From:	David Beattie
To:	Sager, John E - DNR
Cc:	Bannister, Trevor A - DNR
Subject:	Water Analysis Results received through 5/8/18 - Husky Superior Refinery - Privileged and Confidential - Produced at the request of Counsel - Surface Water Data
Date:	Wednesday, May 9, 2018 9:15:41 AM
Attachments:	Summary of SW analytical Results - 050818 for WDNR.xlsx

See attached. Sorry for the delay.

From: David Beattie
Sent: Tuesday, May 8, 2018 9:07 AM
To: John Sager <john.sager@wisconsin.gov>
Cc: Joe Amato <Joe.Amato@huskyenergy.com>
Subject: Fwd: 11156937 - Husky Superior Refinery - Privileged and Confidential - Produced at the request of Counsel - Surface Water Data

John,

See below and attached.

Thanks, Dave

Begin forwarded message:

> **From:** "Alex.Byrum@ghd.com" <Alex.Byrum@ghd.com>
> **Date:** May 8, 2018 at 8:59:17 AM CDT
> **To:** David Beattie <David.Beattie@huskyenergy.com>
> **Cc:** "Dan.Murray@ghd.com" <Dan.Murray@ghd.com>, "Will.Armes@ghd.com" <Will.Armes@ghd.com>, "Derek.Hubbartt@ghd.com" <Derek.Hubbartt@ghd.com>
> **Subject: 11156937 - Husky Superior Refinery - Privileged and Confidential - Produced at the request of Counsel - Surface Water Data Sheet**
>
> David –
>
> I have attached our latest data summary spreadsheet for you to share with WDNR. This does not have any of the proposed screening criteria on it. This data is organized by tab for each location. The historical background data is not included on this sheet.
>
> We will have updated summary around noon today, with data from 5/2 and 5/4. Thank you
>
> **Alex Byrum**
>
> **GHD**
> T: +1 972 331 5926 | C: +1 469 515 0109 | E: alex.byrum@ghd.com
> 1755 Wittington Place Suite 500 Dallas TX 75234 USA | www.ghd.com
> WATER | ENERGY & RESOURCES | ENVIRONMENT | PROPERTY & BUILDINGS | TRANSPORTATION

Table 1

Summary of Analytical Results - Pond 2/3
Husky Energy Refiney - 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
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
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
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)	-
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	-	0.44 J	0.24 J	0.22 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	-	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)	-
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	-	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)	-
Benzene	ug/L	-	1.0	0.94 J	1.0	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	-	0.95 J	0.58 J	0.61 J	0.67 J	0.67	-
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	-	2.8	1.8	1.9	1.3 J	1.3 J	-
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	-	ND (0.14)	ND (0.14)	ND (0.14)	ND (0.14)	ND (0.14)	-
Dibromochloromethane	ug/L	-	0.18 J	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)	-
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)	-

Table 1

Summary of Analytical Results - Pond 2/3
Husky Energy Refiney - 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**
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**
Sample Date:		**4/29/2018**	**4/29/2018**	**4/30/2018**	**4/30/2018**	**5/2/2018**	**5/2/2018**	**5/4/2018**
					Duplicate		**Duplicate**	
Parameters	**Units**							
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	-	1.1	0.85 J	0.86 J	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 (4.6)	ND (43.6)	ND (45.3)	-	-	-
1,2-Dichlorobenzene	ug/L	-	ND (3.8)	ND (36.6)	ND (38.0)	-	-	-
1,2-Diphenylhydrazine	ug/L	-	ND (1.4)	ND (13.4)	ND (13.9)	-	-	-
1,3-Dichlorobenzene	ug/L	-	ND (4.5)	ND (43.0)	ND (44.6)	-	-	-
1,4-Dichlorobenzene	ug/L	-	ND (3.7)	ND (35.4)	ND (36.8)	-	-	-
1-Methylnaphthalene	ug/L	-	ND (2.3)	ND (21.8)	ND (22.6)	-	-	-
2,2'-Oxybis(1-chloropropane) (bis(2-Chloroisopropyl) ether)	ug/L	-	ND (1.5)	ND (14.1)	ND (14.6)	-	-	-
2,4,5-Trichlorophenol	ug/L	-	ND (1.2)	ND (11.4)	ND (11.8)	-	-	-
2,4,6-Trichlorophenol	ug/L	-	ND (1.2)	ND (11.4)	ND (11.8)	-	-	-
2,4-Dichlorophenol	ug/L	-	ND (1.7)	ND (16.2)	ND (16.8)	-	-	-
2,4-Dimethylphenol	ug/L	-	ND (3.1)	ND (29.4)	ND (30.5)	-	-	-
2,4-Dinitrophenol	ug/L	-	ND (2.7)	ND (25.5)	ND (26.5)	-	-	-
2,4-Dinitrotoluene	ug/L	-	ND (1.5)	ND (13.9)	ND (14.4)	-	-	-
2,6-Dinitrotoluene	ug/L	-	ND (0.70)	ND (6.6)	ND (6.9)	-	-	-
2-Chloronaphthalene	ug/L	-	ND (2.4)	ND (23.1)	ND (24.0)	-	-	-
2-Chlorophenol	ug/L	-	ND (1.2)	ND (11.7)	ND (12.2)	-	-	-
2-Methylnaphthalene	ug/L	-	ND (2.7)	ND (26.0)	ND (27.0)	-	-	-
2-Methylphenol	ug/L	-	ND (2.1)	ND (19.7)	ND (20.4)	-	-	-
2-Nitroaniline	ug/L	-	ND (1.7)	ND (15.9)	ND (16.5)	-	-	-
2-Nitrophenol	ug/L	-	ND (1.8)	ND (17.4)	ND (18.1)	-	-	-
3&4-Methylphenol	ug/L	-	ND (1.1)	ND (10.7)	ND (11.1)	-	-	-
3,3'-Dichlorobenzidine	ug/L	-	ND (1.3)	ND (12.5)	ND (13.0)	-	-	-
3-Nitroaniline	ug/L	-	ND (1.3)	ND (12.5)	ND (13.0)	-	-	-
4,6-Dinitro-2-methylphenol	ug/L	-	ND (1.7)	ND (15.8)	ND (16.3)	-	-	-
4-Bromophenyl phenyl ether	ug/L	-	ND (2.5)	ND (23.9)	ND (24.8)	-	-	-
4-Chloro-3-methylphenol	ug/L	-	ND (1.6)	ND (15.4)	ND (16.0)	-	-	-
4-Chloroaniline	ug/L	-	ND (2.1)	ND (19.8)	ND (20.5)	-	-	-
4-Chlorophenyl phenyl ether	ug/L	-	ND (1.7)	ND (15.9)	ND (16.5)	-	-	-
4-Nitroaniline	ug/L	-	ND (2.2)	ND (21.2)	ND (22.0)	-	-	-
4-Nitrophenol	ug/L	-	ND (2.8)	ND (26.7)	ND (27.7)	-	-	-
Acenaphthene	ug/L	-	ND (2.0)	ND (19.5)	ND (20.2)	-	-	-
Acenaphthylene	ug/L	-	ND (1.8)	ND (17.6)	ND (18.3)	-	-	-
Anthracene	ug/L	-	ND (1.4)	ND (13.4)	ND (13.9)	-	-	-
Benzo(a)anthracene	ug/L	-	ND (1.4)	ND (13.2)	ND (13.7)	-	-	-

Table 1

Summary of Analytical Results - Pond 2/3
Husky Energy Refiney - 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**
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**
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**
Parameters	**Units**							
Benzo(a)pyrene	ug/L	-	ND (1.9)	ND (17.8)	ND (18.5)	-	-	-
Benzo(b)fluoranthene	ug/L	-	ND (1.9)	ND (17.9)	ND (18.6)	-	-	-
Benzo(g,h,i)perylene	ug/L	-	ND (2.3)	ND (21.8)	ND (22.6)	-	-	-
Benzo(k)fluoranthene	ug/L	-	ND (1.9)	ND (18.2)	ND (18.9)	-	-	-
bis(2-Chloroethoxy)methane	ug/L	-	ND (1.5)	ND (14.0)	ND (14.5)	-	-	-
bis(2-Chloroethyl)ether	ug/L	-	ND (1.2)	ND (11.7)	ND (12.2)	-	-	-
bis(2-Ethylhexyl)phthalate (DEHP)	ug/L	-	ND (5.0)	ND (47.6)	ND (49.4)	-	-	-
Butyl benzylphthalate (BBP)	ug/L	-	ND (1.9)	ND (18.4)	ND (19.1)	-	-	-
Carbazole	ug/L	-	ND (1.2)	ND (11.4)	ND (11.8)	-	-	-
Chrysene	ug/L	-	ND (1.9)	ND (18.1)	ND (18.8)	-	-	-
Dibenz(a,h)anthracene	ug/L	-	ND (2.3)	ND (22.4)	ND (23.2)	-	-	-
Dibenzofuran	ug/L	-	ND (1.8)	ND (16.7)	ND (17.3)	-	-	-
Diethyl phthalate	ug/L	-	ND (1.5)	ND (14.6)	ND (15.2)	-	-	-
Dimethyl phthalate	ug/L	-	ND (1.4)	ND (13.1)	ND (13.5)	-	-	-
Di-n-butylphthalate (DBP)	ug/L	-	ND (1.5)	ND (14.0)	ND (14.5)	-	-	-
Di-n-octyl phthalate (DnOP)	ug/L	-	ND (2.2)	ND (21.2)	ND (22.0)	-	-	-
Fluoranthene	ug/L	-	ND (1.6)	ND (15.3)	ND (15.9)	-	-	-
Fluorene	ug/L	-	ND (1.6)	ND (14.9)	ND (15.5)	-	-	-
Hexachlorobenzene	ug/L	-	ND (2.3)	ND (22.4)	ND (23.2)	-	-	-
Hexachlorobutadiene	ug/L	-	ND (3.5)	ND (33.1)	ND (34.3)	-	-	-
Hexachloroethane	ug/L	-	ND (3.7)	ND (35.5)	ND (36.9)	-	-	-
Indeno(1,2,3-cd)pyrene	ug/L	-	ND (2.2)	ND (20.9)	ND (21.7)	-	-	-
Isophorone	ug/L	-	ND (1.3)	ND (12.0)	ND (12.5)	-	-	-
Naphthalene	ug/L	-	ND (2.6)	ND (24.7)	ND (25.6)	-	-	-
Nitrobenzene	ug/L	-	ND (1.4)	ND (13.4)	ND (13.9)	-	-	-
N-Nitrosodimethylamine	ug/L	-	ND (1.1)	ND (10.7)	ND (11.1)	-	-	-
N-Nitrosodi-n-propylamine	ug/L	-	ND (1.1)	ND (10.5)	ND (10.9)	-	-	-
N-Nitrosodiphenylamine	ug/L	-	ND (1.2)	ND (11.3)	ND (11.7)	-	-	-
Pentachlorophenol	ug/L	-	ND (2.8)	ND (27.2)	ND (28.2)	-	-	-
Phenanthrene	ug/L	-	ND (1.1)	ND (10.2)	ND (10.6)	-	-	-
Phenol	ug/L	-	ND (1.3)	ND (12.0)	ND (12.5)	-	-	-
Pyrene	ug/L	-	ND (1.6)	ND (15.4)	ND (16.0)	-	-	-
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	-	180	260	290	-	-	-
Perfluorobutane sulfonic acid (PFBS)	ng/L	-	20	20	20	-	-	-
Perfluorobutanoic acid (PFBA)	ng/L	-	80	100	110	-	-	-
Perfluorodecanesulfonic acid (PFDS)	ng/L	-	ND (10)	ND (10)	ND (10)	-	-	-
Perfluorodecanoic acid (PFDA)	ng/L	-	30	40	50	-	-	-
Perfluorododecanoic acid (PFDoA)	ng/L	-	ND (10)	ND (10)	ND (10)	-	-	-
Perfluoroheptane sulfonic acid (PFHpS)	ng/L	-	10	20	20	-	-	-
Perfluoroheptanoic acid (PFHpA)	ng/L	-	40	80	80	-	-	-
Perfluorohexane sulfonic acid (PFHxS)	ng/L	-	160	350	310	-	-	-
Perfluorononane sulfonic acid (PFNS)	ng/L	-	ND (10)	ND (10)	ND (10)	-	-	-
Perfluorononanoic acid (PFNA)	ng/L	-	20	50	50	-	-	-
Perfluorooctane sulfonamide (FOSA)	ng/L	-	ND (10)	ND (10)	ND (10)	-	-	-
Perfluorooctane sulfonic acid (PFOS)	ng/L	-	**720^{cde}**	**880^{cde}**	**910^{cde}**	-	-	-
Perfluorooctanoic acid (PFOA)	ng/L	-	**90^{cd}**	**290^{cd}**	**290^{cd}**	-	-	-

Table 1

Summary of Analytical Results - Pond 2/3
Husky Energy Refiney - 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**
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**
Sample Date:		**4/29/2018**	**4/29/2018**	**4/30/2018**	**4/30/2018**	**5/2/2018**	**5/2/2018**	**5/4/2018**
					Duplicate		**Duplicate**	
Parameters	**Units**							
Perfluoropentane sulfonic acid (PFPeS)	ng/L	-	20	20	20	-	-	-
Perfluoropentanoic acid (PFPeA)	ng/L	-	70	90	110	-	-	-
Perfluorotetradecanoic acid (PFTeA)	ng/L	-	ND (10)	ND (10) I	ND (10) I	-	-	-
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	-	1040	1170	1400	-	-	-
Sodium 1H,1H,2H,2H-perfluorooctane sulfonate (6:2)	ng/L	-	2660 E	5180 E	5040 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	ND (36.4)
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)	ND (8.9)	18.0 J
Total Petroleum Hydrocarbons (C10-C28) DRO	mg/L	-	0.56	0.79	0.74	0.49	0.46	0.34
Total Petroleum Hydrocarbons (C24-C36) Motor Oil	mg/L	-	0.19	0.34	0.34	0.21	0.22	0.18
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)
Sulfate	mg/L	-	5.4	6.0	6.0	7.6	7.4	7.8
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

Table 2

Summary of Analytical Results - Pond 4
Husky Energy Refiney - Surface Water
Superior, Wisconsin

Sample Location:		**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**
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**
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	-	2.0	1.8	0.47 J	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	-	1.0	0.93 J	1.1	0.63	-	-
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	-	9.5 J	ND (8.8)	9.7 J	11.6 J	-	-
Allyl chloride	ug/L	-	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)	-	-
Benzene	ug/L	-	7.5	6.8	7.6	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)	0.58 J	-	-
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)	0.77 J	1.0 J	-	-
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	-	0.60 J	0.54 J	0.62 J	0.66	-	-
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)	-	-
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	-	0.65 J	0.61 J	0.20 J	ND (0.14)	-	-
Hexachlorobutadiene	ug/L	-	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)	-	-
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)	-	-

Table 2

Summary of Analytical Results - Pond 4
Husky Energy Refiney - Surface Water
Superior, Wisconsin

Sample Location:		**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**
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**
Parameters	**Units**							
Naphthalene	ug/L	-	1.1 J	1.0 J	0.69 J	ND (0.42)	-	-
N-Butylbenzene	ug/L	-	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)	-	-
Styrene	ug/L	-	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)	-	-
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	-	7.4	6.6	4.7	ND (0.17)	-	-
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)	0.22 J	0.38 J	-	-
Trichlorofluoromethane (CFC-11)	ug/L	-	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)	-	-
Vinyl chloride	ug/L	-	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)	-	-
Semi-Volatiles								
1,2,4-Trichlorobenzene	ug/L	-	ND (4.6)	ND (4.4)	ND (45.3)	-	-	-
1,2-Dichlorobenzene	ug/L	-	ND (3.9)	ND (3.7)	ND (38.0)	-	-	-
1,2-Diphenylhydrazine	ug/L	-	ND (1.4)	ND (1.3)	ND (13.9)	-	-	-
1,3-Dichlorobenzene	ug/L	-	ND (4.6)	ND (4.3)	ND (44.6)	-	-	-
1,4-Dichlorobenzene	ug/L	-	ND (3.8)	ND (3.6)	ND (36.8)	-	-	-
1-Methylnaphthalene	ug/L	-	ND (2.3)	ND (2.2)	ND (22.6)	-	-	-
2,2'-Oxybis(1-chloropropane) (bis(2-Chloroisopropyl) ether)	ug/L	-	ND (1.5)	ND (1.4)	ND (14.6)	-	-	-
2,4,5-Trichlorophenol	ug/L	-	ND (1.2)	ND (1.1)	ND (11.8)	-	-	-
2,4,6-Trichlorophenol	ug/L	-	ND (1.2)	ND (1.1)	ND (11.8)	-	-	-
2,4-Dichlorophenol	ug/L	-	ND (1.7)	ND (1.6)	ND (16.8)	-	-	-
2,4-Dimethylphenol	ug/L	-	ND (3.1)	ND (3.0)	ND (30.5)	-	-	-
2,4-Dinitrophenol	ug/L	-	ND (2.7)	ND (2.6)	ND (26.5)	-	-	-
2,4-Dinitrotoluene	ug/L	-	ND (1.5)	ND (1.4)	ND (14.4)	-	-	-
2,6-Dinitrotoluene	ug/L	-	ND (0.70)	ND (0.67)	ND (6.9)	-	-	-
2-Chloronaphthalene	ug/L	-	ND (2.5)	ND (2.3)	ND (24.0)	-	-	-
2-Chlorophenol	ug/L	-	ND (1.2)	ND (1.2)	ND (12.2)	-	-	-
2-Methylnaphthalene	ug/L	-	ND (2.8)	ND (2.6)	ND (27.0)	-	-	-
2-Methylphenol	ug/L	-	ND (2.1)	ND (2.0)	ND (20.4)	-	-	-
2-Nitroaniline	ug/L	-	ND (1.7)	ND (1.6)	ND (16.5)	-	-	-
2-Nitrophenol	ug/L	-	ND (1.8)	ND (1.8)	ND (18.1)	-	-	-
3&4-Methylphenol	ug/L	-	ND (1.1)	ND (1.1)	ND (11.1)	-	-	-
3,3'-Dichlorobenzidine	ug/L	-	ND (1.3)	ND (1.3)	ND (13.0)	-	-	-
3-Nitroaniline	ug/L	-	ND (1.3)	ND (1.3)	ND (13.0)	-	-	-
4,6-Dinitro-2-methylphenol	ug/L	-	ND (1.7)	ND (1.6)	ND (16.3)	-	-	-
4-Bromophenyl phenyl ether	ug/L	-	ND (2.5)	ND (2.4)	ND (24.8)	-	-	-
4-Chloro-3-methylphenol	ug/L	-	ND (1.6)	ND (1.6)	ND (16.0)	-	-	-
4-Chloroaniline	ug/L	-	ND (2.1)	ND (2.0)	ND (20.5)	-	-	-
4-Chlorophenyl phenyl ether	ug/L	-	ND (1.7)	ND (1.6)	ND (16.5)	-	-	-
4-Nitroaniline	ug/L	-	ND (2.3)	ND (2.1)	ND (22.0)	-	-	-
4-Nitrophenol	ug/L	-	ND (2.8)	ND (2.7)	ND (27.7)	-	-	-
Acenaphthene	ug/L	-	ND (2.1)	ND (2.0)	ND (20.2)	-	-	-
Acenaphthylene	ug/L	-	ND (1.9)	ND (1.8)	ND (18.3)	-	-	-
Anthracene	ug/L	-	ND (1.4)	ND (1.3)	ND (13.9)	-	-	-
Benzo(a)anthracene	ug/L	-	ND (1.4)	ND (1.3)	ND (13.7)	-	-	-
Benzo(a)pyrene	ug/L	-	ND (1.9)	ND (1.8)	ND (18.5)	-	-	-
Benzo(b)fluoranthene	ug/L	-	ND (1.9)	ND (1.8)	ND (18.6)	-	-	-

Table 2

Summary of Analytical Results - Pond 4
Husky Energy Refiney - Surface Water
Superior, Wisconsin

Sample Location:		**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**
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**
Parameters	**Units**							
Benzo(g,h,i)perylene	ug/L	-	ND (2.3)	ND (2.2)	ND (22.6)	-	-	-
Benzo(k)fluoranthene	ug/L	-	ND (1.9)	ND (1.8)	ND (18.9)	-	-	-
bis(2-Chloroethoxy)methane	ug/L	-	ND (1.5)	ND (1.4)	ND (14.5)	-	-	-
bis(2-Chloroethyl)ether	ug/L	-	ND (1.2)	ND (1.2)	ND (12.2)	-	-	-
bis(2-Ethylhexyl)phthalate (DEHP)	ug/L	-	ND (5.0)	ND (4.8)	ND (49.4)	-	-	-
Butyl benzylphthalate (BBP)	ug/L	-	ND (2.0)	ND (1.9)	ND (19.1)	-	-	-
Carbazole	ug/L	-	ND (1.2)	ND (1.1)	ND (11.8)	-	-	-
Chrysene	ug/L	-	ND (1.9)	ND (1.8)	ND (18.8)	-	-	-
Dibenz(a,h)anthracene	ug/L	-	ND (2.4)	ND (2.3)	ND (23.2)	-	-	-
Dibenzofuran	ug/L	-	ND (1.8)	ND (1.7)	ND (17.3)	-	-	-
Diethyl phthalate	ug/L	-	ND (1.5)	ND (1.5)	ND (15.2)	-	-	-
Dimethyl phthalate	ug/L	-	ND (1.4)	ND (1.3)	ND (13.5)	-	-	-
Di-n-butylphthalate (DBP)	ug/L	-	ND (1.5)	ND (1.4)	ND (14.5)	-	-	-
Di-n-octyl phthalate (DnOP)	ug/L	-	ND (2.3)	ND (2.1)	ND (22.0)	-	-	-
Fluoranthene	ug/L	-	ND (1.6)	ND (1.5)	ND (15.9)	-	-	-
Fluorene	ug/L	-	ND (1.6)	ND (1.5)	ND (15.5)	-	-	-
Hexachlorobenzene	ug/L	-	ND (2.4)	ND (2.3)	ND (23.2)	-	-	-
Hexachlorobutadiene	ug/L	-	ND (3.5)	ND (3.3)	ND (34.3)	-	-	-
Hexachloroethane	ug/L	-	ND (3.8)	ND (3.6)	ND (36.9)	-	-	-
Indeno(1,2,3-cd)pyrene	ug/L	-	ND (2.2)	ND (2.1)	ND (21.7)	-	-	-
Isophorone	ug/L	-	ND (1.3)	ND (1.2)	ND (12.5)	-	-	-
Naphthalene	ug/L	-	ND (2.6)	ND (2.5)	ND (25.6)	-	-	-
Nitrobenzene	ug/L	-	ND (1.4)	ND (1.3)	ND (13.9)	-	-	-
N-Nitrosodimethylamine	ug/L	-	ND (1.1)	ND (1.1)	ND (11.1)	-	-	-
N-Nitrosodi-n-propylamine	ug/L	-	ND (1.1)	ND (1.1)	ND (10.9)	-	-	-
N-Nitrosodiphenylamine	ug/L	-	ND (1.2)	ND (1.1)	ND (11.7)	-	-	-
Pentachlorophenol	ug/L	-	ND (2.9)	ND (2.7)	ND (28.2)	-	-	-
Phenanthrene	ug/L	-	ND (1.1)	ND (1.0)	ND (10.6)	-	-	-
Phenol	ug/L	-	ND (1.3)	ND (1.2)	ND (12.5)	-	-	-
Pyrene	ug/L	-	ND (1.6)	ND (1.6)	ND (16.0)	-	-	-
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	-	1250	1290	1370	-	-	-
Perfluorobutane sulfonic acid (PFBS)	ng/L	-	20	20	20	-	-	-
Perfluorobutanoic acid (PFBA)	ng/L	-	450	460	460	-	-	-
Perfluorodecanesulfonic acid (PFDS)	ng/L	-	ND (10)	ND (10)	ND (10)	-	-	-
Perfluorodecanoic acid (PFDA)	ng/L	-	100	100	80	-	-	-
Perfluorododecanoic acid (PFDoA)	ng/L	-	30	30	20	-	-	-
Perfluoroheptane sulfonic acid (PFHpS)	ng/L	-	ND (10)	ND (10)	ND (10)	-	-	-
Perfluoroheptanoic acid (PFHpA)	ng/L	-	270	290	290	-	-	-
Perfluorohexane sulfonic acid (PFHxS)	ng/L	-	140	150	190	-	-	-
Perfluorononane sulfonic acid (PFNS)	ng/L	-	ND (10)	ND (10)	ND (10)	-	-	-
Perfluorononanoic acid (PFNA)	ng/L	-	60	60	60	-	-	-
Perfluorooctane sulfonamide (FOSA)	ng/L	-	ND (10)	ND (10)	ND (10)	-	-	-
Perfluorooctane sulfonic acid (PFOS)	ng/L	-	**310^{cde}**	**270^{cde}**	**280^{cde}**	-	-	-
Perfluorooctanoic acid (PFOA)	ng/L	-	**650^{cd}**	**680^{cd}**	**810^{cd}**	-	-	-
Perfluoropentane sulfonic acid (PFPeS)	ng/L	-	10	20	20	-	-	-
Perfluoropentanoic acid (PFPeA)	ng/L	-	410	410	440	-	-	-
Perfluorotetradecanoic acid (PFTeA)	ng/L	-	10 I	10 I	ND (10) I	-	-	-

Table 2

Summary of Analytical Results - Pond 4
Husky Energy Refiney - Surface Water
Superior, Wisconsin

Sample Location:		**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**
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**
Parameters	**Units**							
Perfluorotridecanoic acid (PFTrDA)	ng/L	-	ND (10)	ND (10)	ND (10)	-	-	-
Perfluoroundecanoic acid (PFUnA)	ng/L	-	20	10	10	-	-	-
Sodium 1H,1H,2H,2H-perfluorodecane sulfonate (8:2)	ng/L	-	3330 E	3000 E	1940	-	-	-
Sodium 1H,1H,2H,2H-perfluorooctane sulfonate (6:2)	ng/L	-	5740 E	6530 E	7510 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)	ND (39.7)
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)	ND (0.52)
Iron	ug/L	896	-	-	-	-	-	-
Lead	ug/L	-	ND (3.0)	ND (3.0)	ND (3.0)	ND (3.0)	3.2 J	ND (3.0)
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	0.45
Total Petroleum Hydrocarbons (C24-C36) Motor Oil	mg/L	-	0.80	-	0.95	0.50	0.32	0.28
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)
Sulfate	mg/L	-	10.8	11.1	13.0	14.7	15.6	15.6
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

Table 3

Summary of Analytical Results - Start Of Impoundment
Husky Energy Refiney - Surface Water
Superior, Wisconsin

Sample Location:		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
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	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)	-
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	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)	-
Isopropyl benzene	ug/L	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)	-

Table 3

Summary of Analytical Results - Start Of Impoundment
Husky Energy Refiney - Surface Water
Superior, Wisconsin

Sample Location:		**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**
Sample Date:		**4/29/2018**	**4/30/2018**	**5/2/2018**	**5/2/2018**	**5/4/2018**
Parameters	**Units**					
Methylene chloride	ug/L	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)	-
N-Butylbenzene	ug/L	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)	-
Styrene	ug/L	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)	-
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	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)	-
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)	-
Trifluorotrichloroethane (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	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)	-	-	-
1,2-Dichlorobenzene	ug/L	ND (3.7)	ND (3.8)	-	-	-
1,2-Diphenylhydrazine	ug/L	ND (1.4)	ND (1.4)	-	-	-
1,3-Dichlorobenzene	ug/L	ND (4.4)	ND (4.4)	-	-	-
1,4-Dichlorobenzene	ug/L	ND (3.6)	ND (3.6)	-	-	-
1-Methylnaphthalene	ug/L	ND (2.2)	ND (2.2)	-	-	-
2,2'-Oxybis(1-chloropropane) (bis(2-Chloroisopropyl) ether)	ug/L	ND (1.4)	ND (1.4)	-	-	-
2,4,5-Trichlorophenol	ug/L	ND (1.2)	ND (1.2)	-	-	-
2,4,6-Trichlorophenol	ug/L	ND (1.2)	ND (1.2)	-	-	-
2,4-Dichlorophenol	ug/L	ND (1.6)	ND (1.7)	-	-	-
2,4-Dimethylphenol	ug/L	ND (3.0)	ND (3.0)	-	-	-
2,4-Dinitrophenol	ug/L	ND (2.6)	ND (2.6)	-	-	-
2,4-Dinitrotoluene	ug/L	ND (1.4)	ND (1.4)	-	-	-
2,6-Dinitrotoluene	ug/L	ND (0.67)	ND (0.68)	-	-	-
2-Chloronaphthalene	ug/L	ND (2.3)	ND (2.4)	-	-	-
2-Chlorophenol	ug/L	ND (1.2)	ND (1.2)	-	-	-
2-Methylnaphthalene	ug/L	ND (2.6)	ND (2.7)	-	-	-
2-Methylphenol	ug/L	ND (2.0)	ND (2.0)	-	-	-
2-Nitroaniline	ug/L	ND (1.6)	ND (1.6)	-	-	-
2-Nitrophenol	ug/L	ND (1.8)	ND (1.8)	-	-	-
3&4-Methylphenol	ug/L	ND (1.1)	ND (1.1)	-	-	-
3,3'-Dichlorobenzidine	ug/L	ND (1.3)	ND (1.3)	-	-	-
3-Nitroaniline	ug/L	ND (1.3)	ND (1.3)	-	-	-
4,6-Dinitro-2-methylphenol	ug/L	ND (1.6)	ND (1.6)	-	-	-
4-Bromophenyl phenyl ether	ug/L	ND (2.4)	ND (2.5)	-	-	-
4-Chloro-3-methylphenol	ug/L	ND (1.6)	ND (1.6)	-	-	-
4-Chloroaniline	ug/L	ND (2.0)	ND (2.0)	-	-	-
4-Chlorophenyl phenyl ether	ug/L	ND (1.6)	ND (1.6)	-	-	-
4-Nitroaniline	ug/L	ND (2.2)	ND (2.2)	-	-	-
4-Nitrophenol	ug/L	ND (2.7)	ND (2.7)	-	-	-
Acenaphthene	ug/L	ND (2.0)	ND (2.0)	-	-	-
Acenaphthylene	ug/L	ND (1.8)	ND (1.8)	-	-	-
Anthracene	ug/L	ND (1.4)	ND (1.4)	-	-	-
Benzo(a)anthracene	ug/L	ND (1.3)	ND (1.4)	-	-	-

Table 3

Summary of Analytical Results - Start Of Impoundment
Husky Energy Refiney - Surface Water
Superior, Wisconsin

Sample Location:		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
Sample Date:		4/29/2018	4/30/2018	5/2/2018	5/2/2018	5/4/2018
Parameters	**Units**					
Benzo(a)pyrene	ug/L	ND (1.8)	ND (1.8)	-	-	-
Benzo(b)fluoranthene	ug/L	ND (1.8)	ND (1.8)	-	-	-
Benzo(g,h,i)perylene	ug/L	ND (2.2)	ND (2.2)	-	-	-
Benzo(k)fluoranthene	ug/L	ND (1.9)	ND (1.9)	-	-	-
bis(2-Chloroethoxy)methane	ug/L	ND (1.4)	ND (1.4)	-	-	-
bis(2-Chloroethyl)ether	ug/L	ND (1.2)	ND (1.2)	-	-	-
bis(2-Ethylhexyl)phthalate (DEHP)	ug/L	ND (4.8)	ND (4.9)	-	-	-
Butyl benzylphthalate (BBP)	ug/L	ND (1.9)	ND (1.9)	-	-	-
Carbazole	ug/L	ND (1.2)	ND (1.2)	-	-	-
Chrysene	ug/L	ND (1.8)	ND (1.9)	-	-	-
Dibenz(a,h)anthracene	ug/L	ND (2.3)	ND (2.3)	-	-	-
Dibenzofuran	ug/L	ND (1.7)	ND (1.7)	-	-	-
Diethyl phthalate	ug/L	ND (1.5)	ND (1.5)	-	-	-
Dimethyl phthalate	ug/L	ND (1.3)	ND (1.3)	-	-	-
Di-n-butylphthalate (DBP)	ug/L	ND (1.4)	ND (1.4)	-	-	-
Di-n-octyl phthalate (DnOP)	ug/L	ND (2.2)	ND (2.2)	-	-	-
Fluoranthene	ug/L	ND (1.6)	ND (1.6)	-	-	-
Fluorene	ug/L	ND (1.5)	ND (1.5)	-	-	-
Hexachlorobenzene	ug/L	ND (2.3)	ND (2.3)	-	-	-
Hexachlorobutadiene	ug/L	ND (3.4)	ND (3.4)	-	-	-
Hexachloroethane	ug/L	ND (3.6)	ND (3.6)	-	-	-
Indeno(1,2,3-cd)pyrene	ug/L	ND (2.1)	ND (2.1)	-	-	-
Isophorone	ug/L	ND (1.2)	ND (1.2)	-	-	-
Naphthalene	ug/L	ND (2.5)	ND (2.5)	-	-	-
Nitrobenzene	ug/L	ND (1.4)	ND (1.4)	-	-	-
N-Nitrosodimethylamine	ug/L	ND (1.1)	ND (1.1)	-	-	-
N-Nitrosodi-n-propylamine	ug/L	ND (1.1)	ND (1.1)	-	-	-
N-Nitrosodiphenylamine	ug/L	ND (1.1)	ND (1.2)	-	-	-
Pentachlorophenol	ug/L	ND (2.8)	ND (2.8)	-	-	-
Phenanthrene	ug/L	1.2 J	ND (1.0)	-	-	-
Phenol	ug/L	ND (1.2)	ND (1.2)	-	-	-
Pyrene	ug/L	ND (1.6)	ND (1.6)	-	-	-
PFAS						
Fluorotelomer sulfonic acid (4:2)	ng/L	ND (10)	ND (10)	-	-	-
N-Ethyl perfluorooctane sulfonamidoacetic acid	ng/L	ND (10)	ND (10)	-	-	-
N-Methyl-perfluorooctane sulfonamide	ng/L	ND (10)	ND (10)	-	-	-
Perfluorhexanoic acid (PFHxA)	ng/L	120	20	-	-	-
Perfluorobutane sulfonic acid (PFBS)	ng/L	110	ND (10)	-	-	-
Perfluorobutanoic acid (PFBA)	ng/L	80	ND (20)	-	-	-
Perfluorodecanesulfonic acid (PFDS)	ng/L	ND (10)	ND (10)	-	-	-
Perfluorodecanoic acid (PFDA)	ng/L	ND (10)	ND (10)	-	-	-
Perfluorododecanoic acid (PFDoA)	ng/L	ND (10)	ND (10)	-	-	-
Perfluoroheptane sulfonic acid (PFHpS)	ng/L	ND (10)	ND (10)	-	-	-
Perfluoroheptanoic acid (PFHpA)	ng/L	30	ND (10)	-	-	-
Perfluorohexane sulfonic acid (PFHxS)	ng/L	370	ND (10)	-	-	-
Perfluorononane sulfonic acid (PFNS)	ng/L	ND (10)	ND (10)	-	-	-
Perfluorononanoic acid (PFNA)	ng/L	10	ND (10)	-	-	-
Perfluorooctane sulfonamide (FOSA)	ng/L	ND (10)	ND (10)	-	-	-
Perfluorooctane sulfonic acid (PFOS)	ng/L	**410[cde]**	ND (10)	-	-	-
Perfluorooctanoic acid (PFOA)	ng/L	**40[c]**	ND (10)	-	-	-

Table 3

Summary of Analytical Results - Start Of Impoundment
Husky Energy Refiney - 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**
Parameters	**Units**					
Perfluoropentane sulfonic acid (PFPeS)	ng/L	90	ND (10)	-	-	-
Perfluoropentanoic acid (PFPeA)	ng/L	110	20	-	-	-
Perfluorotetradecanoic acid (PFTeA)	ng/L	ND (10)	ND (10)	-	-	-
Perfluorotridecanoic acid (PFTrDA)	ng/L	ND (10)	ND (10)	-	-	-
Perfluoroundecanoic acid (PFUnA)	ng/L	ND (10)	ND (10)	-	-	-
Sodium 1H,1H,2H,2H-perfluorodecane sulfonate (8:2)	ng/L	360	20	-	-	-
Sodium 1H,1H,2H,2H-perfluorooctane sulfonate (6:2)	ng/L	350	110	-	-	-
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)
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)	ND (0.075)
Total Petroleum Hydrocarbons (C24-C36) Motor Oil	mg/L	5.0	0.15	0.080	0.073	0.072
General Chemistry						
Oil and grease	mg/L	1.9 J	ND (1.4)	ND (1.4)	ND (1.4)	ND (1.4)
Sulfate	mg/L	6.8	13.3	11.3	11.2	11.2

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

Table 4

Summary of Analytical Results - 21st Street Weir Upstream
Husky Energy Refiney - 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)	-
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)	-

Table 4

Summary of Analytical Results - 21st Street Weir Upstream
Husky Energy Refiney - 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**					
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)	-
Trifluorotrichloroethane (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)	-	-	-
1,2-Dichlorobenzene	ug/L	ND (3.7)	ND (36.8)	-	-	-
1,2-Diphenylhydrazine	ug/L	ND (1.4)	ND (13.4)	-	-	-
1,3-Dichlorobenzene	ug/L	ND (4.4)	ND (43.2)	-	-	-
1,4-Dichlorobenzene	ug/L	ND (3.6)	ND (35.6)	-	-	-
1-Methylnaphthalene	ug/L	3.8 J	ND (21.9)	-	-	-
2,2'-Oxybis(1-chloropropane) (bis(2-Chloroisopropyl) ether)	ug/L	ND (1.4)	ND (14.2)	-	-	-
2,4,5-Trichlorophenol	ug/L	ND (1.2)	ND (11.5)	-	-	-
2,4,6-Trichlorophenol	ug/L	ND (1.2)	ND (11.5)	-	-	-
2,4-Dichlorophenol	ug/L	ND (1.6)	ND (16.3)	-	-	-
2,4-Dimethylphenol	ug/L	ND (3.0)	ND (29.6)	-	-	-
2,4-Dinitrophenol	ug/L	ND (2.6)	ND (25.6)	-	-	-
2,4-Dinitrotoluene	ug/L	ND (1.4)	ND (14.0)	-	-	-
2,6-Dinitrotoluene	ug/L	ND (0.67)	ND (6.7)	-	-	-
2-Chloronaphthalene	ug/L	ND (2.3)	ND (23.2)	-	-	-
2-Chlorophenol	ug/L	ND (1.2)	ND (11.8)	-	-	-
2-Methylnaphthalene	ug/L	3.6 J	ND (26.1)	-	-	-
2-Methylphenol	ug/L	ND (2.0)	ND (19.8)	-	-	-
2-Nitroaniline	ug/L	ND (1.6)	ND (15.9)	-	-	-
2-Nitrophenol	ug/L	ND (1.8)	ND (17.5)	-	-	-
3&4-Methylphenol	ug/L	ND (1.1)	ND (10.7)	-	-	-
3,3'-Dichlorobenzidine	ug/L	ND (1.3)	ND (12.6)	-	-	-
3-Nitroaniline	ug/L	ND (1.3)	ND (12.6)	-	-	-
4,6-Dinitro-2-methylphenol	ug/L	ND (1.6)	ND (15.8)	-	-	-
4-Bromophenyl phenyl ether	ug/L	ND (2.4)	ND (24.1)	-	-	-
4-Chloro-3-methylphenol	ug/L	ND (1.6)	ND (15.5)	-	-	-
4-Chloroaniline	ug/L	ND (2.0)	ND (19.9)	-	-	-
4-Chlorophenyl phenyl ether	ug/L	ND (1.6)	ND (15.9)	-	-	-
4-Nitroaniline	ug/L	ND (2.2)	ND (21.4)	-	-	-
4-Nitrophenol	ug/L	ND (2.7)	ND (26.9)	-	-	-
Acenaphthene	ug/L	ND (2.0)	ND (19.6)	-	-	-
Acenaphthylene	ug/L	ND (1.8)	ND (17.7)	-	-	-
Anthracene	ug/L	ND (1.4)	ND (13.4)	-	-	-
Benzo(a)anthracene	ug/L	ND (1.3)	ND (13.2)	-	-	-
Benzo(a)pyrene	ug/L	ND (1.8)	ND (17.9)	-	-	-
Benzo(b)fluoranthene	ug/L	ND (1.8)	ND (18.0)	-	-	-
Benzo(g,h,i)perylene	ug/L	ND (2.2)	ND (21.9)	-	-	-
Benzo(k)fluoranthene	ug/L	ND (1.9)	ND (18.3)	-	-	-
bis(2-Chloroethoxy)methane	ug/L	ND (1.4)	ND (14.1)	-	-	-
bis(2-Chloroethyl)ether	ug/L	ND (1.2)	ND (11.8)	-	-	-
bis(2-Ethylhexyl)phthalate (DEHP)	ug/L	ND (4.8)	ND (47.8)	-	-	-
Butyl benzylphthalate (BBP)	ug/L	ND (1.9)	ND (18.5)	-	-	-

Table 4

Summary of Analytical Results - 21st Street Weir Upstream
Husky Energy Refiney - 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**					
Carbazole	ug/L	ND (1.2)	ND (11.5)	-	-	-
Chrysene	ug/L	ND (1.8)	ND (18.2)	-	-	-
Dibenz(a,h)anthracene	ug/L	ND (2.3)	ND (22.5)	-	-	-
Dibenzofuran	ug/L	ND (1.7)	ND (16.8)	-	-	-
Diethyl phthalate	ug/L	ND (1.5)	ND (14.7)	-	-	-
Dimethyl phthalate	ug/L	ND (1.3)	ND (13.1)	-	-	-
Di-n-butylphthalate (DBP)	ug/L	ND (1.4)	ND (14.1)	-	-	-
Di-n-octyl phthalate (DnOP)	ug/L	ND (2.2)	ND (21.4)	-	-	-
Fluoranthene	ug/L	ND (1.6)	ND (15.4)	-	-	-
Fluorene	ug/L	ND (1.5)	ND (15.0)	-	-	-
Hexachlorobenzene	ug/L	ND (2.3)	ND (22.5)	-	-	-
Hexachlorobutadiene	ug/L	ND (3.4)	ND (33.2)	-	-	-
Hexachloroethane	ug/L	ND (3.6)	ND (35.7)	-	-	-
Indeno(1,2,3-cd)pyrene	ug/L	ND (2.1)	ND (21.0)	-	-	-
Isophorone	ug/L	ND (1.2)	ND (12.1)	-	-	-
Naphthalene	ug/L	ND (2.5)	ND (24.8)	-	-	-
Nitrobenzene	ug/L	ND (1.4)	ND (13.4)	-	-	-
N-Nitrosodimethylamine	ug/L	ND (1.1)	ND (10.7)	-	-	-
N-Nitrosodi-n-propylamine	ug/L	ND (1.1)	ND (10.5)	-	-	-
N-Nitrosodiphenylamine	ug/L	ND (1.1)	ND (11.4)	-	-	-
Pentachlorophenol	ug/L	ND (2.8)	ND (27.3)	-	-	-
Phenanthrene	ug/L	1.2 J	ND (10.3)	-	-	-
Phenol	ug/L	ND (1.2)	ND (12.1)	-	-	-
Pyrene	ug/L	ND (1.6)	ND (15.5)	-	-	-
PFAS						
Fluorotelomer sulfonic acid (4:2)	ng/L	10	ND (10)	-	-	-
N-Ethyl perfluorooctane sulfonamidoacetic acid	ng/L	ND (10)	ND (10)	-	-	-
N-Methyl-perfluorooctane sulfonamide	ng/L	ND (10)	ND (10)	-	-	-
Perfluorhexanoic acid (PFHxA)	ng/L	1140	1070	-	-	-
Perfluorobutane sulfonic acid (PFBS)	ng/L	20	30	-	-	-
Perfluorobutanoic acid (PFBA)	ng/L	400	350	-	-	-
Perfluorodecanesulfonic acid (PFDS)	ng/L	ND (10)	ND (10)	-	-	-
Perfluorodecanoic acid (PFDA)	ng/L	70	60	-	-	-
Perfluorododecanoic acid (PFDoA)	ng/L	20	20	-	-	-
Perfluoroheptane sulfonic acid (PFHpS)	ng/L	ND (10)	ND (10)	-	-	-
Perfluoroheptanoic acid (PFHpA)	ng/L	250	270	-	-	-
Perfluorohexane sulfonic acid (PFHxS)	ng/L	120	180	-	-	-
Perfluorononane sulfonic acid (PFNS)	ng/L	ND (10)	ND (10)	-	-	-
Perfluorononanoic acid (PFNA)	ng/L	60	60	-	-	-
Perfluorooctane sulfonamide (FOSA)	ng/L	ND (10)	ND (10)	-	-	-
Perfluorooctane sulfonic acid (PFOS)	ng/L	**170[cde]**	**180[cde]**	-	-	-
Perfluorooctanoic acid (PFOA)	ng/L	**590[cd]**	**650[cd]**	-	-	-
Perfluoropentane sulfonic acid (PFPeS)	ng/L	20	30	-	-	-
Perfluoropentanoic acid (PFPeA)	ng/L	440	420	-	-	-
Perfluorotetradecanoic acid (PFTeA)	ng/L	ND (10) I	ND (10) I	-	-	-
Perfluorotridecanoic acid (PFTrDA)	ng/L	ND (10)	ND (10)	-	-	-
Perfluoroundecanoic acid (PFUnA)	ng/L	10	10	-	-	-
Sodium 1H,1H,2H,2H-perfluorodecane sulfonate (8:2)	ng/L	2340 E	2010 E	-	-	-
Sodium 1H,1H,2H,2H-perfluorooctane sulfonate (6:2)	ng/L	6230 E	7510 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)

Table 4

Summary of Analytical Results - 21st Street Weir Upstream
Husky Energy Refiney - 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**					
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)
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

Table 5

Summary of Analytical Results - 21st Street
Husky Energy Refiney - 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)	-	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	17.2	15.2	-	9.0
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-Dichloroethene (total)	ug/L	ND (0.41)	-	-	-
1,2-Dichloropropane	ug/L	ND (0.62)	ND (0.62)	-	ND (0.62)
1,3,5-Trimethylbenzene	ug/L	4.0	3.7	-	2.3
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	7.3	7.1	-	4.1 J
2-Chlorotoluene	ug/L	ND (0.20)	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	-	0.35 J
4-Chlorotoluene	ug/L	ND (0.13)	ND (0.13)	-	ND (0.13)
4-Methyl-2-pentanone (Methyl isobutyl ketone) (MIBK)	ug/L	0.73 J	ND (0.55)	-	ND (0.55)
Acetone	ug/L	20.7	19.2 J	-	16.2 J
Allyl chloride	ug/L	ND (1.0)	ND (1.0)	-	ND (1.0)
Benzene	ug/L	55.9	33.7	-	18.4
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 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)
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)

Table 5

Summary of Analytical Results - 21st Street
Husky Energy Refiney - 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**				
Cyclohexane	ug/L	19.2	-	-	-
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)
Trifluorotrichloroethane (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)	-

Table 5

Summary of Analytical Results - 21st Street
Husky Energy Refiney - 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**				
2,6-Dinitrotoluene	ug/L	ND (0.65)	ND (33.0)	ND (6.2)	-
2-Chloronaphthalene	ug/L	ND (2.3)	ND (115)	ND (21.7)	-
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)	-

Table 5

Summary of Analytical Results - 21st Street
Husky Energy Refiney - 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**				
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)	-
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					

Table 5

Summary of Analytical Results - 21st Street
Husky Energy Refiney - 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**				
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

Notes:
mg/L - milligrams per litre
ug/L - micrograms per litre
ND (0.25) - not detected at the associated reporting limit
J - estimated concentration

Table 6

Summary of Analytical Results - 11th Street
Husky Energy Refiney - Surface Water
Superior, Wisconsin

Sample Location:		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
Sample Date:		4/27/2018	4/28/2018	4/28/2018	4/29/2018	4/30/2018	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)	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	5.8	-	2.5	0.21 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	1.6	-	0.82 J	0.35 J	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)	-
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	0.25 J	-	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	9.8 J	-	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)	-
Benzene	ug/L	11.2	-	4.4	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)	-
Bromodichloromethane	ug/L	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)	-
Bromomethane (Methyl bromide)	ug/L	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)	-
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)	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)	-
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	1.1 J	-	0.66 J	0.27 J	ND (0.14)	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)	-
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	1.8	-	0.73 J	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	0.88 J	-	0.37 J	ND (0.17)	ND (0.17)	ND (0.17)	-

Table 6

Summary of Analytical Results - 11th Street
Husky Energy Refiney - Surface Water
Superior, Wisconsin

Sample Location:		**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**
Sample Date:		**4/27/2018**	**4/28/2018**	**4/28/2018**	**4/29/2018**	**4/30/2018**	**5/2/2018**	**5/4/2018**
Parameters	**Units**							
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	3.5 J	-	1.6 J	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)	-
N-Propylbenzene	ug/L	0.60 J	-	0.25 J	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	14.0	-	5.5	0.29 J	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	11.0	-	4.6	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)	-	-
1,2-Dichlorobenzene	ug/L	ND (184)	ND (3.4)	-	ND (3.8)	ND (38.0)	-	-
1,2-Diphenylhydrazine	ug/L	ND (67.2)	ND (1.3)	-	ND (1.4)	ND (13.9)	-	-
1,3-Dichlorobenzene	ug/L	ND (216)	ND (4.0)	-	ND (4.5)	ND (44.6)	-	-
1,4-Dichlorobenzene	ug/L	ND (178)	ND (3.3)	-	ND (3.7)	ND (36.8)	-	-
1-Methylnaphthalene	ug/L	ND (109)	2.4 J	-	ND (2.3)	ND (22.6)	-	-
2,2'-Oxybis(1-chloropropane) (bis(2-Chloroisopropyl) ether)	ug/L	ND (70.8)	ND (1.3)	-	ND (1.5)	ND (14.6)	-	-
2,4,5-Trichlorophenol	ug/L	ND (57.3)	ND (1.1)	-	ND (1.2)	ND (11.8)	-	-
2,4,6-Trichlorophenol	ug/L	ND (57.3)	ND (1.1)	-	ND (1.2)	ND (11.8)	-	-
2,4-Dichlorophenol	ug/L	ND (81.3)	ND (1.5)	-	ND (1.7)	ND (16.8)	-	-
2,4-Dimethylphenol	ug/L	ND (148)	ND (2.8)	-	ND (3.1)	ND (30.5)	-	-
2,4-Dinitrophenol	ug/L	ND (128)	ND (2.4)	-	ND (2.6)	ND (26.5)	-	-
2,4-Dinitrotoluene	ug/L	ND (69.8)	ND (1.3)	-	ND (1.4)	ND (14.4)	-	-
2,6-Dinitrotoluene	ug/L	ND (33.4)	ND (0.62)	-	ND (0.69)	ND (6.9)	-	-
2-Chloronaphthalene	ug/L	ND (116)	ND (2.2)	-	ND (2.4)	ND (24.0)	-	-
2-Chlorophenol	ug/L	ND (58.9)	ND (1.1)	-	ND (1.2)	ND (12.2)	-	-
2-Methylnaphthalene	ug/L	ND (131)	ND (2.4)	-	ND (2.7)	ND (27.0)	-	-
2-Methylphenol	ug/L	ND (99.0)	ND (1.8)	-	ND (2.0)	ND (20.4)	-	-
2-Nitroaniline	ug/L	ND (79.7)	ND (1.5)	-	ND (1.6)	ND (16.5)	-	-
2-Nitrophenol	ug/L	ND (87.5)	ND (1.6)	-	ND (1.8)	ND (18.1)	-	-
3&4-Methylphenol	ug/L	ND (53.6)	ND (1.0)	-	ND (1.1)	ND (11.1)	-	-
3,3'-Dichlorobenzidine	ug/L	ND (63.0)	ND (1.2)	-	ND (1.3)	ND (13.0)	-	-
3-Nitroaniline	ug/L	ND (63.0)	ND (1.2)	-	ND (1.3)	ND (13.0)	-	-
4,6-Dinitro-2-methylphenol	ug/L	ND (79.2)	ND (1.5)	-	ND (1.6)	ND (16.3)	-	-
4-Bromophenyl phenyl ether	ug/L	ND (120)	ND (2.2)	-	ND (2.5)	ND (24.8)	-	-
4-Chloro-3-methylphenol	ug/L	ND (77.6)	ND (1.4)	-	ND (1.6)	ND (16.0)	-	-
4-Chloroaniline	ug/L	ND (99.5)	ND (1.9)	-	ND (2.1)	ND (20.5)	-	-
4-Chlorophenyl phenyl ether	ug/L	ND (79.7)	ND (1.5)	-	ND (1.6)	ND (16.5)	-	-
4-Nitroaniline	ug/L	ND (107)	ND (2.0)	-	ND (2.2)	ND (22.0)	-	-
4-Nitrophenol	ug/L	ND (134)	ND (2.5)	-	ND (2.8)	ND (27.7)	-	-
Acenaphthene	ug/L	ND (97.9)	ND (1.8)	-	ND (2.0)	ND (20.2)	-	-
Acenaphthylene	ug/L	ND (88.5)	ND (1.7)	-	ND (1.8)	ND (18.3)	-	-
Anthracene	ug/L	ND (67.2)	ND (1.3)	-	ND (1.4)	ND (13.9)	-	-

Table 6

Summary of Analytical Results - 11th Street
Husky Energy Refiney - Surface Water
Superior, Wisconsin

Sample Location:		**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**
Sample Date:		**4/27/2018**	**4/28/2018**	**4/28/2018**	**4/29/2018**	**4/30/2018**	**5/2/2018**	**5/4/2018**
Parameters	**Units**							
Benzo(a)anthracene	ug/L	ND (66.1)	ND (1.2)	-	ND (1.4)	ND (13.7)	-	-
Benzo(a)pyrene	ug/L	ND (89.6)	ND (1.7)	-	ND (1.8)	ND (18.5)	-	-
Benzo(b)fluoranthene	ug/L	ND (90.1)	ND (1.7)	-	ND (1.9)	ND (18.6)	-	-
Benzo(g,h,i)perylene	ug/L	ND (109)	ND (2.0)	-	ND (2.3)	ND (22.6)	-	-
Benzo(k)fluoranthene	ug/L	ND (91.7)	ND (1.7)	-	ND (1.9)	ND (18.9)	-	-
bis(2-Chloroethoxy)methane	ug/L	ND (70.3)	ND (1.3)	-	ND (1.5)	ND (14.5)	-	-
bis(2-Chloroethyl)ether	ug/L	ND (58.9)	ND (1.1)	-	ND (1.2)	ND (12.2)	-	-
bis(2-Ethylhexyl)phthalate (DEHP)	ug/L	ND (239)	ND (4.5)	-	ND (4.9)	ND (49.4)	-	-
Butyl benzylphthalate (BBP)	ug/L	ND (92.7)	ND (1.7)	-	ND (1.9)	ND (19.1)	-	-
Carbazole	ug/L	ND (57.3)	ND (1.1)	-	ND (1.2)	ND (11.8)	-	-
Chrysene	ug/L	ND (91.1)	ND (1.7)	-	ND (1.9)	ND (18.8)	-	-
Dibenz(a,h)anthracene	ug/L	ND (112)	ND (2.1)	-	ND (2.3)	ND (23.2)	-	-
Dibenzofuran	ug/L	ND (83.9)	ND (1.6)	-	ND (1.7)	ND (17.3)	-	-
Diethyl phthalate	ug/L	ND (73.4)	ND (1.4)	-	ND (1.5)	ND (15.2)	-	-
Dimethyl phthalate	ug/L	ND (65.6)	ND (1.2)	-	ND (1.4)	ND (13.5)	-	-
Di-n-butylphthalate (DBP)	ug/L	ND (70.3)	ND (1.3)	-	ND (1.5)	ND (14.5)	-	-
Di-n-octyl phthalate (DnOP)	ug/L	ND (107)	ND (2.0)	-	ND (2.2)	ND (22.0)	-	-
Fluoranthene	ug/L	ND (77.1)	ND (1.4)	-	ND (1.6)	ND (15.9)	-	-
Fluorene	ug/L	ND (75.0)	ND (1.4)	-	ND (1.5)	ND (15.5)	-	-
Hexachlorobenzene	ug/L	ND (112)	ND (2.1)	-	ND (2.3)	ND (23.2)	-	-
Hexachlorobutadiene	ug/L	ND (166)	ND (3.1)	-	ND (3.4)	ND (34.3)	-	-
Hexachloroethane	ug/L	ND (179)	ND (3.3)	-	ND (3.7)	ND (36.9)	-	-
Indeno(1,2,3-cd)pyrene	ug/L	ND (105)	ND (2.0)	-	ND (2.2)	ND (21.7)	-	-
Isophorone	ug/L	ND (60.4)	ND (1.1)	-	ND (1.2)	ND (12.5)	-	-
Naphthalene	ug/L	ND (124)	ND (2.3)	-	ND (2.6)	ND (25.6)	-	-
Nitrobenzene	ug/L	ND (67.2)	ND (1.3)	-	ND (1.4)	ND (13.9)	-	-
N-Nitrosodimethylamine	ug/L	ND (53.6)	ND (1.0)	-	ND (1.1)	ND (11.1)	-	-
N-Nitrosodi-n-propylamine	ug/L	ND (52.6)	ND (0.98)	-	ND (1.1)	ND (10.9)	-	-
N-Nitrosodiphenylamine	ug/L	ND (56.8)	ND (1.1)	-	ND (1.2)	ND (11.7)	-	-
Pentachlorophenol	ug/L	ND (136)	ND (2.5)	-	ND (2.8)	ND (28.2)	-	-
Phenanthrene	ug/L	ND (51.3)	1.2 J	-	ND (1.1)	ND (10.6)	-	-
Phenol	ug/L	ND (60.4)	ND (1.1)	-	ND (1.2)	ND (12.5)	-	-
Pyrene	ug/L	ND (77.6)	ND (1.4)	-	ND (1.6)	ND (16.0)	-	-
PFAS								
Fluorotelomer sulfonic acid (4:2)	ng/L	-	-	-	10	ND (10)	-	-
N-Ethyl perfluorooctane sulfonamidoacetic acid	ng/L	-	-	-	ND (10)	ND (10)	-	-
N-Methyl-perfluorooctane sulfonamide	ng/L	-	-	-	ND (10)	ND (10)	-	-
Perfluorhexanoic acid (PFHxA)	ng/L	-	-	-	1020	300	-	-
Perfluorobutane sulfonic acid (PFBS)	ng/L	-	-	-	10	10	-	-
Perfluorobutanoic acid (PFBA)	ng/L	-	-	-	330	100	-	-
Perfluorodecanesulfonic acid (PFDS)	ng/L	-	-	-	ND (10)	ND (10)	-	-
Perfluorodecanoic acid (PFDA)	ng/L	-	-	-	50	30	-	-
Perfluorododecanoic acid (PFDoA)	ng/L	-	-	-	10	ND (10)	-	-
Perfluoroheptane sulfonic acid (PFHpS)	ng/L	-	-	-	ND (10)	ND (10)	-	-
Perfluoroheptanoic acid (PFHpA)	ng/L	-	-	-	250	80	-	-
Perfluorohexane sulfonic acid (PFHxS)	ng/L	-	-	-	70	80	-	-
Perfluorononane sulfonic acid (PFNS)	ng/L	-	-	-	ND (10)	ND (10)	-	-
Perfluorononanoic acid (PFNA)	ng/L	-	-	-	50	40	-	-
Perfluorooctane sulfonamide (FOSA)	ng/L	-	-	-	ND (10)	ND (10)	-	-
Perfluorooctane sulfonic acid (PFOS)	ng/L	-	-	-	**90**[cde]	**100**[cde]	-	-

Table 6

Summary of Analytical Results - 11th Street
Husky Energy Refiney - Surface Water
Superior, Wisconsin

Sample Location:		**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**
Sample Date:		**4/27/2018**	**4/28/2018**	**4/28/2018**	**4/29/2018**	**4/30/2018**	**5/2/2018**	**5/4/2018**
Parameters	**Units**							
Perfluorooctanoic acid (PFOA)	ng/L	-	-	-	**670[cd]**	**210[cd]**	-	-
Perfluoropentane sulfonic acid (PFPeS)	ng/L	-	-	-	10	ND (10)	-	-
Perfluoropentanoic acid (PFPeA)	ng/L	-	-	-	390	110	-	-
Perfluorotetradecanoic acid (PFTeA)	ng/L	-	-	-	ND (10) I	ND (10)	-	-
Perfluorotridecanoic acid (PFTrDA)	ng/L	-	-	-	ND (10)	ND (10)	-	-
Perfluoroundecanoic acid (PFUnA)	ng/L	-	-	-	ND (10)	ND (10)	-	-
Sodium 1H,1H,2H,2H-perfluorodecane sulfonate (8:2)	ng/L	-	-	-	1560	950	-	-
Sodium 1H,1H,2H,2H-perfluorooctane sulfonate (6:2)	ng/L	-	-	-	8350 E	4720 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)
Petroleum Hydrocarbons								
Total Petroleum Hydrocarbons - Gasoline Range Organics	ug/L	227	-	150	45.2 J	9.0 J	24.1 J	19.2 J
Total Petroleum Hydrocarbons (C10-C28) DRO	mg/L	-	-	-	0.70	0.56	0.21	0.21
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
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)
Sulfate	mg/L	14.0	-	15.7	15.0	11.2	11.5	11.5

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
E - Concentration exceeds calibration range
I - Matrix interference with internal standard
J - estimated concentration

Table 7

Summary of Analytical Results - 3rd Street
Husky Energy Refiney - Surface Water
Superior, Wisconsin

Sample Location:		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
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
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	8.8	4.0	-	ND (1.1)	0.14 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)	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-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)	-
1,3,5-Trimethylbenzene	ug/L	2.1	1.0	-	0.40 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	4.6 J	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-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)	-
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	17.1 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	41.9	6.8	-	2.0	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	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)	-	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)	-
Cyclohexane	ug/L	13.3	-	-	-	-	-	-	-
Cymene (p-Isopropyltoluene)	ug/L	2.4 J	0.70 J	-	0.31 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)	-
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)	-
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)	-
Ethylbenzene	ug/L	4.3	1.1	-	0.33 J	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)	-

Table 7

Summary of Analytical Results - 3rd Street
Husky Energy Refiney - Surface Water
Superior, Wisconsin

Sample Location:		**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**
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**
Parameters	**Units**								
Isopropyl benzene	ug/L	1.0 J	0.57 J	-	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)	-
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	7.5	2.6 J	-	0.92 J	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)	-
N-Propylbenzene	ug/L	0.80 J	0.39 J	-	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)	-
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	54.3	8.7	-	2.5	0.22 J	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	1.3	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)	-
Trifluorotrichloroethane (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	25.7	7.0	-	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)	-	-
1,2-Dichlorobenzene	ug/L	ND (3.6)	ND (182)	ND (3.5)	-	ND (3.7)	ND (36.0)	-	-
1,2-Diphenylhydrazine	ug/L	ND (1.3)	ND (66.5)	ND (1.3)	-	ND (1.3)	ND (13.2)	-	-
1,3-Dichlorobenzene	ug/L	ND (4.2)	ND (214)	ND (4.1)	-	ND (4.3)	ND (42.3)	-	-
1,4-Dichlorobenzene	ug/L	ND (3.5)	ND (176)	ND (3.4)	-	ND (3.6)	ND (34.9)	-	-
1-Methylnaphthalene	ug/L	5.2 J	ND (108)	ND (2.1)	-	ND (2.2)	ND (21.4)	-	-
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)	-	-
2,4,5-Trichlorophenol	ug/L	ND (1.1)	ND (56.7)	ND (1.1)	-	ND (1.1)	ND (11.2)	-	-
2,4,6-Trichlorophenol	ug/L	ND (1.1)	ND (56.7)	ND (1.1)	-	ND (1.1)	ND (11.2)	-	-
2,4-Dichlorophenol	ug/L	ND (1.6)	ND (80.4)	ND (1.5)	-	ND (1.6)	ND (15.9)	-	-
2,4-Dimethylphenol	ug/L	ND (2.9)	ND (146)	ND (2.8)	-	ND (3.0)	ND (29.0)	-	-
2,4-Dinitrophenol	ug/L	ND (2.5)	ND (127)	ND (2.4)	-	ND (2.6)	ND (25.1)	-	-
2,4-Dinitrotoluene	ug/L	ND (1.4)	ND (69.1)	ND (1.3)	-	ND (1.4)	ND (13.7)	-	-
2,6-Dinitrotoluene	ug/L	ND (0.65)	ND (33.0)	ND (0.63)	-	ND (0.67)	ND (6.5)	-	-
2-Chloronaphthalene	ug/L	ND (2.3)	ND (115)	ND (2.2)	-	ND (2.3)	ND (22.8)	-	-
2-Chlorophenol	ug/L	ND (1.2)	ND (58.2)	ND (1.1)	-	ND (1.2)	ND (11.5)	-	-
2-Methylnaphthalene	ug/L	6.0 J	ND (129)	ND (2.5)	-	ND (2.6)	ND (25.6)	-	-
2-Methylphenol	ug/L	3.6 J	ND (97.9)	ND (1.9)	-	ND (2.0)	ND (19.4)	-	-
2-Nitroaniline	ug/L	ND (1.6)	ND (78.9)	ND (1.5)	-	ND (1.6)	ND (15.6)	-	-
2-Nitrophenol	ug/L	ND (1.7)	ND (86.6)	ND (1.7)	-	ND (1.8)	ND (17.1)	-	-
3&4-Methylphenol	ug/L	2.7 J	ND (53.1)	ND (1.0)	-	ND (1.1)	ND (10.5)	-	-
3,3'-Dichlorobenzidine	ug/L	ND (1.2)	ND (62.4)	ND (1.2)	-	ND (1.3)	ND (12.3)	-	-
3-Nitroaniline	ug/L	ND (1.2)	ND (62.4)	ND (1.2)	-	ND (1.3)	ND (12.3)	-	-
4,6-Dinitro-2-methylphenol	ug/L	ND (1.6)	ND (78.4)	ND (1.5)	-	ND (1.6)	ND (15.5)	-	-
4-Bromophenyl phenyl ether	ug/L	ND (2.4)	ND (119)	ND (2.3)	-	ND (2.4)	ND (23.6)	-	-
4-Chloro-3-methylphenol	ug/L	ND (1.5)	ND (76.8)	ND (1.5)	-	ND (1.6)	ND (15.2)	-	-
4-Chloroaniline	ug/L	ND (1.9)	ND (98.5)	ND (1.9)	-	ND (2.0)	ND (19.5)	-	-
4-Chlorophenyl phenyl ether	ug/L	ND (1.6)	ND (78.9)	ND (1.5)	-	ND (1.6)	ND (15.6)	-	-
4-Nitroaniline	ug/L	ND (2.1)	ND (106)	ND (2.0)	-	ND (2.1)	ND (20.9)	-	-
4-Nitrophenol	ug/L	ND (2.6)	ND (133)	ND (2.5)	-	ND (2.7)	ND (26.3)	-	-
Acenaphthene	ug/L	ND (1.9)	ND (96.9)	ND (1.9)	-	ND (2.0)	ND (19.2)	-	-
Acenaphthylene	ug/L	ND (1.7)	ND (87.6)	ND (1.7)	-	ND (1.8)	ND (17.3)	-	-
Anthracene	ug/L	ND (1.3)	ND (66.5)	ND (1.3)	-	ND (1.3)	ND (13.2)	-	-

Table 7

Summary of Analytical Results - 3rd Street
Husky Energy Refiney - Surface Water
Superior, Wisconsin

Sample Location:		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
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
Parameters	**Units**								
Benzo(a)anthracene	ug/L	ND (1.3)	ND (65.5)	ND (1.3)	-	ND (1.3)	ND (13.0)	-	-
Benzo(a)pyrene	ug/L	ND (1.8)	ND (88.7)	ND (1.7)	-	ND (1.8)	ND (17.6)	-	-
Benzo(b)fluoranthene	ug/L	ND (1.8)	ND (89.2)	ND (1.7)	-	ND (1.8)	ND (17.7)	-	-
Benzo(g,h,i)perylene	ug/L	ND (2.1)	ND (108)	ND (2.1)	-	ND (2.2)	ND (21.4)	-	-
Benzo(k)fluoranthene	ug/L	ND (1.8)	ND (90.7)	ND (1.7)	-	ND (1.8)	ND (18.0)	-	-
bis(2-Chloroethoxy)methane	ug/L	ND (1.4)	ND (69.6)	ND (1.3)	-	ND (1.4)	ND (13.8)	-	-
bis(2-Chloroethyl)ether	ug/L	ND (1.2)	ND (58.2)	ND (1.1)	-	ND (1.2)	ND (11.5)	-	-
bis(2-Ethylhexyl)phthalate (DEHP)	ug/L	ND (4.7)	ND (237)	ND (4.5)	-	ND (4.8)	ND (46.8)	-	-
Butyl benzylphthalate (BBP)	ug/L	ND (1.8)	ND (91.8)	ND (1.8)	-	ND (1.9)	ND (18.2)	-	-
Carbazole	ug/L	ND (1.1)	ND (56.7)	ND (1.1)	-	ND (1.1)	ND (11.2)	-	-
Chrysene	ug/L	ND (1.8)	ND (90.2)	ND (1.7)	-	ND (1.8)	ND (17.9)	-	-
Dibenz(a,h)anthracene	ug/L	ND (2.2)	ND (111)	ND (2.1)	-	ND (2.3)	ND (22.0)	-	-
Dibenzofuran	ug/L	ND (1.6)	ND (83.0)	ND (1.6)	-	ND (1.7)	ND (16.4)	-	-
Diethyl phthalate	ug/L	ND (1.4)	ND (72.7)	ND (1.4)	-	ND (1.5)	ND (14.4)	-	-
Dimethyl phthalate	ug/L	ND (1.3)	ND (64.9)	ND (1.2)	-	ND (1.3)	ND (12.9)	-	-
Di-n-butylphthalate (DBP)	ug/L	ND (1.4)	ND (69.6)	ND (1.3)	-	ND (1.4)	ND (13.8)	-	-
Di-n-octyl phthalate (DnOP)	ug/L	ND (2.1)	ND (106)	ND (2.0)	-	ND (2.1)	ND (20.9)	-	-
Fluoranthene	ug/L	ND (1.5)	ND (76.3)	ND (1.5)	-	ND (1.5)	ND (15.1)	-	-
Fluorene	ug/L	ND (1.5)	ND (74.2)	ND (1.4)	-	ND (1.5)	ND (14.7)	-	-
Hexachlorobenzene	ug/L	ND (2.2)	ND (111)	ND (2.1)	-	ND (2.3)	ND (22.0)	-	-
Hexachlorobutadiene	ug/L	ND (3.3)	ND (164)	ND (3.1)	-	ND (3.3)	ND (32.6)	-	-
Hexachloroethane	ug/L	ND (3.5)	ND (177)	ND (3.4)	-	ND (3.6)	ND (35.0)	-	-
Indeno(1,2,3-cd)pyrene	ug/L	ND (2.1)	ND (104)	ND (2.0)	-	ND (2.1)	ND (20.6)	-	-
Isophorone	ug/L	ND (1.2)	ND (59.8)	ND (1.1)	-	ND (1.2)	ND (11.8)	-	-
Naphthalene	ug/L	4.6 J	ND (123)	ND (2.3)	-	ND (2.5)	ND (24.3)	-	-
Nitrobenzene	ug/L	ND (1.3)	ND (66.5)	ND (1.3)	-	ND (1.3)	ND (13.2)	-	-
N-Nitrosodimethylamine	ug/L	ND (1.1)	ND (53.1)	ND (1.0)	-	ND (1.1)	ND (10.5)	-	-
N-Nitrosodi-n-propylamine	ug/L	ND (1.0)	ND (52.1)	ND (1.0)	-	ND (1.1)	ND (10.3)	-	-
N-Nitrosodiphenylamine	ug/L	ND (1.1)	ND (56.2)	ND (1.1)	-	ND (1.1)	ND (11.1)	-	-
Pentachlorophenol	ug/L	ND (2.7)	ND (135)	ND (2.6)	-	ND (2.7)	ND (26.7)	-	-
Phenanthrene	ug/L	ND (1.0)	ND (50.8)	ND (0.97)	-	ND (1.0)	ND (10.1)	-	-
Phenol	ug/L	5.2	ND (59.8)	ND (1.1)	-	ND (1.2)	ND (11.8)	-	-
Pyrene	ug/L	ND (1.5)	ND (76.8)	ND (1.5)	-	ND (1.6)	ND (15.2)	-	-
PFAS									
Fluorotelomer sulfonic acid (4:2)	ng/L	-	-	-	-	ND (10)	ND (10)	-	-
N-Ethyl perfluorooctane sulfonamidoacetic acid	ng/L	-	-	-	-	ND (10)	ND (10)	-	-
N-Methyl-perfluorooctane sulfonamide	ng/L	-	-	-	-	ND (10)	ND (10)	-	-
Perfluorhexanoic acid (PFHxA)	ng/L	-	-	-	-	480	320	-	-
Perfluorobutane sulfonic acid (PFBS)	ng/L	-	-	-	-	ND (10)	10	-	-
Perfluorobutanoic acid (PFBA)	ng/L	-	-	-	-	190	100	-	-
Perfluorodecanesulfonic acid (PFDS)	ng/L	-	-	-	-	ND (10)	ND (10)	-	-
Perfluorodecanoic acid (PFDA)	ng/L	-	-	-	-	30	20	-	-
Perfluorododecanoic acid (PFDoA)	ng/L	-	-	-	-	ND (10)	ND (10)	-	-
Perfluoroheptane sulfonic acid (PFHpS)	ng/L	-	-	-	-	ND (10)	ND (10)	-	-
Perfluoroheptanoic acid (PFHpA)	ng/L	-	-	-	-	110	80	-	-
Perfluorohexane sulfonic acid (PFHxS)	ng/L	-	-	-	-	50	60	-	-
Perfluorononane sulfonic acid (PFNS)	ng/L	-	-	-	-	ND (10)	ND (10)	-	-
Perfluorononanoic acid (PFNA)	ng/L	-	-	-	-	30	20	-	-
Perfluorooctane sulfonamide (FOSA)	ng/L	-	-	-	-	ND (10)	ND (10)	-	-
Perfluorooctane sulfonic acid (PFOS)	ng/L	-	-	-	-	**60[ce]**	**50[ce]**	-	-
Perfluorooctanoic acid (PFOA)	ng/L	-	-	-	-	**300[cd]**	**200[cd]**	-	-
Perfluoropentane sulfonic acid (PFPeS)	ng/L	-	-	-	-	ND (10)	10	-	-
Perfluoropentanoic acid (PFPeA)	ng/L	-	-	-	-	160	110	-	-

Table 7

Summary of Analytical Results - 3rd Street
Husky Energy Refiney - Surface Water
Superior, Wisconsin

Sample Location:		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
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
Parameters	**Units**								
Perfluorotetradecanoic acid (PFTeA)	ng/L	-	-	-	-	ND (10)	ND (10)	-	-
Perfluorotridecanoic acid (PFTrDA)	ng/L	-	-	-	-	ND (10)	ND (10)	-	-
Perfluoroundecanoic acid (PFUnA)	ng/L	-	-	-	-	ND (10)	ND (10)	-	-
Sodium 1H,1H,2H,2H-perfluorodecane sulfonate (8:2)	ng/L	-	-	-	-	920	620	-	-
Sodium 1H,1H,2H,2H-perfluorooctane sulfonate (6:2)	ng/L	-	-	-	-	4760 E	4800 E	-	-
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
Total Petroleum Hydrocarbons (C10-C28) DRO	mg/L	1.3	-	-	-	0.56	0.60	0.14	ND (0.11)
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
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)
Sulfate	mg/L	25.8	12.1	-	12.0	11.7	11.4	9.8	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
E - Concentration exceeds calibration range

Table 7

Summary of Analytical Results - 3rd Street
Husky Energy Refiney - Surface Water
Superior, Wisconsin

Sample Location:		**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**
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**
Parameters	**Units**								

J - estimated concentration

Table 8

Summary of Analytical Results - Mouth
Husky Energy Refiney - Surface Water
Superior, Wisconsin

Sample Location:		**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**
Sample Date:		**4/27/2018**	**4/28/2018**	**4/29/2018**	**4/30/2018**	**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)	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	4.6	ND (1.2)	0.22 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	1.2	0.40 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)	-
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	0.17 J	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	17.9 J	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)	-
Benzene	ug/L	7.5	2.1	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)	-
Bromodichloromethane	ug/L	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)	-
Bromomethane (Methyl bromide)	ug/L	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)	-
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)	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)	-
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	0.74 J	0.34 J	0.14 J	ND (0.14)	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)	-

Table 8

Summary of Analytical Results - Mouth
Husky Energy Refiney - Surface Water
Superior, Wisconsin

Sample Location:		**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**
Sample Date:		**4/27/2018**	**4/28/2018**	**4/29/2018**	**4/30/2018**	**5/2/2018**	**5/4/2018**
Parameters	**Units**						
Dichlorodifluoromethane (CFC-12)	ug/L	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)	-
Ethyl ether	ug/L	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)	-
Hexachlorobutadiene	ug/L	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)	-
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	2.9 J	0.95 J	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)	-
N-Propylbenzene	ug/L	0.46 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	9.9	2.5	0.32 J	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	8.1	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)	-	-
1,2-Dichlorobenzene	ug/L	ND (186)	ND (3.4)	ND (19.0)	ND (36.8)	-	-
1,2-Diphenylhydrazine	ug/L	ND (67.9)	ND (1.3)	ND (6.9)	ND (13.4)	-	-
1,3-Dichlorobenzene	ug/L	ND (218)	ND (4.0)	ND (22.3)	ND (43.2)	-	-
1,4-Dichlorobenzene	ug/L	ND (180)	ND (3.3)	ND (18.4)	ND (35.6)	-	-
1-Methylnaphthalene	ug/L	ND (111)	ND (2.0)	ND (11.3)	ND (21.9)	-	-
2,2'-Oxybis(1-chloropropane) (bis(2-Chloroisopropyl) ether)	ug/L	ND (71.6)	ND (1.3)	ND (7.3)	ND (14.2)	-	-
2,4,5-Trichlorophenol	ug/L	ND (57.9)	ND (1.1)	ND (5.9)	ND (11.5)	-	-
2,4,6-Trichlorophenol	ug/L	ND (57.9)	ND (1.1)	ND (5.9)	ND (11.5)	-	-
2,4-Dichlorophenol	ug/L	ND (82.1)	ND (1.5)	ND (8.4)	ND (16.3)	-	-
2,4-Dimethylphenol	ug/L	ND (149)	ND (2.8)	ND (15.3)	ND (29.6)	-	-
2,4-Dinitrophenol	ug/L	ND (129)	ND (2.4)	ND (13.2)	ND (25.6)	-	-
2,4-Dinitrotoluene	ug/L	ND (70.5)	ND (1.3)	ND (7.2)	ND (14.0)	-	-
2,6-Dinitrotoluene	ug/L	ND (33.7)	ND (0.62)	ND (3.4)	ND (6.7)	-	-
2-Chloronaphthalene	ug/L	ND (117)	ND (2.2)	ND (12.0)	ND (23.2)	-	-
2-Chlorophenol	ug/L	ND (59.5)	ND (1.1)	ND (6.1)	ND (11.8)	-	-
2-Methylnaphthalene	ug/L	ND (132)	ND (2.4)	ND (13.5)	ND (26.1)	-	-
2-Methylphenol	ug/L	ND (100)	ND (1.8)	ND (10.2)	ND (19.8)	-	-
2-Nitroaniline	ug/L	ND (80.5)	ND (1.5)	ND (8.2)	ND (15.9)	-	-
2-Nitrophenol	ug/L	ND (88.4)	ND (1.6)	ND (9.0)	ND (17.5)	-	-
3&4-Methylphenol	ug/L	ND (54.2)	ND (1.0)	ND (5.5)	ND (10.7)	-	-

Table 8

Summary of Analytical Results - Mouth
Husky Energy Refiney - Surface Water
Superior, Wisconsin

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

Table 8

Summary of Analytical Results - Mouth
Husky Energy Refiney - Surface Water
Superior, Wisconsin

Sample Location:		**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**
Sample Date:		**4/27/2018**	**4/28/2018**	**4/29/2018**	**4/30/2018**	**5/2/2018**	**5/4/2018**
Parameters	**Units**						
PFAS							
Fluorotelomer sulfonic acid (4:2)	ng/L	-	-	ND (10)	ND (10)	-	-
N-Ethyl perfluorooctane sulfonamidoacetic acid	ng/L	-	-	ND (10)	ND (10)	-	-
N-Methyl-perfluorooctane sulfonamide	ng/L	-	-	ND (10)	ND (10)	-	-
Perfluorhexanoic acid (PFHxA)	ng/L	-	-	440	290	-	-
Perfluorobutane sulfonic acid (PFBS)	ng/L	-	-	ND (10)	ND (10)	-	-
Perfluorobutanoic acid (PFBA)	ng/L	-	-	170	110	-	-
Perfluorodecanesulfonic acid (PFDS)	ng/L	-	-	ND (10)	ND (10)	-	-
Perfluorodecanoic acid (PFDA)	ng/L	-	-	70	20	-	-
Perfluorododecanoic acid (PFDoA)	ng/L	-	-	ND (10)	ND (10)	-	-
Perfluoroheptane sulfonic acid (PFHpS)	ng/L	-	-	ND (10)	ND (10)	-	-
Perfluoroheptanoic acid (PFHpA)	ng/L	-	-	90	70	-	-
Perfluorohexane sulfonic acid (PFHxS)	ng/L	-	-	40	40	-	-
Perfluorononane sulfonic acid (PFNS)	ng/L	-	-	ND (10)	ND (10)	-	-
Perfluorononanoic acid (PFNA)	ng/L	-	-	40	20	-	-
Perfluorooctane sulfonamide (FOSA)	ng/L	-	-	ND (10)	ND (10)	-	-
Perfluorooctane sulfonic acid (PFOS)	ng/L	-	-	**220[cde]**	**50[ce]**	-	-
Perfluorooctanoic acid (PFOA)	ng/L	-	-	**230[cd]**	**160[cd]**	-	-
Perfluoropentane sulfonic acid (PFPeS)	ng/L	-	-	ND (10)	ND (10)	-	-
Perfluoropentanoic acid (PFPeA)	ng/L	-	-	140	100	-	-
Perfluorotetradecanoic acid (PFTeA)	ng/L	-	-	ND (10)	ND (10)	-	-
Perfluorotridecanoic acid (PFTrDA)	ng/L	-	-	ND (10)	ND (10)	-	-
Perfluoroundecanoic acid (PFUnA)	ng/L	-	-	ND (10)	ND (10)	-	-
Sodium 1H,1H,2H,2H-perfluorodecane sulfonate (8:2)	ng/L	-	-	2930	700	-	-
Sodium 1H,1H,2H,2H-perfluorooctane sulfonate (6:2)	ng/L	-	-	4160 E	3810 E	-	-
Metals							
Arsenic	ug/L	ND (4.1)	ND (4.1)	ND (5.2)	ND (5.2)	**5.4 J[b]**	ND (5.2)
Barium	ug/L	48.3	47.6	43.8	63.6	46.7	ND (0.22)
Cadmium	ug/L	ND (0.64)	ND (0.64)	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)
Lead	ug/L	ND (3.3)	ND (3.3)	ND (3.0)	8.2 J	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)
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)
Total Petroleum Hydrocarbons (C10-C28) DRO	mg/L	-	-	0.74	0.73	0.15	ND (0.11)
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
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)
Sulfate	mg/L	12.9	12.4	11.6	12.4	10.1	10.6

Table 8

Summary of Analytical Results - Mouth
Husky Energy Refiney - Surface Water
Superior, Wisconsin

Sample Location:		**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**
Sample Date:		**4/27/2018**	**4/28/2018**	**4/29/2018**	**4/30/2018**	**5/2/2018**	**5/4/2018**
Parameters	**Units**						

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
J - estimated concentration

Table 9

Summary of Analytical Results - Faxon
Husky Energy Refiney - Surface Water
Superior, Wisconsin

Sample Location:		**Faxon**
Sample ID:		**SW-042918-KJ-01**
Sample Date:		**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)

Table 9

Summary of Analytical Results - Faxon
Husky Energy Refiney - Surface Water
Superior, Wisconsin

Sample Location:		**Faxon**
Sample ID:		**SW-042918-KJ-01**
Sample Date:		**4/29/2018**
Parameters	**Units**	
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)
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)

Table 9

Summary of Analytical Results - Faxon
Husky Energy Refiney - Surface Water
Superior, Wisconsin

Sample Location:		**Faxon**
Sample ID:		**SW-042918-KJ-01**
Sample Date:		**4/29/2018**
Parameters	**Units**	
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)
Trifluorotrichloroethane (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)

Table 9

Summary of Analytical Results - Faxon
Husky Energy Refiney - Surface Water
Superior, Wisconsin

Sample Location:		**Faxon**
Sample ID:		**SW-042918-KJ-01**
Sample Date:		**4/29/2018**
Parameters	**Units**	
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)
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)

Table 9

Summary of Analytical Results - Faxon
Husky Energy Refiney - Surface Water
Superior, Wisconsin

Sample Location:		**Faxon**
Sample ID:		**SW-042918-KJ-01**
Sample Date:		**4/29/2018**
Parameters	**Units**	
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		
Fluorotelomer sulfonic acid (4:2)	ng/L	ND (10)
N-Ethyl perfluorooctane sulfonamidoacetic acid	ng/L	ND (10)

Table 9

Summary of Analytical Results - Faxon
Husky Energy Refiney - Surface Water
Superior, Wisconsin

Sample Location:		**Faxon**
Sample ID:		**SW-042918-KJ-01**
Sample Date:		**4/29/2018**
Parameters	**Units**	
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)
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)
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

Table 9

Summary of Analytical Results - Faxon
Husky Energy Refiney - Surface Water
Superior, Wisconsin

Sample Location:		**Faxon**
Sample ID:		**SW-042918-KJ-01**
Sample Date:		**4/29/2018**
Parameters	**Units**	
Lead	ug/L	ND (3.0)
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	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