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Prepared for:
City of Kenosha
Kenosha, WI

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October 2019

Semi-Annual Operation and Monitoring Report, January - June 2019

Former Kenosha Engine Plant, Kenosha, Wisconsin

WDNR FID 230004500, BRRTS# 02-30-000327

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October 9, 2019

Mr. Paul Grittner
Wisconsin Department of Natural Resources
Remediation and Redevelopment Program
141 NW Barstow St., Room 180
Waukesha, WI 53188

Subject: Semi-Annual Operation and Monitoring Report, January - June 2019
Former Kenosha Engine Plant, Kenosha, Wisconsin
WDNR FID 230004500, BRRTS# 02-30-000327

Dear Mr. Grittner,

AECOM is transmitting the attached Semi-Annual Remediation Site Progress and Operation, Maintenance, Monitoring and Optimization Report (Form 4400-194) for the former Kenosha Engine Plant (KEP) for the time period January 2019 through June 2019 on behalf of the City of Kenosha.

AECOM continues operation, maintenance, and monitoring (OM&M) of three groundwater remediation systems at the KEP (location shown on Figure 1).

The three systems are:

- The North System: Sump 6
- The Central System: Sumps 18 & 23
- The Southern System: Sumps 7 & 17R

Figure 2 depicts sump locations. Treated groundwater is discharged to the Kenosha Water Utility sanitary system at three different locations near the boundary of the KEP. During this operational period remedial systems have been maintained for continued operation. A review of the current conditions of each of the systems and the measures taken during the reporting period to restore/improve operations are provided below.

System Description and Operational Status

AECOM maintained the operational status of each of the three groundwater remediation systems located at the KEP during the period from January through June 2019. The system component(s) encountered the following operational breakdowns during the period and have been restored back into working order:

- Sump 6 – The system has been functioning normally except for the following intermittent interruptions;
    - On May 7th a replacement pump was installed in Sump 6 as a result of normal wear and use.

- Central System – The system has been functioning normally except for the following intermittent interruptions;

    - Intermittent temperature alarms have been observed and related to the building temperature sensor. Replacement and calibration occurred in 2018. Troubleshooting the temperature sensor will continue when the drain blockage is removed.

    - During routine monthly site visits on April 8th and May 7th the air compressor was off. Schedule maintenance to replace oil, filters, and drive belt followed by an inspection was performed to restore operation to the compressor.

    - During June's monthly site visit, a blockage in the remediation system's discharge line was discovered. The groundwater remediation system was shut down pending repair of the blockage.

- Southern System – The system has been operating normally.

The conditions of the system components were reviewed on July 3, 2019 and are summarized here:

North System, Sump 6

- Pump – Depth to water and depth to bottom were adequate for continued groundwater removal.
- System is operating.

Central System, Sumps 18 and 23

- Pump – Depth to water and depth to bottom were adequate for continued groundwater removal.
- System is operating.

Southern System, Sumps 7 and 17R

- Pumps – Depth to water and depth to bottom were adequate for continued groundwater removal.
- System is operating.

Evaluation of Current Monitoring Data

A water table contour map (Figure 2) and a potentiometric map of the deeper groundwater (Figure 3, as measured by KEP piezometers at a depth of approximately 25 feet bgs) for April 2019 are attached. Capture zones for the Southern System (Sumps 7 and 17R) are illustrated by the 613 foot contour located adjacent to the system building. The capture zone for Central System (Sumps 18 and 23) is illustrated by the 618 foot contour located around the system building. The capture zone for Sump 6 is illustrated by the 615 foot contour located around the system building.

Influent (pre-treatment) groundwater samples are collected from each individual sump and effluent (post-treatment) samples are collected from each treatment system. The samples are analyzed for volatile organic compounds (VOCs), diesel range organics (DRO) and gasoline range organics (GRO) in conformance with the Kenosha Water Utility discharge permit. Tables 1 and 2 provide a summary of influent and effluent samples (detected VOCs, DRO and GRO) collected, with the most recent results from March 2019 shown for four operating sumps (Sumps 6, 18, 7, and 17R). Influent samples were not collected in March 2019 at Sump 23 because the pump was not operating at the time of sample collection.

After reviewing the influent concentrations for each sump, generally one contaminant was dominant (as evidenced by its exceedance of the NR 140 Wisconsin Administrative Code groundwater quality Enforcement Standard [ES]) in its concentration over time. The individual contaminants and their trends by sump are:

Sump 6

- Sump 6 – Trichloroethene and vinyl chloride
  The TCE and vinyl chloride concentrations exceed the ES without an observable trend. Cis-1,2-dichloroethene was reported below the Preventive Action Limit (PAL) for the first time since performance monitoring.

Central System

- Sump 18 – Benzene, cis-1,2 dichloroethene, and vinyl chloride
  The concentrations of benzene and cis-1,2 dichloroethene exceed the PAL while and vinyl chloride remains above the ES. Although benzene, cis-1,2 dichloroethene and vinyl chloride exceed action limits decreasing trends are observed.

Southern System

- Sump 7 – No ES exceedances reported during the March 2019 sampling event.
  Decreasing trends were observed and are anticipated to continue during future sampling events.

- Sump 17R – Cis-1,2 dichloroethene, trans-1,2 dichloroethene, drichloroethene, and vinyl chloride
  The concentrations of cis-1,2 dicholorethene, trichloroethene, and vinyl chloride exceed the ES without an observable trend. Trans-1,2-dichloroethene exceeds the PAL at concentrations without an observable trend. Trend analysis will continue during future sampling events.

Table 3 presents a summary of the operational data collected for January through June 2019. The treatment systems reduce influent concentrations to below the effluent concentration permit limits established by the Kenosha Water Utility. Thus, the systems are operating in compliance with discharge requirements.

Plan for Repair, Replacement and Optimization

Sump 6 – The groundwater extraction pump was replaced during the operational period. Biofouling reduction on the pump inlet screen and flow meter are planned during the next operational period to extend the life of the pump and ensure treatment flow is recorded. Biofouling reduction on the pump inlet screen and flow meter will continue during the next operational period to ensure treatment flow is recorded.

Central System – The capture zone from Sump 18 appears to be sufficient at the current time. If the capture zone needs to be increased adjustments to the pumping rate in Sump 18 will take place and evaluate initiating pumping from Sump 23. Biofouling reduction on the pump inlet screen and flow meter will continue during the next operational period to ensure treatment flow is recorded.

Southern System – Biofouling reduction on the pump inlet screen and flow meter are planned during the next operational period to ensure treatment flow is recorded.

Optimization of the three operating groundwater recovery systems will continue for the remainder of 2019 with regular monitoring of flow and evaluation of nearby groundwater elevations for the control of the hydraulic gradient with the least amount of pumping required.

Closing

WDNR form 4400-194 Remediation Site Progress, and Operation, Maintenance, Monitoring & Optimization Report is attached as well as supporting tables and figures as required. The Kenosha Engine Plant groundwater remediation system effectively reduces contaminant concentration in compliance with the wastewater discharge permits.

Yours sincerely,

AECOM Technical Services, Inc.

Tory A. Schultz
Team Leader
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Lanette L. Altenbach, P.G., C.P.G.
Senior Hydrogeologist
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Attachments

WDNR form 4400-194 Remediation site Progress, and Operation, Maintenance, Monitoring & Optimization Report
Table 1 – Influent Summary (Detected VOCs, DRO and GRO)
Table 2 – Effluent Summary
Table 3 – Operational Summary
Figure 1 – Monitoring Well Location Map (April 2019)
Figure 2 – Potentiometric Surface in Water Table Wells (April 2019)
Figure 3 – Potentiometric Surface in Piezometers (April 2019)

Pace Analytical – Laboratory Report Influent and effluent samples

Cc: Shelly Billingsley MBA, PE, Director of Public Works, City of Kenosha
Katie Karow, Director of Wastewater Treatment, Kenosha Water Utility

State of Wisconsin
Department of Natural Resources
PO Box 7921, Madison WI 53707-7921
dnr.wi.gov

Remediation Site Operation, Maintenance, Monitoring & Optimization Report

GENERAL INSTRUCTIONS, PURPOSE AND APPLICABILITY OF THIS FORM:

Completion of the applicable portions of this form is required under Wis. Admin. Code § NR 724.13(3). Failure to submit this form as required is a violation of that rule section and is subject to the penalties in Wis. Stats. § 292.99. This form must be submitted every six months for remediation projects that report operation and maintenance progress, in accordance with Wis. Admin. Code §. NR 724.13(3). A narrative report or letter containing the equivalent information required in this form may be submitted in lieu of the actual form. Submittal of this form is not a substitute for reporting required by department programs such as Waste Water or Air Management.

Notes:

1. Long-term monitoring results submitted in accordance with Wis. Admin. Code § NR 724.17(3) are required to be submitted within 10 business days of receiving sampling results and are not required to be submitted using this form. However, portions of this form require monitoring data summary information that may be based on information previously submitted in accordance with that section of code.
2. Responsible parties should check with the department Project Manager assigned to the site to determine if this form is required to be submitted at sites responded to under the Federal Comprehensive Environmental Response and Compensation Act (commonly known as Superfund) or an equivalent state-lead response.
3. Responsible parties should check with the department Project Manager assigned to the site to determine if any of the information required in this form may be omitted or changed and should obtain prior written approval for any omissions or changes.
4. Responsible parties are required to report separately on a semi-annual basis under Wis. Admin. Code § NR 700.11(1). Reporting under that provision is through an internet-based form. More information can be found at: http://dnr.wi.gov/topic/Brownfields/documents/regs/NR700progreport.pdf.
5. Personally identifiable information on this form is not intended to be used for any other purpose than tracking progress of the remediation by Remediation and Redevelopment Program. Personal information collected will be used for administrative purposes and may be provided to requesters to the extent required by Wisconsin's Open Records Law (Wis. Stats. §§ 19.31–19.39).

Section GI - General Site Information

A. General Information

1. Site name: Kenosha Engine Plant

2. Reporting period from:	To:	Days in period:
01/01/2019	06/30/2019	181

3. Regulatory agency (enter DNR, DATCP and/or other)	4. BRRTS ID No. (2 digit program-2 digit county-6 digit site specific)
DNR	02-03-000327

5. Site location

Region	County	Address
Southeast Region	Kenosha	5555 30th Avenue

Municipality name	Township	Range	Section	¼	¼ ¼
(●) City ( ) Town ( ) Village					
City of Kenosha	N	( )E ( )W			

6. Responsible party	7. Consultant
Name: City of Kenosha	☐ Select if the following information has changed since the last submittal
Mailing address: 625 52nd Street	Company name: AECOM
Phone number: (262) 653-4000	Mailing address: 1555 N. RiverCenter Dr, Ste 214, 53212
	Phone number:

8. Contaminants: VOCs

9. Soil types (USCS or USDA): Fill, Sand, Silty Sand, Silt, Clay

10. Hydraulic conductivity(cm/sec):	11. Average linear velocity of groundwater (ft/yr)
10-2 to 10-4	1.3-1700

12. If soil is treated ex situ, is the treatment location off site? ◯ Yes ◯ No

If yes, give location: Region	County					
Municipality name ◯ City ◯ Town ◯ Village	Township N	Range ◯E ◯W	Section	¼	¼ ¼

B. Remediation Method

Only submit sections that apply to an individual site. Check all that apply:

- ☒ Groundwater extraction (submit a completed Section GW-1).
- ☐ Free product recovery (submit a completed Section GW-1).
- ☐ In situ air sparging (submit a completed Section GW-2).
- ☐ Groundwater natural attenuation (submit a completed Section GW-3).
- ☐ Other groundwater remediation method (submit a completed Section GW-4).
- ☐ Soil venting (including soil vapor extraction building venting and bioventing submit a completed Section IS-1).
- ☐ Soil natural attenuation (submit a completed Section IS-2).
- ☐ Other in situ soil remediation method (submit a completed Section IS-3).
- ☐ Biopiles (submit a completed Section ES-1).
- ☐ Landspreading/thinspreading of petroleum contaminated soil (submit a completed Section ES-2).
- ☐ Other ex situ remediation method (submit a completed Section ES-3).
- ☐ Site is a landfill (submit a completed Section LF-1).

C. General Effectiveness Evaluation for All Active Systems

If the remediation is active (not natural attentuation), complete this subsection.

1. Is the system operating at design rates and specifications? ◉ Yes ◯ No
   If the answer is no, explain whether or not modifications are necessary to achieve the goal that was previously established in design.

2. Are modifications to the system warranted to improve effectiveness ◯ Yes ◉ No
   If yes, explain:

3. Is natural attenuation an effective low cost option at this time? ◯ Yes ◉ No
4. Is closure sampling warranted at this time? ◯ Yes ◉ No
5. Are there any modifications that can be made to the remediation to improve cost effectiveness? ◉ Yes ◯ No
   If yes, explain:
   The pumping rates of the systems are modified seasonally to achieve optimal groundwater capture without excessive wear on the groundwater extraction systems.

D. Economic and Cost Data to Date

1. Total investigation cost: _____
2. Implementation costs (design, capital and installation costs, excluding investigation costs: _____
3. Total costs during the previous reporting period: _____
4. Total costs during this reporting period: _____
5. Total anticipated costs for the next reporting period: _____
6. Are any unusual or one-time costs listed in the reporting periods covered by D.3., D.4. or D.5. above? ○ Yes ◉ No
   If yes, explain:

7. If closure is anticipated within 12 months, estimated costs for project closeout: _____

E. Name(s), Signature(s) and Date of Person(s) Submitting Form

Legibly print name, date and sign. Only persons qualified to submit reports under ch. NR 712 Wis. Adm. Code are to sign this form for sites with any ongoing active remediation, monitoring or an investigation. Other persons may sign this form for sites with no response activities during the six month reporting period.

Registered Professional Engineers:

I hereby certify that I am a registered professional engineer in the State of Wisconsin, registered in accordance with the requirements of ch. A-E 4, Wis. Adm. Code; that this document has been prepared in accordance with the rules of Professional Conduct in ch. A-E 8, Wis. Adm. Code; and that, to the best of my knowledge, all information contained in this document is correct and the document was prepared in compliance with all applicable requirements in chs. NR 700 to 726, Wis. Adm. Code.

Print name	Title
Kevin Brehm	Associate Vice President
Signature	Date
Kevin L. Brehm	10/9/19

Hydrogeologists:

I hereby certify that I am a hydrogeologist as that term is defined in s. NR 712.03(1), Wis. Adm. Code, and that, to the best of my knowledge, all information contained in this document is correct and the document was prepared in compliance with all applicable requirements in chs. NR 700 to 726, Wis. Adm. Code.

Print name	Title
Lanette Altenbach	Senior Hydrogeologist/Project Manager II
Signature	Date
Lanette Altenbach	10-9-19

Scientists:

I hereby certify that I am a scientist as that term is defined in s. NR 712.03(3), Wis. Adm. Code, and that, to the best of my knowledge, all information contained in this document is correct and the document was prepared in compliance with all applicable requirements in chs. NR 700 to 726, Wis. Adm. Code.

Print name	Title
Signature	Date

Other Persons:

Print name	Title
Signature	Date

Professional Seal(s), if applicable:

Section GW-1, Groundwater Pump and Treat Systems and Free Product Recovery Systems

A. Groundwater Extraction System Operation:

1. Total number of groundwater extraction wells or trenches available: 10 and the number in use during period: 4

2. Number of days of operation (only list the number of days the system actually operated, if unknown explain:
Northern System (Sump 6) - 179 days
Central System (Sumps 18 and 23) - 137 days
Southern System (Sumps 7 and 17R) - 179 days

3. System utilization in percent (days of operation divided by reporting time period multiplied by 100). If < 80%, explain:
Northern System (Sump 6) - 98% Operational (2% accounted for system shut-down during cleaning events)
Central System (Sumps 18) - 75% Operational (2% accounted for system shut-down during cleaning events, 23% accounted for air compressor shut-down during March and April related to failed temperature sensor)
Southern System (Sumps 7 and 17R) - 98% Operational (2% accounted for system shut-down during cleaning events)

4. Quantity of groundwater extracted during this time period: 2,136,330.9 gallons

5. Average groundwater extraction rate: 8.2 gpm

6. Quantity of dissolved phase contaminants removed during this time period in pounds: _____ lbs

B. Free Product Recovery System Operation

1. Is free product (nonaqueous phase liquid) being recovered at this site? ◯ Yes ◉ No
If yes, explain:

2. Quantity of free product extracted during this time period (enter none if none): _____ gallons

3. Average free product extraction rate: _____ gpm

C. System Effectiveness Evaluation

1. Is a contaminated groundwater plume fully contained in the capture zone? ◉ Yes ◯ No
If no, explain:

2. If free product is present, is the free product fully contained in capture zone? ◉ Yes ◯ No
If no, explain:

3. If free product is present in any wells at the site, but free product was not recovered during reporting period, explain:
Free product is trapped within the saturated zone at concentrations not recoverable as evidenced by little to no free product recovery in the oil/water separators associated with each treatment unit.

4. If free product is not present, determine the single contaminant that requires the greatest percent reduction to achieve ch. NR 140 ES and PAL. Perform this calculation for all contaminants that were present at the site that have ch. NR 140 standards. Use the highest contaminant concentration measured in any sampling points during reporting period. If free product is present, write "FREE PRODUCT" in C.4.a.

a. Contaminant: _____

b. Percent reduction necessary to reach ch. NR 140 ES and PAL: _____ %

c. Maximum contaminant concentration level in any monitoring well of that contaminant: _____ µg/L

d. Maximum contaminant concentration level in any extraction well of that contaminant: _____ µg/L

e. If the maximum concentration in a monitoring well is more that one order of magnitude above the concentration measured in an extraction well, explain why the extracted groundwater contamination levels are significantly less than the levels at other locations within the aquifer.

D. Additional Attachments

Attach the following to this form:

- Most recent report to the DNR Wastewater Program, if applicable.
- Groundwater contour map with capture zone indicated.
- Groundwater contaminant distribution map (may be combined with contour map).
- Graph of cumulative contaminant removal, if both free product recovery and ground water extraction are used, provide separate graphs.
- Time versus groundwater contaminant concentration graphs for the contaminant listed in C.4.a. (above), as follows:
  - -- Graph of contaminant concentrations versus time for each extraction well in use during the period.
  - -- Graph of contaminant concentrations versus time for the monitoring well with the greatest level of contamination.
- Groundwater contaminant chemistry table.
- Groundwater elevations table.
- System operational data table.

Table 1
Influent Summary
KEP Groundwater Remediation Systems
Kenosha, Wisconsin

Well Location	Sample Date	Benzene (ug/L)	1,1-Dichloro-ethane (ug/L)	Chloro-ethane (ug/L)	1,2-Dichloro-ethane (ug/L)	1,1-Dichloro-ethene (ug/L)	1,1,1-Trichloro-ethane (ug/L)	cis-1,2-Dichloro-ethene (ug/L)	trans-1,2-Dichloro-ethene (ug/L)	Ethyl-benzene (ug/L)	Methylene Chloride (ug/L)	Naphthalene (ug/L)	n-Propyl-benzene (ug/L)	Tetra-chloro-ethene (ug/L)	Toluene (ug/L)	Trichloro-ethene (ug/L)	1,2,4-Trimethyl benzene (ug/L)	1,3,5-Trimethyl benzene (ug/L)	Vinyl chloride (ug/L)	Xylene Totals (ug/L)	Gasoline Range Organics (ug/L)	Diesel Range Organics (mg/L)
Northern System																						
Sump 6	1/18/11	<2.2	5.4	ND	<3.7	<3.2	ND	**600**	*39*	ND	ND	<4	<2.3	<4.8	<2.2	**540**	<2	<1.6	**26**	<4	330	0.35
	3/24/11	<29	<29	ND	<29	<29	ND	**410**	*36*	ND	ND	<29	<29	<29	<29	**830**	<29	<29	**19**	<57	410	0.37
	6/13/11	<1	3.3	ND	<2.5	<2.5	ND	**280**	17	ND	ND	<1.3	<2.5	<2.5	<2.5	**370**	<1	<1	**6.7**	<2.5	190	0.47
	9/19/11	<1	6.1	ND	<2.5	*2.8*	ND	**680**	*46*	ND	ND	<1.3	<2.5	<2.5	<2.5	**330**	<1	<1	**31**	<2.5	180	0.23
	1/15/12	<0.2	13	ND	<0.5	*3.1*	ND	**410**	*47*	ND	ND	0.52	<0.5	<0.5	<0.5	**750**	0.39	<0.2	**66**	0.58	410	1.2
	3/15/12	<1	8.2	ND	<2.5	*3.7*	ND	**620**	*49*	ND	ND	<1.3	<2.5	<2.5	<2.5	**890**	<1	<1	**23**	<2.5	470	0.39
	6/21/12	<0.074	8.3	ND	<0.28	*3.8*	ND	**610**	*51*	ND	ND	<0.16	<0.13	<0.17	<0.11	**770**	<0.14	<0.18	**32**	<0.068	420	0.22
	9/17/12	<0.15	9.6	ND	<0.56	*4.3*	ND	**700**	*53*	ND	ND	<0.32	<0.26	<0.34	<0.22	**780**	<0.28	<0.36	**49**	<0.14	490	0.24
	12/21/12	<0.074	15	ND	<0.28	0.64	ND	**160**	6.8	ND	ND	<0.16	<0.13	<0.17	<0.11	**60**	<0.14	<0.18	**36**	<0.068	79	0.51
	3/26/13	<0.074	6.1	ND	<0.28	*3*	ND	**420**	*47*	ND	ND	<0.16	<0.13	<0.17	<0.11	**1,000**	<0.14	<0.18	**12**	<0.068	490	0.7
	6/11/13	<0.074	7.5	ND	<0.28	*4*	ND	**590**	*59*	ND	ND	<0.16	<0.13	<0.17	<0.11	**540**	<0.14	<0.18	**30**	<0.068	380	0.25
	9/24/13	<0.37	<0.95	ND	<1.4	<1.6	ND	**580**	*54*	ND	ND	<0.8	<0.65	<0.85	<0.55	**1,600**	<0.7	<0.9	**31**	<0.34	630	0.43
	12/20/13	<0.074	4.1	ND	<0.28	*2*	ND	**330**	*26*	ND	ND	<0.16	<0.13	<0.17	<0.11	**220**	<0.14	<0.18	**38**	<0.068	190	0.17
	1/6/15	<2.5	6.8	ND	<0.84	*3.5*	ND	**568**	*58.2*	ND	ND	<12.5	<2.5	<2.5	<2.5	**712**	<2.5	<2.5	**25**	<7.5	388	0.15
	3/6/15	<5.0	5.4 J	ND	<1.7	<4.1	ND	**363**	35.4	<5.0	ND	<25.0	<5.0	<5.0	<5.0	**930**	<5.0	<5.0	**17**	<15.0	342	0.35
	9/24/15	Discharge line blocked - not operating at the time of sample collection																				
	3/9/16	<5.0	3.2 J	ND	<1.7	<4.1	ND	**439**	*43.5*	<5.0	ND	<25.0	<5.0	<5.0	<5.0	**1,010**	<5.0	<5.0	**17.3**	<15.0	413	0.22
	9/7/16	<5.0	5.0 J	<3.7	<1.7	<4.1	<5.0	**733**	*57.6*	<5.0	<2.3	<25.0	<5.0	<5.0	<5.0	**931**	<5.0	<5.0	**38.1**	<15.0	539	0.047J
	3/7/17	<5.0	4.4 J	<3.7	<1.7	<4.1	<5.0	**537**	*54.9*	<5.0	<2.3	<25.0	<5.0	<5.0	<5.0	**950**	<5.0	<5.0	**24.1**	<15.0	480	0.14
	10/5/17	<5.0	5.2 J	<3.7	<1.7	<4.1	<5.0	**653**	*50.3*	<5.0	<2.3	<25.0	<5.0	<5.0	<5.0	**990**	<5.0	<5.0	**21.9**	<15.0	490	0.026J
	3/9/18	<5.0	5.1J	<3.7	<1.7	<4.1	<5.0	**483**	*49.3*	<5.0	<2.3	<25.0	<5.0	<5.0	<5.0	**782**	<5.0	<5.0	**17.2**	<15.0	380	0.047J
	10/5/18	<2.5	7.8 J	<13.4	<2.8	*2.7 J*	<2.4	**466**	*45.1*	<2.2	**6.3 J**	<11.8	<8.1	<3.3	<1.7	**979**	<8.4	<8.7	**12**	<15.0	410	0.38
	3/5/19	<0.25	<0.27	<1.3	<0.28	0.40 J	<0.24	*63.1*	4.8	<0.22	<0.58	<1.2	<0.81	<0.33	<0.17	**31.4**	<0.84	<0.87	**10.2**	<1.5	38 J	0.05
Central System																						
Sump 18	3/28/11	**22**	39	ND	ND	*2*	ND	**240**	<6.7	4.6	ND	6.2	3	<6.7	<6.7	<6.7	11	8	**23**	44	390	1.1
	6/14/11	**510**	*620*	ND	ND	<25	ND	**4,800**	*31*	84	ND	*28*	<25	<25	*450*	<10	86	27	**1,100**	350	4300	1.9
	9/23/11	**74**	80	ND	ND	<1	ND	**160**	4	35	ND	*17*	5.8	*1.2*	110	*1.6*	69	22	**120**	150	910	130
	1/24/12	**330**	*620*	ND	ND	*5*	ND	**3,300**	*22*	55	ND	*21*	4.9	<2	*270*	*1.2*	80	28	**1,000**	310	3200	1.8
	3/21/12	**910**	**1500**	ND	ND	<25	ND	**9,300**	*64*	110	ND	*35*	<25	<25	*660*	<10	130	40	**940**	*530*	8600	2.1
	6/21/12	**270**	*780*	ND	ND	**13**	ND	**5,600**	*41*	19	ND	*13*	<1.3	<1.7	140	**5**	24	24	**3,000**	170	3100	2.6
	9/17/12	**150**	**900**	ND	ND	<6.2	ND	**5,000**	*32*	<2.6	ND	<3.2	<2.6	<3.4	7.2	**5.5**	<2.8	31	**1,100**	77	3100	4.1
	12/27/12	**11**	45	ND	ND	<0.31	ND	**120**	<0.25	8.2	ND	6.2	2	*0.71*	18	0.48	28	11	**11**	49	760	110
	3/25/13	*0.7*	1.7	ND	ND	<0.31	ND	1	<0.25	6	ND	5.4	2.9	<0.17	4.2	<0.19	33	8.3	<0.1	19	380	23
	6/10/13	**150**	*350*	ND	ND	*3.9*	ND	**2,300**	14	13	ND	5.2	<0.65	<0.85	79	<0.95	15	5.9	**260**	62	1600	1
	9/24/13	**570**	**970**	ND	ND	**18**	ND	**5,500**	*43*	79	ND	*29*	<1.3	<1.7	*370*	**7.1**	73	17	**1,600**	310	4600	3
	12/20/13	**270**	*720*	ND	ND	**9.1**	ND	**3,200**	*24*	41	ND	*16*	3.4	*0.52*	*170*	*1.1*	43	11	**820**	180	3	1
	9/11/15	0.56 J	4.2	ND	<0.17	<0.41	ND	5	<0.26	<0.5	ND	<2.5	<0.50	<0.50	<0.50	0.36 J	<0.50	<0.50	**0.81 J**	<1.5	37.5 J	<0.081
	3/9/16	**357**	*735*	ND	<4.2	<10.3	ND	**3,180**	*44*	78	ND	<62.5	<12.5	<12.5	*287*	<8.3	45.3	12.6 J	**2,720**	342	3240	2.2
	9/7/16	**277**	*738*	37.1	<4.2	<10.3	137	**2,110**	*40.1*	45.9	**37.5**	<62.5	<12.5	<12.5	134	**23.0 J**	24.2 J	<12.5	**1,950**	201	2530	1.4
	3/7/17	**241**	*444*	60.1	<4.2	<10.3	137	**1,670**	*31.6*	61.3	24.1J	<62.5	<12.5	<12.5	*178*	**14.8 J**	42.8	<12.5	**1,480**	286	2700	1.3
	10/5/17	System shut off during time of sampling.																				
	3/9/18	System shut off during time of sampling.																				
	10/5/18	**134**	*696*	19.7 J	<2.8	*3.2 J*	*169*	**529**	14.2 J	34.4	**8.7 J**	<11.8	<8.1	<3.3	*191*	<2.6	29.6	<8.7	**163**	231	1500	0.41
	3/5/19	*3.7*	21.6	<1.3	<0.28	<0.24	15.6	*26*	1.3 J	0.49 J	<0.58	<1.2	<0.81	<0.33	1.8 J	*0.66 J*	0.96 J	<0.87	**3**	4.4	50 J	0.4
Sump 23	1/19/11	**420**	<5	ND	ND	<6.3	ND	**930**	<6.3	36	ND	<4.7	<4.7	ND	5.9	NPD	16 B	<3.2	**500**	<12.7	NT	NT
	3/28/11	**22**	0.41	ND	ND	<1	ND	6.5	<1	1.9	ND	1	0.47	ND	0.19	NPD	0.97	0.56	**2.4**	2.6	94	0.91
	7/20/11	**170**	<1	ND	ND	<1	ND	*9.2*	<1	1.8	ND	1.1	<1	ND	1.5	NPD	3.2	1.2	**57**	3.8	360	0.63
	9/26/11	**23**	<0.5	ND	ND	<0.5	ND	1.7	<0.5	<0.5	ND	0.32	<0.5	ND	<0.5	0.42	0.44	<0.2	**0.61**	<0.5	31	0.28
	1/24/12	**480**	<2	ND	ND	<2	ND	**930**	3.6	32	ND	7.2	2.5	ND	6.9	<0.8	9.2	2.2	**530**	34	1700	0.78
	3/21/12	**470**	1.4	ND	ND	*1.4*	ND	**580**	3	69	ND	*11*	6.9	ND	9.5	<0.2	18	1.6	**470**	51	1700	1.1
	6/21/12	**42**	1.5	ND	ND	*1.6*	ND	**78**	2.6	61	ND	8.6	3.7	ND	7	<0.19	6.5	1.1	**68**	52	1100	1.2
	9/17/12	**180**	<0.19	ND	ND	*1.1*	ND	**670**	2.4	9.6	ND	3.2	<0.13	ND	2.6	<0.19	1.7	0.64	**440**	26	760	1.1
	12/27/12	**160**	2.3	ND	ND	<0.31	ND	**530**	1.5	21	ND	5.2	1.9	ND	2.7	<0.19	3.1	<0.18	**170**	20	580	0.78
	3/25/13	**26**	<0.19	ND	ND	<0.31	ND	**94**	<0.25	2.9	ND	2.1	<0.13	ND	0.47	<0.19	<0.14	<0.18	**23**	2.3	97	0.083
	6/10/13	**390**	<0.38	ND	ND	<0.62	ND	**820**	2.8	47	ND	7.9	4	ND	6.7	<0.38	2.8	<0.36	**440**	30	1100	0.79
	9/24/13	**140**	<0.19	ND	ND	*1*	ND	**660**	2.4	16	ND	7.6	1.6	ND	2.7	<0.19	2	<0.18	**320**	18	670	1.7
	12/20/13	*1.1*	1	ND	ND	<0.31	ND	*9.4*	<0.25	<0.13	ND	<0.16	<0.13	ND	0.33	<0.19	<0.14	<0.18	**1**	<0.068	10	1.1
	6/19/14	Pump inoperable and not replaced because groundwater capture from Sump 18 is sufficient. This sump was located close to the former UST area remediated in 2012.																				
PAL[A]		0.5	85	80	0.5	0.7	40	7	20	140	0.5	10	NE	0.5	160	0.5	96*	96*	0.02	400	NE	NE
ES[B]		5	850	400	5	7	200	70	100	700	5	100	NE	5	800	5	480*	480*	0.2	2,000	NE	NE

Table 1
Influent Summary
KEP Groundwater Remediation Systems
Kenosha, Wisconsin

Well Location	Sample Date	Benzene (ug/L)	1,1-Dichloro-ethane (ug/L)	Chloro-ethane (ug/L)	1,2-Dichloro-ethane (ug/L)	1,1-Dichloro-ethene (ug/L)	1,1,1-Trichloro-ethane (ug/L)	cis-1,2-Dichloro-ethene (ug/L)	trans-1,2-Dichloro-ethene (ug/L)	Ethyl-benzene (ug/L)	Methylene Chloride (ug/L)	Naphthalene (ug/L)	n-Propyl-benzene (ug/L)	Tetra-chloro-ethene (ug/L)	Toluene (ug/L)	Trichloro-ethene (ug/L)	1,2,4-Trimethyl benzene (ug/L)	1,3,5-Trimethyl benzene (ug/L)	Vinyl chloride (ug/L)	Xylene Totals (ug/L)	Gasoline Range Organics (ug/L)	Diesel Range Organics (mg/L)
Southern System																						
Sump 7	1/19/11	<0.13	<0.15	ND	ND	<0.19	ND	*9.1*	0.4	<0.17	ND	ND	ND	ND	<0.13	0.29	<0.12	<0.096	**3.1**	<0.14	NT	NT
	3/24/11	<1	<1	ND	ND	<1	ND	6.2	0.39	<1	ND	ND	ND	ND	<1	0.43	<1	<1	**2.8**	<2	ND	3.3
	6/13/11	<0.2	<0.5	ND	ND	<0.5	ND	*16*	1.2	<0.5	ND	ND	ND	ND	<0.5	*2.6*	<0.2	<0.2	**2.6**	<0.5	ND	3.3
	9/19/11	<0.2	<0.5	ND	ND	<0.5	ND	*17*	1.2	<0.5	ND	ND	ND	ND	<0.5	*2*	<0.2	<0.2	**2.8**	<0.5	ND	14
	1/5/12	<0.20	<0.50	ND	ND	<0.50	ND	*12*	1.1	<0.50	ND	ND	ND	ND	<0.50	0.35 J	0.20 J	<0.20	**3.3**	<0.50	24	2.5
	3/20/12	<0.2	<0.5	ND	ND	<0.5	ND	*8.8*	1.1	<0.5	ND	ND	ND	ND	<0.5	<0.2	<0.2	<0.2	**2.6**	<0.5	11	2.1
	6/22/12	<0.074	<0.19	ND	ND	<0.31	ND	*8.3*	0.96	<0.13	ND	ND	ND	ND	<0.11	<0.19	<0.14	<0.18	**2.7**	<0.068	<6.9	1.7
	9/18/12	<0.074	<0.19	ND	ND	<0.31	ND	*7*	0.93	<0.13	ND	ND	ND	ND	<11	<0.19	<0.14	<0.18	**2**	<0.068	16	2.3
	12/27/12	<0.074	<0.19	ND	ND	<0.31	ND	6.7	0.87	<0.13	ND	ND	ND	ND	<0.11	<0.19	<0.14	<0.18	**1.3**	<0.068	<8.8	4
	3/26/13	<0.074	<0.19	ND	ND	<0.31	ND	4.4	<0.25	<0.13	ND	ND	ND	ND	<0.11	0.43	<0.14	<0.18	<0.1	<0.068	13	5
	6/11/13	<0.074	<0.19	ND	ND	<0.31	ND	*12*	2	<0.13	ND	ND	ND	ND	<0.11	<0.19	<0.14	<0.18	**2.9**	<0.068	16	2.4
	9/23/13	<0.074	<0.19	ND	ND	<0.31	ND	*8.7*	1.5	<0.13	ND	ND	ND	ND	<0.11	0.3	<0.14	<0.18	**1.5**	<0.068	24	9.2
	12/20/13	<0.074	<0.19	ND	ND	<0.31	ND	*7.9*	1.2	<0.13	ND	ND	ND	ND	<0.11	0.42	<0.14	<0.18	**1.3**	<0.068	<8.8	2
	6/19/14	<0.50	<0.24	ND	<0.17	<0.41	ND	6.3	1.1	<0.50	ND	<2.5	<0.50	<0.50	<0.50	0.45 J	<0.50	<0.50	<0.18	<1.5	NT	NT
	9/5/14	<0.50	<0.24	ND	<0.17	<0.41	ND	*10.1*	2.2	<0.50	ND	<2.5	<0.50	<0.50	<0.50	<0.33	<0.50	<0.50	**1.5**	<1.5	<29.6	3.1
	12/3/14	<0.50	0.32 J	ND	<0.17	<0.41	ND	*8.9*	1.9	<0.50	ND	<2.5	<0.50	<0.50	<0.50	*0.71 J*	<0.50	<0.50	**1.6**	<1.5	<29.6	2.6
	9/9/15	<0.50	<0.24	ND	<0.17	<0.41	ND	*9*	2.2	<0.50	ND	<2.5	<0.50	<0.50	<0.50	<0.33	<0.50	<0.50	**1.2**	<1.5	29.9 J	0.36
	3/9/16	<0.50	0.31 J	ND	<0.17	<0.41	ND	*10.4*	2.6	<0.50	ND	<2.5	<0.50	<0.50	<0.50	<0.33	<0.50	<0.50	**2.3**	<1.5	<29.6	1.1
	9/7/16	<0.50	<0.24	<0.50	<0.17	<0.41	<0.50	*9*	2.1	<0.50	<0.23	<2.5	<0.50	<0.50	<0.50	<0.33	<0.50	<0.50	**3.8**	<1.5	<29.6	5.4
	3/7/17	<0.50	<0.24	<0.37	<0.17	<0.41	<0.50	5.6	0.76 J	<0.50	<0.23	<2.5	<0.50	<0.50	<0.50	*0.86 J*	<0.50	<0.50	**1.2**	<1.5	<30	29.2
	10/5/17	Pump inoperable and not sampled.																				
	3/9/18	<0.50	<0.24	<0.37	<0.17	<0.41	<0.50	5.8	1.4	<0.50	<0.23	<2.5	<0.50	<0.50	<0.50	<0.33	<0.50	<0.50	**1.1**	<1.5	<30	4.6
	10/5/18	<0.25	<0.27	<1.3	<0.28	<0.24	<0.24	5.6	1.4 J	<0.22	<0.58	<1.2	<0.81	<0.33	<0.17	<0.26	<0.84	<0.87	**1.5**	<1.5	<36	2.0
	3/5/19	<0.25	<0.27	<1.3	<0.28	<0.24	<0.24	5.3	1.2 J	<0.22	<0.58	<1.2	<0.81	<0.33	<0.17	<0.26	<0.84	<0.87	<0.17	<1.5	<36	15.1
Sump 15	1/19/11	<0.13	<0.15	ND	ND	<0.19	ND	<0.17	<0.19	ND	ND	ND	ND	ND	<0.13	<0.17	<0.12	ND	<0.22	ND	NT	NT
	3/24/11	<1	<1	ND	ND	<1	ND	<1	<1	ND	ND	ND	ND	ND	<1	<1	<1	ND	<1	ND	<100	3.3
	6/13/11	<0.2	<0.5	ND	ND	<0.5	ND	<0.5	<0.5	ND	ND	ND	ND	ND	<0.5	<0.2	<0.2	ND	<0.2	ND	<10	3.6
	9/19/11	<0.2	<0.5	ND	ND	<0.5	ND	<0.5	<0.5	ND	ND	ND	ND	ND	<0.5	<0.2	<0.2	ND	<0.2	ND	<10	5.7
	1/5/12	<0.20	<0.50	ND	ND	<0.50	ND	<0.50	<0.50	ND	ND	ND	ND	ND	<0.50	<0.20	<0.20	ND	<0.20	ND	18J	5.9
	3/20/12	<0.2	<0.5	ND	ND	<0.5	ND	<0.5	<0.5	ND	ND	ND	ND	ND	<0.5	<0.2	<0.2	ND	<0.2	ND	<10	3.1
	6/22/12	<0.074	<0.19	ND	ND	<0.31	ND	0.8	<0.25	ND	ND	ND	ND	ND	<0.11	*1.2*	<0.14	ND	<0.10	ND	<6.9	4.2
	9/18/12	<0.074	<0.19	ND	ND	<0.31	ND	<0.12	<0.25	ND	ND	ND	ND	ND	<0.11	0.47	<0.14	ND	<0.1	ND	<6.9	3.7
	12/27/12	<0.074	<0.19	ND	ND	<0.31	ND	<0.12	<0.25	ND	ND	ND	ND	ND	<0.11	*0.62*	<0.14	ND	<0.1	ND	<8.8	2.8
	3/26/13	<0.074	<0.19	ND	ND	<0.31	ND	<0.12	<0.25	ND	ND	ND	ND	ND	<0.11	<0.19	<0.14	ND	<0.1	ND	11	2
	6/11/13	<0.074	<0.19	ND	ND	<0.31	ND	<0.12	<0.25	ND	ND	ND	ND	ND	<0.11	*1.3*	<0.14	ND	<0.1	ND	14	2.1
	9/23/13	<0.074	<0.19	ND	ND	<0.31	ND	<0.12	<0.25	ND	ND	ND	ND	ND	<0.11	*2.8*	<0.14	ND	<0.1	ND	43	9.2
	12/20/13	<0.074	<0.19	ND	ND	<0.31	ND	6.8	<0.25	ND	ND	ND	ND	ND	<0.11	0.26	<0.14	ND	**1.1**	ND	<8.8	2.9
	6/19/14	<0.50	<0.24	ND	<0.17	<0.41	ND	<0.26	<0.26	<0.50	ND	<2.5	<0.50	<0.50	<0.50	*2*	<0.50	<0.50	<0.18	<1.5	NT	NT
	9/5/14	*0.62 J*	<0.24	ND	<0.17	<0.41	ND	<0.26	<0.26	<0.50	ND	<2.5	<0.50	<0.50	<0.50	<0.33	<0.50	<0.50	<0.18	<1.5	<29.6	6
	12/3/14	<0.50	<0.24	ND	<0.17	<0.41	ND	<0.26	<0.26	<0.50	ND	<2.5	<0.50	<0.50	<0.50	<0.33	<0.50	<0.50	<0.18	<1.5	<29.6	2.6
	9/9/15	<0.50	<0.24	ND	<0.17	<0.41	ND	<0.26	<0.26	<0.50	ND	<2.5	<0.50	<0.50	<0.50	<0.33	<0.50	<0.50	<0.18	<1.5	<29.6	1.3
	3/9/16	Pump inoperable and not sampled. Sump abandoned on September 13, 2018.																				
PAL[A]		0.5	85	80	0.5	0.7	40	7	20	140	0.5	10	NE	0.5	160	0.5	96*	96*	0.02	400	NE	NE
ES[B]		5	850	400	5	7	200	70	100	700	5	100	NE	5	800	5	480*	480*	0.2	2,000	NE	NE

Table 1
Influent Summary
KEP Groundwater Remediation Systems
Kenosha, Wisconsin

Well Location	Sample Date	Benzene (ug/L)	1,1-Dichloro-ethane (ug/L)	Chloro-ethane (ug/L)	1,2-Dichloro-ethane (ug/L)	1,1-Dichloro-ethene (ug/L)	1,1,1-Trichloro-ethane (ug/L)	cis-1,2-Dichloro-ethene (ug/L)	trans-1,2-Dichloro-ethene (ug/L)	Ethyl-benzene (ug/L)	Methylene Chloride (ug/L)	Naphthalene (ug/L)	n-Propyl-benzene (ug/L)	Tetra-chloro-ethene (ug/L)	Toluene (ug/L)	Trichloro-ethene (ug/L)	1,2,4-Trimethyl benzene (ug/L)	1,3,5-Trimethyl benzene (ug/L)	Vinyl chloride (ug/L)	Xylene Totals (ug/L)	Gasoline Range Organics (ug/L)	Diesel Range Organics (mg/L)
Sump 17R	1/19/11	ND	<6	ND	ND	<7.6	ND	**1100**	*98*	ND	ND	<9.6	ND	ND	<5.2	**340**	<4.8	ND	**24**	ND	NT	NT
	3/24/11	ND	<18	ND	ND	<18	ND	**300**	*35*	ND	ND	<18	ND	ND	<18	**70**	<18	ND	<18	ND	150	0.62
	6/13/11	ND	5.4	ND	ND	<2.5	ND	**370**	*34*	ND	ND	<1.3	ND	ND	<2.5	**160**	<1	ND	**1.3**	ND	80	1.2
	9/19/11	ND	3.1	ND	ND	<1	ND	**190**	14	ND	ND	<0.5	ND	ND	<1	**25**	<0.4	ND	**13**	ND	66	2
	1/5/12	ND	5.6	ND	ND	0.59	ND	**270**	*30*	ND	ND	<0.25	ND	ND	<0.50	**110**	<0.20	ND	**1.2**	ND	130	1.6
	3/20/12	ND	7.1	ND	ND	<1	ND	**500**	*39*	ND	ND	<0.5	ND	ND	<1	**150**	<0.4	ND	**1.8**	ND	260	1.1
	6/22/12	ND	6.3	ND	ND	*1.2*	ND	**700**	*38*	ND	ND	<0.16	ND	ND	<0.11	**180**	<0.14	ND	**2.9**	ND	270	1.8
	9/18/12	ND	3.8	ND	ND	<0.31	ND	**180**	*20*	ND	ND	<0.16	ND	ND	<0.11	**35**	<0.14	ND	**17**	ND	79	1.7
	12/27/12	ND	6.4	ND	ND	*1.2*	ND	**400**	*59*	ND	ND	<0.16	ND	ND	<0.11	**45**	<0.14	ND	**55**	ND	170	2.3
	3/26/13	ND	2	ND	ND	<0.31	ND	**190**	15	ND	ND	<0.16	ND	ND	<0.11	**69**	<0.14	ND	**3.5**	ND	100	1.5
	6/11/13	ND	5.3	ND	ND	*0.91*	ND	**380**	*33*	ND	ND	<0.16	ND	ND	<0.11	**120**	<0.14	ND	**6.6**	ND	220	0.88
	9/23/13	ND	5.4	ND	ND	*1.8*	ND	**620**	*37*	ND	ND	<0.16	ND	ND	<0.11	**38**	<0.14	ND	**36**	ND	290	1.9
	12/20/13	ND	8.6	ND	ND	*1.9*	ND	**970**	*79*	ND	ND	<0.16	ND	ND	<0.11	**91**	<0.14	ND	**200**	ND	360	2.4
	6/19/14	<2.5	5.7	ND	<0.84	2.2 J	ND	**702**	*38.1*	<2.5	ND	<12.5	<2.5	<2.5	<2.5	**103**	<2.5	<2.5	<0.88	<7.5	NT	NT
	9/5/14	<1.2	5.4	ND	<0.42	<1	ND	**331**	*20*	<1.2	ND	<6.2	<1.2	<1.2	<1.2	**45.4**	<1.2	<1.2	**38**	<3.8	137	2.1
	12/3/14	<2.5	4.6 J	ND	<0.84	<2.1	ND	**236**	*22.9*	<2.5	ND	<12.5	<2.5	<2.5	<2.5	**57.7**	<2.5	<2.5	**17.6**	<7.5	132	0.78
	9/9/15	<2.5	<0.24	ND	<0.84	<2.1	ND	4.8	1.2	<2.5	ND	<12.5	<2.5	<2.5	<2.5	*0.53 J*	<2.5	<2.5	**0.71 J**	<7.5	34.2 J	67
	3/9/16	<5.0	6 J	ND	<1.7	<4.1	ND	**982**	*72.3*	<5.0	ND	<25.0	<5.0	<5.0	<5.0	**80.3**	<5.0	<5.0	**148**	<15.0	373	0.87
	9/7/16	<1.2	5.5	<0.94	<0.42	<1.0	<1.2	**370**	*24*	<1.2	<0.58	<6.2	<1.2	<1.2	<1.2	**35.1**	<1.2	<1.2	**143**	<3.8	143	2.2
	3/7/17	<1.2	6.6	<0.94	<0.42	*1.6 J*	<1.2	**423**	*37.3*	<1.2	<0.58	<6.2	<1.2	<1.2	<1.2	**85.2**	<1.2	<1.2	**39.2**	<3.8	180	0.86
	10/5/17	<1.2	4.6	<0.94	<0.42	<1.0	<1.2	**235**	10.6	<1.2	<0.58	<6.2	<1.2	<1.2	<1.2	**18.8**	<1.2	<1.2	**107**	<3.8	58	0.62
	3/9/18	<0.50	2.9	<0.37	<0.17	*0.70J*	<0.50	**184**	15.6	<0.50	<0.23	<2.5	<0.50	<0.50	<0.50	**16.2**	<0.50	<0.50	**47**	<1.5	61	1.7
	10/5/18	<0.25	3.2	<1.3	<0.28	0.58 J	<0.24	**137**	5.5	<0.22	<0.58	<1.2	<0.81	<0.33	<0.17	**16.6**	<0.84	<0.87	**17.1**	<1.5	38 J	2.2
	3/5/19	<2.5	7.5 J	<13.4	<2.8	<2.4	<2.4	**752**	*54.3*	<2.2	<5.8	<11.8	<8.1	<3.3	<1.7	**78.9**	<8.4	<8.7	**54.4**	<15.0	300	1.1
PAL[A]		0.5	85	80	0.5	0.7	40	7	20	140	0.5	10	NE	0.5	160	0.5	96*	96*	0.02	400	NE	NE
ES[B]		5	850	400	5	7	200	70	100	700	5	100	NE	5	800	5	480*	480*	0.2	2,000	NE	NE

Notes:
ug/L = micrograms per liter *PAL & ES are for combined isomers <2.5 - not detected at the detection limit shown NT=Not Tested
PAL - Preventive Action Limit, Wisconsin Administrative Code NR 140.10 Table 1, February 2017 exceedances are *underlined italics*. ES - Enforcement Standard, Wisconsin Administrative Code NR 140.10 Table 1, February 2017, exceedances are **bold**.

Table 2
Effluent Summary
KEP Groundwater Remediation Systems
Kenosha, Wisconsin

Well Location	Sample Date	1,1-Dichloroethene (ug/L)	1,1-Dichloroethane (ug/L)	trans-1,2-Dichloroethene (ug/L)	1,2,4-Trimethylbenzene (ug/L)	1,1,1-Trichloroethane (ug/L)	Benzene (ug/L)	cis-1,2-Dichloroethene (ug/L)	Ethylbenzene (ug/L)	Methyl tert-butyl ether (ug/L)	Methylene Chloride	Isopropylbenzene (ug/L)	Naphthalene (ug/L)	N-Propylbenzene (ug/L)	Toluene (ug/L)	Trichloroethene (ug/L)	Vinyl chloride (ug/L)	Xylenes, Total (ug/L)	Gasoline Range Organics (ug/L)	Diesel Range Organics (mg/L)
Sump 6	9/28/2011	ND	ND	1.9 J	ND	ND	ND	42	ND	ND	ND	ND	ND	ND	ND	18	0.81 J	ND	<10	0.22 B
	3/26/2012	1.5 J	4.6	24	ND	ND	ND	320	ND	ND	ND	ND	ND	ND	ND	430	8.5	ND	240	0.35
	7/9/2012	ND	1.7	7.8	ND	ND	ND	140	ND	ND	ND	ND	ND	ND	ND	160	3.4	ND	95	0.18
	10/2/2012	ND	2.8	13	ND	ND	ND	290	ND	ND	ND	ND	ND	ND	ND	280	8.8	ND	170	0.23
	4/4/2013	ND	1.6	9.3	ND	ND	ND	130	ND	ND	ND	ND	ND	ND	ND	230	1.5	ND	110	0.25
	6/25/2013	ND	ND	1.1	ND	ND	ND	19	ND	ND	ND	ND	ND	ND	ND	13	ND	ND	14 J	0.23
	10/10/2013	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	8.8	ND	ND	<8.8	0.36
	1/8/2014	0.54 J	1.9	9.8	ND	ND	ND	200	ND	ND	ND	ND	ND	ND	ND	110	8.9	ND	96	0.16
	3/6/2015	<0.41	<0.24	<0.26	<0.50	ND	<0.50	0.53 J	<0.50	<0.17	ND	<0.14	<2.5	<0.50	<0.50	1.2	<0.18	<1.5	<29.6	0.3
	3/9/2016	<0.41	<0.24	2.0	<0.50	ND	<0.50	29.3	<0.50	<0.17	ND	<0.14	<2.5	<0.50	<0.50	56.5	0.55 J	<1.5	<29.6	0.17
	9/7/2016	<0.41	<0.24	1.5	<0.50	<0.50	<0.50	43.2	<0.50	0.48 J	<0.23	<0.14	<2.5	<0.50	<0.50	27.8	<0.18	<1.5	<29.6	0.17
	3/7/2017	<0.41	0.94J	8.7	<0.50	<0.50	<0.50	138	<0.50	0.71 J	<0.23	<0.14	<2.5	<0.50	<0.50	175	2.4	<1.5	85	0.26
	10/5/2017	0.47 J	1.8	12.5	<0.50	<0.50	<0.50	234	<0.50	1.0	<0.23	<0.14	<2.5	<0.50	<0.50	296	4.2	<1.5	120	0.037 J
	3/9/2018	<0.41	<0.24	<0.26	<0.50	<0.50	<0.50	1.1	<0.50	<0.17	<0.23	<0.14	<2.5	<0.50	<0.50	1.2	<0.18	<1.5	<30	0.16
	10/5/2018	<0.24	<0.27	<1.1	<0.84	<0.24	<0.25	2.1	<0.22	<1.2	<0.58	<0.39	<1.2	<0.81	<0.17	1.8	<0.17	<1.5	<36	0.70
	3/5/2019	<0.24	<0.27	<1.1	<0.84	<0.24	<0.25	20.6	<0.22	10.0	<0.58	<0.39	<1.2	<0.81	<0.17	8.6	1.1	<1.5	<36	0.14
Sump 18/23	3/30/2012	ND	ND	ND	ND	ND	0.62 J	5.8	ND	ND	ND	ND	0.56 J	ND	ND	ND	0.30 J	ND	26 J	2.5
	7/9/2012	ND	ND	ND	ND	ND	0.28 J	4.1	ND	ND	ND	ND	ND	ND	ND	ND	0.56	ND	<6.9	1.6
	10/2/2012	ND	ND	ND	ND	ND	ND	2.8	ND	ND	ND	ND	ND	ND	ND	ND	0.34 J	ND	<6.9	2.3
	4/4/2013	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	<8.8	0.85
	6/24/2013	ND	ND	ND	ND	ND	1.1	5.5	ND	ND	ND	ND	ND	ND	ND	ND	0.89	ND	<8.8	0.87
	10/10/2013	ND	1.1	ND	ND	ND	0.75	ND	ND	ND	ND	ND	ND	ND	0.26 J	ND	0.76	ND	<8.8	1.4
	1/8/2014	ND	2	ND	ND	ND	0.76	12	ND	ND	ND	ND	ND	ND	0.36 J	ND	0.61	0.32 J	10 J	0.92
	9/11/2015	<0.41	<0.24	<0.26	<0.50	ND	<0.50	0.59 J	<0.50	<0.17	ND	<0.14	<2.5	<0.50	<0.50	<0.33	<0.18	<1.50	<29.6	0.14 J
	3/9/2016	<0.41	25.9	0.97 J	1.6	ND	8.9	134	1.7	<0.17	ND	<0.14	3.1 J	<0.50	7.1	<0.33	22.7	10.3	123	1.3
	9/7/2016	<0.41	15.1	<0.26	<0.50	1.1	2.6	53.9	<0.50	<0.17	1.2	<0.14	<2.5	<0.50	0.73 J	<0.33	6.2	<1.5	29.9 J	1.2
	3/7/2017	<0.41	17.1	0.76 J	1.1	3.2	5	77	1	<0.17	1.7	<0.14	<2.5	<0.50	3.9	0.48 J	15.1	6.5	75	1.3
	10/5/2017	System off per localized groundwater treatment study, no sample collected.																		
	3/9/2018	System off per localized groundwater treatment study, no sample collected.																		
	10/5/2018	<0.24	21.2	<1.1	<0.84	2.9	2.8	20.2	0.39 J	<1.2	<0.58	<0.39	2.2 J	<0.81	2.9 J	<0.26	1.4	4.5	37 J	0.26
	3/5/2019	<0.24	1.2	<1.1	<0.84	2.4	<0.25	1.4	<0.22	<1.2	<0.58	<0.39	<1.2	<0.81	<0.17	<0.26	<0.17	<1.5	<36	0.19
Sump 7/15/17R	9/28/2011	ND	ND	ND	ND	ND	ND	0.82 J	ND	ND	ND	ND	ND	ND	ND	ND	0.21 J	ND	47 J	1.5 B
	3/30/2012	ND	ND	ND	ND	ND	ND	2.3	ND	ND	ND	ND	ND	ND	ND	0.62 J	ND	ND	<10	1.2
	7/11/2012	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	<6.9	2.2
	9/28/2012	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	<6.9	1.7
	4/4/2013	ND	ND	ND	ND	ND	ND	1.5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	<8.8	0.71
	6/25/2013	ND	ND	ND	ND	ND	ND	2.3	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	<8.8	2.3
	10/10/2013	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	<8.8	3.5
	1/8/2014	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	<8.8	1.2
	6/19/2014	<0.41	0.91 J	0.83 J	<0.50	ND	<0.50	22.7	<0.50	<0.17	ND	<0.14	<2.5	<0.50	<0.50	0.94 J	1.7	<1.5	<29.6	3.1
	9/5/2014	<0.41	0.35 J	2	<0.50	ND	<0.50	28.4	<0.50	<0.17	ND	<0.14	<2.5	<0.50	<0.50	2.0	0.69 J	<1.5	31.8 J	1.3
	12/3/2014	<0.41	<0.24	<0.26	<0.50	ND	<0.50	<0.26	<0.50	<0.17	ND	<0.14	<2.5	<0.50	<0.50	<0.33	<0.18	<1.5	<29.6	1.4
	9/9/2015	<0.41	<0.24	<0.26	<0.50	ND	<0.50	<0.26	<0.50	<0.17	ND	<0.14	<2.5	<0.50	<0.50	<0.33	<0.18	<1.5	<29.6	0.32
	3/9/2016	<0.41	<0.24	<0.26	<0.50	ND	<0.50	<0.26	<0.50	<0.17	ND	<0.14	<2.5	<0.50	<0.50	<0.33	<0.18	<1.5	<29.6	1.8
	9/7/2016	<0.41	<0.24	<0.26	<0.50	0.5	<0.50	<0.26	<0.50	<0.17	<0.23	<0.14	<2.5	<0.50	<0.50	<0.33	<0.18	<1.5	<29.6	0.54
	3/7/2017	<0.41	<0.24	<0.26	<0.50	<0.50	<0.50	<0.26	<0.50	<0.17	<0.23	<0.14	<2.5	<0.50	<0.50	<0.33	<0.18	<1.5	<30	0.68
	10/5/2017	<0.41	<0.24	<0.26	<0.50	<0.50	<0.50	5.1	<0.50	<0.17	<0.23	<0.14	<2.5	<0.50	<0.50	0.40 J	<0.18	<1.5	<30	0.97
	3/9/2018	<0.41	<0.24	0.45J	<0.50	<0.50	<0.50	6.6	<0.50	<0.17	<0.23	<0.14	<2.5	<0.50	<0.50	0.42 J	0.91 J	<1.5	<30	1.1
	10/5/2018	<0.24	<0.27	<1.1	<0.84	<0.24	<0.25	1.4	<0.22	<1.2	<0.58	<0.39	<1.2	<0.81	<0.17	<0.26	0.20 J	<1.5	<36	1.5
	3/5/2019	<0.24	<0.27	<1.1	<0.84	<0.24	<0.25	12.6	<0.22	<1.2	<0.58	<0.39	<1.2	<0.81	<0.17	1.5	0.21 J	<1.5	<36	0.98

.
<0.50 = not detected at the concentration shown after the less-than (<) sign.

Table 3
Remedial Systems Operational Data
Kenosha Engine Plant
5555 30th Ave Kenosha, Wisconsin

Sump	Date	Flow Meter Reading	Total Flow	Permits Limit Achieved by Effluent?		
				GRO	DRO	VOC's
6	2/4/2019	5,293,698.10	199,556.40	Yes	Yes	Yes
	3/5/2019	5,446,934.50	153,236.40			
	4/8/2019	5,636,974.50	190,040.00			
	5/7/2019	5,773,798.30	136,823.80			
	7/8/2019*	6,111,732.40	337,934.10			
18	2/4/2019	3,949,550.25	13,809.94	Yes	Yes	Yes
	3/5/2019	3,959,513.05	9,962.80			
	4/8/2019	3,961,549.60	2,036.55			
	5/7/2019	3,979,909.15	18,359.55			
	7/8/2019*	4,081,238.40	101,329.25			
23	2/4/2019	4,238,580.10	0	Pump not in operation during semi-annual period. No effluent sample.		
	3/5/2019	4,238,580.10	0			
	4/8/2019	4,238,580.10	0			
	5/7/2019	4,238,580.10	0			
	7/8/2019*	4,238,580.10	0			
		4,238,580.10	0			
7	2/4/2019	499,294.88	27,526.76	Yes	Yes	Yes
	3/5/2019	516,913.42	17,618.54			
	4/8/2019	537,929.89	21,016.47			
	5/7/2019	553,946.99	16,017.10			
	7/8/2019*	624,552.70	70,605.71			
17R	2/4/2019	1,759,933.07	197,340.21	Yes	Yes	Yes
	3/5/2019	1,785,255.90	25,322.83			
	4/8/2019	1,835,137.60	49,881.70			
	5/7/2019	1,888,174.79	53,037.19			
	7/8/2019*	1,985,951.90	97,777.11			

Notes:

1) Total flow is difference of current month flow reading minus prior month flow reading, unless otherwise noted.

2) No meter on effluent discharge at any of the systems

3) Total flow covers the time period from 7/6/2016 to 1/8/2018.

* Date of flow meter readings collected during next semi-annual reporting period (July through December 2019).

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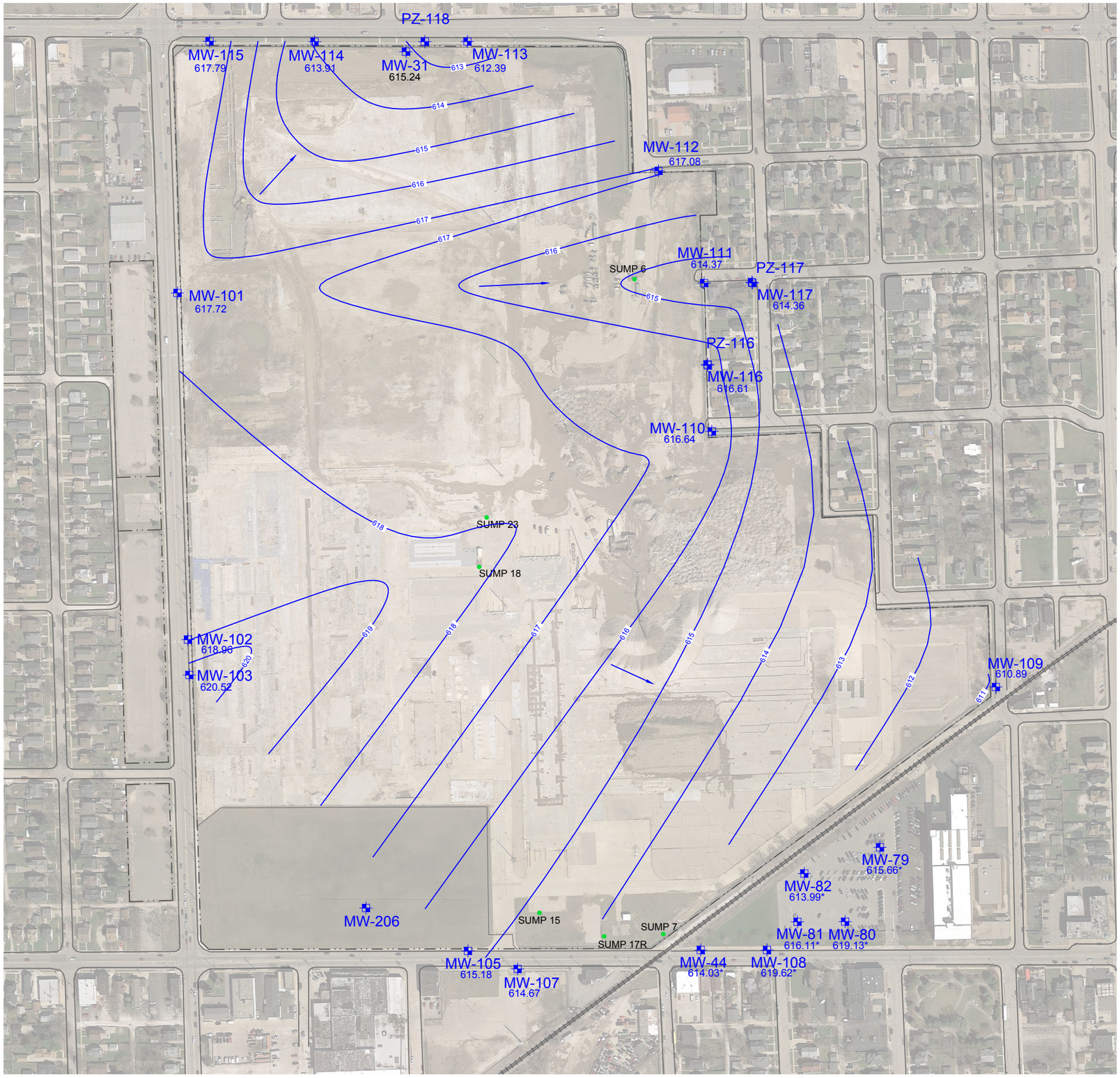
MONITORING WELL LOCATION MAP
KENOSHA ENGINE PLANT
CITY OF KENOSHA
KENOSHA, WISCONSIN

Drawn :	JSM	4/23/2019
Checked:	LLA	5/8/2019
Approved:	LLA	5/8/2019
PROJECT NUMBER	60605022	
FIGURE NUMBER	1	



LEGEND

- APPROXIMATE SITE BOUNDARY
- RAILROAD
- EXISTING FENCE
- PERIMETER MONITORING WELL LOCATIONS
- 617 — WATER TABLE CONTOURS
- * WELLS LOCATED SOUTHEAST OF THE RAILROAD TRACKS (SOUTHEAST OF KEP) ARE UNDER THE INFLUANCE OF THE SOUTHERN GROUNDWATER RECOVERY SYSTEM AND ARE NOT INCLUDED IN THE CONTOURS BECAUSE WATER LEVELS ADJACENT TO THE RECOVERY SYSTEM WERE NOT MEASURED.

NOTES

1. AERIAL PHOTOGRAPH FROM GOOGLE EARTH PRO, IMAGE DATED 4/6/2017; DOWNLOADED ON 6/5/2017.
2. MW-31 NOT USED FOR CONTOUR MAP

0' 300' 600'

SCALE

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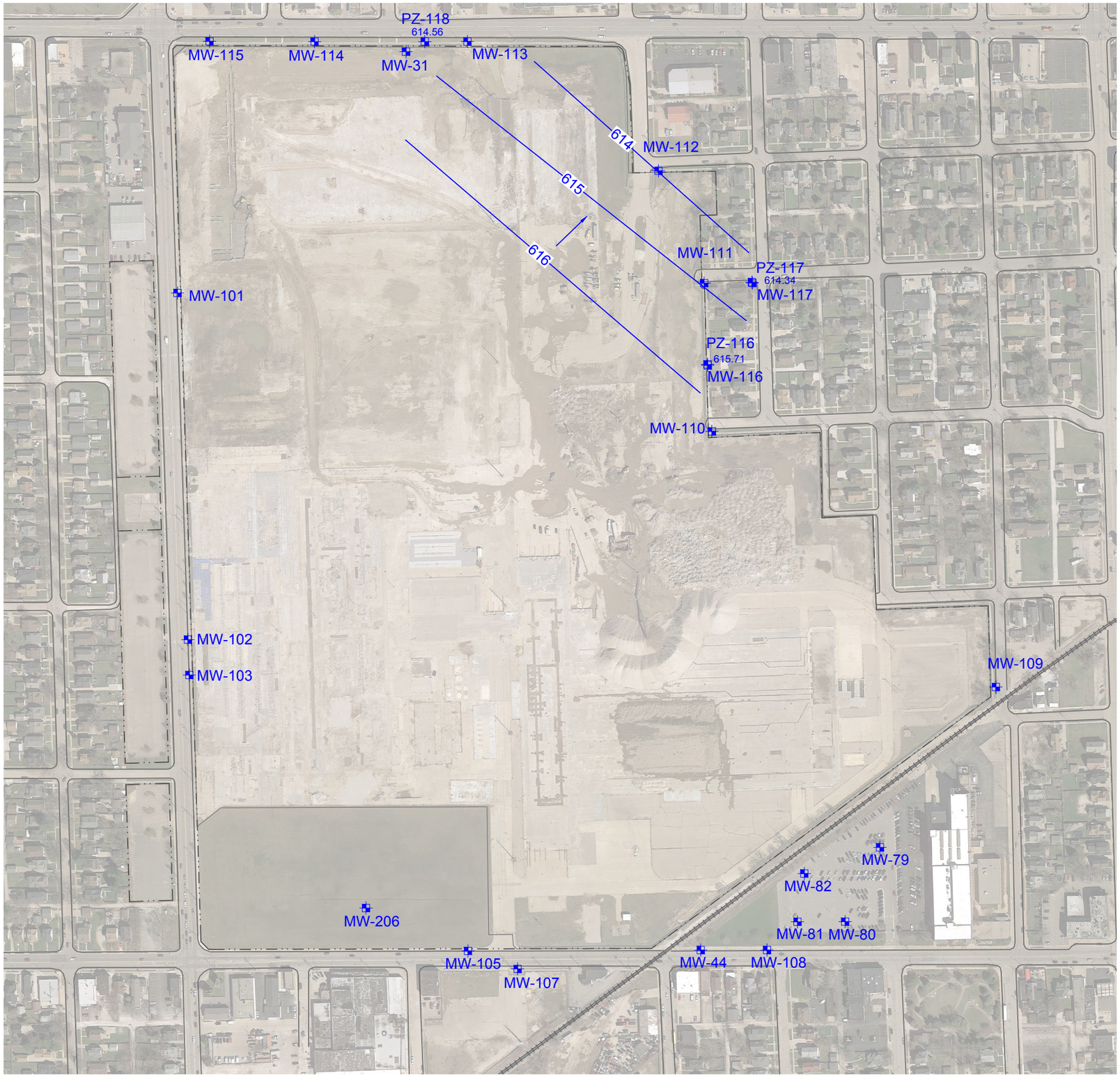
POTENTIOMETRIC SURFACE PERIMETER WATER TABLE MONITORING WELLS - APRIL 2019

KENOSHA ENGINE PLANT
CITY OF KENOSHA
KENOSHA, WISCONSIN

Drawn :	JSM	4/23/2019
Checked:	LLA	5/8/2019
Approved:	LLA	5/8/2019
PROJECT NUMBER	60605022	
FIGURE NUMBER	2	



LEGEND

- APPROXIMATE SITE BOUNDARY
- RAILROAD
- EXISTING FENCE
- PERIMETER PIEZOMETER LOCATIONS
- 617 WATER TABLE CONTOURS

NOTES

1. AERIAL PHOTOGRAPH FROM GOOGLE EARTH PRO, IMAGE DATED 4/6/2017; DOWNLOADED ON 6/5/2017.

0' 300' 600'

SCALE

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POTENTIOMETRIC SURFACE PERIMETER PIEZOMETERS - APRIL 2019

KENOSHA ENGINE PLANT
CITY OF KENOSHA
KENOSHA, WISCONSIN

Drawn :	JSM	4/23/2019
Checked:	LLA	5/8/2019
Approved:	LLA	5/8/2019
PROJECT NUMBER	60605022	
FIGURE NUMBER	3	