8)	ND (5.9)	-	-
2,4,6-Trichlorophenol	ug/L	-	ND (1.2)	ND (1.1)	ND (11.8)	ND (5.9)	-	-
2,4-Dichlorophenol	ug/L	-	ND (1.7)	ND (1.6)	ND (16.8)	ND (8.3)	-	-
2,4-Dimethylphenol	ug/L	-	ND (3.1)	ND (3.0)	ND (30.5)	ND (15.1)	-	-
2,4-Dinitrophenol	ug/L	-	ND (2.7)	ND (2.6)	ND (26.5)	ND (13.1)	-	-
2,4-Dinitrotoluene	ug/L	-	ND (1.5)	ND (1.4)	ND (14.4)	ND (7.1)	-	-
2,6-Dinitrotoluene	ug/L	-	ND (0.70)	ND (0.67)	ND (6.9)	ND (3.4)	-	-
2-Chloronaphthalene	ug/L	-	ND (2.5)	ND (2.3)	ND (24.0)	ND (11.9)	-	-
2-Chlorophenol	ug/L	-	ND (1.2)	ND (1.2)	ND (12.2)	ND (6.0)	-	-
2-Methylnaphthalene	ug/L	-	ND (2.8)	ND (2.6)	ND (27.0)	ND (13.4)	-	-
2-Methylphenol	ug/L	-	ND (2.1)	ND (2.0)	ND (20.4)	ND (10.1)	-	-
2-Nitroaniline	ug/L	-	ND (1.7)	ND (1.6)	ND (16.5)	ND (8.1)	-	-
2-Nitrophenol	ug/L	-	ND (1.8)	ND (1.8)	ND (18.1)	ND (8.9)	-	-
3&4-Methylphenol	ug/L	-	ND (1.1)	ND (1.1)	ND (11.1)	ND (5.5)	-	-
3,3'-Dichlorobenzidine	ug/L	-	ND (1.3)	ND (1.3)	ND (13.0)	ND (6.4)	-	-

Table 2
Summary of Analytical Results - Pond 4
Husky Energy Refinery - Surface Water
Superior, Wisconsin

Sample Location: Pond 4
Sample ID: SW-050818-JT-06
Sample Date: 5/8/2018

Parameters	Units	
Dichlorofluoromethane	ug/L	ND (0.38)
Ethyl ether	ug/L	ND (1.3)
Ethylbenzene	ug/L	ND (0.14)
Hexachlorobutadiene	ug/L	ND (0.48)
Isopropyl benzene	ug/L	ND (0.17)
Methyl tert butyl ether (MTBE)	ug/L	ND (0.40)
Methylene chloride	ug/L	ND (1.2)
Naphthalene	ug/L	ND (0.42)
N-Butylbenzene	ug/L	ND (0.13)
N-Propylbenzene	ug/L	ND (0.15)
Styrene	ug/L	ND (0.14)
tert-Butylbenzene	ug/L	ND (0.15)
Tetrachloroethene	ug/L	ND (0.16)
Tetrahydrofuran	ug/L	ND (4.3)
Toluene	ug/L	ND (0.17)
trans-1,2-Dichloroethene	ug/L	ND (0.21)
trans-1,3-Dichloropropene	ug/L	ND (0.14)
Trichloroethene	ug/L	ND (0.18)
Trichlorofluoromethane (CFC-11)	ug/L	ND (0.13)
Trifluorotrchloroethane (CFC-113)	ug/L	ND (0.28)
Vinyl chloride	ug/L	ND (0.096)
Xylenes (total)	ug/L	ND (0.24)

Semi-Volatiles	Units	
1,2,4-Trichlorobenzene	ug/L	-
1,2-Dichlorobenzene	ug/L	-
1,2-Diphenylhydrazine	ug/L	-
1,3-Dichlorobenzene	ug/L	-
1,4-Dichlorobenzene	ug/L	-
1-Methylnaphthalene	ug/L	-
2,2'-Oxybis(1-chloropropane) (bis(2-Chloroisopropyl) ether)	ug/L	-
2,4,5-Trichlorophenol	ug/L	-
2,4,6-Trichlorophenol	ug/L	-
2,4-Dichlorophenol	ug/L	-
2,4-Dimethylphenol	ug/L	-
2,4-Dinitrophenol	ug/L	-
2,4-Dinitrotoluene	ug/L	-
2,6-Dinitrotoluene	ug/L	-
2-Chloronaphthalene	ug/L	-
2-Chlorophenol	ug/L	-
2-Methylnaphthalene	ug/L	-
2-Methylphenol	ug/L	-
2-Nitroaniline	ug/L	-
2-Nitrophenol	ug/L	-
3&4-Methylphenol	ug/L	-
3,3'-Dichlorobenzidine	ug/L	-

Table 2
Summary of Analytical Results - Pond 4
Husky Energy Refinery - Surface Water
Superior, Wisconsin

Sample Location:	Pond 4	Pond 4	Pond 4	Pond 4	Pond 4	Pond 4	Pond 4	Pond 4
Sample ID:	Pond 4	SW-042918-KJ-07	DUP-042918-KJ-01	SW-043018-JT-06	SW-050218-RE-08	SW-050418-JT-06	Dup-050418-JT-01	SW-050618-JT-06
Sample Date:	4/29/2018	4/29/2018	4/29/2018	4/30/2018	5/2/2018	5/4/2018	5/4/2018	5/6/2018
Parameters	Units		Duplicate				Duplicate	
3-Nitroaniline	ug/L	-	ND (1.3)	ND (1.3)	ND (13.0)	ND (6.4)	-	-
4,6-Dinitro-2-methylphenol	ug/L	-	ND (1.7)	ND (1.6)	ND (16.3)	ND (8.1)	-	-
4-Bromophenyl phenyl ether	ug/L	-	ND (2.5)	ND (2.4)	ND (24.8)	ND (12.3)	-	-
4-Chloro-3-methylphenol	ug/L	-	ND (1.6)	ND (1.6)	ND (16.0)	ND (7.9)	-	-
4-Chloroaniline	ug/L	-	ND (2.1)	ND (2.0)	ND (20.5)	ND (10.2)	-	-
4-Chlorophenyl phenyl ether	ug/L	-	ND (1.7)	ND (1.6)	ND (16.5)	ND (8.1)	-	-
4-Nitroaniline	ug/L	-	ND (2.3)	ND (2.1)	ND (22.0)	ND (10.9)	-	-
4-Nitrophenol	ug/L	-	ND (2.8)	ND (2.7)	ND (27.7)	ND (13.7)	-	-
Acenaphthene	ug/L	-	ND (2.1)	ND (2.0)	ND (20.2)	ND (10)	-	-
Acenaphthylene	ug/L	-	ND (1.9)	ND (1.8)	ND (18.3)	ND (9.0)	-	-
Anthracene	ug/L	-	ND (1.4)	ND (1.3)	ND (13.9)	ND (6.9)	-	-
Benzo(a)anthracene	ug/L	-	ND (1.4)	ND (1.3)	ND (13.7)	ND (6.8)	-	-
Benzo(a)pyrene	ug/L	-	ND (1.9)	ND (1.8)	ND (18.5)	ND (9.1)	-	-
Benzo(b)fluoranthene	ug/L	-	ND (1.9)	ND (1.8)	ND (18.6)	ND (9.2)	-	-
Benzo(g,h,i)perylene	ug/L	-	ND (2.3)	ND (2.2)	ND (22.6)	ND (11.2)	-	-
Benzo(k)fluoranthene	ug/L	-	ND (1.9)	ND (1.8)	ND (18.9)	ND (9.4)	-	-
bis(2-Chloroethoxy)methane	ug/L	-	ND (1.5)	ND (1.4)	ND (14.5)	ND (7.2)	-	-
bis(2-Chloroethyl)ether	ug/L	-	ND (1.2)	ND (1.2)	ND (12.2)	ND (6.0)	-	-
bis(2-Ethylhexyl)phthalate (DEHP)	ug/L	-	ND (5.0)	ND (4.8)	ND (49.4)	ND (24.4)	-	-
Butyl benzylphthalate (BBP)	ug/L	-	ND (2.0)	ND (1.9)	ND (19.1)	ND (9.5)	-	-
Carbazole	ug/L	-	ND (1.2)	ND (1.1)	ND (11.8)	ND (5.9)	-	-
Chrysene	ug/L	-	ND (1.9)	ND (1.8)	ND (18.8)	ND (9.3)	-	-
Dibenz(a,h)anthracene	ug/L	-	ND (2.4)	ND (2.3)	ND (23.2)	ND (11.5)	-	-
Dibenzofuran	ug/L	-	ND (1.8)	ND (1.7)	ND (17.3)	ND (8.6)	-	-
Diethyl phthalate	ug/L	-	ND (1.5)	ND (1.5)	ND (15.2)	ND (7.5)	-	-
Dimethyl phthalate	ug/L	-	ND (1.4)	ND (1.3)	ND (13.5)	ND (6.7)	-	-
Di-n-butylphthalate (DBP)	ug/L	-	ND (1.5)	ND (1.4)	ND (14.5)	ND (7.2)	-	-
Di-n-octyl phthalate (DnOP)	ug/L	-	ND (2.3)	ND (2.1)	ND (22.0)	ND (10.9)	-	-
Fluoranthene	ug/L	-	ND (1.6)	ND (1.5)	ND (15.9)	ND (7.9)	-	-
Fluorene	ug/L	-	ND (1.6)	ND (1.5)	ND (15.5)	ND (7.7)	-	-
Hexachlorobenzene	ug/L	-	ND (2.4)	ND (2.3)	ND (23.2)	ND (11.5)	-	-
Hexachlorobutadiene	ug/L	-	ND (3.5)	ND (3.3)	ND (34.3)	ND (17.0)	-	-
Hexachloroethane	ug/L	-	ND (3.8)	ND (3.6)	ND (36.9)	ND (18.2)	-	-
Indeno(1,2,3-cd)pyrene	ug/L	-	ND (2.2)	ND (2.1)	ND (21.7)	ND (10.7)	-	-
Isophorone	ug/L	-	ND (1.3)	ND (1.2)	ND (12.5)	ND (6.2)	-	-
Naphthalene	ug/L	-	ND (2.6)	ND (2.5)	ND (25.6)	ND (12.7)	-	-
Nitrobenzene	ug/L	-	ND (1.4)	ND (1.3)	ND (13.9)	ND (6.9)	-	-
N-Nitrosodimethylamine	ug/L	-	ND (1.1)	ND (1.1)	ND (11.1)	ND (5.5)	-	-
N-Nitrosodi-n-propylamine	ug/L	-	ND (1.1)	ND (1.1)	ND (10.9)	ND (5.4)	-	-
N-Nitrosodiphenylamine	ug/L	-	ND (1.2)	ND (1.1)	ND (11.7)	ND (5.8)	-	-
Pentachlorophenol	ug/L	-	ND (2.9)	ND (2.7)	ND (28.2)	ND (13.9)	-	-
Phenanthrene	ug/L	-	ND (1.1)	ND (1.0)	ND (10.6)	ND (5.2)	-	-
Phenol	ug/L	-	ND (1.3)	ND (1.2)	ND (12.5)	ND (6.2)	-	-
Pyrene	ug/L	-	ND (1.6)	ND (1.6)	ND (16.0)	ND (7.9)	-	-

PFAS

Table 2
Summary of Analytical Results - Pond 4
Husky Energy Refinery - Surface Water
Superior, Wisconsin

Sample Location: Pond 4
Sample ID: SW-050818-JT-06
Sample Date: 5/8/2018

Parameters	Units	
3-Nitroaniline	ug/L	-
4,6-Dinitro-2-methylphenol	ug/L	-
4-Bromophenyl phenyl ether	ug/L	-
4-Chloro-3-methylphenol	ug/L	-
4-Chloroaniline	ug/L	-
4-Chlorophenyl phenyl ether	ug/L	-
4-Nitroaniline	ug/L	-
4-Nitrophenol	ug/L	-
Acenaphthene	ug/L	-
Acenaphthylene	ug/L	-
Anthracene	ug/L	-
Benzo(a)anthracene	ug/L	-
Benzo(a)pyrene	ug/L	-
Benzo(b)fluoranthene	ug/L	-
Benzo(g,h,i)perylene	ug/L	-
Benzo(k)fluoranthene	ug/L	-
bis(2-Chloroethoxy)methane	ug/L	-
bis(2-Chloroethyl)ether	ug/L	-
bis(2-Ethylhexyl)phthalate (DEHP)	ug/L	-
Butyl benzylphthalate (BBP)	ug/L	-
Carbazole	ug/L	-
Chrysene	ug/L	-
Dibenz(a,h)anthracene	ug/L	-
Dibenzofuran	ug/L	-
Diethyl phthalate	ug/L	-
Dimethyl phthalate	ug/L	-
Di-n-butylphthalate (DBP)	ug/L	-
Di-n-octyl phthalate (DnOP)	ug/L	-
Fluoranthene	ug/L	-
Fluorene	ug/L	-
Hexachlorobenzene	ug/L	-
Hexachlorobutadiene	ug/L	-
Hexachloroethane	ug/L	-
Indeno(1,2,3-cd)pyrene	ug/L	-
Isophorone	ug/L	-
Naphthalene	ug/L	-
Nitrobenzene	ug/L	-
N-Nitrosodimethylamine	ug/L	-
N-Nitrosodi-n-propylamine	ug/L	-
N-Nitrosodiphenylamine	ug/L	-
Pentachlorophenol	ug/L	-
Phenanthrene	ug/L	-
Phenol	ug/L	-
Pyrene	ug/L	-

PFAS

Table 2
Summary of Analytical Results - Pond 4
Husky Energy Refinery - Surface Water
Superior, Wisconsin

Sample Location:	Pond 4	Pond 4	Pond 4	Pond 4	Pond 4	Pond 4	Pond 4	Pond 4
Sample ID:	Pond 4	SW-042918-KJ-07	DUP-042918-KJ-01	SW-043018-JT-06	SW-050218-RE-08	SW-050418-JT-06	Dup-050418-JT-01	SW-050618-JT-06
Sample Date:	4/29/2018	4/29/2018	4/29/2018 Duplicate	4/30/2018	5/2/2018	5/4/2018	5/4/2018 Duplicate	5/6/2018
Parameters	Units							
Fluorotelomer sulfonic acid (4:2)	ng/L	-	ND (10)	ND (10)	10	10	-	-
N-Ethyl perfluorooctane sulfonamidoacetic acid	ng/L	-	ND (10)	ND (10)	ND (10)	ND (10)	-	-
N-Methyl-perfluorooctane sulfonamide	ng/L	-	ND (10)	ND (10)	ND (10)	ND (10)	-	-
Perfluorhexanoic acid (PFHxA)	ng/L	-	1310	1380	1300	1460	-	-
Perfluorobutane sulfonic acid (PFBS)	ng/L	-	20	20	20	20	-	-
Perfluorobutanoic acid (PFBA)	ng/L	-	430	460	440	420	-	-
Perfluorodecanesulfonic acid (PFDS)	ng/L	-	ND (10)	ND (10)	ND (10)	ND (10)	-	-
Perfluorodecanoic acid (PFDA)	ng/L	-	80	110	80	80	-	-
Perfluorododecanoic acid (PFDoA)	ng/L	-	20	30	20	20	-	-
Perfluoroheptane sulfonic acid (PFHpS)	ng/L	-	ND (10)	ND (10)	ND (10)	ND (10)	-	-
Perfluoroheptanoic acid (PFHpA)	ng/L	-	320	350	310	330	-	-
Perfluorohexane sulfonic acid (PFHxS)	ng/L	-	180	200	200	160	-	-
Perfluorohexane sulfonic acid (PFHxS) - Branched	ng/L	-	30	30	30	30	-	-
Perfluorohexane sulfonic acid (PFHxS) - Linear	ng/L	-	150	170	170	130	-	-
Perfluorononane sulfonic acid (PFNS)	ng/L	-	ND (10)	ND (10)	ND (10)	ND (10)	-	-
Perfluorononanoic acid (PFNA)	ng/L	-	70	80	60	60	-	-
Perfluorooctane sulfonamide (FOSA)	ng/L	-	ND (10)	ND (10)	ND (10)	ND (10)	-	-
Perfluorooctane sulfonic acid (PFOS)	ng/L	-	290^{cde}	330^{cde}	270^{cde}	200^{cde}	-	-
Perfluorooctane sulfonic acid (PFOS) - Branched	ng/L	-	130	140	140	90	-	-
Perfluorooctane sulfonic acid (PFOS) - Linear	ng/L	-	150	170	130	110	-	-
Perfluorooctanoic acid (PFOA)	ng/L	-	790^{cd}	920^{cd}	820^{cd}	720^{cd}	-	-
Perfluoropentane sulfonic acid (PFPeS)	ng/L	-	20	20	20	20	-	-
Perfluoropentanoic acid (PFPeA)	ng/L	-	400	420	410	540	-	-
Perfluorotetradecanoic acid (PFTeA)	ng/L	-	ND (10) I	ND (10) I	ND (10) I	ND (10) I	-	-
Perfluorotridecanoic acid (PFTrDA)	ng/L	-	ND (10)	ND (10)	ND (10)	ND (10)	-	-
Perfluoroundecanoic acid (PFUnA)	ng/L	-	20	20	10	20	-	-
Sodium 1H,1H,2H,2H-perfluorodecane sulfonate (8:2)	ng/L	-	2810	3540	2170	2900 E	-	-
Sodium 1H,1H,2H,2H-perfluorooctane sulfonate (6:2)	ng/L	-	13400	13620	16910	7380 E	-	-
Metals								
Arsenic	ug/L	-	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)
Barium	ug/L	-	42.1	42.6	48.9	38.6	ND (40.0)	48.2
Cadmium	ug/L	-	ND (0.46)	ND (0.46)	ND (0.46)	ND (0.46)	ND (0.46)	ND (0.46)
Calcium	ug/L	37700	-	-	-	-	-	-
Chromium	ug/L	-	1.2 J	1.4 J	1.5 J	0.93 J	ND (0.51)	1.7
Iron	ug/L	896	-	-	-	-	-	-
Lead	ug/L	-	ND (3.0)	ND (3.0)	ND (3.0)	ND (3.0)	3.2 J	5.1 J
Magnesium	ug/L	12200	-	-	-	-	-	-
Manganese	ug/L	142^b	-	-	-	-	-	-
Mercury	ug/L	-	ND (0.062)	ND (0.062)	ND (0.062)	ND (0.062)	ND (0.062)	ND (0.062)
Selenium	ug/L	-	ND (6.4)	ND (6.4)	ND (6.4)	ND (6.4)	ND (6.4)	ND (6.4)
Silver	ug/L	-	ND (0.27)	ND (0.27)	ND (0.27)	ND (0.27)	ND (0.27)	ND (0.27)
Petroleum Hydrocarbons								
Total Petroleum Hydrocarbons - Gasoline Range Organics	ug/L	-	115	104	113	18.7 J	ND (8.9)	ND (8.9)
Total Petroleum Hydrocarbons (C10-C28) DRO	mg/L	-	3.4	-	3.4	1.3	0.52	0.44

**Table 2
Summary of Analytical Results - Pond 4
Husky Energy Refinery - Surface Water
Superior, Wisconsin**

Sample Location: Pond 4
Sample ID: SW-050818-JT-06
Sample Date: 5/8/2018

Parameters	Units	
Fluorotelomer sulfonic acid (4:2)	ng/L	-
N-Ethyl perfluorooctane sulfonamidoacetic acid	ng/L	-
N-Methyl-perfluorooctane sulfonamide	ng/L	-
Perfluorhexanoic acid (PFHxA)	ng/L	-
Perfluorobutane sulfonic acid (PFBS)	ng/L	-
Perfluorobutanoic acid (PFBA)	ng/L	-
Perfluorodecanesulfonic acid (PFDS)	ng/L	-
Perfluorodecanoic acid (PFDA)	ng/L	-
Perfluorododecanoic acid (PFDoA)	ng/L	-
Perfluoroheptane sulfonic acid (PFHpS)	ng/L	-
Perfluoroheptanoic acid (PFHpA)	ng/L	-
Perfluorohexane sulfonic acid (PFHxS)	ng/L	-
Perfluorohexane sulfonic acid (PFHxS) - Branched	ng/L	-
Perfluorohexane sulfonic acid (PFHxS) - Linear	ng/L	-
Perfluorononane sulfonic acid (PFNS)	ng/L	-
Perfluorononanoic acid (PFNA)	ng/L	-
Perfluorooctane sulfonamide (FOSA)	ng/L	-
Perfluorooctane sulfonic acid (PFOS)	ng/L	-
Perfluorooctane sulfonic acid (PFOS) - Branched	ng/L	-
Perfluorooctane sulfonic acid (PFOS) - Linear	ng/L	-
Perfluorooctanoic acid (PFOA)	ng/L	-
Perfluoropentane sulfonic acid (PFPeS)	ng/L	-
Perfluoropentanoic acid (PFPeA)	ng/L	-
Perfluorotetradecanoic acid (PFTeA)	ng/L	-
Perfluorotridecanoic acid (PFTrDA)	ng/L	-
Perfluoroundecanoic acid (PFUnA)	ng/L	-
Sodium 1H,1H,2H,2H-perfluorodecane sulfonate (8:2)	ng/L	-
Sodium 1H,1H,2H,2H-perfluorooctane sulfonate (6:2)	ng/L	-
Metals		
Arsenic	ug/L	ND (5.2)
Barium	ug/L	ND (50.0)
Cadmium	ug/L	ND (0.46)
Calcium	ug/L	-
Chromium	ug/L	0.99 J
Iron	ug/L	-
Lead	ug/L	ND (3.0)
Magnesium	ug/L	-
Manganese	ug/L	-
Mercury	ug/L	ND (0.062)
Selenium	ug/L	ND (6.4)
Silver	ug/L	ND (0.27)
Petroleum Hydrocarbons		
Total Petroleum Hydrocarbons - Gasoline Range Organics	ug/L	ND (8.9)
Total Petroleum Hydrocarbons (C10-C28) DRO	mg/L	0.39

**Table 2
Summary of Analytical Results - Pond 4
Husky Energy Refinery - Surface Water
Superior, Wisconsin**

Sample Location:	Pond 4	Pond 4	Pond 4	Pond 4	Pond 4	Pond 4	Pond 4	Pond 4	Pond 4
Sample ID:	Pond 4	SW-042918-KJ-07	DUP-042918-KJ-01	SW-043018-JT-06	SW-050218-RE-08	SW-050418-JT-06	Dup-050418-JT-01	SW-050618-JT-06	
Sample Date:	4/29/2018	4/29/2018	4/29/2018 Duplicate	4/30/2018	5/2/2018	5/4/2018	5/4/2018 Duplicate	5/6/2018	
Parameters	Units								
Total Petroleum Hydrocarbons (C24-C36) Motor Oil	mg/L	-	0.80	-	0.95	0.50	0.32	0.28	0.37
General Chemistry									
Alkalinity, total (as CaCO3)	mg/L	138	-	-	-	-	-	-	-
Chloride	mg/L	35.6	-	-	-	-	-	-	-
Hardness	ug/L	144000	-	-	-	-	-	-	-
Oil and grease	mg/L	-	ND (1.5)	ND (1.4)	1.6 J	ND (1.6)	ND (1.5)	ND (1.4)	ND (1.5)
Sulfate	mg/L	-	10.8	11.1	13.0	14.7	15.6	15.6	15.9
Total dissolved solids (TDS)	mg/L	237	-	-	-	-	-	-	-
Total organic carbon (TOC)	mg/L	21.5	-	-	-	-	-	-	-
Total suspended solids (TSS)	mg/L	13.0	-	-	-	-	-	-	-

Notes:

- mg/L - milligrams per litre
- ng/L - nanogram per liter
- ug/L - micrograms per litre
- ND (0.25) - not detected at the associated reporting limit
- E - concentration exceeds calibration range
- I - matrix interference with internal standard
- J - estimated concentration
- ^a - Selected aquatic life protection surface water screening criteria (reg or permit)
- ^b - selected Human Health surface water screening criteria (reg or permit)
- ^c - Minnesota Department of Health. Human Health-Based Water Guidance, Drinking water health-based values (HBV)
- ^d - USEPA 2016. Drinking Water Health Advisory
- ^e - Rule 57 Water Quality Values for Surface Water Assessment, Section Michigan Department of Environmental Quality (DEQ) Non-drink values

90 - concentration exceeds the indicated standard

Table 2
Summary of Analytical Results - Pond 4
Husky Energy Refinery - Surface Water
Superior, Wisconsin

Sample Location: Pond 4
Sample ID: SW-050818-JT-06
Sample Date: 5/8/2018

Parameters	Units	
Total Petroleum Hydrocarbons (C24-C36) Motor Oil	mg/L	0.28
General Chemistry		
Alkalinity, total (as CaCO3)	mg/L	-
Chloride	mg/L	-
Hardness	ug/L	-
Oil and grease	mg/L	ND (1.5)
Sulfate	mg/L	16.6
Total dissolved solids (TDS)	mg/L	-
Total organic carbon (TOC)	mg/L	-
Total suspended solids (TSS)	mg/L	-

Notes:

- mg/L - milligrams per litre
- ng/L - nanogram per liter
- ug/L - micrograms per litre
- ND (0.25) - not detected at the associated reporting limit
- E - concentration exceeds calibration range
- I - matrix interference with internal standard
- J - estimated concentration
- ^a - Selected aquatic life protection surface water screening criteria (reg or permit)
- ^b - selected Human Health surface water screening criteria (reg or permit)
- ^c - Minnesota Department of Health. Human Health-Based Water Guidance, Drinking water health-based values (HBV)
- ^d - USEPA 2016. Drinking Water Health Advisory
- ^e - Rule 57 Water Quality Values for Surface Water Assessment, Section Michigan Department of Environmental Quality (DEQ) Non-drink values
- 90 - concentration exceeds the indicated standard

Table 3
Summary of Analytical Results - Start Of Impoundment
Husky Energy Refinery - Surface Water
Superior, Wisconsin

Sample Location:	Start of Impoundment	Start of Impoundment	Start of Impoundment	Start of Impoundment	Start of Impoundment	Start of Impoundment
Sample ID:	SW-042918-KJ-06	SW-043018-JT-05	SW-050218-RE-06	SW-050218-RE-07 (depth)	SW-050418-JT-05	SW-050618-JT-05
Sample Date:	4/29/2018	4/30/2018	5/2/2018	5/2/2018	5/4/2018	5/6/2018
Parameters	Units					
Volatiles						
1,1,1,2-Tetrachloroethane	ug/L	ND (0.14)	ND (0.14)	ND (0.14)	ND (0.14)	-
1,1,1-Trichloroethane	ug/L	ND (0.15)	ND (0.15)	ND (0.15)	ND (0.15)	-
1,1,2,2-Tetrachloroethane	ug/L	ND (0.19)	ND (0.19)	ND (0.19)	ND (0.19)	-
1,1,2-Trichloroethane	ug/L	ND (0.22)	ND (0.22)	ND (0.22)	ND (0.22)	-
1,1-Dichloroethane	ug/L	ND (0.14)	ND (0.14)	ND (0.14)	ND (0.14)	-
1,1-Dichloroethene	ug/L	ND (0.18)	ND (0.18)	ND (0.18)	ND (0.18)	-
1,1-Dichloropropene	ug/L	ND (0.18)	ND (0.18)	ND (0.18)	ND (0.18)	-
1,2,3-Trichlorobenzene	ug/L	ND (0.14)	ND (0.14)	ND (0.14)	ND (0.14)	-
1,2,3-Trichloropropane	ug/L	ND (0.66)	ND (0.66)	ND (0.66)	ND (0.66)	-
1,2,4-Trichlorobenzene	ug/L	ND (0.18)	ND (0.18)	ND (0.18)	ND (0.18)	-
1,2,4-Trimethylbenzene	ug/L	ND (0.14)	ND (0.14)	ND (0.14)	ND (0.14)	-
1,2-Dibromo-3-chloropropane (DBCP)	ug/L	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)	-
1,2-Dibromoethane (Ethylene dibromide)	ug/L	ND (0.24)	ND (0.24)	ND (0.24)	ND (0.24)	-
1,2-Dichlorobenzene	ug/L	ND (0.21)	ND (0.21)	ND (0.21)	ND (0.21)	-
1,2-Dichloroethane	ug/L	ND (0.32)	ND (0.32)	ND (0.32)	ND (0.32)	-
1,2-Dichloropropane	ug/L	ND (0.62)	ND (0.62)	ND (0.62)	ND (0.62)	-
1,3,5-Trimethylbenzene	ug/L	ND (0.18)	ND (0.18)	ND (0.18)	ND (0.18)	-
1,3-Dichlorobenzene	ug/L	ND (0.16)	ND (0.16)	ND (0.16)	ND (0.16)	-
1,3-Dichloropropane	ug/L	ND (0.13)	ND (0.13)	ND (0.13)	ND (0.13)	-
1,4-Dichlorobenzene	ug/L	ND (0.10)	ND (0.10)	ND (0.10)	ND (0.10)	-
2,2-Dichloropropane	ug/L	ND (0.40)	ND (0.40)	ND (0.40)	ND (0.40)	-
2-Butanone (Methyl ethyl ketone) (MEK)	ug/L	ND (2.4)	ND (2.4)	ND (2.4)	ND (2.4)	-
2-Chlorotoluene	ug/L	ND (0.20)	ND (0.20)	ND (0.20)	ND (0.20)	-
2-Phenylbutane (sec-Butylbenzene)	ug/L	ND (0.12)	ND (0.12)	ND (0.12)	ND (0.12)	-
4-Chlorotoluene	ug/L	ND (0.13)	ND (0.13)	ND (0.13)	ND (0.13)	-
4-Methyl-2-pentanone (Methyl isobutyl ketone) (MIBK)	ug/L	ND (0.55)	ND (0.55)	ND (0.55)	ND (0.55)	-
Acetone	ug/L	ND (8.8)	ND (8.8)	ND (8.8)	ND (8.8)	-
Allyl chloride	ug/L	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)	-
Benzene	ug/L	ND (0.34)	ND (0.34)	ND (0.34)	ND (0.34)	-
Bromobenzene	ug/L	ND (0.16)	ND (0.16)	ND (0.16)	ND (0.16)	-
Bromodichloromethane	ug/L	ND (0.20)	ND (0.20)	ND (0.20)	ND (0.20)	-
Bromoform	ug/L	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)	-
Bromomethane (Methyl bromide)	ug/L	ND (1.5)	ND (1.5)	ND (1.5)	ND (1.5)	-
Carbon tetrachloride	ug/L	ND (0.20)	ND (0.20)	ND (0.20)	ND (0.20)	-
Chlorobenzene	ug/L	ND (0.14)	ND (0.14)	ND (0.14)	ND (0.14)	-
Chlorobromomethane	ug/L	ND (0.38)	ND (0.38)	ND (0.38)	ND (0.38)	-
Chloroethane	ug/L	ND (0.44)	ND (0.44)	ND (0.44)	ND (0.44)	-
Chloroform (Trichloromethane)	ug/L	ND (0.46)	ND (0.46)	ND (0.46)	ND (0.46)	-
Chloromethane (Methyl chloride)	ug/L	ND (1.1)	ND (1.1)	ND (1.1)	ND (1.1)	-
cis-1,2-Dichloroethene	ug/L	ND (0.20)	ND (0.20)	ND (0.20)	ND (0.20)	-
cis-1,3-Dichloropropene	ug/L	ND (0.12)	ND (0.12)	ND (0.12)	ND (0.12)	-
Cymene (p-Isopropyltoluene)	ug/L	ND (0.14)	ND (0.14)	ND (0.14)	ND (0.14)	-
Dibromochloromethane	ug/L	ND (0.13)	ND (0.13)	ND (0.13)	ND (0.13)	-
Dibromomethane	ug/L	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	-
Dichlorodifluoromethane (CFC-12)	ug/L	ND (0.31)	ND (0.31)	ND (0.31)	ND (0.31)	-

Table 3
Summary of Analytical Results - Start Of Impoundment
Husky Energy Refinery - Surface Water
Superior, Wisconsin

Sample Location: Start of Impoundment
Sample ID: SW-050818-JT-05
Sample Date: 5/8/2018

Parameters	Units	
Volatiles		
1,1,1,2-Tetrachloroethane	ug/L	ND (0.14)
1,1,1-Trichloroethane	ug/L	ND (0.15)
1,1,2,2-Tetrachloroethane	ug/L	ND (0.19)
1,1,2-Trichloroethane	ug/L	ND (0.22)
1,1-Dichloroethane	ug/L	ND (0.14)
1,1-Dichloroethene	ug/L	ND (0.18)
1,1-Dichloropropene	ug/L	ND (0.18)
1,2,3-Trichlorobenzene	ug/L	ND (0.14)
1,2,3-Trichloropropane	ug/L	ND (0.66)
1,2,4-Trichlorobenzene	ug/L	ND (0.18)
1,2,4-Trimethylbenzene	ug/L	ND (0.14)
1,2-Dibromo-3-chloropropane (DBCP)	ug/L	ND (1.0)
1,2-Dibromoethane (Ethylene dibromide)	ug/L	ND (0.24)
1,2-Dichlorobenzene	ug/L	ND (0.21)
1,2-Dichloroethane	ug/L	ND (0.32)
1,2-Dichloropropane	ug/L	ND (0.62)
1,3,5-Trimethylbenzene	ug/L	ND (0.18)
1,3-Dichlorobenzene	ug/L	ND (0.16)
1,3-Dichloropropane	ug/L	ND (0.13)
1,4-Dichlorobenzene	ug/L	ND (0.10)
2,2-Dichloropropane	ug/L	ND (0.40)
2-Butanone (Methyl ethyl ketone) (MEK)	ug/L	ND (2.4)
2-Chlorotoluene	ug/L	ND (0.20)
2-Phenylbutane (sec-Butylbenzene)	ug/L	ND (0.12)
4-Chlorotoluene	ug/L	ND (0.13)
4-Methyl-2-pentanone (Methyl isobutyl ketone) (MIBK)	ug/L	ND (0.55)
Acetone	ug/L	ND (8.8)
Allyl chloride	ug/L	ND (1.0)
Benzene	ug/L	ND (0.34)
Bromobenzene	ug/L	ND (0.16)
Bromodichloromethane	ug/L	ND (0.20)
Bromoform	ug/L	ND (1.0)
Bromomethane (Methyl bromide)	ug/L	ND (1.5)
Carbon tetrachloride	ug/L	ND (0.20)
Chlorobenzene	ug/L	ND (0.14)
Chlorobromomethane	ug/L	ND (0.38)
Chloroethane	ug/L	ND (0.44)
Chloroform (Trichloromethane)	ug/L	ND (0.46)
Chloromethane (Methyl chloride)	ug/L	ND (1.1)
cis-1,2-Dichloroethene	ug/L	ND (0.20)
cis-1,3-Dichloropropene	ug/L	ND (0.12)
Cymene (p-Isopropyltoluene)	ug/L	ND (0.14)
Dibromochloromethane	ug/L	ND (0.13)
Dibromomethane	ug/L	ND (0.50)
Dichlorodifluoromethane (CFC-12)	ug/L	ND (0.31)

Table 3
Summary of Analytical Results - Start Of Impoundment
Husky Energy Refinery - Surface Water
Superior, Wisconsin

Sample Location:	Start of Impoundment	Start of Impoundment	Start of Impoundment	Start of Impoundment	Start of Impoundment	Start of Impoundment	
Sample ID:	SW-042918-KJ-06	SW-043018-JT-05	SW-050218-RE-06	SW-050218-RE-07 (depth)	SW-050418-JT-05	SW-050618-JT-05	
Sample Date:	4/29/2018	4/30/2018	5/2/2018	5/2/2018	5/4/2018	5/6/2018	
Parameters	Units						
Dichlorofluoromethane	ug/L	ND (0.38)	ND (0.38)	ND (0.38)	ND (0.38)	-	ND (0.38)
Ethyl ether	ug/L	ND (1.3)	ND (1.3)	ND (1.3)	ND (1.3)	-	ND (1.3)
Ethylbenzene	ug/L	ND (0.14)	ND (0.14)	ND (0.14)	ND (0.14)	-	ND (0.14)
Hexachlorobutadiene	ug/L	ND (0.48)	ND (0.48)	ND (0.48)	ND (0.48)	-	ND (0.48)
Isopropyl benzene	ug/L	ND (0.17)	ND (0.17)	ND (0.17)	ND (0.17)	-	ND (0.17)
Methyl tert butyl ether (MTBE)	ug/L	ND (0.40)	ND (0.40)	ND (0.40)	ND (0.40)	-	ND (0.40)
Methylene chloride	ug/L	ND (1.2)	ND (1.2)	ND (1.2)	ND (1.2)	-	ND (1.2)
Naphthalene	ug/L	ND (0.42)	ND (0.42)	ND (0.42)	ND (0.42)	-	ND (0.42)
N-Butylbenzene	ug/L	ND (0.13)	ND (0.13)	ND (0.13)	ND (0.13)	-	ND (0.13)
N-Propylbenzene	ug/L	ND (0.15)	ND (0.15)	ND (0.15)	ND (0.15)	-	ND (0.15)
Styrene	ug/L	ND (0.14)	ND (0.14)	ND (0.14)	ND (0.14)	-	ND (0.14)
tert-Butylbenzene	ug/L	ND (0.15)	ND (0.15)	ND (0.15)	ND (0.15)	-	ND (0.15)
Tetrachloroethene	ug/L	ND (0.16)	ND (0.16)	ND (0.16)	ND (0.16)	-	ND (0.16)
Tetrahydrofuran	ug/L	ND (4.3)	ND (4.3)	ND (4.3)	ND (4.3)	-	ND (4.3)
Toluene	ug/L	ND (0.17)	ND (0.17)	ND (0.17)	ND (0.17)	-	ND (0.17)
trans-1,2-Dichloroethene	ug/L	ND (0.21)	ND (0.21)	ND (0.21)	ND (0.21)	-	ND (0.21)
trans-1,3-Dichloropropene	ug/L	ND (0.14)	ND (0.14)	ND (0.14)	ND (0.14)	-	ND (0.14)
Trichloroethene	ug/L	ND (0.18)	ND (0.18)	ND (0.18)	ND (0.18)	-	ND (0.18)
Trichlorofluoromethane (CFC-11)	ug/L	ND (0.13)	ND (0.13)	ND (0.13)	ND (0.13)	-	ND (0.13)
Trifluorotrichloroethane (CFC-113)	ug/L	ND (0.28)	ND (0.28)	ND (0.28)	ND (0.28)	-	ND (0.28)
Vinyl chloride	ug/L	ND (0.096)	ND (0.096)	ND (0.096)	ND (0.096)	-	ND (0.096)
Xylenes (total)	ug/L	ND (0.24)	ND (0.24)	ND (0.24)	ND (0.24)	-	ND (0.24)
Semi-Volatiles							
1,2,4-Trichlorobenzene	ug/L	ND (4.4)	ND (4.5)	ND (4.4)	ND (5.0)	-	-
1,2-Dichlorobenzene	ug/L	ND (3.7)	ND (3.8)	ND (3.7)	ND (4.2)	-	-
1,2-Diphenylhydrazine	ug/L	ND (1.4)	ND (1.4)	ND (1.4)	ND (1.5)	-	-
1,3-Dichlorobenzene	ug/L	ND (4.4)	ND (4.4)	ND (4.4)	ND (4.9)	-	-
1,4-Dichlorobenzene	ug/L	ND (3.6)	ND (3.6)	ND (3.6)	ND (4.1)	-	-
1-Methylnaphthalene	ug/L	ND (2.2)	ND (2.2)	ND (2.2)	ND (2.5)	-	-
2,2'-Oxybis(1-chloropropane) (bis(2-Chloroisopropyl) ether)	ug/L	ND (1.4)	ND (1.4)	ND (1.4)	ND (1.6)	-	-
2,4,5-Trichlorophenol	ug/L	ND (1.2)	ND (1.2)	ND (1.2)	ND (1.3)	-	-
2,4,6-Trichlorophenol	ug/L	ND (1.2)	ND (1.2)	ND (1.2)	ND (1.3)	-	-
2,4-Dichlorophenol	ug/L	ND (1.6)	ND (1.7)	ND (1.6)	ND (1.9)	-	-
2,4-Dimethylphenol	ug/L	ND (3.0)	ND (3.0)	ND (3.0)	ND (3.4)	-	-
2,4-Dinitrophenol	ug/L	ND (2.6)	ND (2.6)	ND (2.6)	ND (2.9)	-	-
2,4-Dinitrotoluene	ug/L	ND (1.4)	ND (1.4)	ND (1.4)	ND (1.6)	-	-
2,6-Dinitrotoluene	ug/L	ND (0.67)	ND (0.68)	ND (0.67)	ND (0.76)	-	-
2-Chloronaphthalene	ug/L	ND (2.3)	ND (2.4)	ND (2.3)	ND (2.7)	-	-
2-Chlorophenol	ug/L	ND (1.2)	ND (1.2)	ND (1.2)	ND (1.3)	-	-
2-Methylnaphthalene	ug/L	ND (2.6)	ND (2.7)	ND (2.6)	ND (3.0)	-	-
2-Methylphenol	ug/L	ND (2.0)	ND (2.0)	ND (2.0)	ND (2.3)	-	-
2-Nitroaniline	ug/L	ND (1.6)	ND (1.6)	ND (1.6)	ND (1.8)	-	-
2-Nitrophenol	ug/L	ND (1.8)	ND (1.8)	ND (1.8)	ND (2.0)	-	-
3&4-Methylphenol	ug/L	ND (1.1)	ND (1.1)	ND (1.1)	ND (1.2)	-	-
3,3'-Dichlorobenzidine	ug/L	ND (1.3)	ND (1.3)	ND (1.3)	ND (1.4)	-	-

Table 3
Summary of Analytical Results - Start Of Impoundment
Husky Energy Refinery - Surface Water
Superior, Wisconsin

Sample Location:
Sample ID:
Sample Date:

Start of Impoundment
SW-050818-JT-05
5/8/2018

Parameters	Units	
Dichlorofluoromethane	ug/L	ND (0.38)
Ethyl ether	ug/L	ND (1.3)
Ethylbenzene	ug/L	ND (0.14)
Hexachlorobutadiene	ug/L	ND (0.48)
Isopropyl benzene	ug/L	ND (0.17)
Methyl tert butyl ether (MTBE)	ug/L	ND (0.40)
Methylene chloride	ug/L	ND (1.2)
Naphthalene	ug/L	ND (0.42)
N-Butylbenzene	ug/L	ND (0.13)
N-Propylbenzene	ug/L	ND (0.15)
Styrene	ug/L	ND (0.14)
tert-Butylbenzene	ug/L	ND (0.15)
Tetrachloroethene	ug/L	ND (0.16)
Tetrahydrofuran	ug/L	ND (4.3)
Toluene	ug/L	ND (0.17)
trans-1,2-Dichloroethene	ug/L	ND (0.21)
trans-1,3-Dichloropropene	ug/L	ND (0.14)
Trichloroethene	ug/L	ND (0.18)
Trichlorofluoromethane (CFC-11)	ug/L	ND (0.13)
Trifluorotrchloroethane (CFC-113)	ug/L	ND (0.28)
Vinyl chloride	ug/L	ND (0.096)
Xylenes (total)	ug/L	ND (0.24)
Semi-Volatiles		
1,2,4-Trichlorobenzene	ug/L	-
1,2-Dichlorobenzene	ug/L	-
1,2-Diphenylhydrazine	ug/L	-
1,3-Dichlorobenzene	ug/L	-
1,4-Dichlorobenzene	ug/L	-
1-Methylnaphthalene	ug/L	-
2,2'-Oxybis(1-chloropropane) (bis(2-Chloroisopropyl) ether)	ug/L	-
2,4,5-Trichlorophenol	ug/L	-
2,4,6-Trichlorophenol	ug/L	-
2,4-Dichlorophenol	ug/L	-
2,4-Dimethylphenol	ug/L	-
2,4-Dinitrophenol	ug/L	-
2,4-Dinitrotoluene	ug/L	-
2,6-Dinitrotoluene	ug/L	-
2-Chloronaphthalene	ug/L	-
2-Chlorophenol	ug/L	-
2-Methylnaphthalene	ug/L	-
2-Methylphenol	ug/L	-
2-Nitroaniline	ug/L	-
2-Nitrophenol	ug/L	-
3&4-Methylphenol	ug/L	-
3,3'-Dichlorobenzidine	ug/L	-

Table 3
Summary of Analytical Results - Start Of Impoundment
Husky Energy Refinery - Surface Water
Superior, Wisconsin

Sample Location:	Start of Impoundment	Start of Impoundment	Start of Impoundment	Start of Impoundment	Start of Impoundment	Start of Impoundment
Sample ID:	SW-042918-KJ-06	SW-043018-JT-05	SW-050218-RE-06	SW-050218-RE-07 (depth)	SW-050418-JT-05	SW-050618-JT-05
Sample Date:	4/29/2018	4/30/2018	5/2/2018	5/2/2018	5/4/2018	5/6/2018
Parameters	Units					
3-Nitroaniline	ug/L	ND (1.3)	ND (1.3)	ND (1.3)	ND (1.4)	-
4,6-Dinitro-2-methylphenol	ug/L	ND (1.6)	ND (1.6)	ND (1.6)	ND (1.8)	-
4-Bromophenyl phenyl ether	ug/L	ND (2.4)	ND (2.5)	ND (2.4)	ND (2.8)	-
4-Chloro-3-methylphenol	ug/L	ND (1.6)	ND (1.6)	ND (1.6)	ND (1.8)	-
4-Chloroaniline	ug/L	ND (2.0)	ND (2.0)	ND (2.0)	ND (2.3)	-
4-Chlorophenyl phenyl ether	ug/L	ND (1.6)	ND (1.6)	ND (1.6)	ND (1.8)	-
4-Nitroaniline	ug/L	ND (2.2)	ND (2.2)	ND (2.2)	ND (2.4)	-
4-Nitrophenol	ug/L	ND (2.7)	ND (2.7)	ND (2.7)	ND (3.1)	-
Acenaphthene	ug/L	ND (2.0)	ND (2.0)	ND (2.0)	ND (2.2)	-
Acenaphthylene	ug/L	ND (1.8)	ND (1.8)	ND (1.8)	ND (2.0)	-
Anthracene	ug/L	ND (1.4)	ND (1.4)	ND (1.4)	ND (1.5)	-
Benzo(a)anthracene	ug/L	ND (1.3)	ND (1.4)	ND (1.3)	ND (1.5)	-
Benzo(a)pyrene	ug/L	ND (1.8)	ND (1.8)	ND (1.8)	ND (2.0)	-
Benzo(b)fluoranthene	ug/L	ND (1.8)	ND (1.8)	ND (1.8)	ND (2.1)	-
Benzo(g,h,i)perylene	ug/L	ND (2.2)	ND (2.2)	ND (2.2)	ND (2.5)	-
Benzo(k)fluoranthene	ug/L	ND (1.9)	ND (1.9)	ND (1.9)	ND (2.1)	-
bis(2-Chloroethoxy)methane	ug/L	ND (1.4)	ND (1.4)	ND (1.4)	ND (1.6)	-
bis(2-Chloroethyl)ether	ug/L	ND (1.2)	ND (1.2)	ND (1.2)	ND (1.3)	-
bis(2-Ethylhexyl)phthalate (DEHP)	ug/L	ND (4.8)	ND (4.9)	ND (4.8)	ND (5.5)	-
Butyl benzylphthalate (BBP)	ug/L	ND (1.9)	ND (1.9)	ND (1.9)	ND (2.1)	-
Carbazole	ug/L	ND (1.2)	ND (1.2)	ND (1.2)	ND (1.3)	-
Chrysene	ug/L	ND (1.8)	ND (1.9)	ND (1.8)	ND (2.1)	-
Dibenz(a,h)anthracene	ug/L	ND (2.3)	ND (2.3)	ND (2.3)	ND (2.6)	-
Dibenzofuran	ug/L	ND (1.7)	ND (1.7)	ND (1.7)	ND (1.9)	-
Diethyl phthalate	ug/L	ND (1.5)	ND (1.5)	ND (1.5)	ND (1.7)	-
Dimethyl phthalate	ug/L	ND (1.3)	ND (1.3)	ND (1.3)	ND (1.5)	-
Di-n-butylphthalate (DBP)	ug/L	ND (1.4)	ND (1.4)	ND (1.4)	ND (1.6)	-
Di-n-octyl phthalate (DnOP)	ug/L	ND (2.2)	ND (2.2)	ND (2.2)	ND (2.4)	-
Fluoranthene	ug/L	ND (1.6)	ND (1.6)	ND (1.6)	ND (1.8)	-
Fluorene	ug/L	ND (1.5)	ND (1.5)	ND (1.5)	ND (1.7)	-
Hexachlorobenzene	ug/L	ND (2.3)	ND (2.3)	ND (2.3)	ND (2.6)	-
Hexachlorobutadiene	ug/L	ND (3.4)	ND (3.4)	ND (3.4)	ND (3.8)	-
Hexachloroethane	ug/L	ND (3.6)	ND (3.6)	ND (3.6)	ND (4.1)	-
Indeno(1,2,3-cd)pyrene	ug/L	ND (2.1)	ND (2.1)	ND (2.1)	ND (2.4)	-
Isophorone	ug/L	ND (1.2)	ND (1.2)	ND (1.2)	ND (1.4)	-
Naphthalene	ug/L	ND (2.5)	ND (2.5)	ND (2.5)	ND (2.8)	-
Nitrobenzene	ug/L	ND (1.4)	ND (1.4)	ND (1.4)	ND (1.5)	-
N-Nitrosodimethylamine	ug/L	ND (1.1)	ND (1.1)	ND (1.1)	ND (1.2)	-
N-Nitrosodi-n-propylamine	ug/L	ND (1.1)	ND (1.1)	ND (1.1)	ND (1.2)	-
N-Nitrosodiphenylamine	ug/L	ND (1.1)	ND (1.2)	ND (1.1)	ND (1.3)	-
Pentachlorophenol	ug/L	ND (2.8)	ND (2.8)	ND (2.8)	ND (3.1)	-
Phenanthrene	ug/L	1.2 J	ND (1.0)	ND (1.0)	ND (1.2)	-
Phenol	ug/L	ND (1.2)	ND (1.2)	ND (1.2)	ND (1.4)	-
Pyrene	ug/L	ND (1.6)	ND (1.6)	ND (1.6)	ND (1.8)	-

PFAS

Table 3
Summary of Analytical Results - Start Of Impoundment
Husky Energy Refinery - Surface Water
Superior, Wisconsin

Sample Location:
Sample ID:
Sample Date:

Start of Impoundment
SW-050818-JT-05
5/8/2018

Parameters	Units
3-Nitroaniline	ug/L
4,6-Dinitro-2-methylphenol	ug/L
4-Bromophenyl phenyl ether	ug/L
4-Chloro-3-methylphenol	ug/L
4-Chloroaniline	ug/L
4-Chlorophenyl phenyl ether	ug/L
4-Nitroaniline	ug/L
4-Nitrophenol	ug/L
Acenaphthene	ug/L
Acenaphthylene	ug/L
Anthracene	ug/L
Benzo(a)anthracene	ug/L
Benzo(a)pyrene	ug/L
Benzo(b)fluoranthene	ug/L
Benzo(g,h,i)perylene	ug/L
Benzo(k)fluoranthene	ug/L
bis(2-Chloroethoxy)methane	ug/L
bis(2-Chloroethyl)ether	ug/L
bis(2-Ethylhexyl)phthalate (DEHP)	ug/L
Butyl benzylphthalate (BBP)	ug/L
Carbazole	ug/L
Chrysene	ug/L
Dibenz(a,h)anthracene	ug/L
Dibenzofuran	ug/L
Diethyl phthalate	ug/L
Dimethyl phthalate	ug/L
Di-n-butylphthalate (DBP)	ug/L
Di-n-octyl phthalate (DnOP)	ug/L
Fluoranthene	ug/L
Fluorene	ug/L
Hexachlorobenzene	ug/L
Hexachlorobutadiene	ug/L
Hexachloroethane	ug/L
Indeno(1,2,3-cd)pyrene	ug/L
Isophorone	ug/L
Naphthalene	ug/L
Nitrobenzene	ug/L
N-Nitrosodimethylamine	ug/L
N-Nitrosodi-n-propylamine	ug/L
N-Nitrosodiphenylamine	ug/L
Pentachlorophenol	ug/L
Phenanthrene	ug/L
Phenol	ug/L
Pyrene	ug/L

PFAS

Table 3
Summary of Analytical Results - Start Of Impoundment
Husky Energy Refinery - Surface Water
Superior, Wisconsin

Sample Location: Sample ID: Sample Date:	Start of Impoundment SW-042918-KJ-06 4/29/2018	Start of Impoundment SW-043018-JT-05 4/30/2018	Start of Impoundment SW-050218-RE-06 5/2/2018	Start of Impoundment SW-050218-RE-07 (depth) 5/2/2018	Start of Impoundment SW-050418-JT-05 5/4/2018	Start of Impoundment SW-050618-JT-05 5/6/2018
Parameters	Units					
Fluorotelomer sulfonic acid (4:2)	ng/L	ND (10)	ND (10)	ND (10)	ND (10)	-
N-Ethyl perfluorooctane sulfonamidoacetic acid	ng/L	ND (10)	ND (10)	ND (10)	ND (10)	-
N-Methyl-perfluorooctane sulfonamide	ng/L	ND (10)	ND (10)	ND (10)	ND (10)	-
Perfluorhexanoic acid (PFHxA)	ng/L	120	20	30	40	-
Perfluorobutane sulfonic acid (PFBS)	ng/L	110	ND (10)	ND (10)	10	-
Perfluorobutanoic acid (PFBA)	ng/L	80	ND (20)	20	30	-
Perfluorodecanesulfonic acid (PFDS)	ng/L	ND (10)	ND (10)	ND (10)	ND (10)	-
Perfluorodecanoic acid (PFDA)	ng/L	ND (10)	ND (10)	ND (10)	ND (10)	-
Perfluorododecanoic acid (PFDoA)	ng/L	ND (10)	ND (10)	ND (10)	ND (10)	-
Perfluoroheptane sulfonic acid (PFHpS)	ng/L	ND (10)	ND (10)	ND (10)	ND (10)	-
Perfluoroheptanoic acid (PFHpA)	ng/L	30	ND (10)	10	10	-
Perfluorohexane sulfonic acid (PFHxS)	ng/L	370	ND (10)	20	40	-
Perfluorohexane sulfonic acid (PFHxS) - Branched	ng/L	70	ND (10)	ND (10)	ND (10)	-
Perfluorohexane sulfonic acid (PFHxS) - Linear	ng/L	300	ND (10)	20	30	-
Perfluorononane sulfonic acid (PFNS)	ng/L	ND (10)	ND (10)	ND (10)	ND (10)	-
Perfluorononanoic acid (PFNA)	ng/L	10	ND (10)	ND (10)	ND (10)	-
Perfluorooctane sulfonamide (FOSA)	ng/L	ND (10)	ND (10)	ND (10)	ND (10)	-
Perfluorooctane sulfonic acid (PFOS)	ng/L	410^{cde}	ND (10)	20^e	40^{ce}	-
Perfluorooctane sulfonic acid (PFOS) - Branched	ng/L	160	ND (10)	ND (10)	10	-
Perfluorooctane sulfonic acid (PFOS) - Linear	ng/L	240	ND (10)	ND (10)	20	-
Perfluorooctanoic acid (PFOA)	ng/L	40^c	ND (10)	ND (10)	20	-
Perfluoropentane sulfonic acid (PFPeS)	ng/L	90	ND (10)	ND (10)	ND (10)	-
Perfluoropentanoic acid (PFPeA)	ng/L	110	20	30	40	-
Perfluorotetradecanoic acid (PFTeA)	ng/L	ND (10)	ND (10)	ND (10)	ND (10)	-
Perfluorotridecanoic acid (PFTrDA)	ng/L	ND (10)	ND (10)	ND (10)	ND (10)	-
Perfluoroundecanoic acid (PFUnA)	ng/L	ND (10)	ND (10)	ND (10)	ND (10)	-
Sodium 1H,1H,2H,2H-perfluorodecane sulfonate (8:2)	ng/L	360	20	10	30	-
Sodium 1H,1H,2H,2H-perfluorooctane sulfonate (6:2)	ng/L	350	110	150	300	-
Metals						
Arsenic	ug/L	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)
Barium	ug/L	47.6	33.2	22.4	23.6	ND (24.7)
Cadmium	ug/L	ND (0.46)	ND (0.46)	ND (0.46)	ND (0.46)	ND (0.46)
Chromium	ug/L	0.63 J	ND (0.50)	0.75 J	ND (0.50)	ND (0.50)
Lead	ug/L	ND (3.0)	3.1 J	ND (3.0)	ND (3.0)	ND (3.0)
Mercury	ug/L	ND (0.062)	ND (0.062)	ND (0.062)	ND (0.062)	ND (0.062)
Selenium	ug/L	ND (6.4)	ND (6.4)	ND (6.4)	ND (6.4)	ND (6.4)
Silver	ug/L	ND (0.27)	ND (0.27)	ND (0.27)	ND (0.27)	ND (0.27)

Table 3
Summary of Analytical Results - Start Of Impoundment
Husky Energy Refinery - Surface Water
Superior, Wisconsin

Sample Location: Start of Impoundment
Sample ID: SW-050818-JT-05
Sample Date: 5/8/2018

Parameters	Units	
Fluorotelomer sulfonic acid (4:2)	ng/L	-
N-Ethyl perfluorooctane sulfonamidoacetic acid	ng/L	-
N-Methyl-perfluorooctane sulfonamide	ng/L	-
Perfluorhexanoic acid (PFHxA)	ng/L	-
Perfluorobutane sulfonic acid (PFBS)	ng/L	-
Perfluorobutanoic acid (PFBA)	ng/L	-
Perfluorodecanesulfonic acid (PFDS)	ng/L	-
Perfluorodecanoic acid (PFDA)	ng/L	-
Perfluorododecanoic acid (PFDoA)	ng/L	-
Perfluoroheptane sulfonic acid (PFHpS)	ng/L	-
Perfluoroheptanoic acid (PFHpA)	ng/L	-
Perfluorohexane sulfonic acid (PFHxS)	ng/L	-
Perfluorohexane sulfonic acid (PFHxS) - Branched	ng/L	-
Perfluorohexane sulfonic acid (PFHxS) - Linear	ng/L	-
Perfluorononane sulfonic acid (PFNS)	ng/L	-
Perfluorononanoic acid (PFNA)	ng/L	-
Perfluorooctane sulfonamide (FOSA)	ng/L	-
Perfluorooctane sulfonic acid (PFOS)	ng/L	-
Perfluorooctane sulfonic acid (PFOS) - Branched	ng/L	-
Perfluorooctane sulfonic acid (PFOS) - Linear	ng/L	-
Perfluorooctanoic acid (PFOA)	ng/L	-
Perfluoropentane sulfonic acid (PFPeS)	ng/L	-
Perfluoropentanoic acid (PFPeA)	ng/L	-
Perfluorotetradecanoic acid (PFTeA)	ng/L	-
Perfluorotridecanoic acid (PFTrDA)	ng/L	-
Perfluoroundecanoic acid (PFUnA)	ng/L	-
Sodium 1H,1H,2H,2H-perfluorodecane sulfonate (8:2)	ng/L	-
Sodium 1H,1H,2H,2H-perfluorooctane sulfonate (6:2)	ng/L	-
Metals		
Arsenic	ug/L	ND (5.2)
Barium	ug/L	ND (47.8)
Cadmium	ug/L	ND (0.46)
Chromium	ug/L	ND (0.50)
Lead	ug/L	ND (3.0)
Mercury	ug/L	ND (0.062)
Selenium	ug/L	ND (6.4)
Silver	ug/L	ND (0.27)

Table 3
Summary of Analytical Results - Start Of Impoundment
Husky Energy Refinery - Surface Water
Superior, Wisconsin

Sample Location: Sample ID: Sample Date:	Start of Impoundment SW-042918-KJ-06 4/29/2018	Start of Impoundment SW-043018-JT-05 4/30/2018	Start of Impoundment SW-050218-RE-06 5/2/2018	Start of Impoundment SW-050218-RE-07 (depth) 5/2/2018	Start of Impoundment SW-050418-JT-05 5/4/2018	Start of Impoundment SW-050618-JT-05 5/6/2018
Parameters	Units					
Petroleum Hydrocarbons						
Total Petroleum Hydrocarbons - Gasoline Range Organics	ug/L	ND (8.9)	ND (8.9)	ND (8.9)	ND (8.9)	ND (8.9)
Total Petroleum Hydrocarbons (C10-C28) DRO	mg/L	5.7	ND (0.14)	ND (0.081)	ND (0.076)	0.098
Total Petroleum Hydrocarbons (C24-C36) Motor Oil	mg/L	5.0	0.15	0.080	0.073	0.13
General Chemistry						
Oil and grease	mg/L	1.9 J	ND (1.4)	ND (1.4)	ND (1.4)	ND (1.5)
Sulfate	mg/L	6.8	13.3	11.3	11.2	9.7

- Notes:
- mg/L - milligrams per litre
 - ng/L - nanogram per liter
 - ug/L - micrograms per litre
 - ND (0.25) - not detected at the associated reporting limit
 - J - estimated concentration
 - ^a - Selected aquatic life protection surface water screening criteria (reg or permit)
 - ^b - selected Human Health surface water screening criteria (reg or permit)
 - ^c - Minnesota Department of Health. Human Health-Based Water Guidance, Drinking water health-based values (HBV)
 - ^d - USEPA 2016. Drinking Water Health Advisory
 - ^e - Rule 57 Water Quality Values for Surface Water Assessment, Section Michigan Department of Environmental Quality (DEQ) Non-drink values
- 90 - concentration exceeds the indicated standard

Table 3
Summary of Analytical Results - Start Of Impoundment
Husky Energy Refinery - Surface Water
Superior, Wisconsin

Sample Location: Start of Impoundment
Sample ID: SW-050818-JT-05
Sample Date: 5/8/2018

Parameters	Units	
Petroleum Hydrocarbons		
Total Petroleum Hydrocarbons - Gasoline Range Organics	ug/L	11.7 J
Total Petroleum Hydrocarbons (C10-C28) DRO	mg/L	ND (0.11)
Total Petroleum Hydrocarbons (C24-C36) Motor Oil	mg/L	0.10
General Chemistry		
Oil and grease	mg/L	ND (1.4)
Sulfate	mg/L	4.0

- Notes:
- mg/L - milligrams per litre
 - ng/L - nanogram per liter
 - ug/L - micrograms per litre
 - ND (0.25) - not detected at the associated reporting limit
 - J - estimated concentration
 - ^a - Selected aquatic life protection surface water screening criteria (reg or permit)
 - ^b - selected Human Health surface water screening criteria (reg or permit)
 - ^c - Minnesota Department of Health. Human Health-Based Water Guidance, Drinking water health-based values (HBV)
 - ^d - USEPA 2016. Drinking Water Health Advisory
 - ^e - Rule 57 Water Quality Values for Surface Water Assessment, Section Michigan Department of Environmental Quality (DEQ) Non-drink values
- 90 - concentration exceeds the indicated standard

Table 4
Summary of Analytical Results - 21st Street Weir Upstream
Husky Energy Refinery - Surface Water
Superior, Wisconsin

Sample Location:	21st Street Weir Upstream	21st Street Weir Upstream	21st Street Weir Upstream	21st Street Weir Upstream	21st Street Weir Upstream
Sample ID:	SW-042918-KJ-05	SW-043018-JT-04	SW-050218-RE-04	SW-050218-RE-05 (depth)	SW-050418-JT-04
Sample Date:	4/29/2018	4/30/2018	5/2/2018	5/2/2018	5/4/2018
Parameters	Units				
Volatiles					
1,1,1,2-Tetrachloroethane	ug/L	ND (0.14)	ND (0.14)	ND (0.14)	ND (0.14)
1,1,1-Trichloroethane	ug/L	ND (0.15)	ND (0.15)	ND (0.15)	ND (0.15)
1,1,2,2-Tetrachloroethane	ug/L	ND (0.19)	ND (0.19)	ND (0.19)	ND (0.19)
1,1,2-Trichloroethane	ug/L	ND (0.22)	ND (0.22)	ND (0.22)	ND (0.22)
1,1-Dichloroethane	ug/L	ND (0.14)	ND (0.14)	ND (0.14)	ND (0.14)
1,1-Dichloroethene	ug/L	ND (0.18)	ND (0.18)	ND (0.18)	ND (0.18)
1,1-Dichloropropene	ug/L	ND (0.18)	ND (0.18)	ND (0.18)	ND (0.18)
1,2,3-Trichlorobenzene	ug/L	ND (0.14)	ND (0.14)	ND (0.14)	ND (0.14)
1,2,3-Trichloropropane	ug/L	ND (0.66)	ND (0.66)	ND (0.66)	ND (0.66)
1,2,4-Trichlorobenzene	ug/L	ND (0.18)	ND (0.18)	ND (0.18)	ND (0.18)
1,2,4-Trimethylbenzene	ug/L	3.2	0.99 J	ND (0.14)	ND (0.14)
1,2-Dibromo-3-chloropropane (DBCP)	ug/L	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)
1,2-Dibromoethane (Ethylene dibromide)	ug/L	ND (0.24)	ND (0.24)	ND (0.24)	ND (0.24)
1,2-Dichlorobenzene	ug/L	ND (0.21)	ND (0.21)	ND (0.21)	ND (0.21)
1,2-Dichloroethane	ug/L	ND (0.32)	ND (0.32)	ND (0.32)	ND (0.32)
1,2-Dichloropropane	ug/L	ND (0.62)	ND (0.62)	ND (0.62)	ND (0.62)
1,3,5-Trimethylbenzene	ug/L	1.1	0.84 J	ND (0.18)	ND (0.18)
1,3-Dichlorobenzene	ug/L	ND (0.16)	ND (0.16)	ND (0.16)	ND (0.16)
1,3-Dichloropropane	ug/L	ND (0.13)	ND (0.13)	ND (0.13)	ND (0.13)
1,4-Dichlorobenzene	ug/L	ND (0.10)	ND (0.10)	ND (0.10)	ND (0.10)
2,2-Dichloropropane	ug/L	ND (0.40)	ND (0.40)	ND (0.40)	ND (0.40)
2-Butanone (Methyl ethyl ketone) (MEK)	ug/L	ND (2.4)	ND (2.4)	ND (2.4)	ND (2.4)
2-Chlorotoluene	ug/L	ND (0.20)	ND (0.20)	ND (0.20)	ND (0.20)
2-Phenylbutane (sec-Butylbenzene)	ug/L	0.13 J	ND (0.12)	ND (0.12)	ND (0.12)
4-Chlorotoluene	ug/L	ND (0.13)	ND (0.13)	ND (0.13)	ND (0.13)
4-Methyl-2-pentanone (Methyl isobutyl ketone) (MIBK)	ug/L	ND (0.55)	ND (0.55)	ND (0.55)	ND (0.55)
Acetone	ug/L	8.9 J	ND (8.8)	ND (8.8)	ND (8.8)
Allyl chloride	ug/L	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)
Benzene	ug/L	5.8	2.5	ND (0.34)	ND (0.34)
Bromobenzene	ug/L	ND (0.16)	ND (0.16)	ND (0.16)	ND (0.16)
Bromodichloromethane	ug/L	ND (0.20)	ND (0.20)	ND (0.20)	ND (0.20)
Bromoform	ug/L	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)
Bromomethane (Methyl bromide)	ug/L	ND (1.5)	ND (1.5)	ND (1.5)	ND (1.5)
Carbon tetrachloride	ug/L	ND (0.20)	ND (0.20)	ND (0.20)	ND (0.20)
Chlorobenzene	ug/L	ND (0.14)	ND (0.14)	ND (0.14)	ND (0.14)
Chlorobromomethane	ug/L	ND (0.38)	ND (0.38)	ND (0.38)	ND (0.38)
Chloroethane	ug/L	ND (0.44)	ND (0.44)	ND (0.44)	ND (0.44)
Chloroform (Trichloromethane)	ug/L	ND (0.46)	ND (0.46)	ND (0.46)	ND (0.46)
Chloromethane (Methyl chloride)	ug/L	ND (1.1)	ND (1.1)	ND (1.1)	ND (1.1)
cis-1,2-Dichloroethene	ug/L	ND (0.20)	ND (0.20)	ND (0.20)	ND (0.20)
cis-1,3-Dichloropropene	ug/L	ND (0.12)	ND (0.12)	ND (0.12)	ND (0.12)
Cymene (p-Isopropyltoluene)	ug/L	0.80 J	0.70 J	0.43 J	0.40 J
Dibromochloromethane	ug/L	ND (0.13)	ND (0.13)	ND (0.13)	ND (0.13)
Dibromomethane	ug/L	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)
Dichlorodifluoromethane (CFC-12)	ug/L	ND (0.31)	ND (0.31)	ND (0.31)	ND (0.31)

Table 4
Summary of Analytical Results - 21st Street Weir Upstream
Husky Energy Refinery - Surface Water
Superior, Wisconsin

Sample Location:	21st Street Weir Upstream	21st Street Weir Upstream	21st Street Weir Upstream	
Sample ID:	SW-050618-JT-04	SW-050818-JT-04	DUP-050818-JT-01	
Sample Date:	5/6/2018	5/8/2018	5/8/2018	
Parameters	Units		Duplicate	
Volatiles				
1,1,1,2-Tetrachloroethane	ug/L	ND (0.14)	ND (0.14)	ND (0.14)
1,1,1-Trichloroethane	ug/L	ND (0.15)	ND (0.15)	ND (0.15)
1,1,2,2-Tetrachloroethane	ug/L	ND (0.19)	ND (0.19)	ND (0.19)
1,1,2-Trichloroethane	ug/L	ND (0.22)	ND (0.22)	ND (0.22)
1,1-Dichloroethane	ug/L	ND (0.14)	ND (0.14)	ND (0.14)
1,1-Dichloroethene	ug/L	ND (0.18)	ND (0.18)	ND (0.18)
1,1-Dichloropropene	ug/L	ND (0.18)	ND (0.18)	ND (0.18)
1,2,3-Trichlorobenzene	ug/L	ND (0.14)	ND (0.14)	ND (0.14)
1,2,3-Trichloropropane	ug/L	ND (0.66)	ND (0.66)	ND (0.66)
1,2,4-Trichlorobenzene	ug/L	ND (0.18)	ND (0.18)	ND (0.18)
1,2,4-Trimethylbenzene	ug/L	ND (0.14)	ND (0.14)	ND (0.14)
1,2-Dibromo-3-chloropropane (DBCP)	ug/L	ND (1.0)	ND (1.0)	ND (1.0)
1,2-Dibromoethane (Ethylene dibromide)	ug/L	ND (0.24)	ND (0.24)	ND (0.24)
1,2-Dichlorobenzene	ug/L	ND (0.21)	ND (0.21)	ND (0.21)
1,2-Dichloroethane	ug/L	ND (0.32)	ND (0.32)	ND (0.32)
1,2-Dichloropropane	ug/L	ND (0.62)	ND (0.62)	ND (0.62)
1,3,5-Trimethylbenzene	ug/L	ND (0.18)	ND (0.18)	ND (0.18)
1,3-Dichlorobenzene	ug/L	ND (0.16)	ND (0.16)	ND (0.16)
1,3-Dichloropropane	ug/L	ND (0.13)	ND (0.13)	ND (0.13)
1,4-Dichlorobenzene	ug/L	ND (0.10)	ND (0.10)	ND (0.10)
2,2-Dichloropropane	ug/L	ND (0.40)	ND (0.40)	ND (0.40)
2-Butanone (Methyl ethyl ketone) (MEK)	ug/L	ND (2.4)	ND (2.4)	ND (2.4)
2-Chlorotoluene	ug/L	ND (0.20)	ND (0.20)	ND (0.20)
2-Phenylbutane (sec-Butylbenzene)	ug/L	ND (0.12)	ND (0.12)	ND (0.12)
4-Chlorotoluene	ug/L	ND (0.13)	ND (0.13)	ND (0.13)
4-Methyl-2-pentanone (Methyl isobutyl ketone) (MIBK)	ug/L	ND (0.55)	ND (0.55)	ND (0.55)
Acetone	ug/L	ND (8.8)	ND (8.8)	ND (8.8)
Allyl chloride	ug/L	ND (1.0)	ND (1.0)	ND (1.0)
Benzene	ug/L	ND (0.34)	ND (0.34)	ND (0.34)
Bromobenzene	ug/L	ND (0.16)	ND (0.16)	ND (0.16)
Bromodichloromethane	ug/L	ND (0.20)	ND (0.20)	ND (0.20)
Bromoform	ug/L	ND (1.0)	ND (1.0)	ND (1.0)
Bromomethane (Methyl bromide)	ug/L	ND (1.5)	ND (1.5)	ND (1.5)
Carbon tetrachloride	ug/L	ND (0.20)	ND (0.20)	ND (0.20)
Chlorobenzene	ug/L	ND (0.14)	ND (0.14)	ND (0.14)
Chlorobromomethane	ug/L	ND (0.38)	ND (0.38)	ND (0.38)
Chloroethane	ug/L	ND (0.44)	ND (0.44)	ND (0.44)
Chloroform (Trichloromethane)	ug/L	ND (0.46)	ND (0.46)	ND (0.46)
Chloromethane (Methyl chloride)	ug/L	ND (1.1)	ND (1.1)	ND (1.1)
cis-1,2-Dichloroethene	ug/L	ND (0.20)	ND (0.20)	ND (0.20)
cis-1,3-Dichloropropene	ug/L	ND (0.12)	ND (0.12)	ND (0.12)
Cymene (p-Isopropyltoluene)	ug/L	ND (0.14)	ND (0.14)	ND (0.14)
Dibromochloromethane	ug/L	ND (0.13)	ND (0.13)	ND (0.13)
Dibromomethane	ug/L	ND (0.50)	ND (0.50)	ND (0.50)
Dichlorodifluoromethane (CFC-12)	ug/L	ND (0.31)	ND (0.31)	ND (0.31)

Table 4
Summary of Analytical Results - 21st Street Weir Upstream
Husky Energy Refinery - Surface Water
Superior, Wisconsin

Sample Location: Sample ID: Sample Date:	21st Street Weir Upstream SW-042918-KJ-05 4/29/2018	21st Street Weir Upstream SW-043018-JT-04 4/30/2018	21st Street Weir Upstream SW-050218-RE-04 5/2/2018	21st Street Weir Upstream SW-050218-RE-05 (depth) 5/2/2018	21st Street Weir Upstream SW-050418-JT-04 5/4/2018
Parameters	Units				
Dichlorofluoromethane	ug/L	ND (0.38)	ND (0.38)	ND (0.38)	ND (0.38)
Ethyl ether	ug/L	ND (1.3)	ND (1.3)	ND (1.3)	ND (1.3)
Ethylbenzene	ug/L	0.81 J	0.20 J	ND (0.14)	ND (0.14)
Hexachlorobutadiene	ug/L	ND (0.48)	ND (0.48)	ND (0.48)	ND (0.48)
Isopropyl benzene	ug/L	0.42 J	ND (0.17)	ND (0.17)	ND (0.17)
Methyl tert butyl ether (MTBE)	ug/L	ND (0.40)	ND (0.40)	ND (0.40)	ND (0.40)
Methylene chloride	ug/L	ND (1.2)	ND (1.2)	ND (1.2)	ND (1.2)
Naphthalene	ug/L	1.8 J	1.1 J	ND (0.42)	ND (0.42)
N-Butylbenzene	ug/L	0.20 J	ND (0.13)	ND (0.13)	ND (0.13)
N-Propylbenzene	ug/L	0.24 J	ND (0.15)	ND (0.15)	ND (0.15)
Styrene	ug/L	ND (0.14)	ND (0.14)	ND (0.14)	0.68
tert-Butylbenzene	ug/L	ND (0.15)	ND (0.15)	ND (0.15)	ND (0.15)
Tetrachloroethene	ug/L	ND (0.16)	ND (0.16)	ND (0.16)	ND (0.16)
Tetrahydrofuran	ug/L	ND (4.3)	ND (4.3)	ND (4.3)	ND (4.3)
Toluene	ug/L	7.3	3.3	ND (0.17)	0.20 J
trans-1,2-Dichloroethene	ug/L	ND (0.21)	ND (0.21)	ND (0.21)	ND (0.21)
trans-1,3-Dichloropropene	ug/L	ND (0.14)	ND (0.14)	ND (0.14)	ND (0.14)
Trichloroethene	ug/L	ND (0.18)	ND (0.18)	ND (0.18)	ND (0.18)
Trichlorofluoromethane (CFC-11)	ug/L	ND (0.13)	ND (0.13)	ND (0.13)	ND (0.13)
Trifluorotrchloroethane (CFC-113)	ug/L	ND (0.28)	ND (0.28)	ND (0.28)	ND (0.28)
Vinyl chloride	ug/L	ND (0.096)	ND (0.096)	ND (0.096)	ND (0.096)
Xylenes (total)	ug/L	5.7	1.3 J	ND (0.24)	ND (0.24)
Semi-Volatiles					
1,2,4-Trichlorobenzene	ug/L	ND (4.4)	ND (43.9)	ND (21.0)	ND (21.6)
1,2-Dichlorobenzene	ug/L	ND (3.7)	ND (36.8)	ND (17.6)	ND (18.1)
1,2-Diphenylhydrazine	ug/L	ND (1.4)	ND (13.4)	ND (6.4)	ND (6.6)
1,3-Dichlorobenzene	ug/L	ND (4.4)	ND (43.2)	ND (20.8)	ND (21.3)
1,4-Dichlorobenzene	ug/L	ND (3.6)	ND (35.6)	ND (17.1)	ND (17.5)
1-Methylnaphthalene	ug/L	3.8 J	ND (21.9)	ND (10.5)	ND (10.8)
2,2'-Oxybis(1-chloropropane) (bis(2-Chloroisopropyl) ether)	ug/L	ND (1.4)	ND (14.2)	ND (6.8)	ND (7.0)
2,4,5-Trichlorophenol	ug/L	ND (1.2)	ND (11.5)	ND (5.5)	ND (5.6)
2,4,6-Trichlorophenol	ug/L	ND (1.2)	ND (11.5)	ND (5.5)	ND (5.6)
2,4-Dichlorophenol	ug/L	ND (1.6)	ND (16.3)	ND (7.8)	ND (8.0)
2,4-Dimethylphenol	ug/L	ND (3.0)	ND (29.6)	ND (14.2)	ND (14.6)
2,4-Dinitrophenol	ug/L	ND (2.6)	ND (25.6)	ND (12.3)	ND (12.6)
2,4-Dinitrotoluene	ug/L	ND (1.4)	ND (14.0)	ND (6.7)	ND (6.9)
2,6-Dinitrotoluene	ug/L	ND (0.67)	ND (6.7)	ND (3.2)	ND (3.3)
2-Chloronaphthalene	ug/L	ND (2.3)	ND (23.2)	ND (11.2)	ND (11.4)
2-Chlorophenol	ug/L	ND (1.2)	ND (11.8)	ND (5.6)	ND (5.8)
2-Methylnaphthalene	ug/L	3.6 J	ND (26.1)	ND (12.6)	ND (12.9)
2-Methylphenol	ug/L	ND (2.0)	ND (19.8)	ND (9.5)	ND (9.7)
2-Nitroaniline	ug/L	ND (1.6)	ND (15.9)	ND (7.6)	ND (7.8)
2-Nitrophenol	ug/L	ND (1.8)	ND (17.5)	ND (8.4)	ND (8.6)
3&4-Methylphenol	ug/L	ND (1.1)	ND (10.7)	ND (5.2)	ND (5.3)
3,3'-Dichlorobenzidine	ug/L	ND (1.3)	ND (12.6)	ND (6.0)	ND (6.2)

Table 4
Summary of Analytical Results - 21st Street Weir Upstream
Husky Energy Refinery - Surface Water
Superior, Wisconsin

Sample Location:	21st Street Weir Upstream	21st Street Weir Upstream	21st Street Weir Upstream
Sample ID:	SW-050618-JT-04	SW-050818-JT-04	DUP-050818-JT-01
Sample Date:	5/6/2018	5/8/2018	5/8/2018
Parameters	Units		Duplicate
Dichlorofluoromethane	ug/L	ND (0.38)	ND (0.38)
Ethyl ether	ug/L	ND (1.3)	ND (1.3)
Ethylbenzene	ug/L	ND (0.14)	ND (0.14)
Hexachlorobutadiene	ug/L	ND (0.48)	ND (0.48)
Isopropyl benzene	ug/L	ND (0.17)	ND (0.17)
Methyl tert butyl ether (MTBE)	ug/L	ND (0.40)	ND (0.40)
Methylene chloride	ug/L	ND (1.2)	ND (1.2)
Naphthalene	ug/L	ND (0.42)	ND (0.42)
N-Butylbenzene	ug/L	ND (0.13)	ND (0.13)
N-Propylbenzene	ug/L	ND (0.15)	ND (0.15)
Styrene	ug/L	ND (0.14)	ND (0.14)
tert-Butylbenzene	ug/L	ND (0.15)	ND (0.15)
Tetrachloroethene	ug/L	ND (0.16)	ND (0.16)
Tetrahydrofuran	ug/L	ND (4.3)	ND (4.3)
Toluene	ug/L	ND (0.17)	ND (0.56)
trans-1,2-Dichloroethene	ug/L	ND (0.21)	ND (0.21)
trans-1,3-Dichloropropene	ug/L	ND (0.14)	ND (0.14)
Trichloroethene	ug/L	ND (0.18)	ND (0.18)
Trichlorofluoromethane (CFC-11)	ug/L	ND (0.13)	ND (0.13)
Trifluorotrchloroethane (CFC-113)	ug/L	ND (0.28)	ND (0.28)
Vinyl chloride	ug/L	ND (0.096)	ND (0.096)
Xylenes (total)	ug/L	ND (0.24)	ND (0.24)
Semi-Volatiles			
1,2,4-Trichlorobenzene	ug/L	-	-
1,2-Dichlorobenzene	ug/L	-	-
1,2-Diphenylhydrazine	ug/L	-	-
1,3-Dichlorobenzene	ug/L	-	-
1,4-Dichlorobenzene	ug/L	-	-
1-Methylnaphthalene	ug/L	-	-
2,2'-Oxybis(1-chloropropane) (bis(2-Chloroisopropyl) ether)	ug/L	-	-
2,4,5-Trichlorophenol	ug/L	-	-
2,4,6-Trichlorophenol	ug/L	-	-
2,4-Dichlorophenol	ug/L	-	-
2,4-Dimethylphenol	ug/L	-	-
2,4-Dinitrophenol	ug/L	-	-
2,4-Dinitrotoluene	ug/L	-	-
2,6-Dinitrotoluene	ug/L	-	-
2-Chloronaphthalene	ug/L	-	-
2-Chlorophenol	ug/L	-	-
2-Methylnaphthalene	ug/L	-	-
2-Methylphenol	ug/L	-	-
2-Nitroaniline	ug/L	-	-
2-Nitrophenol	ug/L	-	-
3&4-Methylphenol	ug/L	-	-
3,3'-Dichlorobenzidine	ug/L	-	-

Table 4
Summary of Analytical Results - 21st Street Weir Upstream
Husky Energy Refinery - Surface Water
Superior, Wisconsin

Sample Location:	21st Street Weir Upstream	21st Street Weir Upstream	21st Street Weir Upstream	21st Street Weir Upstream	21st Street Weir Upstream	
Sample ID:	SW-042918-KJ-05	SW-043018-JT-04	SW-050218-RE-04	SW-050218-RE-05 (depth)	SW-050418-JT-04	
Sample Date:	4/29/2018	4/30/2018	5/2/2018	5/2/2018	5/4/2018	
Parameters	Units					
3-Nitroaniline	ug/L	ND (1.3)	ND (12.6)	ND (6.0)	ND (6.2)	-
4,6-Dinitro-2-methylphenol	ug/L	ND (1.6)	ND (15.8)	ND (7.6)	ND (7.8)	-
4-Bromophenyl phenyl ether	ug/L	ND (2.4)	ND (24.1)	ND (11.6)	ND (11.8)	-
4-Chloro-3-methylphenol	ug/L	ND (1.6)	ND (15.5)	ND (7.4)	ND (7.6)	-
4-Chloroaniline	ug/L	ND (2.0)	ND (19.9)	ND (9.6)	ND (9.8)	-
4-Chlorophenyl phenyl ether	ug/L	ND (1.6)	ND (15.9)	ND (7.6)	ND (7.8)	-
4-Nitroaniline	ug/L	ND (2.2)	ND (21.4)	ND (10.2)	ND (10.5)	-
4-Nitrophenol	ug/L	ND (2.7)	ND (26.9)	ND (12.9)	ND (13.2)	-
Acenaphthene	ug/L	ND (2.0)	ND (19.6)	ND (9.4)	ND (9.6)	-
Acenaphthylene	ug/L	ND (1.8)	ND (17.7)	ND (8.5)	ND (8.7)	-
Anthracene	ug/L	ND (1.4)	ND (13.4)	ND (6.4)	ND (6.6)	-
Benzo(a)anthracene	ug/L	ND (1.3)	ND (13.2)	ND (6.4)	ND (6.5)	-
Benzo(a)pyrene	ug/L	ND (1.8)	ND (17.9)	ND (8.6)	ND (8.8)	-
Benzo(b)fluoranthene	ug/L	ND (1.8)	ND (18.0)	ND (8.6)	ND (8.9)	-
Benzo(g,h,i)perylene	ug/L	ND (2.2)	ND (21.9)	ND (10.5)	ND (10.8)	-
Benzo(k)fluoranthene	ug/L	ND (1.9)	ND (18.3)	ND (8.8)	ND (9.0)	-
bis(2-Chloroethoxy)methane	ug/L	ND (1.4)	ND (14.1)	ND (6.8)	ND (6.9)	-
bis(2-Chloroethyl)ether	ug/L	ND (1.2)	ND (11.8)	ND (5.6)	ND (5.8)	-
bis(2-Ethylhexyl)phthalate (DEHP)	ug/L	ND (4.8)	ND (47.8)	ND (23.0)	ND (23.5)	-
Butyl benzylphthalate (BBP)	ug/L	ND (1.9)	ND (18.5)	ND (8.9)	ND (9.1)	-
Carbazole	ug/L	ND (1.2)	ND (11.5)	ND (5.5)	ND (5.6)	-
Chrysene	ug/L	ND (1.8)	ND (18.2)	ND (8.8)	ND (9.0)	-
Dibenz(a,h)anthracene	ug/L	ND (2.3)	ND (22.5)	ND (10.8)	ND (11.1)	-
Dibenzofuran	ug/L	ND (1.7)	ND (16.8)	ND (8.0)	ND (8.3)	-
Diethyl phthalate	ug/L	ND (1.5)	ND (14.7)	ND (7.0)	ND (7.2)	-
Dimethyl phthalate	ug/L	ND (1.3)	ND (13.1)	ND (6.3)	ND (6.5)	-
Di-n-butylphthalate (DBP)	ug/L	ND (1.4)	ND (14.1)	ND (6.8)	ND (6.9)	-
Di-n-octyl phthalate (DnOP)	ug/L	ND (2.2)	ND (21.4)	ND (10.2)	ND (10.5)	-
Fluoranthene	ug/L	ND (1.6)	ND (15.4)	ND (7.4)	ND (7.6)	-
Fluorene	ug/L	ND (1.5)	ND (15.0)	ND (7.2)	ND (7.4)	-
Hexachlorobenzene	ug/L	ND (2.3)	ND (22.5)	ND (10.8)	ND (11.1)	-
Hexachlorobutadiene	ug/L	ND (3.4)	ND (33.2)	ND (16.0)	ND (16.4)	-
Hexachloroethane	ug/L	ND (3.6)	ND (35.7)	ND (17.2)	ND (17.6)	-
Indeno(1,2,3-cd)pyrene	ug/L	ND (2.1)	ND (21.0)	ND (10.1)	ND (10.4)	-
Isophorone	ug/L	ND (1.2)	ND (12.1)	ND (5.8)	ND (5.9)	-
Naphthalene	ug/L	ND (2.5)	ND (24.8)	ND (11.9)	ND (12.2)	-
Nitrobenzene	ug/L	ND (1.4)	ND (13.4)	ND (6.4)	ND (6.6)	-
N-Nitrosodimethylamine	ug/L	ND (1.1)	ND (10.7)	ND (5.2)	ND (5.3)	-
N-Nitrosodi-n-propylamine	ug/L	ND (1.1)	ND (10.5)	ND (5.0)	ND (5.2)	-
N-Nitrosodiphenylamine	ug/L	ND (1.1)	ND (11.4)	ND (5.4)	ND (5.6)	-
Pentachlorophenol	ug/L	ND (2.8)	ND (27.3)	ND (13.1)	ND (13.4)	-
Phenanthrene	ug/L	1.2 J	ND (10.3)	ND (4.9)	ND (5.1)	-
Phenol	ug/L	ND (1.2)	ND (12.1)	ND (5.8)	ND (5.9)	-
Pyrene	ug/L	ND (1.6)	ND (15.5)	ND (7.4)	ND (7.6)	-

PFAS

Table 4
Summary of Analytical Results - 21st Street Weir Upstream
Husky Energy Refinery - Surface Water
Superior, Wisconsin

Sample Location:	21st Street Weir Upstream	21st Street Weir Upstream	21st Street Weir Upstream
Sample ID:	SW-050618-JT-04	SW-050818-JT-04	DUP-050818-JT-01
Sample Date:	5/6/2018	5/8/2018	5/8/2018 Duplicate
Parameters	Units		
3-Nitroaniline	ug/L	-	-
4,6-Dinitro-2-methylphenol	ug/L	-	-
4-Bromophenyl phenyl ether	ug/L	-	-
4-Chloro-3-methylphenol	ug/L	-	-
4-Chloroaniline	ug/L	-	-
4-Chlorophenyl phenyl ether	ug/L	-	-
4-Nitroaniline	ug/L	-	-
4-Nitrophenol	ug/L	-	-
Acenaphthene	ug/L	-	-
Acenaphthylene	ug/L	-	-
Anthracene	ug/L	-	-
Benzo(a)anthracene	ug/L	-	-
Benzo(a)pyrene	ug/L	-	-
Benzo(b)fluoranthene	ug/L	-	-
Benzo(g,h,i)perylene	ug/L	-	-
Benzo(k)fluoranthene	ug/L	-	-
bis(2-Chloroethoxy)methane	ug/L	-	-
bis(2-Chloroethyl)ether	ug/L	-	-
bis(2-Ethylhexyl)phthalate (DEHP)	ug/L	-	-
Butyl benzylphthalate (BBP)	ug/L	-	-
Carbazole	ug/L	-	-
Chrysene	ug/L	-	-
Dibenz(a,h)anthracene	ug/L	-	-
Dibenzofuran	ug/L	-	-
Diethyl phthalate	ug/L	-	-
Dimethyl phthalate	ug/L	-	-
Di-n-butylphthalate (DBP)	ug/L	-	-
Di-n-octyl phthalate (DnOP)	ug/L	-	-
Fluoranthene	ug/L	-	-
Fluorene	ug/L	-	-
Hexachlorobenzene	ug/L	-	-
Hexachlorobutadiene	ug/L	-	-
Hexachloroethane	ug/L	-	-
Indeno(1,2,3-cd)pyrene	ug/L	-	-
Isophorone	ug/L	-	-
Naphthalene	ug/L	-	-
Nitrobenzene	ug/L	-	-
N-Nitrosodimethylamine	ug/L	-	-
N-Nitrosodi-n-propylamine	ug/L	-	-
N-Nitrosodiphenylamine	ug/L	-	-
Pentachlorophenol	ug/L	-	-
Phenanthrene	ug/L	-	-
Phenol	ug/L	-	-
Pyrene	ug/L	-	-

PFAS

Table 4
Summary of Analytical Results - 21st Street Weir Upstream
Husky Energy Refinery - Surface Water
Superior, Wisconsin

Sample Location:	21st Street Weir Upstream	21st Street Weir Upstream	21st Street Weir Upstream	21st Street Weir Upstream	21st Street Weir Upstream	
Sample ID:	SW-042918-KJ-05	SW-043018-JT-04	SW-050218-RE-04	SW-050218-RE-05 (depth)	SW-050418-JT-04	
Sample Date:	4/29/2018	4/30/2018	5/2/2018	5/2/2018	5/4/2018	
Parameters	Units					
Fluorotelomer sulfonic acid (4:2)	ng/L	ND (10)	ND (10)	ND (10)	ND (10)	-
N-Ethyl perfluorooctane sulfonamidoacetic acid	ng/L	ND (10)	ND (10)	ND (10)	ND (10)	-
N-Methyl-perfluorooctane sulfonamide	ng/L	ND (10)	ND (10)	ND (10)	ND (10)	-
Perfluorhexanoic acid (PFHxA)	ng/L	1080	1040	290	220	-
Perfluorobutane sulfonic acid (PFBS)	ng/L	20	30	20	20	-
Perfluorobutanoic acid (PFBA)	ng/L	370	320	110	80	-
Perfluorodecanesulfonic acid (PFDS)	ng/L	ND (10)	ND (10)	ND (10)	ND (10)	-
Perfluorodecanoic acid (PFDA)	ng/L	60	60	20	ND (10)	-
Perfluorododecanoic acid (PFDoA)	ng/L	20	20	ND (10)	ND (10)	-
Perfluoroheptane sulfonic acid (PFHpS)	ng/L	ND (10)	ND (10)	ND (10)	ND (10)	-
Perfluoroheptanoic acid (PFHpA)	ng/L	250	320	70	50	-
Perfluorohexane sulfonic acid (PFHxS)	ng/L	110	250	80	70	-
Perfluorohexane sulfonic acid (PFHxS) - Branched	ng/L	20	40	10	10	-
Perfluorohexane sulfonic acid (PFHxS) - Linear	ng/L	90	210	70	60	-
Perfluorononane sulfonic acid (PFNS)	ng/L	ND (10)	ND (10)	ND (10)	ND (10)	-
Perfluorononanoic acid (PFNA)	ng/L	50	80	20	10	-
Perfluorooctane sulfonamide (FOSA)	ng/L	ND (10)	ND (10)	ND (10)	ND (10)	-
Perfluorooctane sulfonic acid (PFOS)	ng/L	120^{cde}	190^{cde}	100^{cde}	70^{ce}	-
Perfluorooctane sulfonic acid (PFOS) - Branched	ng/L	50	130	40	30	-
Perfluorooctane sulfonic acid (PFOS) - Linear	ng/L	60	80	50	40	-
Perfluorooctanoic acid (PFOA)	ng/L	560^{cd}	870^{cd}	150^{cd}	100^{cd}	-
Perfluoropentane sulfonic acid (PFPeS)	ng/L	20	40	20	10	-
Perfluoropentanoic acid (PFPeA)	ng/L	400	380	140	100	-
Perfluorotetradecanoic acid (PFTeA)	ng/L	ND (10) I	ND (10) I	ND (10)	ND (10)	-
Perfluorotridecanoic acid (PFTrDA)	ng/L	ND (10)	ND (10)	ND (10)	ND (10)	-
Perfluoroundecanoic acid (PFUnA)	ng/L	10	10	ND (10)	ND (10)	-
Sodium 1H,1H,2H,2H-perfluorodecane sulfonate (8:2)	ng/L	1850	2230	520	360	-
Sodium 1H,1H,2H,2H-perfluorooctane sulfonate (6:2)	ng/L	9710	20118 E	2660 E	2060 E	-
Metals						
Arsenic	ug/L	ND (5.2)	ND (5.2)	5.6 J^b	5.3 J^b	ND (5.2)
Barium	ug/L	46.7	53.5	41.4	37.0	ND (44.3)
Cadmium	ug/L	ND (0.46)	ND (0.46)	ND (0.46)	ND (0.46)	ND (0.46)
Chromium	ug/L	0.53 J	0.89 J	ND (0.50)	0.56 J	ND (0.50)
Lead	ug/L	ND (3.0)	ND (3.0)	ND (3.0)	ND (3.0)	ND (3.0)
Mercury	ug/L	ND (0.062)	ND (0.062)	ND (0.062)	ND (0.062)	ND (0.062)
Selenium	ug/L	ND (6.4)	ND (6.4)	ND (6.4)	ND (6.4)	ND (6.4)
Silver	ug/L	ND (0.27)	ND (0.27)	ND (0.27)	ND (0.27)	ND (0.27)
Petroleum Hydrocarbons						
Total Petroleum Hydrocarbons - Gasoline Range Organics	ug/L	141	111	31.7 J	21.8 J	37.3 J
Total Petroleum Hydrocarbons (C10-C28) DRO	mg/L	2.7	2.7	0.30	0.29	0.30
Total Petroleum Hydrocarbons (C24-C36) Motor Oil	mg/L	0.55	0.95	0.16	0.17	0.18
General Chemistry						
Oil and grease	mg/L	ND (1.4)	2.8 J	ND (1.4)	ND (1.6)	ND (1.5)

Table 4
Summary of Analytical Results - 21st Street Weir Upstream
Husky Energy Refinery - Surface Water
Superior, Wisconsin

Sample Location:	21st Street Weir Upstream	21st Street Weir Upstream	21st Street Weir Upstream
Sample ID:	SW-050618-JT-04	SW-050818-JT-04	DUP-050818-JT-01
Sample Date:	5/6/2018	5/8/2018	5/8/2018
Parameters	Units		Duplicate
Fluorotelomer sulfonic acid (4:2)	ng/L	-	-
N-Ethyl perfluorooctane sulfonamidoacetic acid	ng/L	-	-
N-Methyl-perfluorooctane sulfonamide	ng/L	-	-
Perfluorhexanoic acid (PFHxA)	ng/L	-	-
Perfluorobutane sulfonic acid (PFBS)	ng/L	-	-
Perfluorobutanoic acid (PFBA)	ng/L	-	-
Perfluorodecanesulfonic acid (PFDS)	ng/L	-	-
Perfluorodecanoic acid (PFDA)	ng/L	-	-
Perfluorododecanoic acid (PFDoA)	ng/L	-	-
Perfluoroheptane sulfonic acid (PFHpS)	ng/L	-	-
Perfluoroheptanoic acid (PFHpA)	ng/L	-	-
Perfluorohexane sulfonic acid (PFHxS)	ng/L	-	-
Perfluorohexane sulfonic acid (PFHxS) - Branched	ng/L	-	-
Perfluorohexane sulfonic acid (PFHxS) - Linear	ng/L	-	-
Perfluorononane sulfonic acid (PFNS)	ng/L	-	-
Perfluorononanoic acid (PFNA)	ng/L	-	-
Perfluorooctane sulfonamide (FOSA)	ng/L	-	-
Perfluorooctane sulfonic acid (PFOS)	ng/L	-	-
Perfluorooctane sulfonic acid (PFOS) - Branched	ng/L	-	-
Perfluorooctane sulfonic acid (PFOS) - Linear	ng/L	-	-
Perfluorooctanoic acid (PFOA)	ng/L	-	-
Perfluoropentane sulfonic acid (PFPeS)	ng/L	-	-
Perfluoropentanoic acid (PFPeA)	ng/L	-	-
Perfluorotetradecanoic acid (PFTeA)	ng/L	-	-
Perfluorotridecanoic acid (PFTrDA)	ng/L	-	-
Perfluoroundecanoic acid (PFUnA)	ng/L	-	-
Sodium 1H,1H,2H,2H-perfluorodecane sulfonate (8:2)	ng/L	-	-
Sodium 1H,1H,2H,2H-perfluorooctane sulfonate (6:2)	ng/L	-	-
Metals			
Arsenic	ug/L	ND (5.2)	ND (5.2)
Barium	ug/L	47.3	ND (53.8)
Cadmium	ug/L	ND (0.46)	ND (0.46)
Chromium	ug/L	ND (0.50)	ND (0.50)
Lead	ug/L	ND (3.0)	ND (3.0)
Mercury	ug/L	ND (0.062)	ND (0.062)
Selenium	ug/L	ND (6.4)	ND (6.4)
Silver	ug/L	ND (0.27)	ND (0.27)
Petroleum Hydrocarbons			
Total Petroleum Hydrocarbons - Gasoline Range Organics	ug/L	ND (52.0)	54.4 J
Total Petroleum Hydrocarbons (C10-C28) DRO	mg/L	0.25	0.28
Total Petroleum Hydrocarbons (C24-C36) Motor Oil	mg/L	0.18	0.15
General Chemistry			
Oil and grease	mg/L	ND (1.5)	ND (1.4)

**Table 4
Summary of Analytical Results - 21st Street Weir Upstream
Husky Energy Refinery - Surface Water
Superior, Wisconsin**

Sample Location: Sample ID: Sample Date:	21st Street Weir Upstream SW-042918-KJ-05 4/29/2018	21st Street Weir Upstream SW-043018-JT-04 4/30/2018	21st Street Weir Upstream SW-050218-RE-04 5/2/2018	21st Street Weir Upstream SW-050218-RE-05 (depth) 5/2/2018	21st Street Weir Upstream SW-050418-JT-04 5/4/2018	
Parameters	Units					
Sulfate	mg/L	17.6	16.5	13.2	12.8	12.3

- Notes:
- mg/L - milligrams per litre
 - ng/L - nanogram per liter
 - ug/L - micrograms per litre
 - ND (0.25) - not detected at the associated reporting limit
 - E - concentration exceeds calibration range
 - I - matrix interference with internal standard
 - J - estimated concentration
 - a - Selected aquatic life protection surface water screening criteria (reg or permit)
 - b - selected Human Health surface water screening criteria (reg or permit)
 - c - Minnesota Department of Health. Human Health-Based Water Guidance, Drinking water health-based values (HBV)
 - d - USEPA 2016. Drinking Water Health Advisory
 - e - Rule 57 Water Quality Values for Surface Water Assessment, Section Michigan Department of Environmental Quality (DEQ) Non-drink values
- 90 - concentration exceeds the indicated standard

Table 4
Summary of Analytical Results - 21st Street Weir Upstream
Husky Energy Refinery - Surface Water
Superior, Wisconsin

Sample Location:	21st Street Weir Upstream	21st Street Weir Upstream	21st Street Weir Upstream	
Sample ID:	SW-050618-JT-04	SW-050818-JT-04	DUP-050818-JT-01	
Sample Date:	5/6/2018	5/8/2018	5/8/2018	
Parameters	Units		Duplicate	
Sulfate	mg/L	10.6	9.5	9.4

- Notes:
- mg/L - milligrams per litre
 - ng/L - nanogram per liter
 - ug/L - micrograms per litre
 - ND (0.25) - not detected at the associated reporting limit
 - E - concentration exceeds calibration range
 - I - matrix interference with internal standard
 - J - estimated concentration
 - ^a - Selected aquatic life protection surface water screening criteria (reg or permit)
 - ^b - selected Human Health surface water screening criteria (reg or permit)
 - ^c - Minnesota Department of Health. Human Health-Based Water Guidance, Drinking water health-based values (HBV)
 - ^d - USEPA 2016. Drinking Water Health Advisory
 - ^e - Rule 57 Water Quality Values for Surface Water Assessment, Section Michigan Department of Environmental Quality (DEQ) Non-drink values
 - 90 - concentration exceeds the indicated standard

Table 5
Summary of Analytical Results - 21st Street
Husky Energy Refinery - Surface Water
Superior, Wisconsin

Sample Location:	21st Street	21st Street	21st Street	21st Street
Sample ID:	21st Street Plunge Pool	21st St Embankment	21st St Embankment	21st St. Embankment
Sample Date:	4/26/2018	4/27/2018	4/28/2018	4/28/2018
Parameters	Units			
Volatiles				
1,1,1,2-Tetrachloroethane	ug/L	ND (0.14)	ND (0.14)	-
1,1,1-Trichloroethane	ug/L	ND (0.15)	ND (0.15)	-
1,1,2,2-Tetrachloroethane	ug/L	ND (0.19)	ND (0.19)	-
1,1,2-Trichloroethane	ug/L	ND (0.22)	ND (0.22)	-
1,1-Dichloroethane	ug/L	ND (0.14)	ND (0.14)	-
1,1-Dichloroethene	ug/L	ND (0.18)	ND (0.18)	-
1,1-Dichloropropene	ug/L	ND (0.18)	ND (0.18)	-
1,2,3-Trichlorobenzene	ug/L	ND (0.14)	ND (0.14)	-
1,2,3-Trichloropropane	ug/L	ND (0.66)	ND (0.66)	-
1,2,4-Trichlorobenzene	ug/L	ND (0.18)	ND (0.18)	-
1,2,4-Trimethylbenzene	ug/L	17.2	15.2	-
1,2-Dibromo-3-chloropropane (DBCP)	ug/L	ND (1.0)	ND (1.0)	-
1,2-Dibromoethane (Ethylene dibromide)	ug/L	ND (0.24)	ND (0.24)	-
1,2-Dichlorobenzene	ug/L	ND (0.21)	ND (0.21)	-
1,2-Dichloroethane	ug/L	ND (0.32)	ND (0.32)	-
1,2-Dichloroethene (total)	ug/L	ND (0.41)	-	-
1,2-Dichloropropane	ug/L	ND (0.62)	ND (0.62)	-
1,3,5-Trimethylbenzene	ug/L	4.0	3.7	-
1,3-Dichlorobenzene	ug/L	ND (0.16)	ND (0.16)	-
1,3-Dichloropropane	ug/L	ND (0.13)	ND (0.13)	-
1,4-Dichlorobenzene	ug/L	ND (0.10)	ND (0.10)	-
2,2-Dichloropropane	ug/L	ND (0.40)	ND (0.40)	-
2-Butanone (Methyl ethyl ketone) (MEK)	ug/L	7.3	7.1	-
2-Chlorotoluene	ug/L	ND (0.20)	ND (0.20)	-
2-Hexanone	ug/L	ND (2.5)	-	-
2-Phenylbutane (sec-Butylbenzene)	ug/L	0.52 J	0.59 J	-
4-Chlorotoluene	ug/L	ND (0.13)	ND (0.13)	-
4-Methyl-2-pentanone (Methyl isobutyl ketone) (MIBK)	ug/L	0.73 J	ND (0.55)	-
Acetone	ug/L	20.7	19.2 J	-
Allyl chloride	ug/L	ND (1.0)	ND (1.0)	-
Benzene	ug/L	55.9	33.7	-
Bromobenzene	ug/L	ND (0.16)	ND (0.16)	-
Bromodichloromethane	ug/L	ND (0.20)	ND (0.20)	-
Bromoform	ug/L	ND (1.0)	ND (1.0)	-
Bromomethane (Methyl bromide)	ug/L	ND (1.5)	ND (1.5)	-
Carbon disulfide	ug/L	ND (0.37)	ND (0.37)	-
Carbon tetrachloride	ug/L	ND (0.20)	ND (0.20)	-
Chlorobenzene	ug/L	ND (0.14)	ND (0.14)	-
Chlorobromomethane	ug/L	ND (0.38)	ND (0.38)	-
Chloroethane	ug/L	ND (0.44)	ND (0.44)	-
Chloroform (Trichloromethane)	ug/L	ND (0.46)	ND (0.46)	-
Chloromethane (Methyl chloride)	ug/L	ND (1.1)	ND (1.1)	-
cis-1,2-Dichloroethene	ug/L	ND (0.20)	ND (0.20)	-
cis-1,3-Dichloropropene	ug/L	ND (0.12)	ND (0.12)	-
Cyclohexane	ug/L	19.2	-	-

Table 5
Summary of Analytical Results - 21st Street
Husky Energy Refinery - Surface Water
Superior, Wisconsin

Sample Location:	21st Street	21st Street	21st Street	21st Street	
Sample ID:	21st Street Plunge Pool	21st St Embankment	21st St Embankment	21st St. Embankment	
Sample Date:	4/26/2018	4/27/2018	4/28/2018	4/28/2018	
Parameters	Units				
Cymene (p-Isopropyltoluene)	ug/L	3.5 J	2.0 J	-	1.4 J
Dibromochloromethane	ug/L	ND (0.13)	ND (0.13)	-	ND (0.13)
Dibromomethane	ug/L	ND (0.50)	ND (0.50)	-	ND (0.50)
Dichlorodifluoromethane (CFC-12)	ug/L	ND (0.31)	ND (0.31)	-	ND (0.31)
Dichlorofluoromethane	ug/L	ND (0.38)	ND (0.38)	-	ND (0.38)
Diisopropyl ether	ug/L	ND (0.12)	-	-	-
Ethyl ether	ug/L	ND (1.3)	ND (1.3)	-	ND (1.3)
Ethylbenzene	ug/L	7.0	4.7	-	2.5
Hexachlorobutadiene	ug/L	ND (0.48)	ND (0.48)	-	ND (0.48)
Isopropyl benzene	ug/L	1.9	2.2	-	1.3
m&p-Xylenes	ug/L	29.5	-	-	-
Methyl tert butyl ether (MTBE)	ug/L	ND (0.40)	ND (0.40)	-	ND (0.40)
Methylene chloride	ug/L	ND (1.2)	ND (1.2)	-	ND (1.2)
Naphthalene	ug/L	12.0	8.2	-	4.9
N-Butylbenzene	ug/L	0.77 J	1.0 J	-	0.56 J
N-Propylbenzene	ug/L	1.7	1.5	-	0.86 J
o-Xylene	ug/L	13.1	-	-	-
Styrene	ug/L	0.33 J	ND (0.14)	-	ND (0.14)
tert-Butylbenzene	ug/L	ND (0.15)	ND (0.15)	-	ND (0.15)
Tetrachloroethene	ug/L	ND (0.16)	ND (0.16)	-	ND (0.16)
Tetrahydrofuran	ug/L	ND (4.3)	ND (4.3)	-	ND (4.3)
Toluene	ug/L	73.9	40.2	-	22.2
trans-1,2-Dichloroethene	ug/L	ND (0.21)	ND (0.21)	-	ND (0.21)
trans-1,3-Dichloropropene	ug/L	ND (0.14)	ND (0.14)	-	ND (0.14)
Trichloroethene	ug/L	1.4	0.61	-	0.37 J
Trichlorofluoromethane (CFC-11)	ug/L	ND (0.13)	ND (0.13)	-	ND (0.13)
Trifluorotrchloroethane (CFC-113)	ug/L	ND (0.28)	ND (0.28)	-	ND (0.28)
Vinyl chloride	ug/L	ND (0.096)	ND (0.096)	-	ND (0.096)
Xylenes (total)	ug/L	42.6	29.0	-	16.5
Semi-Volatiles					
1,2,4-Trichlorobenzene	ug/L	ND (4.3)	ND (217)	ND (40.9)	-
1,2-Dichlorobenzene	ug/L	ND (3.6)	ND (182)	ND (34.3)	-
1,2-Diphenylhydrazine	ug/L	ND (1.3)	ND (66.5)	ND (12.5)	-
1,3-Dichlorobenzene	ug/L	ND (4.2)	ND (214)	ND (40.3)	-
1,4-Dichlorobenzene	ug/L	ND (3.5)	ND (176)	ND (33.2)	-
1-Methylnaphthalene	ug/L	12.0	ND (108)	ND (20.4)	-
2,2'-Oxybis(1-chloropropane) (bis(2-Chloroisopropyl) ether)	ug/L	ND (1.4)	ND (70.1)	ND (13.2)	-
2,4,5-Trichlorophenol	ug/L	ND (1.1)	ND (56.7)	ND (10.7)	-
2,4,6-Trichlorophenol	ug/L	ND (1.1)	ND (56.7)	ND (10.7)	-
2,4-Dichlorophenol	ug/L	ND (1.6)	ND (80.4)	ND (15.1)	-
2,4-Dimethylphenol	ug/L	ND (2.9)	ND (146)	ND (27.6)	-
2,4-Dinitrophenol	ug/L	ND (2.5)	ND (127)	ND (23.9)	-
2,4-Dinitrotoluene	ug/L	ND (1.4)	ND (69.1)	ND (13.0)	-
2,6-Dinitrotoluene	ug/L	ND (0.65)	ND (33.0)	ND (6.2)	-
2-Chloronaphthalene	ug/L	ND (2.3)	ND (115)	ND (21.7)	-

Table 5
Summary of Analytical Results - 21st Street
Husky Energy Refinery - Surface Water
Superior, Wisconsin

Sample Location:	21st Street	21st Street	21st Street	21st Street	
Sample ID:	21st Street Plunge Pool	21st St Embankment	21st St Embankment	21st St. Embankment	
Sample Date:	4/26/2018	4/27/2018	4/28/2018	4/28/2018	
Parameters	Units				
2-Chlorophenol	ug/L	ND (1.1)	ND (58.2)	ND (11.0)	-
2-Methylnaphthalene	ug/L	17.2	ND (129)	ND (24.4)	-
2-Methylphenol	ug/L	5.7 J	ND (97.9)	ND (18.4)	-
2-Nitroaniline	ug/L	ND (1.6)	ND (78.9)	ND (14.9)	-
2-Nitrophenol	ug/L	ND (1.7)	ND (86.6)	ND (16.3)	-
3&4-Methylphenol	ug/L	10.9	ND (53.1)	ND (10.0)	-
3,3'-Dichlorobenzidine	ug/L	ND (1.2)	ND (62.4)	ND (11.7)	-
3-Nitroaniline	ug/L	ND (1.2)	ND (62.4)	ND (11.7)	-
4,6-Dinitro-2-methylphenol	ug/L	ND (1.5)	ND (78.4)	ND (14.8)	-
4-Bromophenyl phenyl ether	ug/L	ND (2.3)	ND (119)	ND (22.4)	-
4-Chloro-3-methylphenol	ug/L	ND (1.5)	ND (76.8)	ND (14.5)	-
4-Chloroaniline	ug/L	ND (1.9)	ND (98.5)	ND (18.5)	-
4-Chlorophenyl phenyl ether	ug/L	ND (1.6)	ND (78.9)	ND (14.9)	-
4-Nitroaniline	ug/L	ND (2.1)	ND (106)	ND (19.9)	-
4-Nitrophenol	ug/L	ND (2.6)	ND (133)	ND (25.0)	-
Acenaphthene	ug/L	ND (1.9)	ND (96.9)	ND (18.3)	-
Acenaphthylene	ug/L	ND (1.7)	ND (87.6)	ND (16.5)	-
Anthracene	ug/L	ND (1.3)	ND (66.5)	ND (12.5)	-
Benzo(a)anthracene	ug/L	ND (1.3)	ND (65.5)	ND (12.3)	-
Benzo(a)pyrene	ug/L	ND (1.7)	ND (88.7)	ND (16.7)	-
Benzo(b)fluoranthene	ug/L	ND (1.8)	ND (89.2)	ND (16.8)	-
Benzo(g,h,i)perylene	ug/L	ND (2.1)	ND (108)	ND (20.4)	-
Benzo(k)fluoranthene	ug/L	ND (1.8)	ND (90.7)	ND (17.1)	-
bis(2-Chloroethoxy)methane	ug/L	ND (1.4)	ND (69.6)	ND (13.1)	-
bis(2-Chloroethyl)ether	ug/L	ND (1.1)	ND (58.2)	ND (11.0)	-
bis(2-Ethylhexyl)phthalate (DEHP)	ug/L	ND (4.7)	ND (237)	ND (44.6)	-
Butyl benzylphthalate (BBP)	ug/L	ND (1.8)	ND (91.8)	ND (17.3)	-
Carbazole	ug/L	ND (1.1)	ND (56.7)	ND (10.7)	-
Chrysene	ug/L	ND (1.8)	ND (90.2)	ND (17.0)	-
Dibenz(a,h)anthracene	ug/L	ND (2.2)	ND (111)	ND (21.0)	-
Dibenzofuran	ug/L	ND (1.6)	ND (83.0)	ND (15.6)	-
Diethyl phthalate	ug/L	ND (1.4)	ND (72.7)	ND (13.7)	-
Dimethyl phthalate	ug/L	ND (1.3)	ND (64.9)	ND (12.2)	-
Di-n-butylphthalate (DBP)	ug/L	ND (1.4)	ND (69.6)	ND (13.1)	-
Di-n-octyl phthalate (DnOP)	ug/L	ND (2.1)	ND (106)	ND (19.9)	-
Fluoranthene	ug/L	ND (1.5)	ND (76.3)	ND (14.4)	-
Fluorene	ug/L	3.1 J	ND (74.2)	ND (14.0)	-
Hexachlorobenzene	ug/L	ND (2.2)	ND (111)	ND (21.0)	-
Hexachlorobutadiene	ug/L	ND (3.2)	ND (164)	ND (31.0)	-
Hexachloroethane	ug/L	ND (3.5)	ND (177)	ND (33.3)	-
Indeno(1,2,3-cd)pyrene	ug/L	ND (2.1)	ND (104)	ND (19.6)	-
Isophorone	ug/L	ND (1.2)	ND (59.8)	ND (11.3)	-
Naphthalene	ug/L	9.7	ND (123)	ND (23.1)	-
Nitrobenzene	ug/L	ND (1.3)	ND (66.5)	ND (12.5)	-
N-Nitrosodimethylamine	ug/L	ND (1.0)	ND (53.1)	ND (10.0)	-
N-Nitrosodi-n-propylamine	ug/L	ND (1.0)	ND (52.1)	ND (9.8)	-

Table 5
Summary of Analytical Results - 21st Street
Husky Energy Refinery - Surface Water
Superior, Wisconsin

Sample Location:	21st Street	21st Street	21st Street	21st Street
Sample ID:	21st Street Plunge Pool	21st St Embankment	21st St Embankment	21st St. Embankment
Sample Date:	4/26/2018	4/27/2018	4/28/2018	4/28/2018
Parameters	Units			
N-Nitrosodiphenylamine	ug/L	ND (1.1)	ND (56.2)	ND (10.6)
Pentachlorophenol	ug/L	ND (2.7)	ND (135)	ND (25.4)
Phenanthrene	ug/L	4.0	ND (50.8)	ND (9.6)
Phenol	ug/L	32.2	ND (59.8)	ND (11.3)
Pyrene	ug/L	ND (1.5)	ND (76.8)	ND (14.5)
Metals				
Aluminum	ug/L	5930	-	-
Antimony	ug/L	11.4	-	-
Arsenic	ug/L	ND (5.2)	ND (4.1)	ND (4.1)
Barium	ug/L	89.0	48.9	47.9
Beryllium	ug/L	0.12 J	-	-
Boron	ug/L	147	-	-
Cadmium	ug/L	0.62 J	ND (0.64)	ND (0.64)
Calcium	ug/L	43200	-	-
Chromium	ug/L	9.2	2.8 J	1.7 J
Cobalt	ug/L	3.6	-	-
Copper	ug/L	35.2^a	-	-
Iron	ug/L	6360^a	-	-
Lead	ug/L	10.8	ND (3.3)	ND (3.3)
Magnesium	ug/L	14000	-	-
Manganese	ug/L	221^b	-	-
Mercury	ug/L	-	ND (0.062)	ND (0.062)
Molybdenum	ug/L	19.6	-	-
Nickel	ug/L	8.4	-	-
Potassium	ug/L	11900	-	-
Selenium	ug/L	ND (6.4)	ND (4.7)	ND (4.7)
Silver	ug/L	ND (0.27)	ND (0.38)	ND (0.38)
Sodium	ug/L	47000	-	-
Thallium	ug/L	ND (4.8)	-	-
Tin	ug/L	ND (5.6)	-	-
Titanium	ug/L	239	-	-
Vanadium	ug/L	20.6^a	-	-
Zinc	ug/L	169^a	-	-
Petroleum Hydrocarbons				
Total Petroleum Hydrocarbons - Gasoline Range Organics	ug/L	474	510	330
Total Petroleum Hydrocarbons (C10-C28) DRO	mg/L	5.6	-	-
Total Petroleum Hydrocarbons (C10-C36)	mg/L	6.3	13.1	10.3
General Chemistry				
Ammonia-N	mg/L	0.62 J	0.30	0.20
Hardness	ug/L	166000	-	-
Oil and grease	mg/L	11.1	5.3	2.4 J
Sulfate	mg/L	20.8	17.3	18.8

Table 5
Summary of Analytical Results - 21st Street
Husky Energy Refinery - Surface Water
Superior, Wisconsin

Sample Location:	21st Street	21st Street	21st Street	21st Street
Sample ID:	21st Street Plunge Pool	21st St Embankment	21st St Embankment	21st St. Embankment
Sample Date:	4/26/2018	4/27/2018	4/28/2018	4/28/2018

Parameters Units

- Notes:
- mg/L - milligrams per litre
 - ug/L - micrograms per litre
 - ND (0.25) - not detected at the associated reporting limit
 - J - estimated concentration
 - ^a - Selected aquatic life protection surface water screening criteria (reg or permit)
 - ^b - selected Human Health surface water screening criteria (reg or permit)
 - ^c - Minnesota Department of Health. Human Health-Based Water Guidance, Drinking water health-based values (HBV)
 - ^d - USEPA 2016. Drinking Water Health Advisory
 - ^e - Rule 57 Water Quality Values for Surface Water Assessment, Section Michigan Department of Environmental Quality (DEQ) Non-drink values
- 90 - concentration exceeds the indicated standard

Table 6
Summary of Analytical Results - 11th Street
Husky Energy Refinery - Surface Water
Superior, Wisconsin

Sample Location:	11th Street	11th Street	11th Street	11th Street	11th Street	11th Street	11th Street	11th Street	
Sample ID:	11th St Culvert	11th St Culvert	11th St. Culvert	SW-042918-KJ-04	SW-043018-JT-03	SW-050218-RE-03	SW-050418-JT-03	SW-050618-JT-03	
Sample Date:	4/27/2018	4/28/2018	4/28/2018	4/29/2018	4/30/2018	5/2/2018	5/4/2018	5/6/2018	
Parameters	Units								
Volatiles									
1,1,1,2-Tetrachloroethane	ug/L	ND (0.14)	-	ND (0.14)	ND (0.14)	ND (0.14)	ND (0.14)	-	ND (0.14)
1,1,1-Trichloroethane	ug/L	ND (0.15)	-	ND (0.15)	ND (0.15)	ND (0.15)	ND (0.15)	-	ND (0.15)
1,1,2,2-Tetrachloroethane	ug/L	ND (0.19)	-	ND (0.19)	ND (0.19)	ND (0.19)	ND (0.19)	-	ND (0.19)
1,1,2-Trichloroethane	ug/L	ND (0.22)	-	ND (0.22)	ND (0.22)	ND (0.22)	ND (0.22)	-	ND (0.22)
1,1-Dichloroethane	ug/L	ND (0.14)	-	ND (0.14)	ND (0.14)	ND (0.14)	ND (0.14)	-	ND (0.14)
1,1-Dichloroethene	ug/L	ND (0.18)	-	ND (0.18)	ND (0.18)	ND (0.18)	ND (0.18)	-	ND (0.18)
1,1-Dichloropropene	ug/L	ND (0.18)	-	ND (0.18)	ND (0.18)	ND (0.18)	ND (0.18)	-	ND (0.18)
1,2,3-Trichlorobenzene	ug/L	ND (0.14)	-	ND (0.14)	ND (0.14)	ND (0.14)	ND (0.14)	-	ND (0.14)
1,2,3-Trichloropropane	ug/L	ND (0.66)	-	ND (0.66)	ND (0.66)	ND (0.66)	ND (0.66)	-	ND (0.66)
1,2,4-Trichlorobenzene	ug/L	ND (0.18)	-	ND (0.18)	ND (0.18)	ND (0.18)	ND (0.18)	-	ND (0.18)
1,2,4-Trimethylbenzene	ug/L	5.8	-	2.5	0.21 J	ND (0.14)	ND (0.14)	-	ND (0.14)
1,2-Dibromo-3-chloropropane (DBCP)	ug/L	ND (1.0)	-	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)	-	ND (1.0)
1,2-Dibromoethane (Ethylene dibromide)	ug/L	ND (0.24)	-	ND (0.24)	ND (0.24)	ND (0.24)	ND (0.24)	-	ND (0.24)
1,2-Dichlorobenzene	ug/L	ND (0.21)	-	ND (0.21)	ND (0.21)	ND (0.21)	ND (0.21)	-	ND (0.21)
1,2-Dichloroethane	ug/L	ND (0.32)	-	ND (0.32)	ND (0.32)	ND (0.32)	ND (0.32)	-	ND (0.32)
1,2-Dichloropropane	ug/L	ND (0.62)	-	ND (0.62)	ND (0.62)	ND (0.62)	ND (0.62)	-	ND (0.62)
1,3,5-Trimethylbenzene	ug/L	1.6	-	0.82 J	0.35 J	ND (0.18)	ND (0.18)	-	ND (0.18)
1,3-Dichlorobenzene	ug/L	ND (0.16)	-	ND (0.16)	ND (0.16)	ND (0.16)	ND (0.16)	-	ND (0.16)
1,3-Dichloropropane	ug/L	ND (0.13)	-	ND (0.13)	ND (0.13)	ND (0.13)	ND (0.13)	-	ND (0.13)
1,4-Dichlorobenzene	ug/L	ND (0.10)	-	ND (0.10)	ND (0.10)	ND (0.10)	ND (0.10)	-	ND (0.10)
2,2-Dichloropropane	ug/L	ND (0.40)	-	ND (0.40)	ND (0.40)	ND (0.40)	ND (0.40)	-	ND (0.40)
2-Butanone (Methyl ethyl ketone) (MEK)	ug/L	ND (2.4)	-	ND (2.4)	ND (2.4)	ND (2.4)	ND (2.4)	-	ND (2.4)
2-Chlorotoluene	ug/L	ND (0.20)	-	ND (0.20)	ND (0.20)	ND (0.20)	ND (0.20)	-	ND (0.20)
2-Phenylbutane (sec-Butylbenzene)	ug/L	0.25 J	-	ND (0.12)	ND (0.12)	ND (0.12)	ND (0.12)	-	ND (0.12)
4-Chlorotoluene	ug/L	ND (0.13)	-	ND (0.13)	ND (0.13)	ND (0.13)	ND (0.13)	-	ND (0.13)
4-Methyl-2-pentanone (Methyl isobutyl ketone) (MIBK)	ug/L	ND (0.55)	-	ND (0.55)	ND (0.55)	ND (0.55)	ND (0.55)	-	ND (0.55)
Acetone	ug/L	9.8 J	-	ND (8.8)	ND (8.8)	ND (8.8)	ND (8.8)	-	ND (8.8)
Allyl chloride	ug/L	ND (1.0)	-	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)	-	ND (1.0)
Benzene	ug/L	11.2	-	4.4	ND (0.34)	ND (0.34)	ND (0.34)	-	ND (0.34)
Bromobenzene	ug/L	ND (0.16)	-	ND (0.16)	ND (0.16)	ND (0.16)	ND (0.16)	-	ND (0.16)
Bromodichloromethane	ug/L	ND (0.20)	-	ND (0.20)	ND (0.20)	ND (0.20)	ND (0.20)	-	ND (0.20)
Bromoform	ug/L	ND (1.0)	-	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)	-	ND (1.0)
Bromomethane (Methyl bromide)	ug/L	ND (1.5)	-	ND (1.5)	ND (1.5)	ND (1.5)	ND (1.5)	-	ND (1.5)
Carbon disulfide	ug/L	ND (0.37)	-	ND (0.37)	-	-	-	-	-
Carbon tetrachloride	ug/L	ND (0.20)	-	ND (0.20)	ND (0.20)	ND (0.20)	ND (0.20)	-	ND (0.20)
Chlorobenzene	ug/L	ND (0.14)	-	ND (0.14)	ND (0.14)	ND (0.14)	ND (0.14)	-	ND (0.14)
Chlorobromomethane	ug/L	ND (0.38)	-	ND (0.38)	ND (0.38)	ND (0.38)	ND (0.38)	-	ND (0.38)
Chloroethane	ug/L	ND (0.44)	-	ND (0.44)	ND (0.44)	ND (0.44)	ND (0.44)	-	ND (0.44)
Chloroform (Trichloromethane)	ug/L	ND (0.46)	-	ND (0.46)	ND (0.46)	ND (0.46)	ND (0.46)	-	ND (0.46)
Chloromethane (Methyl chloride)	ug/L	ND (1.1)	-	ND (1.1)	ND (1.1)	ND (1.1)	ND (1.1)	-	ND (1.1)
cis-1,2-Dichloroethene	ug/L	ND (0.20)	-	ND (0.20)	ND (0.20)	ND (0.20)	ND (0.20)	-	ND (0.20)
cis-1,3-Dichloropropene	ug/L	ND (0.12)	-	ND (0.12)	ND (0.12)	ND (0.12)	ND (0.12)	-	ND (0.12)
Cymene (p-Isopropyltoluene)	ug/L	1.1 J	-	0.66 J	0.27 J	ND (0.14)	ND (0.14)	-	ND (0.14)
Dibromochloromethane	ug/L	ND (0.13)	-	ND (0.13)	ND (0.13)	ND (0.13)	ND (0.13)	-	ND (0.13)
Dibromomethane	ug/L	ND (0.50)	-	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	-	ND (0.50)

Table 6
Summary of Analytical Results - 11th Street
Husky Energy Refinery - Surface Water
Superior, Wisconsin

Sample Location:	11th Street	11th Street	11th Street	11th Street	11th Street	11th Street	11th Street	11th Street	
Sample ID:	11th St Culvert	11th St Culvert	11th St. Culvert	SW-042918-KJ-04	SW-043018-JT-03	SW-050218-RE-03	SW-050418-JT-03	SW-050618-JT-03	
Sample Date:	4/27/2018	4/28/2018	4/28/2018	4/29/2018	4/30/2018	5/2/2018	5/4/2018	5/6/2018	
Parameters	Units								
Dichlorodifluoromethane (CFC-12)	ug/L	ND (0.31)	-	ND (0.31)	ND (0.31)	ND (0.31)	ND (0.31)	-	ND (0.31)
Dichlorofluoromethane	ug/L	ND (0.38)	-	ND (0.38)	ND (0.38)	ND (0.38)	ND (0.38)	-	ND (0.38)
Ethyl ether	ug/L	ND (1.3)	-	ND (1.3)	ND (1.3)	ND (1.3)	ND (1.3)	-	ND (1.3)
Ethylbenzene	ug/L	1.8	-	0.73 J	ND (0.14)	ND (0.14)	ND (0.14)	-	ND (0.14)
Hexachlorobutadiene	ug/L	ND (0.48)	-	ND (0.48)	ND (0.48)	ND (0.48)	ND (0.48)	-	ND (0.48)
Isopropyl benzene	ug/L	0.88 J	-	0.37 J	ND (0.17)	ND (0.17)	ND (0.17)	-	ND (0.17)
Methyl tert butyl ether (MTBE)	ug/L	ND (0.40)	-	ND (0.40)	ND (0.40)	ND (0.40)	ND (0.40)	-	ND (0.40)
Methylene chloride	ug/L	ND (1.2)	-	ND (1.2)	ND (1.2)	ND (1.2)	ND (1.2)	-	ND (1.2)
Naphthalene	ug/L	3.5 J	-	1.6 J	ND (0.42)	ND (0.42)	ND (0.42)	-	ND (0.42)
N-Butylbenzene	ug/L	0.46 J	-	0.21 J	ND (0.13)	ND (0.13)	ND (0.13)	-	ND (0.13)
N-Propylbenzene	ug/L	0.60 J	-	0.25 J	ND (0.15)	ND (0.15)	ND (0.15)	-	ND (0.15)
Styrene	ug/L	ND (0.14)	-	ND (0.14)	ND (0.14)	ND (0.14)	ND (0.14)	-	ND (0.14)
tert-Butylbenzene	ug/L	ND (0.15)	-	ND (0.15)	ND (0.15)	ND (0.15)	ND (0.15)	-	ND (0.15)
Tetrachloroethene	ug/L	ND (0.16)	-	ND (0.16)	ND (0.16)	ND (0.16)	ND (0.16)	-	ND (0.16)
Tetrahydrofuran	ug/L	ND (4.3)	-	ND (4.3)	ND (4.3)	ND (4.3)	ND (4.3)	-	ND (4.3)
Toluene	ug/L	14.0	-	5.5	0.29 J	ND (0.17)	ND (0.17)	-	ND (0.17)
trans-1,2-Dichloroethene	ug/L	ND (0.21)	-	ND (0.21)	ND (0.21)	ND (0.21)	ND (0.21)	-	ND (0.21)
trans-1,3-Dichloropropene	ug/L	ND (0.14)	-	ND (0.14)	ND (0.14)	ND (0.14)	ND (0.14)	-	ND (0.14)
Trichloroethene	ug/L	ND (0.18)	-	ND (0.18)	ND (0.18)	ND (0.18)	ND (0.18)	-	ND (0.18)
Trichlorofluoromethane (CFC-11)	ug/L	ND (0.13)	-	ND (0.13)	ND (0.13)	ND (0.13)	ND (0.13)	-	ND (0.13)
Trifluorotrchloroethane (CFC-113)	ug/L	ND (0.28)	-	ND (0.28)	ND (0.28)	ND (0.28)	ND (0.28)	-	ND (0.28)
Vinyl chloride	ug/L	ND (0.096)	-	ND (0.096)	ND (0.096)	ND (0.096)	ND (0.096)	-	ND (0.096)
Xylenes (total)	ug/L	11.0	-	4.6	ND (0.24)	ND (0.24)	ND (0.24)	-	ND (0.24)
Semi-Volatiles									
1,2,4-Trichlorobenzene	ug/L	ND (219)	ND (4.1)	-	ND (4.5)	ND (45.3)	ND (24.2)	-	-
1,2-Dichlorobenzene	ug/L	ND (184)	ND (3.4)	-	ND (3.8)	ND (38.0)	ND (20.3)	-	-
1,2-Diphenylhydrazine	ug/L	ND (67.2)	ND (1.3)	-	ND (1.4)	ND (13.9)	ND (7.4)	-	-
1,3-Dichlorobenzene	ug/L	ND (216)	ND (4.0)	-	ND (4.5)	ND (44.6)	ND (23.9)	-	-
1,4-Dichlorobenzene	ug/L	ND (178)	ND (3.3)	-	ND (3.7)	ND (36.8)	ND (19.7)	-	-
1-Methylnaphthalene	ug/L	ND (109)	2.4 J	-	ND (2.3)	ND (22.6)	ND (12.1)	-	-
2,2'-Oxybis(1-chloropropane) (bis(2-Chloroisopropyl) ether)	ug/L	ND (70.8)	ND (1.3)	-	ND (1.5)	ND (14.6)	ND (7.8)	-	-
2,4,5-Trichlorophenol	ug/L	ND (57.3)	ND (1.1)	-	ND (1.2)	ND (11.8)	ND (6.3)	-	-
2,4,6-Trichlorophenol	ug/L	ND (57.3)	ND (1.1)	-	ND (1.2)	ND (11.8)	ND (6.3)	-	-
2,4-Dichlorophenol	ug/L	ND (81.3)	ND (1.5)	-	ND (1.7)	ND (16.8)	ND (9.0)	-	-
2,4-Dimethylphenol	ug/L	ND (148)	ND (2.8)	-	ND (3.1)	ND (30.5)	ND (16.3)	-	-
2,4-Dinitrophenol	ug/L	ND (128)	ND (2.4)	-	ND (2.6)	ND (26.5)	ND (14.1)	-	-
2,4-Dinitrotoluene	ug/L	ND (69.8)	ND (1.3)	-	ND (1.4)	ND (14.4)	ND (7.7)	-	-
2,6-Dinitrotoluene	ug/L	ND (33.4)	ND (0.62)	-	ND (0.69)	ND (6.9)	ND (3.7)	-	-
2-Chloronaphthalene	ug/L	ND (116)	ND (2.2)	-	ND (2.4)	ND (24.0)	ND (12.8)	-	-
2-Chlorophenol	ug/L	ND (58.9)	ND (1.1)	-	ND (1.2)	ND (12.2)	ND (6.5)	-	-
2-Methylnaphthalene	ug/L	ND (131)	ND (2.4)	-	ND (2.7)	ND (27.0)	ND (14.4)	-	-
2-Methylphenol	ug/L	ND (99.0)	ND (1.8)	-	ND (2.0)	ND (20.4)	ND (10.9)	-	-
2-Nitroaniline	ug/L	ND (79.7)	ND (1.5)	-	ND (1.6)	ND (16.5)	ND (8.8)	-	-
2-Nitrophenol	ug/L	ND (87.5)	ND (1.6)	-	ND (1.8)	ND (18.1)	ND (9.7)	-	-
3&4-Methylphenol	ug/L	ND (53.6)	ND (1.0)	-	ND (1.1)	ND (11.1)	ND (5.9)	-	-

Table 6
Summary of Analytical Results - 11th Street
Husky Energy Refinery - Surface Water
Superior, Wisconsin

Sample Location:	11th Street	11th Street	11th Street	11th Street	11th Street	11th Street	11th Street	11th Street
Sample ID:	11th St Culvert	11th St Culvert	11th St. Culvert	SW-042918-KJ-04	SW-043018-JT-03	SW-050218-RE-03	SW-050418-JT-03	SW-050618-JT-03
Sample Date:	4/27/2018	4/28/2018	4/28/2018	4/29/2018	4/30/2018	5/2/2018	5/4/2018	5/6/2018
Parameters	Units							
3,3'-Dichlorobenzidine	ug/L	ND (63.0)	ND (1.2)	-	ND (1.3)	ND (13.0)	ND (7.0)	-
3-Nitroaniline	ug/L	ND (63.0)	ND (1.2)	-	ND (1.3)	ND (13.0)	ND (7.0)	-
4,6-Dinitro-2-methylphenol	ug/L	ND (79.2)	ND (1.5)	-	ND (1.6)	ND (16.3)	ND (8.7)	-
4-Bromophenyl phenyl ether	ug/L	ND (120)	ND (2.2)	-	ND (2.5)	ND (24.8)	ND (13.3)	-
4-Chloro-3-methylphenol	ug/L	ND (77.6)	ND (1.4)	-	ND (1.6)	ND (16.0)	ND (8.6)	-
4-Chloroaniline	ug/L	ND (99.5)	ND (1.9)	-	ND (2.1)	ND (20.5)	ND (11.0)	-
4-Chlorophenyl phenyl ether	ug/L	ND (79.7)	ND (1.5)	-	ND (1.6)	ND (16.5)	ND (8.8)	-
4-Nitroaniline	ug/L	ND (107)	ND (2.0)	-	ND (2.2)	ND (22.0)	ND (11.8)	-
4-Nitrophenol	ug/L	ND (134)	ND (2.5)	-	ND (2.8)	ND (27.7)	ND (14.8)	-
Acenaphthene	ug/L	ND (97.9)	ND (1.8)	-	ND (2.0)	ND (20.2)	ND (10.8)	-
Acenaphthylene	ug/L	ND (88.5)	ND (1.7)	-	ND (1.8)	ND (18.3)	ND (9.8)	-
Anthracene	ug/L	ND (67.2)	ND (1.3)	-	ND (1.4)	ND (13.9)	ND (7.4)	-
Benzo(a)anthracene	ug/L	ND (66.1)	ND (1.2)	-	ND (1.4)	ND (13.7)	ND (7.3)	-
Benzo(a)pyrene	ug/L	ND (89.6)	ND (1.7)	-	ND (1.8)	ND (18.5)	ND (9.9)	-
Benzo(b)fluoranthene	ug/L	ND (90.1)	ND (1.7)	-	ND (1.9)	ND (18.6)	ND (9.9)	-
Benzo(g,h,i)perylene	ug/L	ND (109)	ND (2.0)	-	ND (2.3)	ND (22.6)	ND (12.1)	-
Benzo(k)fluoranthene	ug/L	ND (91.7)	ND (1.7)	-	ND (1.9)	ND (18.9)	ND (10.1)	-
bis(2-Chloroethoxy)methane	ug/L	ND (70.3)	ND (1.3)	-	ND (1.5)	ND (14.5)	ND (7.8)	-
bis(2-Chloroethyl)ether	ug/L	ND (58.9)	ND (1.1)	-	ND (1.2)	ND (12.2)	ND (6.5)	-
bis(2-Ethylhexyl)phthalate (DEHP)	ug/L	ND (239)	ND (4.5)	-	ND (4.9)	ND (49.4)	ND (26.4)	-
Butyl benzylphthalate (BBP)	ug/L	ND (92.7)	ND (1.7)	-	ND (1.9)	ND (19.1)	ND (10.2)	-
Carbazole	ug/L	ND (57.3)	ND (1.1)	-	ND (1.2)	ND (11.8)	ND (6.3)	-
Chrysene	ug/L	ND (91.1)	ND (1.7)	-	ND (1.9)	ND (18.8)	ND (10.1)	-
Dibenz(a,h)anthracene	ug/L	ND (112)	ND (2.1)	-	ND (2.3)	ND (23.2)	ND (12.4)	-
Dibenzofuran	ug/L	ND (83.9)	ND (1.6)	-	ND (1.7)	ND (17.3)	ND (9.3)	-
Diethyl phthalate	ug/L	ND (73.4)	ND (1.4)	-	ND (1.5)	ND (15.2)	ND (8.1)	-
Dimethyl phthalate	ug/L	ND (65.6)	ND (1.2)	-	ND (1.4)	ND (13.5)	ND (7.2)	-
Di-n-butylphthalate (DBP)	ug/L	ND (70.3)	ND (1.3)	-	ND (1.5)	ND (14.5)	ND (7.8)	-
Di-n-octyl phthalate (DnOP)	ug/L	ND (107)	ND (2.0)	-	ND (2.2)	ND (22.0)	ND (11.8)	-
Fluoranthene	ug/L	ND (77.1)	ND (1.4)	-	ND (1.6)	ND (15.9)	ND (8.5)	-
Fluorene	ug/L	ND (75.0)	ND (1.4)	-	ND (1.5)	ND (15.5)	ND (8.3)	-
Hexachlorobenzene	ug/L	ND (112)	ND (2.1)	-	ND (2.3)	ND (23.2)	ND (12.4)	-
Hexachlorobutadiene	ug/L	ND (166)	ND (3.1)	-	ND (3.4)	ND (34.3)	ND (18.3)	-
Hexachloroethane	ug/L	ND (179)	ND (3.3)	-	ND (3.7)	ND (36.9)	ND (19.7)	-
Indeno(1,2,3-cd)pyrene	ug/L	ND (105)	ND (2.0)	-	ND (2.2)	ND (21.7)	ND (11.6)	-
Isophorone	ug/L	ND (60.4)	ND (1.1)	-	ND (1.2)	ND (12.5)	ND (6.7)	-
Naphthalene	ug/L	ND (124)	ND (2.3)	-	ND (2.6)	ND (25.6)	ND (13.7)	-
Nitrobenzene	ug/L	ND (67.2)	ND (1.3)	-	ND (1.4)	ND (13.9)	ND (7.4)	-
N-Nitrosodimethylamine	ug/L	ND (53.6)	ND (1.0)	-	ND (1.1)	ND (11.1)	ND (5.9)	-
N-Nitrosodi-n-propylamine	ug/L	ND (52.6)	ND (0.98)	-	ND (1.1)	ND (10.9)	ND (5.8)	-
N-Nitrosodiphenylamine	ug/L	ND (56.8)	ND (1.1)	-	ND (1.2)	ND (11.7)	ND (6.3)	-
Pentachlorophenol	ug/L	ND (136)	ND (2.5)	-	ND (2.8)	ND (28.2)	ND (15.1)	-
Phenanthrene	ug/L	ND (51.3)	1.2 J	-	ND (1.1)	ND (10.6)	ND (5.7)	-
Phenol	ug/L	ND (60.4)	ND (1.1)	-	ND (1.2)	ND (12.5)	ND (6.7)	-
Pyrene	ug/L	ND (77.6)	ND (1.4)	-	ND (1.6)	ND (16.0)	ND (8.6)	-

Table 6
Summary of Analytical Results - 11th Street
Husky Energy Refinery - Surface Water
Superior, Wisconsin

Sample Location:	11th Street	11th Street	11th Street	11th Street	11th Street	11th Street	11th Street	11th Street
Sample ID:	11th St Culvert	11th St Culvert	11th St. Culvert	SW-042918-KJ-04	SW-043018-JT-03	SW-050218-RE-03	SW-050418-JT-03	SW-050618-JT-03
Sample Date:	4/27/2018	4/28/2018	4/28/2018	4/29/2018	4/30/2018	5/2/2018	5/4/2018	5/6/2018
Parameters	Units							
PFAS								
Fluorotelomer sulfonic acid (4:2)	ng/L	-	-	-	20	ND (10)	ND (10)	-
N-Ethyl perfluorooctane sulfonamidoacetic acid	ng/L	-	-	-	ND (10)	ND (10)	ND (10)	-
N-Methyl-perfluorooctane sulfonamide	ng/L	-	-	-	ND (10)	ND (10)	ND (10)	-
Perfluorhexanoic acid (PFHxA)	ng/L	-	-	-	970	300	170	-
Perfluorobutane sulfonic acid (PFBS)	ng/L	-	-	-	10	10	10	-
Perfluorobutanoic acid (PFBA)	ng/L	-	-	-	300	100	50	-
Perfluorodecanesulfonic acid (PFDS)	ng/L	-	-	-	ND (10)	ND (10)	ND (10)	-
Perfluorodecanoic acid (PFDA)	ng/L	-	-	-	40	30	10	-
Perfluorododecanoic acid (PFDoA)	ng/L	-	-	-	10	ND (10)	ND (10)	-
Perfluoroheptane sulfonic acid (PFHpS)	ng/L	-	-	-	ND (10)	ND (10)	ND (10)	-
Perfluoroheptanoic acid (PFHpA)	ng/L	-	-	-	280	80	50	-
Perfluorohexane sulfonic acid (PFHxS)	ng/L	-	-	-	90	80	50	-
Perfluorohexane sulfonic acid (PFHxS) - Branched	ng/L	-	-	-	10	10	ND (10)	-
Perfluorohexane sulfonic acid (PFHxS) - Linear	ng/L	-	-	-	70	60	40	-
Perfluorononane sulfonic acid (PFNS)	ng/L	-	-	-	ND (10)	ND (10)	ND (10)	-
Perfluorononanoic acid (PFNA)	ng/L	-	-	-	60	40	10	-
Perfluorooctane sulfonamide (FOSA)	ng/L	-	-	-	ND (10)	ND (10)	ND (10)	-
Perfluorooctane sulfonic acid (PFOS)	ng/L	-	-	-	80^{cde}	100^{cde}	50^{ce}	-
Perfluorooctane sulfonic acid (PFOS) - Branched	ng/L	-	-	-	50	70	20	-
Perfluorooctane sulfonic acid (PFOS) - Linear	ng/L	-	-	-	30	20	20	-
Perfluorooctanoic acid (PFOA)	ng/L	-	-	-	740^{cd}	210^{cd}	80^{cd}	-
Perfluoropentane sulfonic acid (PFPeS)	ng/L	-	-	-	10	ND (10)	10	-
Perfluoropentanoic acid (PFPeA)	ng/L	-	-	-	350	110	70	-
Perfluorotetradecanoic acid (PFTeA)	ng/L	-	-	-	ND (10) I	ND (10)	ND (10)	-
Perfluorotridecanoic acid (PFTrDA)	ng/L	-	-	-	ND (10)	ND (10)	ND (10)	-
Perfluoroundecanoic acid (PFUnA)	ng/L	-	-	-	ND (10)	ND (10)	ND (10)	-
Sodium 1H,1H,2H,2H-perfluorodecane sulfonate (8:2)	ng/L	-	-	-	1310	950	390	-
Sodium 1H,1H,2H,2H-perfluorooctane sulfonate (6:2)	ng/L	-	-	-	22150 E	6520	2020 E	-
Metals								
Arsenic	ug/L	ND (4.1)	-	ND (4.1)	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)
Barium	ug/L	54.0	-	53.3	57.3	50.1	46.8	ND (47.0)
Cadmium	ug/L	ND (0.64)	-	ND (0.64)	ND (0.46)	ND (0.46)	ND (0.46)	ND (0.46)
Chromium	ug/L	1.7 J	-	ND (1.4)	0.80 J	0.83 J	0.72 J	ND (0.70)
Lead	ug/L	ND (3.3)	-	ND (3.3)	ND (3.0)	ND (3.0)	ND (3.0)	ND (3.0)
Mercury	ug/L	ND (0.062)	-	ND (0.062)	ND (0.062)	ND (0.062)	ND (0.062)	ND (0.062)
Selenium	ug/L	ND (4.7)	-	ND (4.7)	ND (6.4)	ND (6.4)	ND (6.4)	ND (6.4)
Silver	ug/L	ND (0.38)	-	ND (0.38)	ND (0.27)	ND (0.27)	ND (0.27)	ND (0.27)

Table 6
Summary of Analytical Results - 11th Street
Husky Energy Refinery - Surface Water
Superior, Wisconsin

Sample Location:	11th Street	11th Street	11th Street	11th Street	11th Street	11th Street	11th Street	11th Street	
Sample ID:	11th St Culvert	11th St Culvert	11th St. Culvert	SW-042918-KJ-04	SW-043018-JT-03	SW-050218-RE-03	SW-050418-JT-03	SW-050618-JT-03	
Sample Date:	4/27/2018	4/28/2018	4/28/2018	4/29/2018	4/30/2018	5/2/2018	5/4/2018	5/6/2018	
Parameters	Units								
Petroleum Hydrocarbons									
Total Petroleum Hydrocarbons - Gasoline Range Organics	ug/L	227	-	150	45.2 J	9.0 J	24.1 J	19.2 J	ND (32.0)
Total Petroleum Hydrocarbons (C10-C28) DRO	mg/L	-	-	-	0.70	0.56	0.21	0.21	0.20
Total Petroleum Hydrocarbons (C10-C36)	mg/L	7.2	-	4.7	-	-	-	-	-
Total Petroleum Hydrocarbons (C24-C36) Motor Oil	mg/L	-	-	-	0.32	0.22	0.11	0.11	0.14
General Chemistry									
Ammonia-N	mg/L	0.15	-	0.072 J	-	-	-	-	-
Oil and grease	mg/L	ND (1.4)	-	1.4 J	ND (1.5)	ND (1.4)	ND (1.4)	ND (1.4)	ND (1.5)
Sulfate	mg/L	14.0	-	15.7	15.0	11.2	11.5	11.5	10.7

- Notes:
- mg/L - milligrams per litre
 - ng/L - nanogram per liter
 - ug/L - micrograms per litre
 - ND (0.25) - not detected at the associated reporting limit
 - E - concentration exceeds calibration range
 - I - matrix interference with internal standard
 - J - estimated concentration
 - a - Selected aquatic life protection surface water screening criteria (reg or permit)
 - b - selected Human Health surface water screening criteria (reg or permit)
 - c - Minnesota Department of Health. Human Health-Based Water Guidance, Drinking water health-based values (HBV)
 - d - USEPA 2016. Drinking Water Health Advisory
 - e - Rule 57 Water Quality Values for Surface Water Assessment, Section Michigan Department of Environmental Quality (DEQ) Non-drink values
 - 90 - concentration exceeds the indicated standard

Table 6
Summary of Analytical Results - 11th Street
Husky Energy Refinery - Surface Water
Superior, Wisconsin

Sample Location: 11th Street
Sample ID: SW-050818-JT-03
Sample Date: 5/8/2018

Parameters	Units	
Volatiles		
1,1,1,2-Tetrachloroethane	ug/L	ND (0.14)
1,1,1-Trichloroethane	ug/L	ND (0.15)
1,1,2,2-Tetrachloroethane	ug/L	ND (0.19)
1,1,2-Trichloroethane	ug/L	ND (0.22)
1,1-Dichloroethane	ug/L	ND (0.14)
1,1-Dichloroethene	ug/L	ND (0.18)
1,1-Dichloropropene	ug/L	ND (0.18)
1,2,3-Trichlorobenzene	ug/L	ND (0.14)
1,2,3-Trichloropropane	ug/L	ND (0.66)
1,2,4-Trichlorobenzene	ug/L	ND (0.18)
1,2,4-Trimethylbenzene	ug/L	ND (0.14)
1,2-Dibromo-3-chloropropane (DBCP)	ug/L	ND (1.0)
1,2-Dibromoethane (Ethylene dibromide)	ug/L	ND (0.24)
1,2-Dichlorobenzene	ug/L	ND (0.21)
1,2-Dichloroethane	ug/L	ND (0.32)
1,2-Dichloropropane	ug/L	ND (0.62)
1,3,5-Trimethylbenzene	ug/L	ND (0.18)
1,3-Dichlorobenzene	ug/L	ND (0.16)
1,3-Dichloropropane	ug/L	ND (0.13)
1,4-Dichlorobenzene	ug/L	ND (0.10)
2,2-Dichloropropane	ug/L	ND (0.40)
2-Butanone (Methyl ethyl ketone) (MEK)	ug/L	ND (2.4)
2-Chlorotoluene	ug/L	ND (0.20)
2-Phenylbutane (sec-Butylbenzene)	ug/L	ND (0.12)
4-Chlorotoluene	ug/L	ND (0.13)
4-Methyl-2-pentanone (Methyl isobutyl ketone) (MIBK)	ug/L	ND (0.55)
Acetone	ug/L	ND (8.8)
Allyl chloride	ug/L	ND (1.0)
Benzene	ug/L	ND (0.34)
Bromobenzene	ug/L	ND (0.16)
Bromodichloromethane	ug/L	ND (0.20)
Bromoform	ug/L	ND (1.0)
Bromomethane (Methyl bromide)	ug/L	ND (1.5)
Carbon disulfide	ug/L	-
Carbon tetrachloride	ug/L	ND (0.20)
Chlorobenzene	ug/L	ND (0.14)
Chlorobromomethane	ug/L	ND (0.38)
Chloroethane	ug/L	ND (0.44)
Chloroform (Trichloromethane)	ug/L	ND (0.46)
Chloromethane (Methyl chloride)	ug/L	ND (1.1)
cis-1,2-Dichloroethene	ug/L	ND (0.20)
cis-1,3-Dichloropropene	ug/L	ND (0.12)
Cymene (p-Isopropyltoluene)	ug/L	ND (0.14)
Dibromochloromethane	ug/L	ND (0.13)
Dibromomethane	ug/L	ND (0.50)

Table 6
Summary of Analytical Results - 11th Street
Husky Energy Refinery - Surface Water
Superior, Wisconsin

Sample Location: 11th Street
Sample ID: SW-050818-JT-03
Sample Date: 5/8/2018

Parameters	Units	
Dichlorodifluoromethane (CFC-12)	ug/L	ND (0.31)
Dichlorofluoromethane	ug/L	ND (0.38)
Ethyl ether	ug/L	ND (1.3)
Ethylbenzene	ug/L	ND (0.14)
Hexachlorobutadiene	ug/L	ND (0.48)
Isopropyl benzene	ug/L	ND (0.17)
Methyl tert butyl ether (MTBE)	ug/L	ND (0.40)
Methylene chloride	ug/L	ND (1.2)
Naphthalene	ug/L	ND (0.42)
N-Butylbenzene	ug/L	ND (0.13)
N-Propylbenzene	ug/L	ND (0.15)
Styrene	ug/L	ND (0.14)
tert-Butylbenzene	ug/L	ND (0.15)
Tetrachloroethene	ug/L	ND (0.16)
Tetrahydrofuran	ug/L	ND (4.3)
Toluene	ug/L	ND (0.17)
trans-1,2-Dichloroethene	ug/L	ND (0.21)
trans-1,3-Dichloropropene	ug/L	ND (0.14)
Trichloroethene	ug/L	ND (0.18)
Trichlorofluoromethane (CFC-11)	ug/L	ND (0.13)
Trifluorotrchloroethane (CFC-113)	ug/L	ND (0.28)
Vinyl chloride	ug/L	ND (0.096)
Xylenes (total)	ug/L	ND (0.24)
Semi-Volatiles		
1,2,4-Trichlorobenzene	ug/L	-
1,2-Dichlorobenzene	ug/L	-
1,2-Diphenylhydrazine	ug/L	-
1,3-Dichlorobenzene	ug/L	-
1,4-Dichlorobenzene	ug/L	-
1-Methylnaphthalene	ug/L	-
2,2'-Oxybis(1-chloropropane) (bis(2-Chloroisopropyl) ether)	ug/L	-
2,4,5-Trichlorophenol	ug/L	-
2,4,6-Trichlorophenol	ug/L	-
2,4-Dichlorophenol	ug/L	-
2,4-Dimethylphenol	ug/L	-
2,4-Dinitrophenol	ug/L	-
2,4-Dinitrotoluene	ug/L	-
2,6-Dinitrotoluene	ug/L	-
2-Chloronaphthalene	ug/L	-
2-Chlorophenol	ug/L	-
2-Methylnaphthalene	ug/L	-
2-Methylphenol	ug/L	-
2-Nitroaniline	ug/L	-
2-Nitrophenol	ug/L	-
3&4-Methylphenol	ug/L	-

Table 6
Summary of Analytical Results - 11th Street
Husky Energy Refinery - Surface Water
Superior, Wisconsin

Sample Location: 11th Street
Sample ID: SW-050818-JT-03
Sample Date: 5/8/2018

Parameters	Units	
3,3'-Dichlorobenzidine	ug/L	-
3-Nitroaniline	ug/L	-
4,6-Dinitro-2-methylphenol	ug/L	-
4-Bromophenyl phenyl ether	ug/L	-
4-Chloro-3-methylphenol	ug/L	-
4-Chloroaniline	ug/L	-
4-Chlorophenyl phenyl ether	ug/L	-
4-Nitroaniline	ug/L	-
4-Nitrophenol	ug/L	-
Acenaphthene	ug/L	-
Acenaphthylene	ug/L	-
Anthracene	ug/L	-
Benzo(a)anthracene	ug/L	-
Benzo(a)pyrene	ug/L	-
Benzo(b)fluoranthene	ug/L	-
Benzo(g,h,i)perylene	ug/L	-
Benzo(k)fluoranthene	ug/L	-
bis(2-Chloroethoxy)methane	ug/L	-
bis(2-Chloroethyl)ether	ug/L	-
bis(2-Ethylhexyl)phthalate (DEHP)	ug/L	-
Butyl benzylphthalate (BBP)	ug/L	-
Carbazole	ug/L	-
Chrysene	ug/L	-
Dibenz(a,h)anthracene	ug/L	-
Dibenzofuran	ug/L	-
Diethyl phthalate	ug/L	-
Dimethyl phthalate	ug/L	-
Di-n-butylphthalate (DBP)	ug/L	-
Di-n-octyl phthalate (DnOP)	ug/L	-
Fluoranthene	ug/L	-
Fluorene	ug/L	-
Hexachlorobenzene	ug/L	-
Hexachlorobutadiene	ug/L	-
Hexachloroethane	ug/L	-
Indeno(1,2,3-cd)pyrene	ug/L	-
Isophorone	ug/L	-
Naphthalene	ug/L	-
Nitrobenzene	ug/L	-
N-Nitrosodimethylamine	ug/L	-
N-Nitrosodi-n-propylamine	ug/L	-
N-Nitrosodiphenylamine	ug/L	-
Pentachlorophenol	ug/L	-
Phenanthrene	ug/L	-
Phenol	ug/L	-
Pyrene	ug/L	-

Table 6
Summary of Analytical Results - 11th Street
Husky Energy Refinery - Surface Water
Superior, Wisconsin

Sample Location: 11th Street
Sample ID: SW-050818-JT-03
Sample Date: 5/8/2018

Parameters **Units**

PFAS

Fluorotelomer sulfonic acid (4:2)	ng/L	-
N-Ethyl perfluorooctane sulfonamidoacetic acid	ng/L	-
N-Methyl-perfluorooctane sulfonamide	ng/L	-
Perfluorhexanoic acid (PFHxA)	ng/L	-
Perfluorobutane sulfonic acid (PFBS)	ng/L	-
Perfluorobutanoic acid (PFBA)	ng/L	-
Perfluorodecanesulfonic acid (PFDS)	ng/L	-
Perfluorodecanoic acid (PFDA)	ng/L	-
Perfluorododecanoic acid (PFDoA)	ng/L	-
Perfluoroheptane sulfonic acid (PFHpS)	ng/L	-
Perfluoroheptanoic acid (PFHpA)	ng/L	-
Perfluorohexane sulfonic acid (PFHxS)	ng/L	-
Perfluorohexane sulfonic acid (PFHxS) - Branched	ng/L	-
Perfluorohexane sulfonic acid (PFHxS) - Linear	ng/L	-
Perfluorononane sulfonic acid (PFNS)	ng/L	-
Perfluorononanoic acid (PFNA)	ng/L	-
Perfluorooctane sulfonamide (FOSA)	ng/L	-
Perfluorooctane sulfonic acid (PFOS)	ng/L	-
Perfluorooctane sulfonic acid (PFOS) - Branched	ng/L	-
Perfluorooctane sulfonic acid (PFOS) - Linear	ng/L	-
Perfluorooctanoic acid (PFOA)	ng/L	-
Perfluoropentane sulfonic acid (PFPeS)	ng/L	-
Perfluoropentanoic acid (PFPeA)	ng/L	-
Perfluorotetradecanoic acid (PFTeA)	ng/L	-
Perfluorotridecanoic acid (PFTrDA)	ng/L	-
Perfluoroundecanoic acid (PFUnA)	ng/L	-
Sodium 1H,1H,2H,2H-perfluorodecane sulfonate (8:2)	ng/L	-
Sodium 1H,1H,2H,2H-perfluorooctane sulfonate (6:2)	ng/L	-

Metals

Arsenic	ug/L	ND (5.2)
Barium	ug/L	ND (50.2)
Cadmium	ug/L	ND (0.46)
Chromium	ug/L	ND (0.50)
Lead	ug/L	ND (3.0)
Mercury	ug/L	ND (0.062)
Selenium	ug/L	ND (6.4)
Silver	ug/L	ND (0.27)

Table 6
Summary of Analytical Results - 11th Street
Husky Energy Refinery - Surface Water
Superior, Wisconsin

Sample Location: 11th Street
Sample ID: SW-050818-JT-03
Sample Date: 5/8/2018

Parameters	Units	
Petroleum Hydrocarbons		
Total Petroleum Hydrocarbons - Gasoline Range Organics	ug/L	25.5 J
Total Petroleum Hydrocarbons (C10-C28) DRO	mg/L	0.21
Total Petroleum Hydrocarbons (C10-C36)	mg/L	-
Total Petroleum Hydrocarbons (C24-C36) Motor Oil	mg/L	0.11
General Chemistry		
Ammonia-N	mg/L	-
Oil and grease	mg/L	ND (1.4)
Sulfate	mg/L	10.2

- Notes:
- mg/L - milligrams per litre
 - ng/L - nanogram per liter
 - ug/L - micrograms per litre
 - ND (0.25) - not detected at the associated reporting limit
 - E - concentration exceeds calibration range
 - I - matrix interference with internal standard
 - J - estimated concentration
 - ^a - Selected aquatic life protection surface water screening criteria (reg or permit)
 - ^b - selected Human Health surface water screening criteria (reg or permit)
 - ^c - Minnesota Department of Health. Human Health-Based Water Guidance, Drinking water health-based values (HBV)
 - ^d - USEPA 2016. Drinking Water Health Advisory
 - ^e - Rule 57 Water Quality Values for Surface Water Assessment, Section Michigan Department of Environmental Quality (DEQ) Non-drink values
 - 90 - concentration exceeds the indicated standard

Table 7
Summary of Analytical Results - 3rd Street
Husky Energy Refinery - Surface Water
Superior, Wisconsin

Sample Location:	3rd Street	3rd Street	3rd Street	3rd Street	3rd Street	3rd Street	3rd Street	3rd Street	3rd Street	
Sample ID:	E. 3rd Street	3rd St Culvert	3rd St Culvert	3rd St. Culvert	SW-042918-KJ-03	SW-043018-JT-02	SW-050218-RE-02	SW-050418-JT-02	SW-050618-JT-02	
Sample Date:	4/26/2018	4/27/2018	4/28/2018	4/28/2018	4/29/2018	4/30/2018	5/2/2018	5/4/2018	5/6/2018	
Parameters	Units									
Volatiles										
1,1,1,2-Tetrachloroethane	ug/L	ND (0.14)	ND (0.14)	-	ND (0.14)	ND (0.14)	ND (0.14)	ND (0.14)	-	ND (0.14)
1,1,1-Trichloroethane	ug/L	ND (0.15)	ND (0.15)	-	ND (0.15)	ND (0.15)	ND (0.15)	ND (0.15)	-	ND (0.15)
1,1,2,2-Tetrachloroethane	ug/L	ND (0.19)	ND (0.19)	-	ND (0.19)	ND (0.19)	ND (0.19)	ND (0.19)	-	ND (0.19)
1,1,2-Trichloroethane	ug/L	ND (0.22)	ND (0.22)	-	ND (0.22)	ND (0.22)	ND (0.22)	ND (0.22)	-	ND (0.22)
1,1-Dichloroethane	ug/L	ND (0.14)	ND (0.14)	-	ND (0.14)	ND (0.14)	ND (0.14)	ND (0.14)	-	ND (0.14)
1,1-Dichloroethene	ug/L	ND (0.18)	ND (0.18)	-	ND (0.18)	ND (0.18)	ND (0.18)	ND (0.18)	-	ND (0.18)
1,1-Dichloropropene	ug/L	ND (0.18)	ND (0.18)	-	ND (0.18)	ND (0.18)	ND (0.18)	ND (0.18)	-	ND (0.18)
1,2,3-Trichlorobenzene	ug/L	ND (0.14)	ND (0.14)	-	ND (0.14)	ND (0.14)	ND (0.14)	ND (0.14)	-	ND (0.14)
1,2,3-Trichloropropane	ug/L	ND (0.66)	ND (0.66)	-	ND (0.66)	ND (0.66)	ND (0.66)	ND (0.66)	-	ND (0.66)
1,2,4-Trichlorobenzene	ug/L	ND (0.18)	ND (0.18)	-	ND (0.18)	ND (0.18)	ND (0.18)	ND (0.18)	-	ND (0.18)
1,2,4-Trimethylbenzene	ug/L	8.8	4.0	-	ND (1.1)	0.14 J	ND (0.14)	ND (0.14)	-	ND (0.14)
1,2-Dibromo-3-chloropropane (DBCP)	ug/L	ND (1.0)	ND (1.0)	-	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)	-	ND (1.0)
1,2-Dibromoethane (Ethylene dibromide)	ug/L	ND (0.24)	ND (0.24)	-	ND (0.24)	ND (0.24)	ND (0.24)	ND (0.24)	-	ND (0.24)
1,2-Dichlorobenzene	ug/L	ND (0.21)	ND (0.21)	-	ND (0.21)	ND (0.21)	ND (0.21)	ND (0.21)	-	ND (0.21)
1,2-Dichloroethane	ug/L	ND (0.32)	ND (0.32)	-	ND (0.32)	ND (0.32)	ND (0.32)	ND (0.32)	-	ND (0.32)
1,2-Dichloroethene (total)	ug/L	ND (0.41)	-	-	-	-	-	-	-	-
1,2-Dichloropropane	ug/L	ND (0.62)	ND (0.62)	-	ND (0.62)	ND (0.62)	ND (0.62)	ND (0.62)	-	ND (0.62)
1,3,5-Trimethylbenzene	ug/L	2.1	1.0	-	0.40 J	ND (0.18)	ND (0.18)	ND (0.18)	-	ND (0.18)
1,3-Dichlorobenzene	ug/L	ND (0.16)	ND (0.16)	-	ND (0.16)	ND (0.16)	ND (0.16)	ND (0.16)	-	ND (0.16)
1,3-Dichloropropane	ug/L	ND (0.13)	ND (0.13)	-	ND (0.13)	ND (0.13)	ND (0.13)	ND (0.13)	-	ND (0.13)
1,4-Dichlorobenzene	ug/L	ND (0.10)	ND (0.10)	-	ND (0.10)	ND (0.10)	ND (0.10)	ND (0.10)	-	ND (0.10)
2,2-Dichloropropane	ug/L	ND (0.40)	ND (0.40)	-	ND (0.40)	ND (0.40)	ND (0.40)	ND (0.40)	-	ND (0.40)
2-Butanone (Methyl ethyl ketone) (MEK)	ug/L	4.6 J	ND (2.4)	-	ND (2.4)	ND (2.4)	ND (2.4)	ND (2.4)	-	ND (2.4)
2-Chlorotoluene	ug/L	ND (0.20)	ND (0.20)	-	ND (0.20)	ND (0.20)	ND (0.20)	ND (0.20)	-	ND (0.20)
2-Hexanone	ug/L	ND (2.5)	-	-	-	-	-	-	-	-
2-Phenylbutane (sec-Butylbenzene)	ug/L	0.22 J	0.17 J	-	ND (0.12)	ND (0.12)	ND (0.12)	ND (0.12)	-	ND (0.12)
4-Chlorotoluene	ug/L	ND (0.13)	ND (0.13)	-	ND (0.13)	ND (0.13)	ND (0.13)	ND (0.13)	-	ND (0.13)
4-Methyl-2-pentanone (Methyl isobutyl ketone) (MIBK)	ug/L	ND (0.55)	ND (0.55)	-	ND (0.55)	ND (0.55)	ND (0.55)	ND (0.55)	-	ND (0.55)
Acetone	ug/L	17.1 J	ND (8.8)	-	ND (8.8)	ND (8.8)	ND (8.8)	ND (8.8)	-	ND (8.8)
Allyl chloride	ug/L	ND (1.0)	ND (1.0)	-	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)	-	ND (1.0)
Benzene	ug/L	41.9	6.8	-	2.0	ND (0.34)	ND (0.34)	ND (0.34)	-	ND (0.34)
Bromobenzene	ug/L	ND (0.16)	ND (0.16)	-	ND (0.16)	ND (0.16)	ND (0.16)	ND (0.16)	-	ND (0.16)
Bromodichloromethane	ug/L	ND (0.20)	ND (0.20)	-	ND (0.20)	ND (0.20)	ND (0.20)	ND (0.20)	-	ND (0.20)
Bromoform	ug/L	ND (1.0)	ND (1.0)	-	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)	-	ND (1.0)
Bromomethane (Methyl bromide)	ug/L	ND (1.5)	ND (1.5)	-	ND (1.5)	ND (1.5)	ND (1.5)	ND (1.5)	-	ND (1.5)
Carbon disulfide	ug/L	ND (0.37)	ND (0.37)	-	ND (0.37)	-	-	-	-	-
Carbon tetrachloride	ug/L	ND (0.20)	ND (0.20)	-	ND (0.20)	ND (0.20)	ND (0.20)	ND (0.20)	-	ND (0.20)
Chlorobenzene	ug/L	ND (0.14)	ND (0.14)	-	ND (0.14)	ND (0.14)	ND (0.14)	ND (0.14)	-	ND (0.14)
Chlorobromomethane	ug/L	ND (0.38)	ND (0.38)	-	ND (0.38)	ND (0.38)	ND (0.38)	ND (0.38)	-	ND (0.38)
Chloroethane	ug/L	ND (0.44)	ND (0.44)	-	ND (0.44)	ND (0.44)	ND (0.44)	ND (0.44)	-	ND (0.44)
Chloroform (Trichloromethane)	ug/L	ND (0.46)	ND (0.46)	-	ND (0.46)	ND (0.46)	ND (0.46)	ND (0.46)	-	ND (0.46)
Chloromethane (Methyl chloride)	ug/L	ND (1.1)	ND (1.1)	-	ND (1.1)	ND (1.1)	ND (1.1)	ND (1.1)	-	ND (1.1)
cis-1,2-Dichloroethene	ug/L	ND (0.20)	ND (0.20)	-	ND (0.20)	ND (0.20)	ND (0.20)	ND (0.20)	-	ND (0.20)
cis-1,3-Dichloropropene	ug/L	ND (0.12)	ND (0.12)	-	ND (0.12)	ND (0.12)	ND (0.12)	ND (0.12)	-	ND (0.12)
Cyclohexane	ug/L	13.3	-	-	-	-	-	-	-	-

Table 7
Summary of Analytical Results - 3rd Street
Husky Energy Refinery - Surface Water
Superior, Wisconsin

Sample Location: 3rd Street
Sample ID: SW-050818-JT-02
Sample Date: 5/8/2018

Parameters	Units	
Volatiles		
1,1,1,2-Tetrachloroethane	ug/L	ND (0.14)
1,1,1-Trichloroethane	ug/L	ND (0.15)
1,1,2,2-Tetrachloroethane	ug/L	ND (0.19)
1,1,2-Trichloroethane	ug/L	ND (0.22)
1,1-Dichloroethane	ug/L	ND (0.14)
1,1-Dichloroethene	ug/L	ND (0.18)
1,1-Dichloropropene	ug/L	ND (0.18)
1,2,3-Trichlorobenzene	ug/L	ND (0.14)
1,2,3-Trichloropropane	ug/L	ND (0.66)
1,2,4-Trichlorobenzene	ug/L	ND (0.18)
1,2,4-Trimethylbenzene	ug/L	ND (0.14)
1,2-Dibromo-3-chloropropane (DBCP)	ug/L	ND (1.0)
1,2-Dibromoethane (Ethylene dibromide)	ug/L	ND (0.24)
1,2-Dichlorobenzene	ug/L	ND (0.21)
1,2-Dichloroethane	ug/L	ND (0.32)
1,2-Dichloroethene (total)	ug/L	-
1,2-Dichloropropane	ug/L	ND (0.62)
1,3,5-Trimethylbenzene	ug/L	ND (0.18)
1,3-Dichlorobenzene	ug/L	ND (0.16)
1,3-Dichloropropane	ug/L	ND (0.13)
1,4-Dichlorobenzene	ug/L	ND (0.10)
2,2-Dichloropropane	ug/L	ND (0.40)
2-Butanone (Methyl ethyl ketone) (MEK)	ug/L	ND (2.4)
2-Chlorotoluene	ug/L	ND (0.20)
2-Hexanone	ug/L	-
2-Phenylbutane (sec-Butylbenzene)	ug/L	ND (0.12)
4-Chlorotoluene	ug/L	ND (0.13)
4-Methyl-2-pentanone (Methyl isobutyl ketone) (MIBK)	ug/L	ND (0.55)
Acetone	ug/L	ND (8.8)
Allyl chloride	ug/L	ND (1.0)
Benzene	ug/L	ND (0.34)
Bromobenzene	ug/L	ND (0.16)
Bromodichloromethane	ug/L	ND (0.20)
Bromoform	ug/L	ND (1.0)
Bromomethane (Methyl bromide)	ug/L	ND (1.5)
Carbon disulfide	ug/L	-
Carbon tetrachloride	ug/L	ND (0.20)
Chlorobenzene	ug/L	ND (0.14)
Chlorobromomethane	ug/L	ND (0.38)
Chloroethane	ug/L	ND (0.44)
Chloroform (Trichloromethane)	ug/L	ND (0.46)
Chloromethane (Methyl chloride)	ug/L	ND (1.1)
cis-1,2-Dichloroethene	ug/L	ND (0.20)
cis-1,3-Dichloropropene	ug/L	ND (0.12)
Cyclohexane	ug/L	-

Table 7
Summary of Analytical Results - 3rd Street
Husky Energy Refinery - Surface Water
Superior, Wisconsin

Sample Location:	3rd Street	3rd Street	3rd Street	3rd Street	3rd Street	3rd Street	3rd Street	3rd Street	3rd Street	
Sample ID:	E. 3rd Street	3rd St Culvert	3rd St Culvert	3rd St. Culvert	SW-042918-KJ-03	SW-043018-JT-02	SW-050218-RE-02	SW-050418-JT-02	SW-050618-JT-02	
Sample Date:	4/26/2018	4/27/2018	4/28/2018	4/28/2018	4/29/2018	4/30/2018	5/2/2018	5/4/2018	5/6/2018	
Parameters	Units									
Cymene (p-Isopropyltoluene)	ug/L	2.4 J	0.70 J	-	0.31 J	ND (0.14)	ND (0.14)	ND (0.14)	-	ND (0.14)
Dibromochloromethane	ug/L	ND (0.13)	ND (0.13)	-	ND (0.13)	ND (0.13)	ND (0.13)	ND (0.13)	-	ND (0.13)
Dibromomethane	ug/L	ND (0.50)	ND (0.50)	-	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	-	ND (0.50)
Dichlorodifluoromethane (CFC-12)	ug/L	ND (0.31)	ND (0.31)	-	ND (0.31)	ND (0.31)	ND (0.31)	ND (0.31)	-	ND (0.31)
Dichlorofluoromethane	ug/L	ND (0.38)	ND (0.38)	-	ND (0.38)	ND (0.38)	ND (0.38)	ND (0.38)	-	ND (0.38)
Diisopropyl ether	ug/L	ND (0.12)	-	-	-	-	-	-	-	-
Ethyl ether	ug/L	ND (1.3)	ND (1.3)	-	ND (1.3)	ND (1.3)	ND (1.3)	ND (1.3)	-	ND (1.3)
Ethylbenzene	ug/L	4.3	1.1	-	0.33 J	ND (0.14)	ND (0.14)	ND (0.14)	-	ND (0.14)
Hexachlorobutadiene	ug/L	ND (0.48)	ND (0.48)	-	ND (0.48)	ND (0.48)	ND (0.48)	ND (0.48)	-	ND (0.48)
Isopropyl benzene	ug/L	1.0 J	0.57 J	-	ND (0.17)	ND (0.17)	ND (0.17)	ND (0.17)	-	ND (0.17)
m&p-Xylenes	ug/L	18.0	-	-	-	-	-	-	-	-
Methyl tert butyl ether (MTBE)	ug/L	ND (0.40)	ND (0.40)	-	ND (0.40)	ND (0.40)	ND (0.40)	ND (0.40)	-	ND (0.40)
Methylene chloride	ug/L	ND (1.2)	ND (1.2)	-	ND (1.2)	ND (1.2)	ND (1.2)	ND (1.2)	-	ND (1.2)
Naphthalene	ug/L	7.5	2.6 J	-	0.92 J	ND (0.42)	ND (0.42)	ND (0.42)	-	ND (0.42)
N-Butylbenzene	ug/L	0.30 J	0.29 J	-	ND (0.13)	ND (0.13)	ND (0.13)	ND (0.13)	-	ND (0.13)
N-Propylbenzene	ug/L	0.80 J	0.39 J	-	ND (0.15)	ND (0.15)	ND (0.15)	ND (0.15)	-	ND (0.15)
o-Xylene	ug/L	7.7	-	-	-	-	-	-	-	-
Styrene	ug/L	ND (0.14)	ND (0.14)	-	ND (0.14)	ND (0.14)	ND (0.14)	ND (0.14)	-	ND (0.14)
tert-Butylbenzene	ug/L	ND (0.15)	ND (0.15)	-	ND (0.15)	ND (0.15)	ND (0.15)	ND (0.15)	-	ND (0.15)
Tetrachloroethene	ug/L	ND (0.16)	ND (0.16)	-	ND (0.16)	ND (0.16)	ND (0.16)	ND (0.16)	-	ND (0.16)
Tetrahydrofuran	ug/L	ND (4.3)	ND (4.3)	-	ND (4.3)	ND (4.3)	ND (4.3)	ND (4.3)	-	ND (4.3)
Toluene	ug/L	54.3	8.7	-	2.5	0.22 J	ND (0.17)	ND (0.17)	-	ND (0.17)
trans-1,2-Dichloroethene	ug/L	ND (0.21)	ND (0.21)	-	ND (0.21)	ND (0.21)	ND (0.21)	ND (0.21)	-	ND (0.21)
trans-1,3-Dichloropropene	ug/L	ND (0.14)	ND (0.14)	-	ND (0.14)	ND (0.14)	ND (0.14)	ND (0.14)	-	ND (0.14)
Trichloroethene	ug/L	1.3	ND (0.18)	-	ND (0.18)	ND (0.18)	ND (0.18)	ND (0.18)	-	ND (0.18)
Trichlorofluoromethane (CFC-11)	ug/L	ND (0.13)	ND (0.13)	-	ND (0.13)	ND (0.13)	ND (0.13)	ND (0.13)	-	ND (0.13)
Trifluorotrchloroethane (CFC-113)	ug/L	ND (0.28)	ND (0.28)	-	ND (0.28)	ND (0.28)	ND (0.28)	ND (0.28)	-	ND (0.28)
Vinyl chloride	ug/L	ND (0.096)	ND (0.096)	-	ND (0.096)	ND (0.096)	ND (0.096)	ND (0.096)	-	ND (0.096)
Xylenes (total)	ug/L	25.7	7.0	-	ND (0.24)	ND (0.24)	ND (0.24)	ND (0.24)	-	ND (0.24)
Semi-Volatiles										
1,2,4-Trichlorobenzene	ug/L	ND (4.3)	ND (217)	ND (4.1)	-	ND (4.4)	ND (43.0)	ND (22.2)	-	-
1,2-Dichlorobenzene	ug/L	ND (3.6)	ND (182)	ND (3.5)	-	ND (3.7)	ND (36.0)	ND (18.6)	-	-
1,2-Diphenylhydrazine	ug/L	ND (1.3)	ND (66.5)	ND (1.3)	-	ND (1.3)	ND (13.2)	ND (6.8)	-	-
1,3-Dichlorobenzene	ug/L	ND (4.2)	ND (214)	ND (4.1)	-	ND (4.3)	ND (42.3)	ND (21.8)	-	-
1,4-Dichlorobenzene	ug/L	ND (3.5)	ND (176)	ND (3.4)	-	ND (3.6)	ND (34.9)	ND (18.0)	-	-
1-Methylnaphthalene	ug/L	5.2 J	ND (108)	ND (2.1)	-	ND (2.2)	ND (21.4)	ND (11.1)	-	-
2,2'-Oxybis(1-chloropropane) (bis(2-Chloroisopropyl) ether)	ug/L	ND (1.4)	ND (70.1)	ND (1.3)	-	ND (1.4)	ND (13.9)	ND (7.2)	-	-
2,4,5-Trichlorophenol	ug/L	ND (1.1)	ND (56.7)	ND (1.1)	-	ND (1.1)	ND (11.2)	ND (5.8)	-	-
2,4,6-Trichlorophenol	ug/L	ND (1.1)	ND (56.7)	ND (1.1)	-	ND (1.1)	ND (11.2)	ND (5.8)	-	-
2,4-Dichlorophenol	ug/L	ND (1.6)	ND (80.4)	ND (1.5)	-	ND (1.6)	ND (15.9)	ND (8.2)	-	-
2,4-Dimethylphenol	ug/L	ND (2.9)	ND (146)	ND (2.8)	-	ND (3.0)	ND (29.0)	ND (14.9)	-	-
2,4-Dinitrophenol	ug/L	ND (2.5)	ND (127)	ND (2.4)	-	ND (2.6)	ND (25.1)	ND (12.9)	-	-
2,4-Dinitrotoluene	ug/L	ND (1.4)	ND (69.1)	ND (1.3)	-	ND (1.4)	ND (13.7)	ND (7.1)	-	-
2,6-Dinitrotoluene	ug/L	ND (0.65)	ND (33.0)	ND (0.63)	-	ND (0.67)	ND (6.5)	ND (3.4)	-	-
2-Chloronaphthalene	ug/L	ND (2.3)	ND (115)	ND (2.2)	-	ND (2.3)	ND (22.8)	ND (11.7)	-	-

Table 7
Summary of Analytical Results - 3rd Street
Husky Energy Refinery - Surface Water
Superior, Wisconsin

Sample Location: 3rd Street
Sample ID: SW-050818-JT-02
Sample Date: 5/8/2018

Parameters	Units	
Cymene (p-Isopropyltoluene)	ug/L	ND (0.14)
Dibromochloromethane	ug/L	ND (0.13)
Dibromomethane	ug/L	ND (0.50)
Dichlorodifluoromethane (CFC-12)	ug/L	ND (0.31)
Dichlorofluoromethane	ug/L	ND (0.38)
Diisopropyl ether	ug/L	-
Ethyl ether	ug/L	ND (1.3)
Ethylbenzene	ug/L	ND (0.14)
Hexachlorobutadiene	ug/L	ND (0.48)
Isopropyl benzene	ug/L	ND (0.17)
m&p-Xylenes	ug/L	-
Methyl tert butyl ether (MTBE)	ug/L	ND (0.40)
Methylene chloride	ug/L	ND (1.2)
Naphthalene	ug/L	ND (0.42)
N-Butylbenzene	ug/L	ND (0.13)
N-Propylbenzene	ug/L	ND (0.15)
o-Xylene	ug/L	-
Styrene	ug/L	ND (0.14)
tert-Butylbenzene	ug/L	ND (0.15)
Tetrachloroethene	ug/L	ND (0.16)
Tetrahydrofuran	ug/L	ND (4.3)
Toluene	ug/L	ND (0.17)
trans-1,2-Dichloroethene	ug/L	ND (0.21)
trans-1,3-Dichloropropene	ug/L	ND (0.14)
Trichloroethene	ug/L	ND (0.18)
Trichlorofluoromethane (CFC-11)	ug/L	ND (0.13)
Trifluorotrchloroethane (CFC-113)	ug/L	ND (0.28)
Vinyl chloride	ug/L	ND (0.096)
Xylenes (total)	ug/L	ND (0.24)
Semi-Volatiles		
1,2,4-Trichlorobenzene	ug/L	-
1,2-Dichlorobenzene	ug/L	-
1,2-Diphenylhydrazine	ug/L	-
1,3-Dichlorobenzene	ug/L	-
1,4-Dichlorobenzene	ug/L	-
1-Methylnaphthalene	ug/L	-
2,2'-Oxybis(1-chloropropane) (bis(2-Chloroisopropyl) ether)	ug/L	-
2,4,5-Trichlorophenol	ug/L	-
2,4,6-Trichlorophenol	ug/L	-
2,4-Dichlorophenol	ug/L	-
2,4-Dimethylphenol	ug/L	-
2,4-Dinitrophenol	ug/L	-
2,4-Dinitrotoluene	ug/L	-
2,6-Dinitrotoluene	ug/L	-
2-Chloronaphthalene	ug/L	-

Table 7
Summary of Analytical Results - 3rd Street
Husky Energy Refinery - Surface Water
Superior, Wisconsin

Sample Location:	3rd Street	3rd Street	3rd Street	3rd Street	3rd Street	3rd Street	3rd Street	3rd Street	3rd Street
Sample ID:	E. 3rd Street	3rd St Culvert	3rd St Culvert	3rd St. Culvert	SW-042918-KJ-03	SW-043018-JT-02	SW-050218-RE-02	SW-050418-JT-02	SW-050618-JT-02
Sample Date:	4/26/2018	4/27/2018	4/28/2018	4/28/2018	4/29/2018	4/30/2018	5/2/2018	5/4/2018	5/6/2018
Parameters	Units								
2-Chlorophenol	ug/L	ND (1.2)	ND (58.2)	ND (1.1)	-	ND (1.2)	ND (11.5)	ND (5.9)	-
2-Methylnaphthalene	ug/L	6.0 J	ND (129)	ND (2.5)	-	ND (2.6)	ND (25.6)	ND (13.2)	-
2-Methylphenol	ug/L	3.6 J	ND (97.9)	ND (1.9)	-	ND (2.0)	ND (19.4)	ND (10)	-
2-Nitroaniline	ug/L	ND (1.6)	ND (78.9)	ND (1.5)	-	ND (1.6)	ND (15.6)	ND (8.1)	-
2-Nitrophenol	ug/L	ND (1.7)	ND (86.6)	ND (1.7)	-	ND (1.8)	ND (17.1)	ND (8.8)	-
3&4-Methylphenol	ug/L	2.7 J	ND (53.1)	ND (1.0)	-	ND (1.1)	ND (10.5)	ND (5.4)	-
3,3'-Dichlorobenzidine	ug/L	ND (1.2)	ND (62.4)	ND (1.2)	-	ND (1.3)	ND (12.3)	ND (6.4)	-
3-Nitroaniline	ug/L	ND (1.2)	ND (62.4)	ND (1.2)	-	ND (1.3)	ND (12.3)	ND (6.4)	-
4,6-Dinitro-2-methylphenol	ug/L	ND (1.6)	ND (78.4)	ND (1.5)	-	ND (1.6)	ND (15.5)	ND (8.0)	-
4-Bromophenyl phenyl ether	ug/L	ND (2.4)	ND (119)	ND (2.3)	-	ND (2.4)	ND (23.6)	ND (12.2)	-
4-Chloro-3-methylphenol	ug/L	ND (1.5)	ND (76.8)	ND (1.5)	-	ND (1.6)	ND (15.2)	ND (7.8)	-
4-Chloroaniline	ug/L	ND (1.9)	ND (98.5)	ND (1.9)	-	ND (2.0)	ND (19.5)	ND (10.1)	-
4-Chlorophenyl phenyl ether	ug/L	ND (1.6)	ND (78.9)	ND (1.5)	-	ND (1.6)	ND (15.6)	ND (8.1)	-
4-Nitroaniline	ug/L	ND (2.1)	ND (106)	ND (2.0)	-	ND (2.1)	ND (20.9)	ND (10.8)	-
4-Nitrophenol	ug/L	ND (2.6)	ND (133)	ND (2.5)	-	ND (2.7)	ND (26.3)	ND (13.6)	-
Acenaphthene	ug/L	ND (1.9)	ND (96.9)	ND (1.9)	-	ND (2.0)	ND (19.2)	ND (9.9)	-
Acenaphthylene	ug/L	ND (1.7)	ND (87.6)	ND (1.7)	-	ND (1.8)	ND (17.3)	ND (8.9)	-
Anthracene	ug/L	ND (1.3)	ND (66.5)	ND (1.3)	-	ND (1.3)	ND (13.2)	ND (6.8)	-
Benzo(a)anthracene	ug/L	ND (1.3)	ND (65.5)	ND (1.3)	-	ND (1.3)	ND (13.0)	ND (6.7)	-
Benzo(a)pyrene	ug/L	ND (1.8)	ND (88.7)	ND (1.7)	-	ND (1.8)	ND (17.6)	ND (9.1)	-
Benzo(b)fluoranthene	ug/L	ND (1.8)	ND (89.2)	ND (1.7)	-	ND (1.8)	ND (17.7)	ND (9.1)	-
Benzo(g,h,i)perylene	ug/L	ND (2.1)	ND (108)	ND (2.1)	-	ND (2.2)	ND (21.4)	ND (11.1)	-
Benzo(k)fluoranthene	ug/L	ND (1.8)	ND (90.7)	ND (1.7)	-	ND (1.8)	ND (18.0)	ND (9.3)	-
bis(2-Chloroethoxy)methane	ug/L	ND (1.4)	ND (69.6)	ND (1.3)	-	ND (1.4)	ND (13.8)	ND (7.1)	-
bis(2-Chloroethyl)ether	ug/L	ND (1.2)	ND (58.2)	ND (1.1)	-	ND (1.2)	ND (11.5)	ND (5.9)	-
bis(2-Ethylhexyl)phthalate (DEHP)	ug/L	ND (4.7)	ND (237)	ND (4.5)	-	ND (4.8)	ND (46.8)	ND (24.2)	-
Butyl benzylphthalate (BBP)	ug/L	ND (1.8)	ND (91.8)	ND (1.8)	-	ND (1.9)	ND (18.2)	ND (9.4)	-
Carbazole	ug/L	ND (1.1)	ND (56.7)	ND (1.1)	-	ND (1.1)	ND (11.2)	ND (5.8)	-
Chrysene	ug/L	ND (1.8)	ND (90.2)	ND (1.7)	-	ND (1.8)	ND (17.9)	ND (9.2)	-
Dibenz(a,h)anthracene	ug/L	ND (2.2)	ND (111)	ND (2.1)	-	ND (2.3)	ND (22.0)	ND (11.4)	-
Dibenzofuran	ug/L	ND (1.6)	ND (83.0)	ND (1.6)	-	ND (1.7)	ND (16.4)	ND (8.5)	-
Diethyl phthalate	ug/L	ND (1.4)	ND (72.7)	ND (1.4)	-	ND (1.5)	ND (14.4)	ND (7.4)	-
Dimethyl phthalate	ug/L	ND (1.3)	ND (64.9)	ND (1.2)	-	ND (1.3)	ND (12.9)	ND (6.6)	-
Di-n-butylphthalate (DBP)	ug/L	ND (1.4)	ND (69.6)	ND (1.3)	-	ND (1.4)	ND (13.8)	ND (7.1)	-
Di-n-octyl phthalate (DnOP)	ug/L	ND (2.1)	ND (106)	ND (2.0)	-	ND (2.1)	ND (20.9)	ND (10.8)	-
Fluoranthene	ug/L	ND (1.5)	ND (76.3)	ND (1.5)	-	ND (1.5)	ND (15.1)	ND (7.8)	-
Fluorene	ug/L	ND (1.5)	ND (74.2)	ND (1.4)	-	ND (1.5)	ND (14.7)	ND (7.6)	-
Hexachlorobenzene	ug/L	ND (2.2)	ND (111)	ND (2.1)	-	ND (2.3)	ND (22.0)	ND (11.4)	-
Hexachlorobutadiene	ug/L	ND (3.3)	ND (164)	ND (3.1)	-	ND (3.3)	ND (32.6)	ND (16.8)	-
Hexachloroethane	ug/L	ND (3.5)	ND (177)	ND (3.4)	-	ND (3.6)	ND (35.0)	ND (18.1)	-
Indeno(1,2,3-cd)pyrene	ug/L	ND (2.1)	ND (104)	ND (2.0)	-	ND (2.1)	ND (20.6)	ND (10.6)	-
Isophorone	ug/L	ND (1.2)	ND (59.8)	ND (1.1)	-	ND (1.2)	ND (11.8)	ND (6.1)	-
Naphthalene	ug/L	4.6 J	ND (123)	ND (2.3)	-	ND (2.5)	ND (24.3)	ND (12.5)	-
Nitrobenzene	ug/L	ND (1.3)	ND (66.5)	ND (1.3)	-	ND (1.3)	ND (13.2)	ND (6.8)	-
N-Nitrosodimethylamine	ug/L	ND (1.1)	ND (53.1)	ND (1.0)	-	ND (1.1)	ND (10.5)	ND (5.4)	-
N-Nitrosodi-n-propylamine	ug/L	ND (1.0)	ND (52.1)	ND (1.0)	-	ND (1.1)	ND (10.3)	ND (5.3)	-

Table 7
Summary of Analytical Results - 3rd Street
Husky Energy Refinery - Surface Water
Superior, Wisconsin

Sample Location: 3rd Street
Sample ID: SW-050818-JT-02
Sample Date: 5/8/2018

Parameters	Units	
2-Chlorophenol	ug/L	-
2-Methylnaphthalene	ug/L	-
2-Methylphenol	ug/L	-
2-Nitroaniline	ug/L	-
2-Nitrophenol	ug/L	-
3&4-Methylphenol	ug/L	-
3,3'-Dichlorobenzidine	ug/L	-
3-Nitroaniline	ug/L	-
4,6-Dinitro-2-methylphenol	ug/L	-
4-Bromophenyl phenyl ether	ug/L	-
4-Chloro-3-methylphenol	ug/L	-
4-Chloroaniline	ug/L	-
4-Chlorophenyl phenyl ether	ug/L	-
4-Nitroaniline	ug/L	-
4-Nitrophenol	ug/L	-
Acenaphthene	ug/L	-
Acenaphthylene	ug/L	-
Anthracene	ug/L	-
Benzo(a)anthracene	ug/L	-
Benzo(a)pyrene	ug/L	-
Benzo(b)fluoranthene	ug/L	-
Benzo(g,h,i)perylene	ug/L	-
Benzo(k)fluoranthene	ug/L	-
bis(2-Chloroethoxy)methane	ug/L	-
bis(2-Chloroethyl)ether	ug/L	-
bis(2-Ethylhexyl)phthalate (DEHP)	ug/L	-
Butyl benzylphthalate (BBP)	ug/L	-
Carbazole	ug/L	-
Chrysene	ug/L	-
Dibenz(a,h)anthracene	ug/L	-
Dibenzofuran	ug/L	-
Diethyl phthalate	ug/L	-
Dimethyl phthalate	ug/L	-
Di-n-butylphthalate (DBP)	ug/L	-
Di-n-octyl phthalate (DnOP)	ug/L	-
Fluoranthene	ug/L	-
Fluorene	ug/L	-
Hexachlorobenzene	ug/L	-
Hexachlorobutadiene	ug/L	-
Hexachloroethane	ug/L	-
Indeno(1,2,3-cd)pyrene	ug/L	-
Isophorone	ug/L	-
Naphthalene	ug/L	-
Nitrobenzene	ug/L	-
N-Nitrosodimethylamine	ug/L	-
N-Nitrosodi-n-propylamine	ug/L	-

Table 7
Summary of Analytical Results - 3rd Street
Husky Energy Refinery - Surface Water
Superior, Wisconsin

Sample Location:	3rd Street	3rd Street	3rd Street	3rd Street	3rd Street	3rd Street	3rd Street	3rd Street	3rd Street	
Sample ID:	E. 3rd Street	3rd St Culvert	3rd St Culvert	3rd St. Culvert	SW-042918-KJ-03	SW-043018-JT-02	SW-050218-RE-02	SW-050418-JT-02	SW-050618-JT-02	
Sample Date:	4/26/2018	4/27/2018	4/28/2018	4/28/2018	4/29/2018	4/30/2018	5/2/2018	5/4/2018	5/6/2018	
Parameters	Units									
N-Nitrosodiphenylamine	ug/L	ND (1.1)	ND (56.2)	ND (1.1)	-	ND (1.1)	ND (11.1)	ND (5.7)	-	-
Pentachlorophenol	ug/L	ND (2.7)	ND (135)	ND (2.6)	-	ND (2.7)	ND (26.7)	ND (13.8)	-	-
Phenanthrene	ug/L	ND (1.0)	ND (50.8)	ND (0.97)	-	ND (1.0)	ND (10.1)	ND (5.2)	-	-
Phenol	ug/L	5.2	ND (59.8)	ND (1.1)	-	ND (1.2)	ND (11.8)	ND (6.1)	-	-
Pyrene	ug/L	ND (1.5)	ND (76.8)	ND (1.5)	-	ND (1.6)	ND (15.2)	ND (7.8)	-	-
PFAS										
Fluorotelomer sulfonic acid (4:2)	ng/L	-	-	-	-	ND (10)	ND (10)	ND (10)	-	-
N-Ethyl perfluorooctane sulfonamidoacetic acid	ng/L	-	-	-	-	ND (10)	ND (10)	ND (10)	-	-
N-Methyl-perfluorooctane sulfonamide	ng/L	-	-	-	-	ND (10)	ND (10)	ND (10)	-	-
Perfluorhexanoic acid (PFHxA)	ng/L	-	-	-	-	480	320	100	-	-
Perfluorobutane sulfonic acid (PFBS)	ng/L	-	-	-	-	ND (10)	10	ND (10)	-	-
Perfluorobutanoic acid (PFBA)	ng/L	-	-	-	-	190	100	50	-	-
Perfluorodecanesulfonic acid (PFDS)	ng/L	-	-	-	-	ND (10)	ND (10)	ND (10)	-	-
Perfluorodecanoic acid (PFDA)	ng/L	-	-	-	-	30	20	ND (10)	-	-
Perfluorododecanoic acid (PFDoA)	ng/L	-	-	-	-	ND (10)	ND (10)	ND (10)	-	-
Perfluoroheptane sulfonic acid (PFHpS)	ng/L	-	-	-	-	ND (10)	ND (10)	ND (10)	-	-
Perfluoroheptanoic acid (PFHpA)	ng/L	-	-	-	-	110	80	30	-	-
Perfluorohexane sulfonic acid (PFHxS)	ng/L	-	-	-	-	50	60	30	-	-
Perfluorohexane sulfonic acid (PFHxS) - Branched	ng/L	-	-	-	-	ND (10)	ND (10)	ND (10)	-	-
Perfluorohexane sulfonic acid (PFHxS) - Linear	ng/L	-	-	-	-	40	50	30	-	-
Perfluorononane sulfonic acid (PFNS)	ng/L	-	-	-	-	ND (10)	ND (10)	ND (10)	-	-
Perfluorononanoic acid (PFNA)	ng/L	-	-	-	-	30	20	ND (10)	-	-
Perfluorooctane sulfonamide (FOSA)	ng/L	-	-	-	-	ND (10)	ND (10)	ND (10)	-	-
Perfluorooctane sulfonic acid (PFOS)	ng/L	-	-	-	-	60^{ce}	50^{ce}	30^{ce}	-	-
Perfluorooctane sulfonic acid (PFOS) - Branched	ng/L	-	-	-	-	30	ND (10)	10	-	-
Perfluorooctane sulfonic acid (PFOS) - Linear	ng/L	-	-	-	-	20	20	10	-	-
Perfluorooctanoic acid (PFOA)	ng/L	-	-	-	-	300^{cd}	200^{cd}	50^c	-	-
Perfluoropentane sulfonic acid (PFPeS)	ng/L	-	-	-	-	ND (10)	10	ND (10)	-	-
Perfluoropentanoic acid (PFPeA)	ng/L	-	-	-	-	160	110	40	-	-
Perfluorotetradecanoic acid (PFTeA)	ng/L	-	-	-	-	ND (10)	ND (10)	ND (10)	-	-
Perfluorotridecanoic acid (PFTrDA)	ng/L	-	-	-	-	ND (10)	ND (10)	ND (10)	-	-
Perfluoroundecanoic acid (PFUnA)	ng/L	-	-	-	-	ND (10)	ND (10)	ND (10)	-	-
Sodium 1H,1H,2H,2H-perfluorodecane sulfonate (8:2)	ng/L	-	-	-	-	920	620	230	-	-
Sodium 1H,1H,2H,2H-perfluorooctane sulfonate (6:2)	ng/L	-	-	-	-	6620	6700	1310	-	-

Table 7
Summary of Analytical Results - 3rd Street
Husky Energy Refinery - Surface Water
Superior, Wisconsin

Sample Location: 3rd Street
Sample ID: SW-050818-JT-02
Sample Date: 5/8/2018

Parameters	Units	
N-Nitrosodiphenylamine	ug/L	-
Pentachlorophenol	ug/L	-
Phenanthrene	ug/L	-
Phenol	ug/L	-
Pyrene	ug/L	-
PFAS		
Fluorotelomer sulfonic acid (4:2)	ng/L	-
N-Ethyl perfluorooctane sulfonamidoacetic acid	ng/L	-
N-Methyl-perfluorooctane sulfonamide	ng/L	-
Perfluorhexanoic acid (PFHxA)	ng/L	-
Perfluorobutane sulfonic acid (PFBS)	ng/L	-
Perfluorobutanoic acid (PFBA)	ng/L	-
Perfluorodecanesulfonic acid (PFDS)	ng/L	-
Perfluorodecanoic acid (PFDA)	ng/L	-
Perfluorododecanoic acid (PFDoA)	ng/L	-
Perfluoroheptane sulfonic acid (PFHpS)	ng/L	-
Perfluoroheptanoic acid (PFHpA)	ng/L	-
Perfluorohexane sulfonic acid (PFHxS)	ng/L	-
Perfluorohexane sulfonic acid (PFHxS) - Branched	ng/L	-
Perfluorohexane sulfonic acid (PFHxS) - Linear	ng/L	-
Perfluorononane sulfonic acid (PFNS)	ng/L	-
Perfluorononanoic acid (PFNA)	ng/L	-
Perfluorooctane sulfonamide (FOSA)	ng/L	-
Perfluorooctane sulfonic acid (PFOS)	ng/L	-
Perfluorooctane sulfonic acid (PFOS) - Branched	ng/L	-
Perfluorooctane sulfonic acid (PFOS) - Linear	ng/L	-
Perfluorooctanoic acid (PFOA)	ng/L	-
Perfluoropentane sulfonic acid (PFPeS)	ng/L	-
Perfluoropentanoic acid (PFPeA)	ng/L	-
Perfluorotetradecanoic acid (PFTeA)	ng/L	-
Perfluorotridecanoic acid (PFTrDA)	ng/L	-
Perfluoroundecanoic acid (PFUnA)	ng/L	-
Sodium 1H,1H,2H,2H-perfluorodecane sulfonate (8:2)	ng/L	-
Sodium 1H,1H,2H,2H-perfluorooctane sulfonate (6:2)	ng/L	-

Table 7
Summary of Analytical Results - 3rd Street
Husky Energy Refinery - Surface Water
Superior, Wisconsin

Sample Location:	3rd Street	3rd Street	3rd Street	3rd Street	3rd Street	3rd Street	3rd Street	3rd Street	3rd Street	
Sample ID:	E. 3rd Street	3rd St Culvert	3rd St Culvert	3rd St. Culvert	SW-042918-KJ-03	SW-043018-JT-02	SW-050218-RE-02	SW-050418-JT-02	SW-050618-JT-02	
Sample Date:	4/26/2018	4/27/2018	4/28/2018	4/28/2018	4/29/2018	4/30/2018	5/2/2018	5/4/2018	5/6/2018	
Parameters	Units									
Metals										
Aluminum	ug/L	11800	-	-	-	-	-	-	-	
Antimony	ug/L	13.8	-	-	-	-	-	-	-	
Arsenic	ug/L	6.2 J ^b	ND (4.1)	-	ND (4.1)	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)	
Barium	ug/L	148	47.5	-	45.5	45.1	55.1	39.4	ND (38.7)	
Beryllium	ug/L	0.15 J	-	-	-	-	-	-	-	
Boron	ug/L	295	-	-	-	-	-	-	-	
Cadmium	ug/L	ND (0.46)	ND (0.64)	-	ND (0.64)	ND (0.46)	ND (0.46)	ND (0.46)	ND (0.46)	
Calcium	ug/L	41500	-	-	-	-	-	-	-	
Chromium	ug/L	14.2	ND (1.4)	-	ND (1.4)	0.74 J	1.5 J	1.0 J	ND (0.70)	
Cobalt	ug/L	4.8	-	-	-	-	-	-	-	
Copper	ug/L	20.0 ^a	-	-	-	-	-	-	-	
Iron	ug/L	9380 ^a	-	-	-	-	-	-	-	
Lead	ug/L	12.9	ND (3.3)	-	ND (3.3)	ND (3.0)	3.2 J	ND (3.0)	ND (3.0)	
Magnesium	ug/L	15200	-	-	-	-	-	-	-	
Manganese	ug/L	387 ^b	-	-	-	-	-	-	-	
Mercury	ug/L	-	ND (0.062)	-	ND (0.062)	ND (0.062)	ND (0.062)	ND (0.062)	ND (0.062)	
Molybdenum	ug/L	23.6	-	-	-	-	-	-	-	
Nickel	ug/L	9.8	-	-	-	-	-	-	-	
Potassium	ug/L	14700	-	-	-	-	-	-	-	
Selenium	ug/L	ND (6.4)	ND (4.7)	-	ND (4.7)	ND (6.4)	ND (6.4)	ND (6.4)	ND (6.4)	
Silver	ug/L	ND (0.27)	ND (0.38)	-	ND (0.38)	ND (0.27)	ND (0.27)	ND (0.27)	ND (0.27)	
Sodium	ug/L	51300	-	-	-	-	-	-	-	
Thallium	ug/L	5.7 J	-	-	-	-	-	-	-	
Tin	ug/L	ND (5.6)	-	-	-	-	-	-	-	
Titanium	ug/L	390	-	-	-	-	-	-	-	
Vanadium	ug/L	28.4 ^a	-	-	-	-	-	-	-	
Zinc	ug/L	113	-	-	-	-	-	-	-	
Petroleum Hydrocarbons										
Total Petroleum Hydrocarbons - Gasoline Range Organics	ug/L	297	148	-	328	11.1 J	ND (8.9)	ND (8.9)	11.7 J	ND (22.7)
Total Petroleum Hydrocarbons (C10-C28) DRO	mg/L	1.3	-	-	-	0.56	0.60	0.14	ND (0.11)	0.13
Total Petroleum Hydrocarbons (C10-C36)	mg/L	1.4	6.1	-	2.7	-	-	-	-	-
Total Petroleum Hydrocarbons (C24-C36) Motor Oil	mg/L	-	-	-	-	0.22	0.26	0.089	0.069	ND (0.11)

Table 7
Summary of Analytical Results - 3rd Street
Husky Energy Refinery - Surface Water
Superior, Wisconsin

Sample Location: 3rd Street
Sample ID: SW-050818-JT-02
Sample Date: 5/8/2018

Parameters	Units	
Metals		
Aluminum	ug/L	-
Antimony	ug/L	-
Arsenic	ug/L	ND (5.2)
Barium	ug/L	ND (46.0)
Beryllium	ug/L	-
Boron	ug/L	-
Cadmium	ug/L	ND (0.46)
Calcium	ug/L	-
Chromium	ug/L	0.51 J
Cobalt	ug/L	-
Copper	ug/L	-
Iron	ug/L	-
Lead	ug/L	ND (3.0)
Magnesium	ug/L	-
Manganese	ug/L	-
Mercury	ug/L	ND (0.062)
Molybdenum	ug/L	-
Nickel	ug/L	-
Potassium	ug/L	-
Selenium	ug/L	ND (6.4)
Silver	ug/L	ND (0.27)
Sodium	ug/L	-
Thallium	ug/L	-
Tin	ug/L	-
Titanium	ug/L	-
Vanadium	ug/L	-
Zinc	ug/L	-
Petroleum Hydrocarbons		
Total Petroleum Hydrocarbons - Gasoline Range Organics	ug/L	22.2 J
Total Petroleum Hydrocarbons (C10-C28) DRO	mg/L	0.16
Total Petroleum Hydrocarbons (C10-C36)	mg/L	-
Total Petroleum Hydrocarbons (C24-C36) Motor Oil	mg/L	0.089

**Table 7
Summary of Analytical Results - 3rd Street
Husky Energy Refinery - Surface Water
Superior, Wisconsin**

Sample Location:	3rd Street	3rd Street	3rd Street	3rd Street	3rd Street	3rd Street	3rd Street	3rd Street	3rd Street
Sample ID:	E. 3rd Street	3rd St Culvert	3rd St Culvert	3rd St. Culvert	SW-042918-KJ-03	SW-043018-JT-02	SW-050218-RE-02	SW-050418-JT-02	SW-050618-JT-02
Sample Date:	4/26/2018	4/27/2018	4/28/2018	4/28/2018	4/29/2018	4/30/2018	5/2/2018	5/4/2018	5/6/2018

Parameters	Units									
General Chemistry										
Ammonia-N	mg/L	0.72 J	0.16	-	0.11	-	-	-	-	-
Hardness	ug/L	166000	-	-	-	-	-	-	-	-
Oil and grease	mg/L	6.4	ND (1.4)	-	ND (1.5)	ND (1.5)	ND (1.4)	ND (1.4)	ND (1.4)	ND (1.5)
Sulfate	mg/L	25.8	12.1	-	12.0	11.7	11.4	9.8	9.5	9.6

- Notes:
- mg/L - milligrams per litre
 - ng/L - nanogram per liter
 - ug/L - micrograms per litre
 - ND (0.25) - not detected at the associated reporting limit
 - J - estimated concentration
 - ^a - Selected aquatic life protection surface water screening criteria (reg or permit)
 - ^b - selected Human Health surface water screening criteria (reg or permit)
 - ^c - Minnesota Department of Health. Human Health-Based Water Guidance, Drinking water health-based values (HBV)
 - ^d - USEPA 2016. Drinking Water Health Advisory
 - ^e - Rule 57 Water Quality Values for Surface Water Assessment, Section Michigan Department of Environmental Quality (DEQ) Non-drink values
- 90 - concentration exceeds the indicated standard

**Table 7
Summary of Analytical Results - 3rd Street
Husky Energy Refinery - Surface Water
Superior, Wisconsin**

Sample Location: 3rd Street
Sample ID: SW-050818-JT-02
Sample Date: 5/8/2018

Parameters	Units	
General Chemistry		
Ammonia-N	mg/L	-
Hardness	ug/L	-
Oil and grease	mg/L	ND (1.4)
Sulfate	mg/L	9.2

- Notes:
- mg/L - milligrams per litre
 - ng/L - nanogram per liter
 - ug/L - micrograms per litre
 - ND (0.25) - not detected at the associated reporting limit
 - J - estimated concentration
 - ^a - Selected aquatic life protection surface water screening criteria (reg or permit)
 - ^b - selected Human Health surface water screening criteria (reg or permit)
 - ^c - Minnesota Department of Health. Human Health-Based Water Guidance, Drinking water health-based values (HBV)
 - ^d - USEPA 2016. Drinking Water Health Advisory
 - ^e - Rule 57 Water Quality Values for Surface Water Assessment, Section Michigan Department of Environmental Quality (DEQ) Non-drink values
- 90 - concentration exceeds the indicated standard

Table 8
Summary of Analytical Results - Mouth
Husky Energy Refinery - Surface Water
Superior, Wisconsin

Sample Location:	Mouth	Mouth	Mouth	Mouth	Mouth	Mouth	Mouth	Mouth	Mouth	
Sample ID:	Mouth	Mouth	SW-042918-KJ-02	SW-043018-JT-01	SW-050218-RE-01	SW-050418-JT-01	SW-050618-JT-01	DUP-050618-JT-01	SW-050818-JT-01	
Sample Date:	4/27/2018	4/28/2018	4/29/2018	4/30/2018	5/2/2018	5/4/2018	5/6/2018	5/6/2018 Duplicate	5/8/2018	
Parameters	Units									
Volatiles										
1,1,1,2-Tetrachloroethane	ug/L	ND (0.14)	ND (0.14)	ND (0.14)	ND (0.14)	ND (0.14)	-	ND (0.14)	ND (0.14)	ND (0.14)
1,1,1-Trichloroethane	ug/L	ND (0.15)	ND (0.15)	ND (0.15)	ND (0.15)	ND (0.15)	-	ND (0.15)	ND (0.15)	ND (0.15)
1,1,2,2-Tetrachloroethane	ug/L	ND (0.19)	ND (0.19)	ND (0.19)	ND (0.19)	ND (0.19)	-	ND (0.19)	ND (0.19)	ND (0.19)
1,1,2-Trichloroethane	ug/L	ND (0.22)	ND (0.22)	ND (0.22)	ND (0.22)	ND (0.22)	-	ND (0.22)	ND (0.22)	ND (0.22)
1,1-Dichloroethane	ug/L	ND (0.14)	ND (0.14)	ND (0.14)	ND (0.14)	ND (0.14)	-	ND (0.14)	ND (0.14)	ND (0.14)
1,1-Dichloroethene	ug/L	ND (0.18)	ND (0.18)	ND (0.18)	ND (0.18)	ND (0.18)	-	ND (0.18)	ND (0.18)	ND (0.18)
1,1-Dichloropropene	ug/L	ND (0.18)	ND (0.18)	ND (0.18)	ND (0.18)	ND (0.18)	-	ND (0.18)	ND (0.18)	ND (0.18)
1,2,3-Trichlorobenzene	ug/L	ND (0.14)	ND (0.14)	ND (0.14)	ND (0.14)	ND (0.14)	-	ND (0.14)	ND (0.14)	ND (0.14)
1,2,3-Trichloropropane	ug/L	ND (0.66)	ND (0.66)	ND (0.66)	ND (0.66)	ND (0.66)	-	ND (0.66)	ND (0.66)	ND (0.66)
1,2,4-Trichlorobenzene	ug/L	ND (0.18)	ND (0.18)	ND (0.18)	ND (0.18)	ND (0.18)	-	ND (0.18)	ND (0.18)	ND (0.18)
1,2,4-Trimethylbenzene	ug/L	4.6	ND (1.2)	0.22 J	ND (0.14)	ND (0.14)	-	ND (0.14)	ND (0.14)	ND (0.14)
1,2-Dibromo-3-chloropropane (DBCP)	ug/L	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)	-	ND (1.0)	ND (1.0)	ND (1.0)
1,2-Dibromoethane (Ethylene dibromide)	ug/L	ND (0.24)	ND (0.24)	ND (0.24)	ND (0.24)	ND (0.24)	-	ND (0.24)	ND (0.24)	ND (0.24)
1,2-Dichlorobenzene	ug/L	ND (0.21)	ND (0.21)	ND (0.21)	ND (0.21)	ND (0.21)	-	ND (0.21)	ND (0.21)	ND (0.21)
1,2-Dichloroethane	ug/L	ND (0.32)	ND (0.32)	ND (0.32)	ND (0.32)	ND (0.32)	-	ND (0.32)	ND (0.32)	ND (0.32)
1,2-Dichloropropane	ug/L	ND (0.62)	ND (0.62)	ND (0.62)	ND (0.62)	ND (0.62)	-	ND (0.62)	ND (0.62)	ND (0.62)
1,3,5-Trimethylbenzene	ug/L	1.2	0.40 J	ND (0.18)	ND (0.18)	ND (0.18)	-	ND (0.18)	ND (0.18)	ND (0.18)
1,3-Dichlorobenzene	ug/L	ND (0.16)	ND (0.16)	ND (0.16)	ND (0.16)	ND (0.16)	-	ND (0.16)	ND (0.16)	ND (0.16)
1,3-Dichloropropane	ug/L	ND (0.13)	ND (0.13)	ND (0.13)	ND (0.13)	ND (0.13)	-	ND (0.13)	ND (0.13)	ND (0.13)
1,4-Dichlorobenzene	ug/L	ND (0.10)	ND (0.10)	ND (0.10)	ND (0.10)	ND (0.10)	-	ND (0.10)	ND (0.10)	ND (0.10)
2,2-Dichloropropane	ug/L	ND (0.40)	ND (0.40)	ND (0.40)	ND (0.40)	ND (0.40)	-	ND (0.40)	ND (0.40)	ND (0.40)
2-Butanone (Methyl ethyl ketone) (MEK)	ug/L	ND (2.4)	ND (2.4)	ND (2.4)	ND (2.4)	ND (2.4)	-	ND (2.4)	ND (2.4)	ND (2.4)
2-Chlorotoluene	ug/L	ND (0.20)	ND (0.20)	ND (0.20)	ND (0.20)	ND (0.20)	-	ND (0.20)	ND (0.20)	ND (0.20)
2-Phenylbutane (sec-Butylbenzene)	ug/L	0.17 J	ND (0.12)	ND (0.12)	ND (0.12)	ND (0.12)	-	ND (0.12)	ND (0.12)	ND (0.12)
4-Chlorotoluene	ug/L	ND (0.13)	ND (0.13)	ND (0.13)	ND (0.13)	ND (0.13)	-	ND (0.13)	ND (0.13)	ND (0.13)
4-Methyl-2-pentanone (Methyl isobutyl ketone) (MIBK)	ug/L	ND (0.55)	ND (0.55)	ND (0.55)	ND (0.55)	ND (0.55)	-	ND (0.55)	ND (0.55)	ND (0.55)
Acetone	ug/L	17.9 J	ND (8.8)	ND (8.8)	ND (8.8)	ND (8.8)	-	ND (8.8)	ND (8.8)	ND (8.8)
Allyl chloride	ug/L	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)	-	ND (1.0)	ND (1.0)	ND (1.0)
Benzene	ug/L	7.5	2.1	ND (0.34)	ND (0.34)	ND (0.34)	-	ND (0.34)	ND (0.34)	ND (0.34)
Bromobenzene	ug/L	ND (0.16)	ND (0.16)	ND (0.16)	ND (0.16)	ND (0.16)	-	ND (0.16)	ND (0.16)	ND (0.16)
Bromodichloromethane	ug/L	ND (0.20)	ND (0.20)	ND (0.20)	ND (0.20)	ND (0.20)	-	ND (0.20)	ND (0.20)	ND (0.20)
Bromoform	ug/L	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)	-	ND (1.0)	ND (1.0)	ND (1.0)
Bromomethane (Methyl bromide)	ug/L	ND (1.5)	ND (1.5)	ND (1.5)	ND (1.5)	ND (1.5)	-	ND (1.5)	ND (1.5)	ND (1.5)
Carbon disulfide	ug/L	ND (0.37)	ND (0.37)	-	-	-	-	-	-	-
Carbon tetrachloride	ug/L	ND (0.20)	ND (0.20)	ND (0.20)	ND (0.20)	ND (0.20)	-	ND (0.20)	ND (0.20)	ND (0.20)
Chlorobenzene	ug/L	ND (0.14)	ND (0.14)	ND (0.14)	ND (0.14)	ND (0.14)	-	ND (0.14)	ND (0.14)	ND (0.14)
Chlorobromomethane	ug/L	ND (0.38)	ND (0.38)	ND (0.38)	ND (0.38)	ND (0.38)	-	ND (0.38)	ND (0.38)	ND (0.38)
Chloroethane	ug/L	ND (0.44)	ND (0.44)	ND (0.44)	ND (0.44)	ND (0.44)	-	ND (0.44)	ND (0.44)	ND (0.44)
Chloroform (Trichloromethane)	ug/L	ND (0.46)	ND (0.46)	ND (0.46)	ND (0.46)	ND (0.46)	-	ND (0.46)	ND (0.46)	ND (0.46)
Chloromethane (Methyl chloride)	ug/L	ND (1.1)	ND (1.1)	ND (1.1)	ND (1.1)	ND (1.1)	-	ND (1.1)	ND (1.1)	ND (1.1)
cis-1,2-Dichloroethene	ug/L	ND (0.20)	ND (0.20)	ND (0.20)	ND (0.20)	ND (0.20)	-	ND (0.20)	ND (0.20)	ND (0.20)
cis-1,3-Dichloropropene	ug/L	ND (0.12)	ND (0.12)	ND (0.12)	ND (0.12)	ND (0.12)	-	ND (0.12)	ND (0.12)	ND (0.12)
Cymene (p-Isopropyltoluene)	ug/L	0.74 J	0.34 J	0.14 J	ND (0.14)	ND (0.14)	-	ND (0.14)	ND (0.14)	ND (0.14)
Dibromochloromethane	ug/L	ND (0.13)	ND (0.13)	ND (0.13)	ND (0.13)	ND (0.13)	-	ND (0.13)	ND (0.13)	ND (0.13)
Dibromomethane	ug/L	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	-	ND (0.50)	ND (0.50)	ND (0.50)

Table 8
Summary of Analytical Results - Mouth
Husky Energy Refinery - Surface Water
Superior, Wisconsin

Sample Location:	Mouth	Mouth	Mouth	Mouth	Mouth	Mouth	Mouth	Mouth	Mouth	
Sample ID:	Mouth	Mouth	SW-042918-KJ-02	SW-043018-JT-01	SW-050218-RE-01	SW-050418-JT-01	SW-050618-JT-01	DUP-050618-JT-01	SW-050818-JT-01	
Sample Date:	4/27/2018	4/28/2018	4/29/2018	4/30/2018	5/2/2018	5/4/2018	5/6/2018	5/6/2018 Duplicate	5/8/2018	
Parameters	Units									
Dichlorodifluoromethane (CFC-12)	ug/L	ND (0.31)	ND (0.31)	ND (0.31)	ND (0.31)	ND (0.31)	-	ND (0.31)	ND (0.31)	ND (0.31)
Dichlorofluoromethane	ug/L	ND (0.38)	ND (0.38)	ND (0.38)	ND (0.38)	ND (0.38)	-	ND (0.38)	ND (0.38)	ND (0.38)
Ethyl ether	ug/L	ND (1.3)	ND (1.3)	ND (1.3)	ND (1.3)	ND (1.3)	-	ND (1.3)	ND (1.3)	ND (1.3)
Ethylbenzene	ug/L	1.3	0.37 J	ND (0.14)	ND (0.14)	ND (0.14)	-	ND (0.14)	ND (0.14)	ND (0.14)
Hexachlorobutadiene	ug/L	ND (0.48)	ND (0.48)	ND (0.48)	ND (0.48)	ND (0.48)	-	ND (0.48)	ND (0.48)	ND (0.48)
Isopropyl benzene	ug/L	0.63 J	0.18 J	ND (0.17)	ND (0.17)	ND (0.17)	-	ND (0.17)	ND (0.17)	ND (0.17)
Methyl tert butyl ether (MTBE)	ug/L	ND (0.40)	ND (0.40)	ND (0.40)	ND (0.40)	ND (0.40)	-	ND (0.40)	ND (0.40)	ND (0.40)
Methylene chloride	ug/L	ND (1.2)	ND (1.2)	ND (1.2)	ND (1.2)	ND (1.2)	-	ND (1.2)	ND (1.2)	ND (1.2)
Naphthalene	ug/L	2.9 J	0.95 J	ND (0.42)	ND (0.42)	ND (0.42)	-	ND (0.42)	ND (0.42)	ND (0.42)
N-Butylbenzene	ug/L	0.29 J	ND (0.13)	ND (0.13)	ND (0.13)	ND (0.13)	-	ND (0.13)	ND (0.13)	ND (0.13)
N-Propylbenzene	ug/L	0.46 J	ND (0.15)	ND (0.15)	ND (0.15)	ND (0.15)	-	ND (0.15)	ND (0.15)	ND (0.15)
Styrene	ug/L	ND (0.14)	ND (0.14)	ND (0.14)	ND (0.14)	ND (0.14)	-	ND (0.14)	ND (0.14)	ND (0.14)
tert-Butylbenzene	ug/L	ND (0.15)	ND (0.15)	ND (0.15)	ND (0.15)	ND (0.15)	-	ND (0.15)	ND (0.15)	ND (0.15)
Tetrachloroethene	ug/L	ND (0.16)	ND (0.16)	ND (0.16)	ND (0.16)	ND (0.16)	-	ND (0.16)	ND (0.16)	ND (0.16)
Tetrahydrofuran	ug/L	ND (4.3)	ND (4.3)	ND (4.3)	ND (4.3)	ND (4.3)	-	ND (4.3)	ND (4.3)	ND (4.3)
Toluene	ug/L	9.9	2.5	0.32 J	ND (0.17)	ND (0.17)	-	ND (0.17)	ND (0.17)	ND (0.17)
trans-1,2-Dichloroethene	ug/L	ND (0.21)	ND (0.21)	ND (0.21)	ND (0.21)	ND (0.21)	-	ND (0.21)	ND (0.21)	ND (0.21)
trans-1,3-Dichloropropene	ug/L	ND (0.14)	ND (0.14)	ND (0.14)	ND (0.14)	ND (0.14)	-	ND (0.14)	ND (0.14)	ND (0.14)
Trichloroethene	ug/L	ND (0.18)	ND (0.18)	ND (0.18)	ND (0.18)	ND (0.18)	-	ND (0.18)	ND (0.18)	ND (0.18)
Trichlorofluoromethane (CFC-11)	ug/L	ND (0.13)	ND (0.13)	ND (0.13)	ND (0.13)	ND (0.13)	-	ND (0.13)	ND (0.13)	ND (0.13)
Trifluorotrchloroethane (CFC-113)	ug/L	ND (0.28)	ND (0.28)	ND (0.28)	ND (0.28)	ND (0.28)	-	ND (0.28)	ND (0.28)	ND (0.28)
Vinyl chloride	ug/L	ND (0.096)	ND (0.096)	ND (0.096)	ND (0.096)	ND (0.096)	-	ND (0.096)	ND (0.096)	ND (0.096)
Xylenes (total)	ug/L	8.1	ND (0.24)	ND (0.24)	ND (0.24)	ND (0.24)	-	ND (0.24)	ND (0.24)	ND (0.24)
Semi-Volatiles										
1,2,4-Trichlorobenzene	ug/L	ND (222)	ND (4.1)	ND (22.6)	ND (43.9)	ND (21.0)	-	-	-	-
1,2-Dichlorobenzene	ug/L	ND (186)	ND (3.4)	ND (19.0)	ND (36.8)	ND (17.6)	-	-	-	-
1,2-Diphenylhydrazine	ug/L	ND (67.9)	ND (1.3)	ND (6.9)	ND (13.4)	ND (6.4)	-	-	-	-
1,3-Dichlorobenzene	ug/L	ND (218)	ND (4.0)	ND (22.3)	ND (43.2)	ND (20.8)	-	-	-	-
1,4-Dichlorobenzene	ug/L	ND (180)	ND (3.3)	ND (18.4)	ND (35.6)	ND (17.1)	-	-	-	-
1-Methylnaphthalene	ug/L	ND (111)	ND (2.0)	ND (11.3)	ND (21.9)	ND (10.5)	-	-	-	-
2,2'-Oxybis(1-chloropropane) (bis(2-Chloroisopropyl) ether)	ug/L	ND (71.6)	ND (1.3)	ND (7.3)	ND (14.2)	ND (6.8)	-	-	-	-
2,4,5-Trichlorophenol	ug/L	ND (57.9)	ND (1.1)	ND (5.9)	ND (11.5)	ND (5.5)	-	-	-	-
2,4,6-Trichlorophenol	ug/L	ND (57.9)	ND (1.1)	ND (5.9)	ND (11.5)	ND (5.5)	-	-	-	-
2,4-Dichlorophenol	ug/L	ND (82.1)	ND (1.5)	ND (8.4)	ND (16.3)	ND (7.8)	-	-	-	-
2,4-Dimethylphenol	ug/L	ND (149)	ND (2.8)	ND (15.3)	ND (29.6)	ND (14.2)	-	-	-	-
2,4-Dinitrophenol	ug/L	ND (129)	ND (2.4)	ND (13.2)	ND (25.6)	ND (12.3)	-	-	-	-
2,4-Dinitrotoluene	ug/L	ND (70.5)	ND (1.3)	ND (7.2)	ND (14.0)	ND (6.7)	-	-	-	-
2,6-Dinitrotoluene	ug/L	ND (33.7)	ND (0.62)	ND (3.4)	ND (6.7)	ND (3.2)	-	-	-	-
2-Chloronaphthalene	ug/L	ND (117)	ND (2.2)	ND (12.0)	ND (23.2)	ND (11.2)	-	-	-	-
2-Chlorophenol	ug/L	ND (59.5)	ND (1.1)	ND (6.1)	ND (11.8)	ND (5.6)	-	-	-	-
2-Methylnaphthalene	ug/L	ND (132)	ND (2.4)	ND (13.5)	ND (26.1)	ND (12.6)	-	-	-	-
2-Methylphenol	ug/L	ND (100)	ND (1.8)	ND (10.2)	ND (19.8)	ND (9.5)	-	-	-	-
2-Nitroaniline	ug/L	ND (80.5)	ND (1.5)	ND (8.2)	ND (15.9)	ND (7.6)	-	-	-	-
2-Nitrophenol	ug/L	ND (88.4)	ND (1.6)	ND (9.0)	ND (17.5)	ND (8.4)	-	-	-	-
3&4-Methylphenol	ug/L	ND (54.2)	ND (1.0)	ND (5.5)	ND (10.7)	ND (5.2)	-	-	-	-

Table 8
Summary of Analytical Results - Mouth
Husky Energy Refinery - Surface Water
Superior, Wisconsin

Sample Location:	Mouth	Mouth	Mouth	Mouth	Mouth	Mouth	Mouth	Mouth	Mouth	
Sample ID:	Mouth	Mouth	SW-042918-KJ-02	SW-043018-JT-01	SW-050218-RE-01	SW-050418-JT-01	SW-050618-JT-01	DUP-050618-JT-01	SW-050818-JT-01	
Sample Date:	4/27/2018	4/28/2018	4/29/2018	4/30/2018	5/2/2018	5/4/2018	5/6/2018	5/6/2018 Duplicate	5/8/2018	
Parameters	Units									
3,3'-Dichlorobenzidine	ug/L	ND (63.7)	ND (1.2)	ND (6.5)	ND (12.6)	ND (6.0)	-	-	-	-
3-Nitroaniline	ug/L	ND (63.7)	ND (1.2)	ND (6.5)	ND (12.6)	ND (6.0)	-	-	-	-
4,6-Dinitro-2-methylphenol	ug/L	ND (80.0)	ND (1.5)	ND (8.2)	ND (15.8)	ND (7.6)	-	-	-	-
4-Bromophenyl phenyl ether	ug/L	ND (122)	ND (2.2)	ND (12.4)	ND (24.1)	ND (11.6)	-	-	-	-
4-Chloro-3-methylphenol	ug/L	ND (78.4)	ND (1.4)	ND (8.0)	ND (15.5)	ND (7.4)	-	-	-	-
4-Chloroaniline	ug/L	ND (101)	ND (1.9)	ND (10.3)	ND (19.9)	ND (9.6)	-	-	-	-
4-Chlorophenyl phenyl ether	ug/L	ND (80.5)	ND (1.5)	ND (8.2)	ND (15.9)	ND (7.6)	-	-	-	-
4-Nitroaniline	ug/L	ND (108)	ND (2.0)	ND (11.0)	ND (21.4)	ND (10.2)	-	-	-	-
4-Nitrophenol	ug/L	ND (136)	ND (2.5)	ND (13.9)	ND (26.9)	ND (12.9)	-	-	-	-
Acenaphthene	ug/L	ND (98.9)	ND (1.8)	ND (10.1)	ND (19.6)	ND (9.4)	-	-	-	-
Acenaphthylene	ug/L	ND (89.5)	ND (1.7)	ND (9.1)	ND (17.7)	ND (8.5)	-	-	-	-
Anthracene	ug/L	ND (67.9)	ND (1.3)	ND (6.9)	ND (13.4)	ND (6.4)	-	-	-	-
Benzo(a)anthracene	ug/L	ND (66.8)	ND (1.2)	ND (6.8)	ND (13.2)	ND (6.4)	-	-	-	-
Benzo(a)pyrene	ug/L	ND (90.5)	ND (1.7)	ND (9.2)	ND (17.9)	ND (8.6)	-	-	-	-
Benzo(b)fluoranthene	ug/L	ND (91.1)	ND (1.7)	ND (9.3)	ND (18.0)	ND (8.6)	-	-	-	-
Benzo(g,h,i)perylene	ug/L	ND (111)	ND (2.0)	ND (11.3)	ND (21.9)	ND (10.5)	-	-	-	-
Benzo(k)fluoranthene	ug/L	ND (92.6)	ND (1.7)	ND (9.5)	ND (18.3)	ND (8.8)	-	-	-	-
bis(2-Chloroethoxy)methane	ug/L	ND (71.1)	ND (1.3)	ND (7.3)	ND (14.1)	ND (6.8)	-	-	-	-
bis(2-Chloroethyl)ether	ug/L	ND (59.5)	ND (1.1)	ND (6.1)	ND (11.8)	ND (5.6)	-	-	-	-
bis(2-Ethylhexyl)phthalate (DEHP)	ug/L	ND (242)	ND (4.5)	ND (24.7)	ND (47.8)	ND (23.0)	-	-	-	-
Butyl benzylphthalate (BBP)	ug/L	ND (93.7)	ND (1.7)	ND (9.6)	ND (18.5)	ND (8.9)	-	-	-	-
Carbazole	ug/L	ND (57.9)	ND (1.1)	ND (5.9)	ND (11.5)	ND (5.5)	-	-	-	-
Chrysene	ug/L	ND (92.1)	ND (1.7)	ND (9.4)	ND (18.2)	ND (8.8)	-	-	-	-
Dibenz(a,h)anthracene	ug/L	ND (114)	ND (2.1)	ND (11.6)	ND (22.5)	ND (10.8)	-	-	-	-
Dibenzofuran	ug/L	ND (84.7)	ND (1.6)	ND (8.7)	ND (16.8)	ND (8.0)	-	-	-	-
Diethyl phthalate	ug/L	ND (74.2)	ND (1.4)	ND (7.6)	ND (14.7)	ND (7.0)	-	-	-	-
Dimethyl phthalate	ug/L	ND (66.3)	ND (1.2)	ND (6.8)	ND (13.1)	ND (6.3)	-	-	-	-
Di-n-butylphthalate (DBP)	ug/L	ND (71.1)	ND (1.3)	ND (7.3)	ND (14.1)	ND (6.8)	-	-	-	-
Di-n-octyl phthalate (DnOP)	ug/L	ND (108)	ND (2.0)	ND (11.0)	ND (21.4)	ND (10.2)	-	-	-	-
Fluoranthene	ug/L	ND (77.9)	ND (1.4)	ND (8.0)	ND (15.4)	ND (7.4)	-	-	-	-
Fluorene	ug/L	ND (75.8)	ND (1.4)	ND (7.7)	ND (15.0)	ND (7.2)	-	-	-	-
Hexachlorobenzene	ug/L	ND (114)	ND (2.1)	ND (11.6)	ND (22.5)	ND (10.8)	-	-	-	-
Hexachlorobutadiene	ug/L	ND (168)	ND (3.1)	ND (17.2)	ND (33.2)	ND (16.0)	-	-	-	-
Hexachloroethane	ug/L	ND (181)	ND (3.3)	ND (18.4)	ND (35.7)	ND (17.2)	-	-	-	-
Indeno(1,2,3-cd)pyrene	ug/L	ND (106)	ND (2.0)	ND (10.9)	ND (21.0)	ND (10.1)	-	-	-	-
Isophorone	ug/L	ND (61.1)	ND (1.1)	ND (6.2)	ND (12.1)	ND (5.8)	-	-	-	-
Naphthalene	ug/L	ND (125)	ND (2.3)	ND (12.8)	ND (24.8)	ND (11.9)	-	-	-	-
Nitrobenzene	ug/L	ND (67.9)	ND (1.3)	ND (6.9)	ND (13.4)	ND (6.4)	-	-	-	-
N-Nitrosodimethylamine	ug/L	ND (54.2)	ND (1.0)	ND (5.5)	ND (10.7)	ND (5.2)	-	-	-	-
N-Nitrosodi-n-propylamine	ug/L	ND (53.2)	ND (0.98)	ND (5.4)	ND (10.5)	ND (5.0)	-	-	-	-
N-Nitrosodiphenylamine	ug/L	ND (57.4)	ND (1.1)	ND (5.9)	ND (11.4)	ND (5.4)	-	-	-	-
Pentachlorophenol	ug/L	ND (138)	ND (2.5)	ND (14.1)	ND (27.3)	ND (13.1)	-	-	-	-
Phenanthrene	ug/L	ND (51.8)	ND (0.96)	ND (5.3)	ND (10.3)	ND (4.9)	-	-	-	-
Phenol	ug/L	ND (61.1)	ND (1.1)	ND (6.2)	ND (12.1)	ND (5.8)	-	-	-	-
Pyrene	ug/L	ND (78.4)	ND (1.4)	ND (8.0)	ND (15.5)	ND (7.4)	-	-	-	-

Table 8
Summary of Analytical Results - Mouth
Husky Energy Refinery - Surface Water
Superior, Wisconsin

Sample Location:	Mouth	Mouth	Mouth	Mouth	Mouth	Mouth	Mouth	Mouth	Mouth	
Sample ID:	Mouth	Mouth	SW-042918-KJ-02	SW-043018-JT-01	SW-050218-RE-01	SW-050418-JT-01	SW-050618-JT-01	DUP-050618-JT-01	SW-050818-JT-01	
Sample Date:	4/27/2018	4/28/2018	4/29/2018	4/30/2018	5/2/2018	5/4/2018	5/6/2018	5/6/2018 Duplicate	5/8/2018	
Parameters	Units									
PFAS										
Fluorotelomer sulfonic acid (4:2)	ng/L	-	-	ND (10)	ND (10)	ND (10)	-	-	-	-
N-Ethyl perfluorooctane sulfonamidoacetic acid	ng/L	-	-	ND (10)	ND (10)	ND (10)	-	-	-	-
N-Methyl-perfluorooctane sulfonamide	ng/L	-	-	ND (10)	ND (10)	ND (10)	-	-	-	-
Perfluorhexanoic acid (PFHxA)	ng/L	-	-	440	290	100	-	-	-	-
Perfluorobutane sulfonic acid (PFBS)	ng/L	-	-	ND (10)	ND (10)	ND (10)	-	-	-	-
Perfluorobutanoic acid (PFBA)	ng/L	-	-	170	110	50	-	-	-	-
Perfluorodecanesulfonic acid (PFDS)	ng/L	-	-	ND (10)	ND (10)	ND (10)	-	-	-	-
Perfluorodecanoic acid (PFDA)	ng/L	-	-	70	20	ND (10)	-	-	-	-
Perfluorododecanoic acid (PFDoA)	ng/L	-	-	ND (10)	ND (10)	ND (10)	-	-	-	-
Perfluoroheptane sulfonic acid (PFHpS)	ng/L	-	-	ND (10)	ND (10)	ND (10)	-	-	-	-
Perfluoroheptanoic acid (PFHpA)	ng/L	-	-	90	70	30	-	-	-	-
Perfluorohexane sulfonic acid (PFHxS)	ng/L	-	-	40	40	30	-	-	-	-
Perfluorohexane sulfonic acid (PFHxS) - Branched	ng/L	-	-	ND (10)	ND (10)	ND (10)	-	-	-	-
Perfluorohexane sulfonic acid (PFHxS) - Linear	ng/L	-	-	30	30	20	-	-	-	-
Perfluorononane sulfonic acid (PFNS)	ng/L	-	-	ND (10)	ND (10)	ND (10)	-	-	-	-
Perfluorononanoic acid (PFNA)	ng/L	-	-	40	20	ND (10)	-	-	-	-
Perfluorooctane sulfonamide (FOSA)	ng/L	-	-	ND (10)	ND (10)	ND (10)	-	-	-	-
Perfluorooctane sulfonic acid (PFOS)	ng/L	-	-	220^{cde}	50^{ce}	30^{ce}	-	-	-	-
Perfluorooctane sulfonic acid (PFOS) - Branched	ng/L	-	-	120	ND (10)	10	-	-	-	-
Perfluorooctane sulfonic acid (PFOS) - Linear	ng/L	-	-	100	30	10	-	-	-	-
Perfluorooctanoic acid (PFOA)	ng/L	-	-	230^{cd}	160^{cd}	50^c	-	-	-	-
Perfluoropentane sulfonic acid (PFPeS)	ng/L	-	-	ND (10)	ND (10)	ND (10)	-	-	-	-
Perfluoropentanoic acid (PFPeA)	ng/L	-	-	140	100	40	-	-	-	-
Perfluorotetradecanoic acid (PFTeA)	ng/L	-	-	ND (10)	ND (10)	ND (10)	-	-	-	-
Perfluorotridecanoic acid (PFTrDA)	ng/L	-	-	ND (10)	ND (10)	ND (10)	-	-	-	-
Perfluoroundecanoic acid (PFUnA)	ng/L	-	-	ND (10)	ND (10)	ND (10)	-	-	-	-
Sodium 1H,1H,2H,2H-perfluorodecane sulfonate (8:2)	ng/L	-	-	3040	700	250	-	-	-	-
Sodium 1H,1H,2H,2H-perfluorooctane sulfonate (6:2)	ng/L	-	-	5430	4780	1310	-	-	-	-
Metals										
Arsenic	ug/L	ND (4.1)	ND (4.1)	ND (5.2)	ND (5.2)	5.4 J^b	ND (5.2)	ND (5.2)	ND (5.2)	ND (5.2)
Barium	ug/L	48.3	47.6	43.8	63.6	46.7	ND (0.22)	26.3	26.2	ND (31.7)
Cadmium	ug/L	ND (0.64)	ND (0.64)	ND (0.46)	ND (0.46)	ND (0.46)	ND (0.46)	ND (0.46)	ND (0.46)	ND (0.46)
Chromium	ug/L	ND (1.4)	ND (1.4)	0.85 J	5.0	1.9	ND (0.50)	0.67 J	0.98 J	0.96 J
Lead	ug/L	ND (3.3)	ND (3.3)	ND (3.0)	8.2 J	ND (3.0)	ND (3.0)	ND (3.0)	ND (3.0)	ND (3.0)
Mercury	ug/L	ND (0.062)	ND (0.062)	ND (0.062)	ND (0.062)	ND (0.062)	ND (0.062)	ND (0.062)	ND (0.062)	ND (0.062)
Selenium	ug/L	ND (4.7)	ND (4.7)	ND (6.4)	ND (6.4)	ND (6.4)	ND (6.4)	ND (6.4)	ND (6.4)	ND (6.4)
Silver	ug/L	ND (0.38)	ND (0.38)	ND (0.27)	ND (0.27)	ND (0.27)	ND (0.27)	ND (0.27)	ND (0.27)	ND (0.27)

Table 8
Summary of Analytical Results - Mouth
Husky Energy Refinery - Surface Water
Superior, Wisconsin

Sample Location:	Mouth	Mouth	Mouth	Mouth	Mouth	Mouth	Mouth	Mouth	Mouth	Mouth
Sample ID:	Mouth	Mouth	SW-042918-KJ-02	SW-043018-JT-01	SW-050218-RE-01	SW-050418-JT-01	SW-050618-JT-01	DUP-050618-JT-01	SW-050818-JT-01	SW-050818-JT-01
Sample Date:	4/27/2018	4/28/2018	4/29/2018	4/30/2018	5/2/2018	5/4/2018	5/6/2018	5/6/2018 Duplicate	5/6/2018	5/8/2018
Parameters	Units									
Petroleum Hydrocarbons										
Total Petroleum Hydrocarbons - Gasoline Range Organics	ug/L	182	66.7 J	15.6 J	ND (8.9)	ND (8.9)	ND (8.9)	ND (15.6)	ND (8.9)	23.6 J
Total Petroleum Hydrocarbons (C10-C28) DRO	mg/L	-	-	0.74	0.73	0.15	ND (0.11)	0.098	0.11	0.15
Total Petroleum Hydrocarbons (C10-C36)	mg/L	6.4	3.2	-	-	-	-	-	-	-
Total Petroleum Hydrocarbons (C24-C36) Motor Oil	mg/L	-	-	0.25	0.53	0.096	0.079	ND (0.11)	ND (0.12)	0.11
General Chemistry										
Ammonia-N	mg/L	0.18	0.086 J	-	-	-	-	-	-	-
Oil and grease	mg/L	1.6 J	ND (1.4)	ND (1.5)	ND (1.4)	ND (1.4)	ND (1.5)	ND (1.4)	ND (1.5)	ND (1.4)
Sulfate	mg/L	12.9	12.4	11.6	12.4	10.1	10.6	10.4	10.4	9.5

- Notes:
- mg/L - milligrams per litre
 - ng/L - nanogram per liter
 - ug/L - micrograms per litre
 - ND (0.25) - not detected at the associated reporting limit
 - J - estimated concentration
 - ^a - Selected aquatic life protection surface water screening criteria (reg or permit)
 - ^b - selected Human Health surface water screening criteria (reg or permit)
 - ^c - Minnesota Department of Health. Human Health-Based Water Guidance, Drinking water health-based values (HBV)
 - ^d - USEPA 2016. Drinking Water Health Advisory
 - ^e - Rule 57 Water Quality Values for Surface Water Assessment, Section Michigan Department of Environmental Quality (DEQ) Non-drink values
- 90 - concentration exceeds the indicated standard

Table 9
Summary of Analytical Results - Faxon
Husky Energy Refinery - Surface Water
Superior, Wisconsin

Sample Location:
Sample ID:
Sample Date:

Faxon
SW-042918-KJ-01
4/29/2018

Parameters	Units	
Volatiles		
1,1,1,2-Tetrachloroethane	ug/L	ND (0.14)
1,1,1-Trichloroethane	ug/L	ND (0.15)
1,1,2,2-Tetrachloroethane	ug/L	ND (0.19)
1,1,2-Trichloroethane	ug/L	ND (0.22)
1,1-Dichloroethane	ug/L	ND (0.14)
1,1-Dichloroethene	ug/L	ND (0.18)
1,1-Dichloropropene	ug/L	ND (0.18)
1,2,3-Trichlorobenzene	ug/L	ND (0.14)
1,2,3-Trichloropropane	ug/L	ND (0.66)
1,2,4-Trichlorobenzene	ug/L	ND (0.18)
1,2,4-Trimethylbenzene	ug/L	ND (0.14)
1,2-Dibromo-3-chloropropane (DBCP)	ug/L	ND (1.0)
1,2-Dibromoethane (Ethylene dibromide)	ug/L	ND (0.24)
1,2-Dichlorobenzene	ug/L	ND (0.21)
1,2-Dichloroethane	ug/L	ND (0.32)
1,2-Dichloropropane	ug/L	ND (0.62)
1,3,5-Trimethylbenzene	ug/L	ND (0.18)
1,3-Dichlorobenzene	ug/L	ND (0.16)
1,3-Dichloropropane	ug/L	ND (0.13)
1,4-Dichlorobenzene	ug/L	ND (0.10)
2,2-Dichloropropane	ug/L	ND (0.40)
2-Butanone (Methyl ethyl ketone) (MEK)	ug/L	ND (2.4)
2-Chlorotoluene	ug/L	ND (0.20)
2-Phenylbutane (sec-Butylbenzene)	ug/L	ND (0.12)
4-Chlorotoluene	ug/L	ND (0.13)
4-Methyl-2-pentanone (Methyl isobutyl ketone) (MIBK)	ug/L	ND (0.55)
Acetone	ug/L	ND (8.8)
Allyl chloride	ug/L	ND (1.0)
Benzene	ug/L	ND (0.34)
Bromobenzene	ug/L	ND (0.16)
Bromodichloromethane	ug/L	ND (0.20)
Bromoform	ug/L	ND (1.0)
Bromomethane (Methyl bromide)	ug/L	ND (1.5)
Carbon tetrachloride	ug/L	ND (0.20)
Chlorobenzene	ug/L	ND (0.14)
Chlorobromomethane	ug/L	ND (0.38)
Chloroethane	ug/L	ND (0.44)
Chloroform (Trichloromethane)	ug/L	ND (0.46)
Chloromethane (Methyl chloride)	ug/L	ND (1.1)
cis-1,2-Dichloroethene	ug/L	ND (0.20)
cis-1,3-Dichloropropene	ug/L	ND (0.12)
Cymene (p-Isopropyltoluene)	ug/L	ND (0.14)
Dibromochloromethane	ug/L	ND (0.13)
Dibromomethane	ug/L	ND (0.50)
Dichlorodifluoromethane (CFC-12)	ug/L	ND (0.31)

Table 9
Summary of Analytical Results - Faxon
Husky Energy Refinery - Surface Water
Superior, Wisconsin

Sample Location:
Sample ID:
Sample Date:

Faxon
SW-042918-KJ-01
4/29/2018

Parameters	Units	
Dichlorofluoromethane	ug/L	ND (0.38)
Ethyl ether	ug/L	ND (1.3)
Ethylbenzene	ug/L	ND (0.14)
Hexachlorobutadiene	ug/L	ND (0.48)
Isopropyl benzene	ug/L	ND (0.17)
Methyl tert butyl ether (MTBE)	ug/L	ND (0.40)
Methylene chloride	ug/L	ND (1.2)
Naphthalene	ug/L	ND (0.42)
N-Butylbenzene	ug/L	ND (0.13)
N-Propylbenzene	ug/L	ND (0.15)
Styrene	ug/L	ND (0.14)
tert-Butylbenzene	ug/L	ND (0.15)
Tetrachloroethene	ug/L	ND (0.16)
Tetrahydrofuran	ug/L	ND (4.3)
Toluene	ug/L	ND (0.17)
trans-1,2-Dichloroethene	ug/L	ND (0.21)
trans-1,3-Dichloropropene	ug/L	ND (0.14)
Trichloroethene	ug/L	ND (0.18)
Trichlorofluoromethane (CFC-11)	ug/L	ND (0.13)
Trifluorotrchloroethane (CFC-113)	ug/L	ND (0.28)
Vinyl chloride	ug/L	ND (0.096)
Xylenes (total)	ug/L	ND (0.24)
Semi-Volatiles		
1,2,4-Trichlorobenzene	ug/L	ND (4.3)
1,2-Dichlorobenzene	ug/L	ND (3.6)
1,2-Diphenylhydrazine	ug/L	ND (1.3)
1,3-Dichlorobenzene	ug/L	ND (4.3)
1,4-Dichlorobenzene	ug/L	ND (3.5)
1-Methylnaphthalene	ug/L	ND (2.2)
2,2'-Oxybis(1-chloropropane) (bis(2-Chloroisopropyl) ether)	ug/L	ND (1.4)
2,4,5-Trichlorophenol	ug/L	ND (1.1)
2,4,6-Trichlorophenol	ug/L	ND (1.1)
2,4-Dichlorophenol	ug/L	ND (1.6)
2,4-Dimethylphenol	ug/L	ND (2.9)
2,4-Dinitrophenol	ug/L	ND (2.5)
2,4-Dinitrotoluene	ug/L	ND (1.4)
2,6-Dinitrotoluene	ug/L	ND (0.66)
2-Chloronaphthalene	ug/L	ND (2.3)
2-Chlorophenol	ug/L	ND (1.2)
2-Methylnaphthalene	ug/L	ND (2.6)
2-Methylphenol	ug/L	ND (2.0)
2-Nitroaniline	ug/L	ND (1.6)
2-Nitrophenol	ug/L	ND (1.7)
3&4-Methylphenol	ug/L	ND (1.1)
3,3'-Dichlorobenzidine	ug/L	ND (1.2)

Table 9
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Husky Energy Refinery - Surface Water
Superior, Wisconsin

Sample Location:
Sample ID:
Sample Date:

Faxon
SW-042918-KJ-01
4/29/2018

Parameters	Units	
3-Nitroaniline	ug/L	ND (1.2)
4,6-Dinitro-2-methylphenol	ug/L	ND (1.6)
4-Bromophenyl phenyl ether	ug/L	ND (2.4)
4-Chloro-3-methylphenol	ug/L	ND (1.5)
4-Chloroaniline	ug/L	ND (2.0)
4-Chlorophenyl phenyl ether	ug/L	ND (1.6)
4-Nitroaniline	ug/L	ND (2.1)
4-Nitrophenol	ug/L	ND (2.7)
Acenaphthene	ug/L	ND (1.9)
Acenaphthylene	ug/L	ND (1.8)
Anthracene	ug/L	ND (1.3)
Benzo(a)anthracene	ug/L	ND (1.3)
Benzo(a)pyrene	ug/L	ND (1.8)
Benzo(b)fluoranthene	ug/L	ND (1.8)
Benzo(g,h,i)perylene	ug/L	ND (2.2)
Benzo(k)fluoranthene	ug/L	ND (1.8)
bis(2-Chloroethoxy)methane	ug/L	ND (1.4)
bis(2-Chloroethyl)ether	ug/L	ND (1.2)
bis(2-Ethylhexyl)phthalate (DEHP)	ug/L	ND (4.7)
Butyl benzylphthalate (BBP)	ug/L	ND (1.8)
Carbazole	ug/L	ND (1.1)
Chrysene	ug/L	ND (1.8)
Dibenz(a,h)anthracene	ug/L	ND (2.2)
Dibenzofuran	ug/L	ND (1.7)
Diethyl phthalate	ug/L	ND (1.5)
Dimethyl phthalate	ug/L	ND (1.3)
Di-n-butylphthalate (DBP)	ug/L	ND (1.4)
Di-n-octyl phthalate (DnOP)	ug/L	ND (2.1)
Fluoranthene	ug/L	ND (1.5)
Fluorene	ug/L	ND (1.5)
Hexachlorobenzene	ug/L	ND (2.2)
Hexachlorobutadiene	ug/L	ND (3.3)
Hexachloroethane	ug/L	ND (3.5)
Indeno(1,2,3-cd)pyrene	ug/L	ND (2.1)
Isophorone	ug/L	ND (1.2)
Naphthalene	ug/L	ND (2.5)
Nitrobenzene	ug/L	ND (1.3)
N-Nitrosodimethylamine	ug/L	ND (1.1)
N-Nitrosodi-n-propylamine	ug/L	ND (1.0)
N-Nitrosodiphenylamine	ug/L	ND (1.1)
Pentachlorophenol	ug/L	ND (2.7)
Phenanthrene	ug/L	ND (1.0)
Phenol	ug/L	ND (1.2)
Pyrene	ug/L	ND (1.5)

PFAS

Table 9
Summary of Analytical Results - Faxon
Husky Energy Refinery - Surface Water
Superior, Wisconsin

Sample Location:
Sample ID:
Sample Date:

Faxon
SW-042918-KJ-01
4/29/2018

Parameters	Units	
Fluorotelomer sulfonic acid (4:2)	ng/L	ND (10)
N-Ethyl perfluorooctane sulfonamidoacetic acid	ng/L	ND (10)
N-Methyl-perfluorooctane sulfonamide	ng/L	ND (10)
Perfluorhexanoic acid (PFHxA)	ng/L	ND (10)
Perfluorobutane sulfonic acid (PFBS)	ng/L	ND (10)
Perfluorobutanoic acid (PFBA)	ng/L	ND (20)
Perfluorodecanesulfonic acid (PFDS)	ng/L	ND (10)
Perfluorodecanoic acid (PFDA)	ng/L	ND (10)
Perfluorododecanoic acid (PFDoA)	ng/L	ND (10)
Perfluoroheptane sulfonic acid (PFHpS)	ng/L	ND (10)
Perfluoroheptanoic acid (PFHpA)	ng/L	ND (10)
Perfluorohexane sulfonic acid (PFHxS)	ng/L	ND (10)
Perfluorohexane sulfonic acid (PFHxS) - Branched	ng/L	ND (10)
Perfluorohexane sulfonic acid (PFHxS) - Linear	ng/L	ND (10)
Perfluorononane sulfonic acid (PFNS)	ng/L	ND (10)
Perfluorononanoic acid (PFNA)	ng/L	ND (10)
Perfluorooctane sulfonamide (FOSA)	ng/L	ND (10)
Perfluorooctane sulfonic acid (PFOS)	ng/L	ND (10)
Perfluorooctane sulfonic acid (PFOS) - Branched	ng/L	ND (10)
Perfluorooctane sulfonic acid (PFOS) - Linear	ng/L	ND (10)
Perfluorooctanoic acid (PFOA)	ng/L	ND (10)
Perfluoropentane sulfonic acid (PFPeS)	ng/L	ND (10)
Perfluoropentanoic acid (PFPeA)	ng/L	ND (10)
Perfluorotetradecanoic acid (PFTeA)	ng/L	ND (10)
Perfluorotridecanoic acid (PFTrDA)	ng/L	ND (10)
Perfluoroundecanoic acid (PFUnA)	ng/L	ND (10)
Sodium 1H,1H,2H,2H-perfluorodecane sulfonate (8:2)	ng/L	ND (10)
Sodium 1H,1H,2H,2H-perfluorooctane sulfonate (6:2)	ng/L	ND (10)
Metals		
Arsenic	ug/L	ND (5.2)
Barium	ug/L	48.6
Cadmium	ug/L	ND (0.46)
Chromium	ug/L	1.8
Lead	ug/L	ND (3.0)
Mercury	ug/L	ND (0.062)
Selenium	ug/L	ND (6.4)
Silver	ug/L	ND (0.27)

**Table 9
Summary of Analytical Results - Faxon
Husky Energy Refinery - Surface Water
Superior, Wisconsin**

Sample Location: Faxon
Sample ID: SW-042918-KJ-01
Sample Date: 4/29/2018

Parameters	Units	
Petroleum Hydrocarbons		
Total Petroleum Hydrocarbons - Gasoline Range Organics	ug/L	ND (8.9)
Total Petroleum Hydrocarbons (C10-C28) DRO	mg/L	ND (0.069)
Total Petroleum Hydrocarbons (C24-C36) Motor Oil	mg/L	0.12
General Chemistry		
Oil and grease	mg/L	ND (1.5)
Sulfate	mg/L	10.6

- Notes:
- mg/L - milligrams per litre
 - ng/L - nanogram per liter
 - ug/L - micrograms per litre
 - ND (0.25) - not detected at the associated reporting limit
 - ^a - Selected aquatic life protection surface water screening criteria (reg or permit)
 - ^b - selected Human Health surface water screening criteria (reg or permit)
 - ^c - Minnesota Department of Health. Human Health-Based Water Guidance, Drinking water health-based values (HBV)
 - ^d - USEPA 2016. Drinking Water Health Advisory
 - ^e - Rule 57 Water Quality Values for Surface Water Assessment, Section Michigan Department of Environmental Quality (DEQ) Non-drink values
- 90 - concentration exceeds the indicated standard