

August 14, 2023

Ms. Jennifer Meyer  
Environmental Program Associate  
Remediation and Redevelopment Program  
Wisconsin Department of Natural Resources  
1027 W. St. Paul Avenue  
Milwaukee, WI 53233

*Via WDNR RR Program Submittal Portal*

**Subject: Infiltration/Injection Request**  
Milwaukee Die Casting Company Site  
4132 North Holton Street, Milwaukee, Wisconsin  
WDNR BRRTS # 02-41-000023  
WDNR FID # 241228240

Dear Ms. Meyer,

We are providing this Infiltration/Injection Request (“Request”) to the Wisconsin Department of Natural Resources (WDNR) for the Milwaukee Die Casting Company Site (“Site”). This Request is being submitted on behalf of Pharmacia LLC (“Pharmacia”), which is acting on behalf of Fisher Controls International, Inc. (“Fisher”) in this matter.<sup>1</sup>

This Request has been prepared in accordance with Wisconsin Administrative Code NR 140 and NR 812 and pursuant to WDNR guidance *Infiltration and Injection Requests* (WDNR PUB-RR-935). This Report follows the June 30, 2023 *Remedial Action Options and Design Report*. The NR 712.09 submittal certification is provided as **Attachment 1**.

This I/I Request includes the following components pursuant to WDNR PUB-RR-935:

1	Cover Sheet Components
2	I/I Request Components
2b	Additional Information
3	WPDES Notice of Intent <sup>2</sup>

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<sup>1</sup> By submitting this Report, neither Pharmacia nor Fisher is waiving any of its rights under federal or state law. Additionally, nothing in this Report should be deemed an admission of fact or law, or a waiver of any defense or right to contest Pharmacia’s or Fisher’s liability under any state or federal law.

<sup>2</sup> Notice of Intent (NOI), Contaminated Groundwater from Remedial Action Operations, WPDES Permit No. WI-0046566-07-0.

Ms. Jennifer Meyer  
Wisconsin Department of Natural Resources  
August 14, 2023  
Page 2

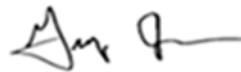
It is understood that the WPDES NOI will be reviewed by the WDNR Water Quality/Wastewater Program.

Please contact us if you have any questions regarding this Infiltration/Injection Request.

Sincerely,



Jeremiah Johnson, P.G.  
Senior Geologist  
(Licensed P.G. in WI)



Greg Johnson, P.H., P.G., P.E.  
Senior Engineer  
(Licensed P.E. in WI, P.H. in WI, P.G. in IL, WI)

Attachments  
NR 712.09 Submittal Certification  
Request Components 1 - 3

cc: J. Gregory Moll, WDNR Project Manager  
Binyoti Amungwafor, WDNR Hydrogeologist-Adv  
Reece Matheson, WDNR SER Wastewater Specialist  
Christopher Clark, Pharmacia LLC  
Mary Jo Anzia, BSI

# **ATTACHMENT 1**

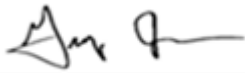

## **NR 712.09 Submittal Certification**

**Infiltration and Injection Request**  
Milwaukee Die Casting Company Site  
4132 North Holton Street  
Milwaukee, Wisconsin  
WDNR BRRTS # 02-41-00023  
WDNR FID # 241228240

**NR 712.09 Submittal certification.**

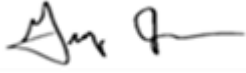
Document Name	INFILTRATION AND INJECTION REQUEST
Document Date	August 14, 2023
Site Name	Milwaukee Die Casting Company Site
WDNR BRRTS #	02-41-000023

"I, Greg Johnson, 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."

 Greg Johnson, P.H., P.G., P.E. Senior Engineer P.E. #: 29898-006	 8/14/2023
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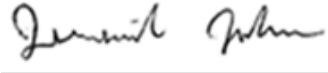
Signature, title and P.E. number	P.E. stamp
----------------------------------	------------

"I, Greg Johnson, hereby certify that I am a hydrogeologist as that term is defined in s. NR 712.03 (1), Wis. Adm. Code, am registered in accordance with the requirements of ch. GHSS 2, Wis. Adm. Code, or licensed in accordance with the requirements of ch. GHSS 3, Wis. Adm. Code, and that, to the best of my knowledge, all of the 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."

 Senior Engineer	8/14/2023
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Signature and title	Date
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"I, Jeremiah Johnson, 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 of the 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."

 Senior Geologist	8/14/2023
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Signature and title	Date
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## 1 - COVER SHEET COMPONENTS

<b>INFILTRATION AND INJECTION REQUEST</b> Enhanced In-Situ Bioremediation (EISB) Milwaukee Die Casting Company Site 4132 North Holton Street, Milwaukee, Wisconsin WDNR BRRTS # 02-41-000023 WDNR FID # 241228240	
BRRTS Activity #	02-41-000023
Site name, address, city, zip code	Milwaukee Die Casting Company Site 4132 North Holton Street Milwaukee, Wisconsin 53212
Pharmacia contact information	Pharmacia LLC Christopher J. Clark, Vice President 66 Hudson Boulevard East MS: 66HB/012/12N-3 New York, NY 10001-219 212.733.5997 <a href="mailto:Christopher.J.Clark@pfizer.com">Christopher.J.Clark@pfizer.com</a>  Mary Jo Anzia, P.E., Pharmacia Project Manager c/o BSI 216 N. Green Bay Rd., Suite 201 Thiensville, WI, 53092 262.292.6080 <a href="mailto:MaryJo.Anzia@bsigroup.com">MaryJo.Anzia@bsigroup.com</a>
Environmental consultant contact information	Geosyntec Consultants Greg Johnson, P.H., P.G., P.E., Senior Engineer 10600 North Port Washington Rd. Suite 100 Mequon, WI 53092 262.834.0226 <a href="mailto:gjohnson@geosyntec.com">gjohnson@geosyntec.com</a>
Type of request	Infiltration and Injection Request
Amount of fee that is attached	\$700
WDNR RR Project Manager	J. Gregory Moll, P.G.

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## 2 - I/I REQUEST COMPONENTS

<p><b>INFILTRATION/INJECTION REQUEST</b>  Enhanced In-Situ Bioremediation (EISB)  Milwaukee Die Casting Company Site  4132 North Holton Street, Milwaukee, Wisconsin  WDNR BRRTS # 02-41-000023  WDNR FID # 241228240</p>	
Site information	<p>Milwaukee Die Casting Company Site  4132 North Holton Street  Milwaukee, Wisconsin 53212  [refer to <b>Attachment 2-1 (Figure 1)</b>]</p>
Identifying numbers	<p>WDNR BRRTS # 02-41-000023  WDNR FID # 241228240</p>
Identify if compounds are being injected or infiltrated	<p>Amendments will be injected into the MW-1 area shallow groundwater target EISB amendment zone via a grid of direct-push technology (DPT) points.</p>
Compound(s) or material(s) being injected	<p>EISB will consist of direct amendment of the MW-1 area shallow groundwater zone with an electron donor (carbon source) and a dechlorinating microbial culture to stimulate biodegradation of the chlorinated volatile organic compounds (CVOCs). Emulsified vegetable oil [EVO] and KB-1<sup>®</sup> (amendments) have been selected as the electron donor and microbial culture, respectively.</p>
Type(s) of contaminants being treated	<p>CVOCs including tetrachloroethene (PCE)/trichloroethene (TCE) (parent chlorinated ethenes) and 1,1-dichloroethane, 1,1-dichloroethene (DCE), cis-1,2-DCE, trans-1,2-DCE, and vinyl chloride (degradation products).</p> <p>Saturated soil data from the MW-1 area shallow groundwater target EISB amendment zone are included in <b>Attachment 2-1 (Figures 2 and 3)</b> and <b>Attachment 2-2 (Table 1)</b>. Groundwater data from the MW-1 area shallow groundwater target EISB amendment zone are included in <b>Attachment 2-1 (Figure 4)</b> and <b>Attachment 2-2 (Table 2)</b>. The laboratory reports were included in the May 19, 2023 <i>Pre-Design Investigation Report</i>.</p>
Implementation plan for injection/infiltration	<p>The following implementation plan is based on evaluations documented in the June 30, 2023 <i>Remedial Action Options and Design Report</i>. The design was based on pre-design investigation data as documented in the May 19, 2023 <i>Pre-Design Investigation Report</i>.</p> <p><u>Amendments</u>  Emulsified vegetable oil [EVO] and KB-1<sup>®</sup> (amendments) have been selected as the electron donor and microbial culture, respectively. The EVO will be diluted with anaerobic water. The anaerobic water will be generated by adding KB-1<sup>®</sup> Primer to municipal water. Anaerobic water is used to disperse the electron donor and protect anaerobic bioaugmentation cultures during injection.</p> <p><u>Target Amendment Zone</u>  The MW-1 area shallow groundwater target EISB amendment zone area and depth interval are approximately 8,100 square feet (sf) and 8 to 18 feet below ground surface (silty sand unit), respectively, as depicted on <b>Figures 2 and 3 (Attachment 2-1)</b>.</p>

	<p><u>Number of Injection Points</u></p> <p>The anticipated number of injection points based on a 7.5-foot injection point radius of influence (ROI) is approximately 46 (i.e., injection points advanced on an approximately 15-foot grid within the MW-1 area shallow groundwater target EISB amendment zone area). The approximate injection point locations are depicted on <b>Figure 2 (Attachment 2-1)</b>.</p> <p><u>Amendment Quantity Estimates</u></p> <p>Based on the evaluation presented in the June 20, 2023 <i>Remedial Action Options and Design Report</i>, approximately 38,000 gallons of EVO emulsion will be injected (approximately 825 gallons per injection point). The EVO concentration of the EVO emulsion will be approximately 4,800 milligrams per liter (mg/L). Approximately 23 liters of KB-1<sup>®</sup> (approximately 0.5 liters per injection point) will be added to the EVO emulsion during injection.</p> <p><u>Injection Procedure</u></p> <p>The EISB amendment injections will be performed in a top-down manner using a retractable DPT injection tool. The tool will be attached to hollow steel DPT drive rods and then driven into the top of the target EISB amendment zone. The rods will then be retracted to expose the 2-foot long section containing injection ports. The upper and lower halves of the tool will seal off the zones above and below the injection ports, allowing the injection solution to be injected into the desired zone. The discrete injections will be performed every 2 feet within the target zone. This will result in 4 to 5 EVO delivery “lifts” in each injection point.</p> <p>Based on the Site conditions and previous experience, an EISB amendment injection rate of approximately 5 gallons per minute (gpm) at pressures of approximately 15 to 25 pounds per square inch (psi) above hydrostatic pressure is anticipated. Injection rates and pressures will likely be modified in the field based on injection observation.</p> <p>The KB-1<sup>®</sup> culture will be added in three (3) of the EVO emulsion delivery lifts (i.e., top, middle and bottom). Approximately one third of the EVO delivery lift volume will be injected first, followed by KB-1<sup>®</sup> injection using compressed gas. Following injection of KB-1<sup>®</sup>, the EVO delivery lift injection will be completed. By resuming EVO injection immediately after the introduction of KB-1<sup>®</sup>, the KB-1<sup>®</sup> culture will be introduced into the groundwater within a “protective ring” of anaerobic water amended with EVO.</p> <p>The injection process duration (start and stop times), amendment quantities, and the injection rate and pressure for each injection point will be recorded on an Injection Tracking Sheet.</p> <p>Following injection, the injection points will be abandoned in accordance with NR 140.</p>
<p>Any necessary constraints on the injection system</p>	<p>There are no constraints to the EISB injection implementation. The Site is currently vacant and there are no subsurface utilities or other features within the target EISB amendment zone area.</p>

Time frame for which approval is needed	It is anticipated that EISB injection implementation will be completed within an approximate one-month period. Performance monitoring will be conducted for approximately one (1) year following injection. It is estimated that EISB injection implementation will be conducted in 4Q2023.
Locations of proposed injection wells, infiltration zones, etc.	Approximately 46 injection points (advanced on an approximately 15-foot grid within the approximate 8,100 sf MW-1 area shallow groundwater target EISB amendment zone area). The injection points will be advanced to the bottom of the silty sand unit.
An injection-specific monitoring plan, designed to monitor the effectiveness of the remedy and determine the extent of migration of the injected material and/or its breakdown products	Post-EISB performance monitoring will be conducted in accordance with the June 20, 2023 <i>Remedial Action Options and Design Report</i> . Post-EISB performance monitoring will utilize the existing WDNR-approved groundwater monitoring well network (incorporating the planned MW-1 replacement well) and two (2) EISB performance monitoring wells (PMW-1 and PMW-2) installed solely for the purpose of post-EISB implementation performance monitoring. Performance monitoring data evaluation will include post-EISB CVOC concentrations, geochemical (redox) conditions, and electron donor (carbon source) consumption.
Pre-injection vapor screening, vapor potential and safety plan	Vapor generation is not anticipated during DPT EISB injection. Worker breathing zone vapor screening will be conducted during EISB injection activities as necessary based on the contractor’s Work-specific health and safety plan.

**REFERENCES**

Geosyntec Consultants (2023a). *Remedial Action Options and Design Report*, Milwaukee Die Casting Company Site; prepared on behalf Pharmacia LLC; June 30, 2023.

Geosyntec Consultants (2023b). *Pre-Design Investigation Report*, Milwaukee Die Casting Company Site; prepared on behalf Pharmacia LLC; May 19, 2023.

**ATTACHMENTS**

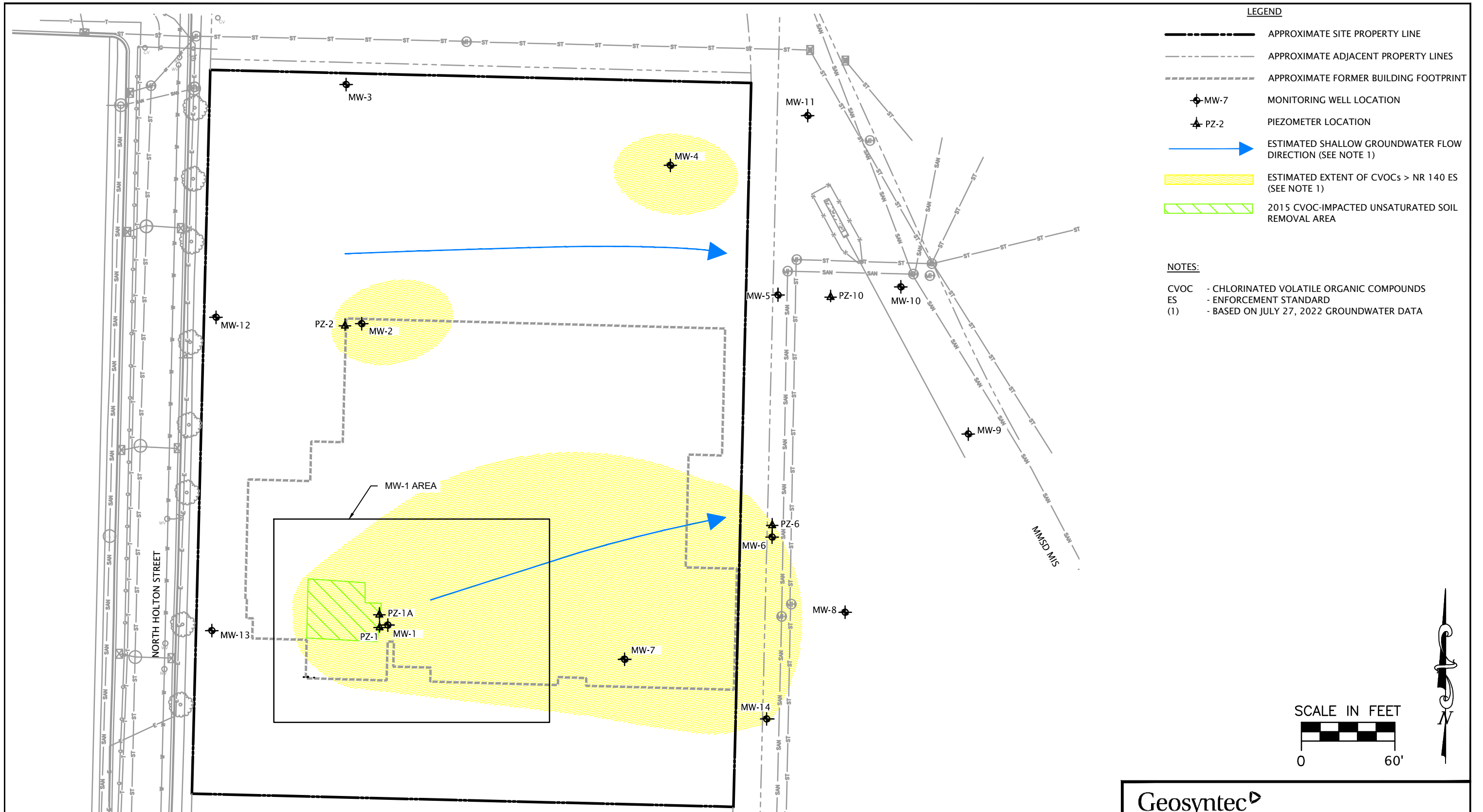
- 2-1 Figures
- 2-2 Tables

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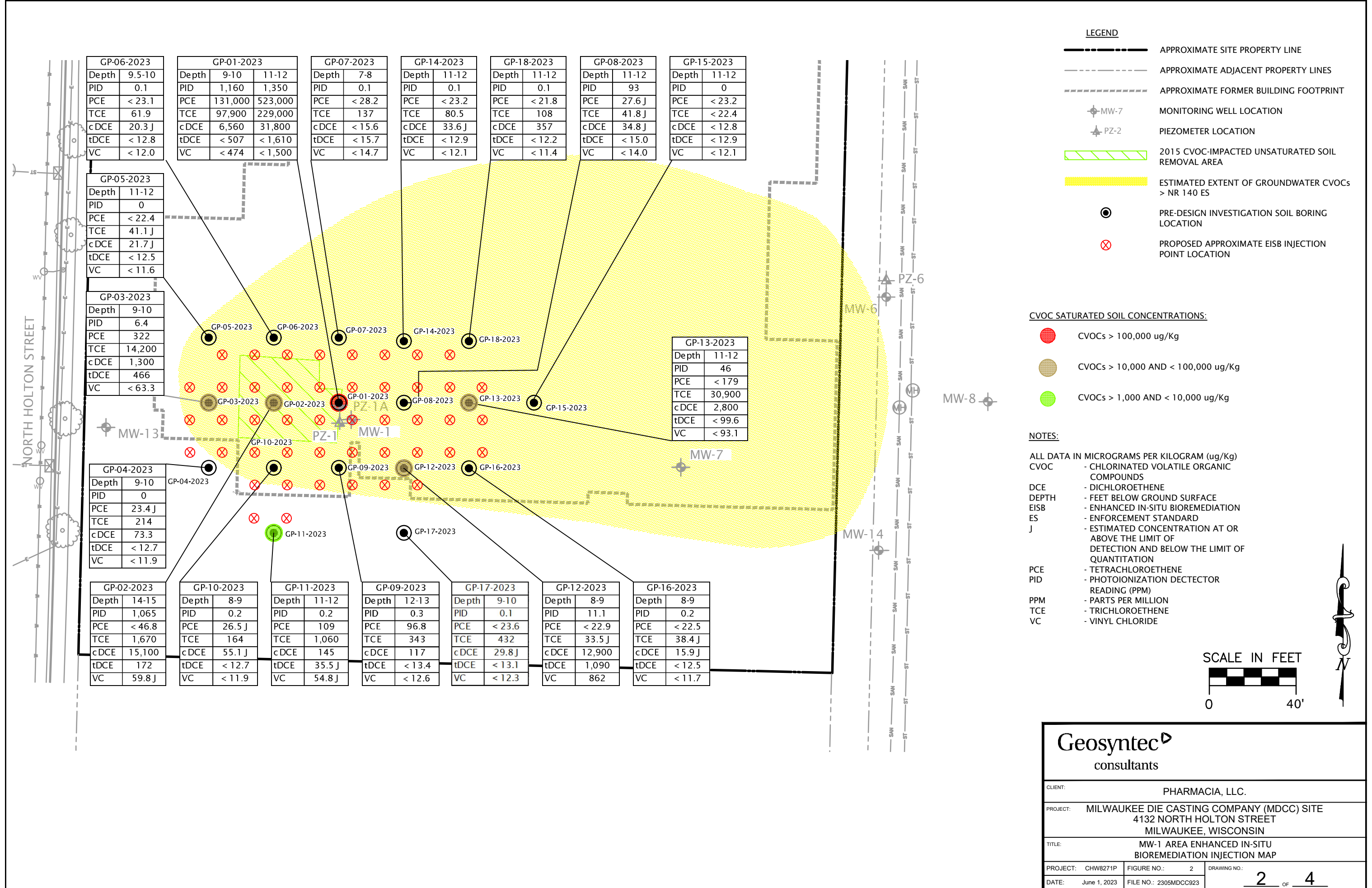


# ATTACHMENT 2-1

## Figures



<p><b>Geosyntec</b> consultants</p>		
<p>CLIENT: PHARMACIA, LLC.</p>		
<p>PROJECT: MILWAUKEE DIE CASTING COMPANY (MDCC) SITE 4132 NORTH HOLTON STREET MILWAUKEE, WISCONSIN</p>		
<p>TITLE: SITE LAYOUT</p>		
PROJECT: CHW8271P	FIGURE NO.: 1	DRAWING NO.: 1 OF 4
DATE: June 1, 2023	FILE NO.: 23-05MDCC923	



**LEGEND**

- APPROXIMATE SITE PROPERTY LINE
- APPROXIMATE ADJACENT PROPERTY LINES
- APPROXIMATE FORMER BUILDING FOOTPRINT
- MONITORING WELL LOCATION
- PIEZOMETER LOCATION
- 2015 CVOC-IMPACTED UNSATURATED SOIL REMOVAL AREA
- ESTIMATED EXTENT OF GROUNDWATER CVOCs > NR 140 ES
- PRE-DESIGN INVESTIGATION SOIL BORING LOCATION
- PROPOSED APPROXIMATE EISB INJECTION POINT LOCATION

**CVOC SATURATED SOIL CONCENTRATIONS:**

- CVOCs > 100,000 ug/Kg
- CVOCs > 10,000 AND < 100,000 ug/Kg
- CVOCs > 1,000 AND < 10,000 ug/Kg

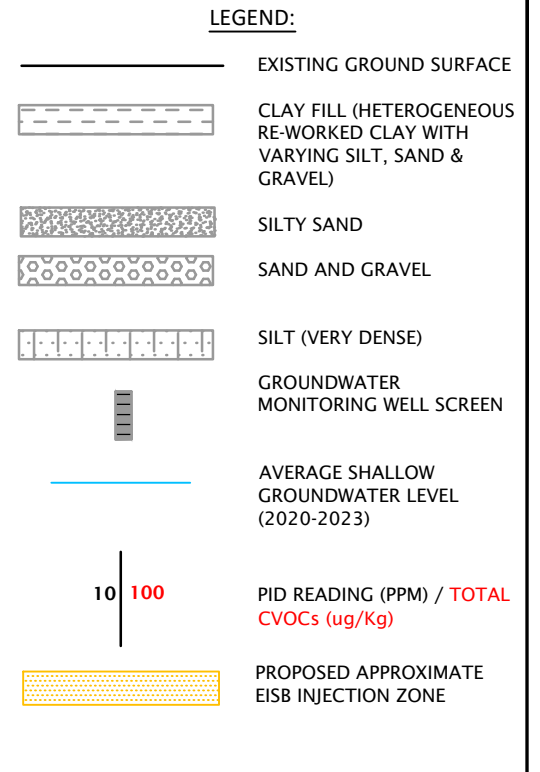
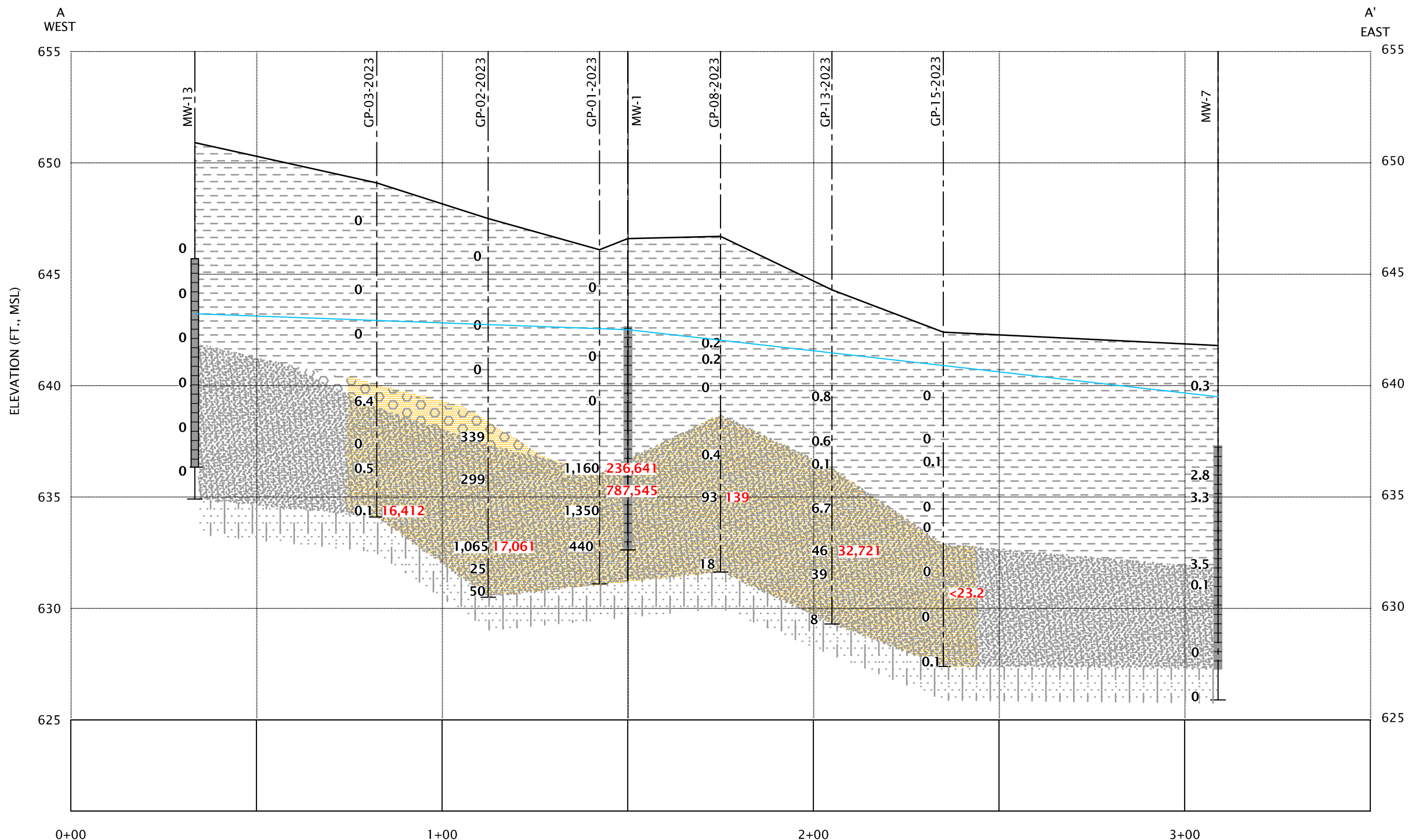
**NOTES:**

- ALL DATA IN MICROGRAMS PER KILOGRAM (ug/Kg)
- CVOC - CHLORINATED VOLATILE ORGANIC COMPOUNDS
  - DCE - DICHLOROETHENE
  - DEPTH - FEET BELOW GROUND SURFACE
  - EISB - ENHANCED IN-SITU BIOREMEDIATION
  - ES - ENFORCEMENT STANDARD
  - J - ESTIMATED CONCENTRATION AT OR ABOVE THE LIMIT OF DETECTION AND BELOW THE LIMIT OF QUANTITATION
  - PCE - TETRACHLOROETHENE
  - PID - PHOTOIONIZATION DETECTOR READING (PPM)
  - PPM - PARTS PER MILLION
  - TCE - TRICHLOROETHENE
  - VC - VINYL CHLORIDE

SCALE IN FEET

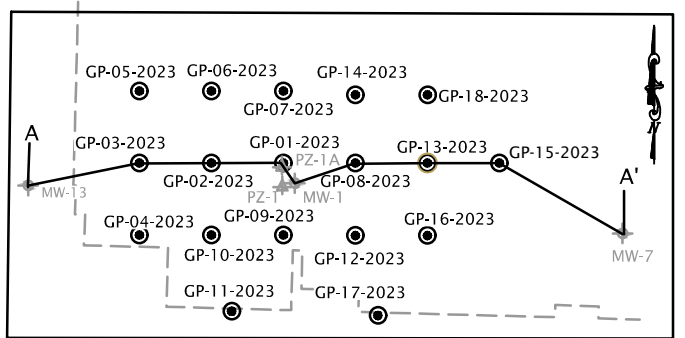


<b>Geosyntec</b> consultants		
CLIENT:	PHARMACIA, LLC.	
PROJECT:	MILWAUKEE DIE CASTING COMPANY (MDCC) SITE 4132 NORTH HOLTON STREET MILWAUKEE, WISCONSIN	
TITLE:	MW-1 AREA ENHANCED IN-SITU BIOREMEDIATION INJECTION MAP	
PROJECT: CHW8271P	FIGURE NO.: 2	DRAWING NO.: 2 OF 4
DATE: June 1, 2023	FILE NO.: 2305MDCC923	

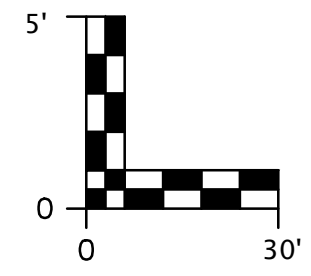


**NOTES:**

- ug/Kg - MICROGRAMS PER KILOGRAM
- PID - PHOTOIONIZATION DETECTOR
- PPM - PARTS PER MILLION
- CVOCs - CHLORINATED VOLATILE ORGANIC COMPOUNDS (ug/Kg)
- EISB - ENHANCED IN-SITU BIOREMEDIATION









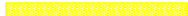

LOCATION MAP  
N.T.S.



**Geosyntec**  
consultants

CLIENT:	PHARMACIA, LLC.	
PROJECT:	MILWAUKEE DIE CASTING COMPANY (MDCC) SITE 4132 NORTH HOLTON STREET MILWAUKEE, WISCONSIN	
TITLE:	MW-1 AREA ENHANCED IN-SITU BIOREMEDIATION INJECTION ZONE MAP	
PROJECT:	CHW8271P	FIGURE NO.: 3
DATE:	June 1, 2023	FILE NO23-05 MDCC 923
DRAWING NO.:	3 OF 4	

**LEGEND**

-  APPROXIMATE SITE PROPERTY LINE
-  APPROXIMATE ADJACENT PROPERTY LINES
-  APPROXIMATE FORMER BUILDING FOOTPRINT
-  MW-7 MONITORING WELL LOCATION
-  PZ-6 PIEZOMETER LOCATION
-  ESTIMATED GROUNDWATER FLOW DIRECTION (SEE NOTE 1)
-  ESTIMATED EXTENT OF CVOCs > NR 140 ES (SEE NOTE 1)
-  2015 CVOC-IMPACTED UNSATURATED SOIL REMOVAL AREA

**NOTES:**

- ALL DATA IN MICROGRAMS PER LITER (µg/L) UNLESS NOTED
- BOX + BOLD - CONCENTRATION GREATER THAN NR 140 ES
- CVOC - CHLORINATED VOLATILE ORGANIC COMPOUNDS
- DCE - DICHLOROETHENE
- DEPTH - FEET BELOW GROUND SURFACE
- Dhc - DEHALOCOCCOIDES (e/L)
- DO - DISSOLVED OXYGEN (mg/L)
- e/L - ENUMERATION PER LITER
- ES - ENFORCEMENT STANDARD
- J - ESTIMATED CONCENTRATION AT OR ABOVE THE LIMIT OF DETECTION AND BELOW THE LIMIT OF QUANTITATION
- mg/l - MILLIGRAMS PER LITER
- mV - MILLIVOLTS
- ORP - OXIDATION-REDUCTION POTENTIAL (mV)
- PCE - TETRACHLOROETHENE
- TCE - TRICHLOROETHENE
- VC - VINYL CHLORIDE
- (1) BASED ON JULY 27, 2022 GROUNDWATER DATA

SCALE IN FEET

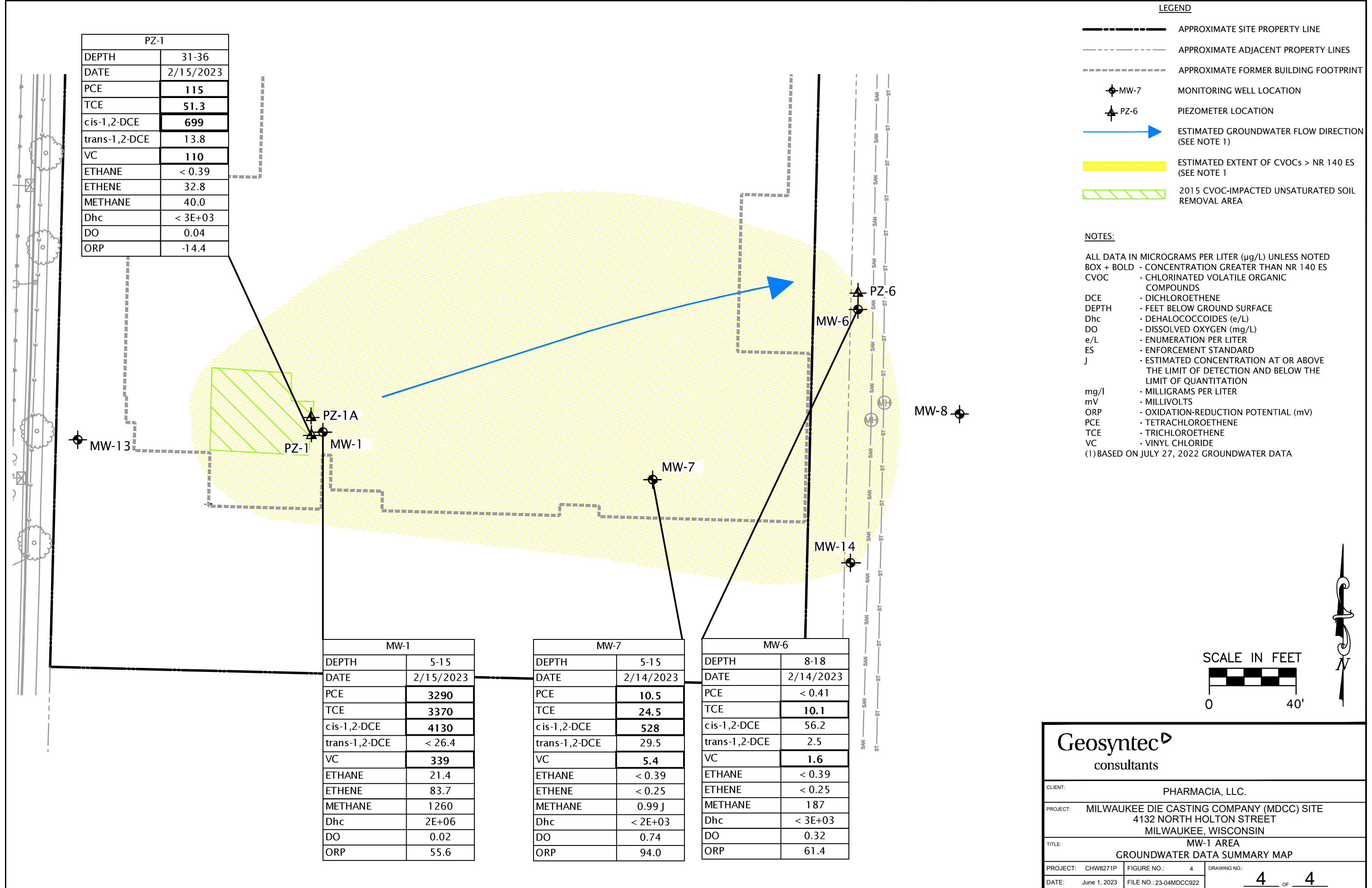


PZ-1	
DEPTH	31-36
DATE	2/15/2023
PCE	<b>115</b>
TCE	<b>51.3</b>
cis-1,2-DCE	<b>699</b>
trans-1,2-DCE	13.8
VC	<b>110</b>
ETHANE	< 0.39
ETHENE	32.8
METHANE	40.0
Dhc	< 3E+03
DO	0.04
ORP	-14.4

MW-1	
DEPTH	5-15
DATE	2/15/2023
PCE	<b>3290</b>
TCE	<b>3370</b>
cis-1,2-DCE	<b>4130</b>
trans-1,2-DCE	< 26.4
VC	<b>339</b>
ETHANE	21.4
ETHENE	83.7
METHANE	1260
Dhc	2E+06
DO	0.02
ORP	55.6

MW-7	
DEPTH	5-15
DATE	2/14/2023
PCE	<b>10.5</b>
TCE	<b>24.5</b>
cis-1,2-DCE	<b>528</b>
trans-1,2-DCE	29.5
VC	<b>5.4</b>
ETHANE	< 0.39
ETHENE	< 0.25
METHANE	0.99 J
Dhc	< 2E+03
DO	0.74
ORP	94.0

MW-6	
DEPTH	8-18
DATE	2/14/2023
PCE	< 0.41
TCE	<b>10.1</b>
cis-1,2-DCE	56.2
trans-1,2-DCE	2.5
VC	<b>1.6</b>
ETHANE	< 0.39
ETHENE	< 0.25
METHANE	187
Dhc	< 3E+03
DO	0.32
ORP	61.4



**Geosyntec**  
consultants

CLIENT: PHARMACIA, LLC.

PROJECT: MILWAUKEE DIE CASTING COMPANY (MDCC) SITE  
4132 NORTH HOLTON STREET  
MILWAUKEE, WISCONSIN

TITLE: MW-1 AREA  
GROUNDWATER DATA SUMMARY MAP

PROJECT: CHW8271P    FIGURE NO.: 4    DRAWING NO.: 4 OF 4

DATE: June 1, 2023    FILE NO.: 23-04MDCC922

# ATTACHMENT 2-2

## Tables

**TABLE 1**  
**Summary of Soil Sample Analytical Results**  
**Pre-Design Investigation**  
 Milwaukee Die Casting Company Site  
 4132 North Holton Street  
 Milwaukee, Wisconsin

Soil Boring No.	GP-01-2023	GP-01-2023	GP-02-2023	GP-03-2023	GP-04-2023	GP-05-2023	GP-06-2023	GP-07-2023	GP-08-2023	GP-09-2023	GP-10-2023
Sample Collection Date	2/14/23	2/14/23	2/14/23	2/14/23	2/15/23	2/15/23	2/15/23	2/15/23	2/14/23	2/14/23	2/14/23
Sample Depth (feet, bgs)	9-10	11-12	14-15	9-10	9-10	11-12	9.5-10	7-8	11-12	12-13	8-9
<b>Detected VOCs (µg/kg)</b>											
1,1-Dichloroethane	<601	<1,910	<30.9	<80.2	<15.1	<14.8	<15.2	<18.6	<17.8	<15.9	<15.1
1,1-Dichloroethene	<779	<2,470	<40.1	<104	<19.5	<19.1	<19.7	<24.2	<23.0	<20.7	<19.5
cis-1,2-Dichloroethene	6,560	31,800	15,100	1,300	73.3	21.7 J	20.3 J	<15.6	34.8 J	117	55.1 J
trans-1,2-Dichloroethene	<507	<1,610	172	466	<12.7	<12.5	<12.8	<15.7	<15.0	<13.4	<12.7
Ethylbenzene	<558	<1,770	<28.7	173 J	<14.0	<13.7	<14.1	<17.3	<16.5	<14.8	<14.0
Methylene Chloride	<652	<2,070	<33.5	<87.1	<16.3	<16.0	<16.5	<20.2	<19.3	<17.3	<16.4
Tetrachloroethene (PCE)	131,000	523,000	<46.8	322	23.4 J	<22.4	<23.1	<28.2	27.6 J	96.8	26.5 J
Toluene	<591	<1,880	<30.4	<78.9	21.2 J	<14.5	<15.0	<18.3	<17.5	<15.7	<14.8
Trichloroethene (TCE)	97,900	229,000	1,670	14,200	214	41.1 J	61.9	137	41.8 J	343	164
Vinyl chloride	<474	<1,500	59.8 J	<63.3	<11.9	<11.6	<12.0	<14.7	<14.0	<12.6	<11.9
m&p-Xylene	<990	<3,140	<50.9	895	<24.8	<24.3	<25.1	<30.7	<29.3	<26.3	<24.8
o-Xylene	<704	<2,230	<36.2	485	<17.6	<17.3	<17.8	<21.8	<20.8	<18.7	<17.7
Xylenes, Total	<1,694	<5,370	<87.1	1,380	<42.4	<41.6	<42.9	<52.5	<50.1	<45	<42.5
<b>Geochemical Parameters</b>											
Total Carbon (%)	--	5.24	5.36	--	--	--	--	--	6.06	--	--
Total Inorganic Carbon (%)	--	4.78	5.11	--	--	--	--	--	5.65	--	--
Total Organic Carbon (%)	--	0.462	0.249	--	--	--	--	--	0.406	--	--
Total Iron (µg/g)	--	12,000	11,000	--	--	--	--	--	12,000	--	--
Total Sulfur (µg/g)	--	5,700	5,500	--	--	--	--	--	4,900	--	--
<b>Other Parameters</b>											
Magnetic Susceptibility (n <sup>3</sup> /kg)	--	5.48E-07	6.81E-07	--	--	--	--	--	6.04E-07	--	--
Mass of Magnetically Separable Material (mg/kg)	--	870	1,101	--	--	--	--	--	967	--	--

Soil Boring No.	GP-11-2023	GP-12-2023	GP-13-2023	GP-13-2023 DUP	GP-14-2023	GP-15-2023	GP-16-2023	GP-17-2023	GP-17-2023 DUP	GP-18-2023
Sample Collection Date	2/15/23	2/15/23	2/15/23	2/15/23	2/15/23	2/15/23	2/15/23	2/15/23	2/15/23	2/15/23
Sample Depth (feet, bgs)	11-12	8-9	11-12	11-12	11-12	11-12	8-9	9-10	9-10	11-12
<b>Detected VOCs (µg/kg)</b>										
1,1-Dichloroethane	33.4 J	<15.1	<118	<117	<15.3	<15.3	<14.8	<15.6	<15.4	<14.4
1,1-Dichloroethene	<20.8	26.9 J	<153	<152	<19.9	<19.8	<19.2	<20.2	<20.0	<18.7
cis-1,2-Dichloroethene	145	12,900	2,800	2,710	33.6 J	<12.8	15.9 J	29.8 J	21.7 J	357
trans-1,2-Dichloroethene	35.5 J	1,090	<99.6	<99.1	<12.9	<12.9	<12.5	<13.1	<13.0	<12.2
Ethylbenzene	<14.9	<14.1	<110	<109	<14.2	<14.2	<13.8	<14.5	<14.3	<13.4
Methylene Chloride	<17.4	<16.4	<128	<128	<16.6	<16.6	18.1 J	17.2 J	19.3 J	<15.6
Tetrachloroethene (PCE)	109	<22.9	<179	<178	<23.2	<23.2	<22.5	<23.6	<23.3	<21.8
Toluene	<15.8	<14.9	<116	<116	<15.1	<15.1	<14.6	<15.3	<15.2	<14.2
Trichloroethene (TCE)	1,060	33.5 J	29,600	30,900	80.5	<22.4	38.4 J	124	432	108
Vinyl chloride	54.8 J	862	<93.1	<92.7	<12.1	<12.1	<11.7	<12.3	<12.1	<11.4
m&p-Xylene	<26.4	<24.9	<195	<194	<25.3	<25.2	<24.5	<25.7	<25.4	<23.7
o-Xylene	<18.8	<17.7	<138	<138	<18.0	<17.9	<17.4	<18.3	<18.0	<16.9
Xylenes, Total	<45.2	<42.6	<333	<332	<43.3	<43.1	<41.9	<44	<43.4	<40.6
<b>Geochemical Parameters</b>										
Total Carbon (%)	--	5.02	5.59	--	--	5.65	--	--	--	--
Total Inorganic Carbon (%)	--	4.66	5.23	--	--	4.95	--	--	--	--
Total Organic Carbon (%)	--	0.364	0.363	--	--	0.704	--	--	--	--
Total Iron (µg/g)	--	12,000	16,000	--	--	13,000	--	--	--	--
Total Sulfur (µg/g)	--	4,600	4,600	--	--	4,400	--	--	--	--
<b>Other Parameters</b>										
Magnetic Susceptibility (n <sup>3</sup> /kg)	--	4.66E-07	4.23E-07	--	--	4.66E-07	--	--	--	--
Mass of Magnetically Separable Material (mg/kg)	--	719	658	--	--	731	--	--	--	--

**Notes:**

-- not analyzed

% - percent

bgs - below ground surface

J - estimated concentration at or above the limit of detection and below the limit of quantitation

VOCs - volatile organic compounds

m<sup>3</sup>/kg - cubic meters per kilogram

mg/kg - milligram per kilogram

µg/g - micrograms per gram

µg/kg - micrograms per kilogram

**TABLE 2**  
**Summary of Groundwater Sample Analytical Results**  
**Pre-Design Investigation**  
Milwaukee Die Casting Company Site  
4132 North Holton Street  
Milwaukee, Wisconsin

Well Identification	MW-1	PZ-1	MW-6		MW-7	NR 140 Groundwater Quality Standard	
Approximate Screen Interval (ft bgs)	5-15	31-36	8-18		5-15		
Sample Date	2/15/2023	2/15/2023	2/14/2023	2/14/2023	2/14/2023	PAL	ES
Analytical Parameters				DUP			
<b>Detected VOCS (µg/L)</b>							
1,1,1-Trichloroethane	< 15.1	< 3.0	7.3	7.2	5.6	40	200
1,1-Dichloroethane	< 14.8	< 3.0	15.4	15.0	6.1	85	850
1,1-Dichloroethene	<29.1	< 5.8	< 0.58	< 0.58	<b>1.9 J</b>	0.7	7
cis-1,2-Dichloroethene	<b>4130</b>	<b>699</b>	<b>56.2</b>	<b>55.3</b>	<b>528</b>	7	70
Tetrachloroethene	<b>3290</b>	<b>115</b>	< 0.41	< 0.41	<b>10.5</b>	0.5	5
trans-1,2-Dichloroethene	< 26.4	13.8	2.5	2.2	<b>29.5</b>	20	100
Trichloroethene	<b>3370</b>	<b>51.3</b>	<b>10.1</b>	<b>10</b>	<b>24.5</b>	0.5	5
Vinyl chloride	<b>339</b>	<b>110</b>	<b>1.6</b>	<b>1.6</b>	<b>5.4</b>	0.02	0.2
<b>Geochemical Parameters</b>							
Ethane (µg/L)	21.4	< 0.39	< 0.39	< 0.39	< 0.39	--	--
Ethene (µg/L)	83.7	32.8	< 0.25	< 0.25	< 0.25	--	--
Methane (µg/L)	1260	40.0	187	234	0.99 J	--	--
Iron (µg/L)	1910	1010	1540	1600	58.8 J	--	--
Iron, Dissolved (µg/L)	363	1150	265	265	< 56.7	150	300
Sulfide (mg/L)	< 1.2	< 1.2	< 1.2	< 1.2	< 1.2	--	--
Nitrate (mg/L)	< 0.044	< 0.044	< 0.044	< 0.044	< 0.044	2	10
Sulfate (mg/L)	228	96.0	247	249	128	125	150
TOC (mg/L)	2.7	2.3	3.0	2.9	2.4	--	--
<b>Microbial Species</b>							
Gene-Trac <sup>®</sup> Dhc (e/L)	2E+06	< 3E+03	< 3E+03	< 3E+03	< 2E+03	--	--
<b>Field Parameters<sup>(1)</sup></b>							
Temperature (deg C)	7.1	8.7	8.6	--	6.9	--	--
pH	7.22	7.29	7.13	--	7.29	--	--
Conductivity (mS/cm)	1.495	1.161	1.112	--	0.988	--	--
Dissolved Oxygen (mg/L)	0.02	0.04	0.32	--	0.74	--	--
ORP (mV)	55.6	-14.4	61.4	--	94.0	--	--
Ferrous Iron (ppm)	0.29	1.17	1.03	--	0.02	--	--

Notes:

bold - VOC concentration greater than NR 140 PAL

boxed - VOC concentration greater than NR 140 ES

<sup>(1)</sup> - stabilized field parameters obtained prior to sample collection

-- - not established

deg C - degrees Celsius

Dhc - Dehalococcoides

DUP - duplicate

e/L - enumeration per liter

ES - NR 140 Enforcement Standard

ft bgs - feet below ground surface

J - estimated concentration at or above the limit of detection and below the limit of quantitation

mg/L - milligrams per liter

mS/cm - millisiemens per centimeter

mV - millivolts

ORP - oxidation-reduction potential

PAL - NR 140 Preventive Action Limit

ppm - parts per million

TOC - total organic carbon

µg/L - micrograms per liter

VOCs - volatile organics compounds



## 2B - ADDITIONAL INFORMATION

<b>INFILTRATION/INJECTION REQUEST</b>	
Enhanced In-Situ Bioremediation (EISB) Milwaukee Die Casting Company Site 4132 North Holton Street, Milwaukee, Wisconsin WDNR BRRTS # 02-41-000023 WDNR FID # 241228240	
Chemical analysis of the proposed injectant/remedial material	The composition and information on ingredients of the EISB amendments [emulsified vegetable oil (EVO), KB-1 <sup>®</sup> and KB-1 <sup>®</sup> Primer] are provided in the Safety Data Sheets (SDSs) provided in <b>Attachment 2B-1</b> .
Concentrations of the injectants	Based on the evaluation presented in the June 20, 2023 <i>Remedial Action Options and Design Report</i> , approximately 38,000 gallons of EVO emulsion will be injected (approximately 825 gallons per injection point). The EVO concentration of the EVO emulsion will be approximately 4,800 milligrams per liter (mg/L). Approximately 23 liters of KB-1 <sup>®</sup> (approximately 0.5 liters per injection point) will be added to the EVO emulsion during injection.
Expected persistence of injectant in the groundwater (i.e., how long will it be effective)	Once injected into the MW-1 area shallow groundwater target EISB amendment zone, the amendments are expected to create an active treatment zone for several years.
Description of the monitoring system in place that can determine the extent of the area affected by the injectant	The post-EISB performance monitoring plan is provided in the June 30, 2023 <i>Remedial Action Options and Design Report</i> . The monitoring plan incorporates the existing WDNR-approved groundwater monitoring well network (incorporating the planned MW-1 replacement well) and two (2) additional EISB performance-specific monitoring wells (installed at the approximate locations of pre-design investigation soil boring locations GP-13-2023 and GP-15-2023). Post-EISB performance monitoring will be conducted at 3, 6 and 12 months following EISB implementation.
Collection of analytical results for groundwater	<p>Post-EISB performance monitoring laboratory analysis will include volatile organic compounds (VOCs); ethene, ethane and methane; Gene-Trac<sup>®</sup> dehalococoides (Dhc), vinyl chloride reductase (vcrA), BAV1 reductase (bvcA) and TCE reductase (tceA); total organic carbon (TOC); and geochemical parameters (chloride, nitrate, nitrite, sulfate, alkalinity, nitrate, and total and dissolved iron).</p> <p>Field parameter data [pH, temperature, conductivity, dissolved oxygen (DO), turbidity and oxidation-reduction potential (ORP)] will also be collected.</p>
Use of sentinel wells as part of the monitoring program to show that the injectant is confined to the area to be treated	The post-EISB performance monitoring plan incorporates the existing WDNR-approved groundwater monitoring well network (incorporating the planned MW-1 replacement well) which includes downgradient sentinel wells.

### ATTACHMENTS

2B-1 EISB Amendment SDSs

\*\*\*\*\*

# **ATTACHMENT 2-B1**

## **EISB Amendment Safety Data Sheets**

**Infiltration and Injection Request**  
Milwaukee Die Casting Company Site  
4132 North Holton Street  
Milwaukee, Wisconsin  
WDNR BRRTS # 02-41-00023  
WDNR FID # 241228240

**1. PRODUCT IDENTIFICATION**

<b><u>TRADE NAME (AS LABELED):</u></b>	<b>Newman Zone EVO</b>
<b><u>SYNONYMS:</u></b>	None known
<b><u>CAS#:</u></b>	Mixture
<b><u>PRODUCT USE:</u></b>	This product is used for soil and ground water remediation. It is formulated and processed using food grade additives, following packaging, sanitation and storage as required by Best Practices used for Food products.
<b><u>CHEMICAL SHIPPING NAME/CLASS:</u></b>	Non-Regulated Material
<b><u>U.N. NUMBER:</u></b>	None
<b><u>MANUFACTURER'S NAME:</u></b>	<b>RNAS Remediation Products</b>
<b><u>ADDRESS:</u></b>	6712 West River Road, Brooklyn Center, MN 55430
<b><u>BUSINESS PHONE:</u></b>	1-763-585-6191
<b><u>EMERGENCY PHONE:</u></b>	1-800-424-9300 (Chemtrec 24 Hr Service – Emergency Only)
<b><u>DATE OF CURRENT REVISION:</u></b>	January 16, 2016
<b><u>DATE OF LAST REVISION:</u></b>	July 16, 2015

**2. HAZARD IDENTIFICATION**

**EMERGENCY OVERVIEW:** This product is a white liquid with a vegetable oil odor.  
**Health Hazards:** Not expected to cause adverse health effects when used as intended. Prolonged or repeated exposure may cause irritation to skin. May cause irritation to eyes upon contact. Inhalation of vapors/sprays or mist may cause respiratory irritation. Ingestion of large amounts of this product may cause gastrointestinal irritation.  
**Flammability Hazards:** This product is a Non-Flammable liquid with a flash point of >540°F (>282°C).  
**Reactivity Hazards:** None known  
**Environmental Hazards:** The Environmental effects of this product have not been investigated. Release of this product is not anticipated to have significant adverse effects in the aquatic environment.

US DOT SYMBOLS

CANADA (WHMIS) SYMBOLS

EUROPEAN and (GHS) Hazard Symbols

None

Non-Regulated Material

Complies with WHMIS 2015

Signal Word: **None**

**GHS LABELING AND CLASSIFICATION:**

This product does not meet the definition of a hazardous substance or preparation as defined by 29CFR 1910.1200 or the European Union Council Directives 67/548/EEC, 1999/45/EC, 1272/2008/EC and subsequent Directives.

**EU HAZARD CLASSIFICATION OF INGREDIENTS PER DIRECTIVE 1272/2008/EC:**

**None of the ingredients are listed in Annex VI**

Substances not listed either individually or in group entries must be self classified.

**Component(s) Contributing to Classification(s):**

All Ingredients

**GHS Hazard Classification(s):**

None known

**Hazard Statement(s):**

None known

**Precautionary Statement(s):**

None known

**HEALTH HAZARDS OR RISKS FROM EXPOSURE:**

**SYMPTOMS OF OVEREXPOSURE BY ROUTE OF EXPOSURE:** The most significant routes of overexposure for this product are by contact with skin or eyes, inhalation of vapors and ingestion. The symptoms of overexposure are described below.

**ACUTE:**

**INHALATION:** Not expected to cause adverse health effects when used as intended. Inhalation of vapors/mist/spray may cause respiratory irritation.

**CONTACT WITH SKIN:** Not expected to cause adverse health effects when used as intended. Prolonged and repeated contact may cause irritation to skin.

**EYE CONTACT:** Direct eye contact can cause irritation with redness, tearing and blurred vision.

**INGESTION:** Under normal conditions of intended use, this material is not expected to be an ingestion hazard. Ingestion of large quantities may cause gastrointestinal irritation, nausea and vomiting.

**CHRONIC:** None known

**TARGET ORGANS:** **Acute:** Skin, Respiratory System and Eyes      **Chronic:** None known

### 3. COMPOSITION AND INFORMATION ON INGREDIENTS

Hazardous Ingredients:	WT%	CAS#	EINECS #	GHS Hazard Classification(s)
Food Grade Soybean Oil	45 - 55%	8001-22-7	232-274-4	None
Water	35 - 45%	7732-18-5	231-791-2	None
Food Grade Sodium-L-lactate	0 - 4%	867-56-1	212-762-3	None
Proprietary Food Grade Surfactant Blend	4 - 6%	Proprietary	Not Listed in ESIS	None
Sodium Bicarbonate	0 - 1%	144-55-8	205-633-8	None
Balance of other ingredients is less than 1% in concentration (or 0.1% for carcinogens, reproductive toxins, or respiratory sensitizers).				

NOTE: This product has been classified in accordance with the hazard criteria of 29CFR1910.1200 and the SDS contains all the information required by the CPR, EU Directives and the Japanese Industrial Standard *JIS Z 7250: 2000*.

### 4. FIRST-AID MEASURES

**EYE CONTACT:** If product enters the eyes, open eyes while under gentle running water for at least 15 minutes. Seek medical attention if irritation persists.

**SKIN CONTACT:** Wash skin thoroughly with soap and water after handling. Seek medical attention if irritation develops and persists.

**INHALATION:** If breathing becomes difficult, remove victim to fresh air. If necessary, use artificial respiration to support vital functions. Seek medical attention.

**INGESTION:** If product is swallowed, call physician or poison control center for most current information. If professional advice is not available, do not induce vomiting. Never induce vomiting or give diluents (milk or water) to someone who is unconscious, having convulsions, or who cannot swallow. Seek medical advice. Take a copy of the label and/or SDS with the victim to the health professional.

**MEDICAL CONDITIONS AGGRAVATED BY EXPOSURE:** None known

**RECOMMENDATIONS TO PHYSICIANS:** Treat symptoms and eliminate overexposure.

### 5. FIRE-FIGHTING MEASURES

**FLASH POINT:** Non-Flammable with flash point >540°F (>282°C)

**AUTOIGNITION TEMPERATURE:** Not Available

**FLAMMABLE LIMITS (in air by volume, %):** Lower NA Upper NA

**FIRE EXTINGUISHING MATERIALS:** Use fire extinguishing methods below:

Water Spray: Yes

Carbon Dioxide: Yes

Foam: Yes

Dry Chemical: Yes

Halon: Yes

Other: Any "C" Class

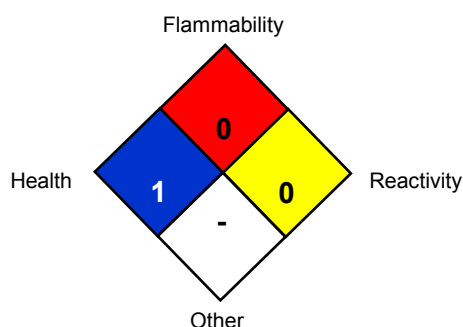
**UNUSUAL FIRE AND EXPLOSION HAZARDS:** Not considered a fire or explosion hazard.

Explosion Sensitivity to Mechanical Impact: No

Explosion Sensitivity to Static Discharge: No

**SPECIAL FIRE-FIGHTING PROCEDURES:** Incipient fire responders should wear eye protection. Structural firefighters must wear Self-Contained Breathing Apparatus and full protective equipment. Isolate materials not yet involved in the fire and protect personnel. Move containers from fire area if this can be done without risk; otherwise, cool with carefully applied water spray. If possible, prevent runoff water from entering storm drains, bodies of water, or other environmentally sensitive areas.

### NFPA RATING SYSTEM



### HMIS RATING SYSTEM

HAZARDOUS MATERIAL IDENTIFICATION SYSTEM			
HEALTH HAZARD (BLUE)	1		
FLAMMABILITY HAZARD (RED)	0		
PHYSICAL HAZARD (YELLOW)	0		
PROTECTIVE EQUIPMENT			
EYES	RESPIRATORY	HANDS	BODY
	See Sect 8		See Sect 8
For Routine Industrial Use and Handling Applications			

Hazard Scale: 0 = Minimal 1 = Slight 2 = Moderate 3 = Serious 4 = Severe \* = Chronic hazard

## 6. ACCIDENTAL RELEASE MEASURES

**SPILL AND LEAK RESPONSE:** Stop the flow of material, if this can be done safely. Contain discharged material. Absorb spill using an absorbent, non-combustible material such as earth, sand, or vermiculite. Place in a proper container for disposal. Dispose of in accordance with U.S. Federal, State, and local hazardous waste disposal regulations and those of Canada and its Provinces, those of Australia, Japan and EU Member States (see Section 13, Disposal Considerations).

## 7. HANDLING and STORAGE

**WORK PRACTICES AND HYGIENE PRACTICES:** As with all chemicals, avoid getting this product ON YOU or IN YOU. Wash thoroughly after handling this product. Use good hygiene practices.

**STORAGE AND HANDLING PRACTICES:** Store in original container. Keep container closed when not in use. Store in a cool, dry location. Avoid freezing or extended storage in high temperatures and away from incompatible materials.

## 8. EXPOSURE CONTROLS - PERSONAL PROTECTION

Chemical Name	CAS#	ACGIH TLV	OSHA TWA
Blend of Food Grade Soybean Oil	8001-22-7	10 mg/m <sup>3</sup> Oil Mists	15 mg/m <sup>3</sup> Oil Mists
Food Grade Sodium-L-lactate	867-56-1	Not Listed	Not Listed
Proprietary Food Grade Surfactant Blend	Proprietary	Not Listed	Not Listed
Sodium Bicarbonate	144-55-8	Not Listed	Not Listed

**VENTILATION AND ENGINEERING CONTROLS:** Use with adequate ventilation to ensure exposure levels are maintained below the limits provided above.

*The following information on appropriate Personal Protective Equipment is provided to assist employers in complying with OSHA regulations found in 29 CFR Subpart I (beginning at 1910.132) or equivalent standard of Canada, or standards of EU member states (including EN 149 for respiratory PPE, and EN 166 for face/eye protection), and those of Japan. Please reference applicable regulations and standards for relevant details.*

**RESPIRATORY PROTECTION:** Not required when using this product. Maintain airborne contaminant concentrations below guidelines listed above, if applicable. If necessary, use only respiratory protection authorized in the U.S. Federal OSHA Respiratory Protection Standard (29 CFR 1910.134), equivalent U.S. State standards, Canadian CSA Standard Z94.4-93, the European Standard EN149, or EU member states.

**EYE PROTECTION:** Safety glasses or goggles are recommended to avoid eye contact. If necessary, refer to U.S. OSHA 29 CFR 1910.133, Canadian Standards, and the European Standard EN166, Australian Standards, or relevant Japanese Standards.

**SKIN PROTECTION:** Wear impervious gloves for prolonged or repeated exposure as appropriate to task when using this product. If necessary, refer to U.S. OSHA 29 CFR 1910.138, the European Standard DIN EN 374, the appropriate Standards of Canada, Australian Standards, or relevant Japanese Standards.

**BODY PROTECTION:** Use body protection appropriate to task being performed. If necessary, refer to appropriate Standards of Canada, or appropriate Standards of the EU, Australian Standards, or relevant Japanese Standards.

### 9. PHYSICAL and CHEMICAL PROPERTIES

**APPEARANCE (Physical State) and COLOR:** This product is a white liquid with a vegetable oil odor.

**ODOR:** Slight

**ODOR THRESHOLD:** Not Applicable

**pH:** 7.0 – 9.0

**MELTING/FREEZING POINT:** Not Available

**BOILING POINT:** Not Available

**FLASH POINT:** >540°F / >282°C ( For pure soybean oil)

**EVAPORATION RATE (n-BuAc=1):** Not Available

**FLAMMABILITY (SOLID, GAS):** Not Applicable

**UPPER/LOWER FLAMMABILITY OR EXPLOSION LIMITS:** Not Available

**VAPOR PRESSURE (mm Hg @ 20°C (68°F)):** Not Available

**VAPOR DENSITY:** Not Available

**SPECIFIC GRAVITY:** 0.98 – 0.99 @ 25°C

**SOLUBILITY IN WATER:** Dispersible in water

**WEIGHT PER GALLON:** 8.15 – 8.25 lb/gal

**PARTITION COEFFICIENT (n-octanol/water):** Not Available

**AUTO-IGNITION TEMPERATURE:** Not Available

**DECOMPOSITION TEMPERATURE:** Not Available

**VISCOSITY:** 24 - 200 cPs @ 20°C

### 10. STABILITY and REACTIVITY

**STABILITY:** Stable under conditions of normal storage and use.

**HAZARDOUS DECOMPOSITION PRODUCTS:** Thermal decomposition products include oxides of carbon.

**MATERIALS WITH WHICH SUBSTANCE IS INCOMPATIBLE:** Strong oxidizing materials.

**POSSIBILITY OF HAZARDOUS REACTIONS:** Will not occur.

**CONDITIONS TO AVOID:** Incompatible materials

### 11. TOXICOLOGICAL INFORMATION

**TOXICITY DATA:**

No LD50 Data available for this product.

**SUSPECTED CANCER AGENT:** Ingredients within this product are not found on the following lists: FEDERAL OSHA Z LIST, NTP, IARC, or CAL/OSHA and therefore are not considered to be, nor suspected to be, cancer-causing agents by these agencies.

**IRRITANCY OF PRODUCT:** No specific data available

**SENSITIZATION TO THE PRODUCT:** This product is not a skin and respiratory sensitizer

**REPRODUCTIVE TOXICITY INFORMATION:** No information concerning the effects of this product and its components on the human reproductive system.

### 12. ECOLOGICAL INFORMATION

ALL WORK PRACTICES MUST BE AIMED AT ELIMINATING ENVIRONMENTAL CONTAMINATION.

**ENVIRONMENTAL STABILITY:** No specific data available on this product.

**CHEMICAL EFFECT ON PLANTS, ANIMALS AND AQUATIC LIFE:** This product is not expected to cause significant harm to plants, animals or aquatic life.

**WATER ENDANGERMENT CLASS:** Water endangering in accordance with EU Guideline 91/155-EWG – Not Determined.

**SPECIFIC AVAILABLE COMPONENT INFORMATION:** No additional data available at this time.

### 13. DISPOSAL CONSIDERATIONS

**PREPARING WASTES FOR DISPOSAL:** Waste disposal must be in accordance with appropriate U.S. Federal, State, and local regulations, those of Canada, Australia, EU Member States and Japan.

**EU Waste Code:** Not determined

### 14. TRANSPORTATION INFORMATION

US DOT, IATA, IMO, ADR:

**U.S. DEPARTMENT OF TRANSPORTATION (DOT) SHIPPING REGULATIONS:** This product is classified (per 49 CFR 172.101) by the U.S. Department of Transportation, as follows.

**PROPER SHIPPING NAME:** Non-Regulated Material

**HAZARD CLASS NUMBER and DESCRIPTION:** None

**UN IDENTIFICATION NUMBER:** None

**PACKING GROUP:** NA

**DOT LABEL(S) REQUIRED:** None

**NORTH AMERICAN EMERGENCY RESPONSE GUIDEBOOK NUMBER:** None

**RQ QUANTITY:** None

**MARINE POLLUTANT:** The components of this product are not designated by the Department of Transportation to be Marine Pollutants (49 CFR 172.101, Appendix B).

INTERNATIONAL AIR TRANSPORT ASSOCIATION SHIPPING INFORMATION (IATA): This product is not considered as dangerous goods.

INTERNATIONAL MARITIME ORGANIZATION SHIPPING INFORMATION (IMO): This product is not considered as dangerous goods.

EUROPEAN AGREEMENT CONCERNING THE INTERNATIONAL CARRIAGE OF DANGEROUS GOODS BY ROAD (ADR): This product is not considered by the United Nations Economic Commission for Europe to be dangerous goods.

### 15. REGULATORY INFORMATION

#### UNITED STATES REGULATIONS:

**U.S. SARA REPORTING REQUIREMENTS:** The components of this product are subject to the reporting requirements of Sections 302, 304, and 313 of Title III of the Superfund Amendments and Reauthorization Act as follows: None

**U.S. SARA THRESHOLD PLANNING QUANTITY:** There are no specific Threshold Planning Quantities for the components of this product. The default Federal SDS submission and inventory requirement filing threshold of 10,000 lbs (4,540 kg) therefore applies, per 40 CFR 370.20.

**U.S. CERCLA REPORTABLE QUANTITY (RQ):** None

**U.S. TSCA INVENTORY STATUS:** The components of this product are listed on the TSCA Inventory or are exempted from listing.

**OTHER U.S. FEDERAL REGULATIONS:** None

**CALIFORNIA SAFE DRINKING WATER AND TOXIC ENFORCEMENT ACT (PROPOSITION 65):** Ingredients within this product are not on the Proposition 65 Lists.

#### CANADIAN REGULATIONS:

**CANADIAN DSL/NDSL INVENTORY STATUS:** The components of this product are on the DSL Inventory, or are exempted from listing.

**OTHER CANADIAN REGULATIONS:** Not applicable.

#### **CANADIAN ENVIRONMENTAL PROTECTION ACT (CEPA) PRIORITIES SUBSTANCES LISTS:**

This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations and the SDS contains all of the information required by those regulations.

**CANADIAN WHMIS CLASSIFICATION and SYMBOLS:** Complies with WHMIS 2015

#### EUROPEAN ECONOMIC COMMUNITY INFORMATION:

This product does not meet the definition of a hazardous substance or preparation as defined by the European Union Council Directives 67/548/EEC, 1999/45/EC, 1272/2008/EC and subsequent Directives.

See Section 2 for Details

**AUSTRALIAN INFORMATION FOR PRODUCT:** The components of this product are listed on the International Chemical Inventory list.

**JAPANESE INFORMATION FOR PRODUCT:**

**JAPANESE MINISTER OF INTERNATIONAL TRADE AND INDUSTRY (MITI) STATUS:** The components of this product are not listed as Class I Specified Chemical Substances, Class II Specified Chemical Substances, or Designated Chemical Substances by the Japanese MITI.

**JAPANESE ENCS INVENTORY:** The components of this product are on the ENCS Inventory as indicated in the section on International Chemical Inventories, below.

**POISONOUS AND DELETERIOUS SUBSTANCES CONTROL LAW:** No component of this product is a listed Specified Poisonous Substance under the Poisonous and Deleterious Substances Control Law.

**INTERNATIONAL CHEMICAL INVENTORIES:**

Listing of the components on individual country Chemical Inventories is as follows:

Asia-Pac: Listed or Exempt from listing

Australian Inventory of Chemical Substances (AICS): Listed or Exempt from listing

Korean Existing Chemicals List (ECL): Listed or Exempt from listing

Japanese Existing National Inventory of Chemical Substances (ENCS): Listed or Exempt from listing

Philippines Inventory of Chemicals and Chemical Substances (PICCS): Listed or Exempt from listing

Swiss Giftlist List of Toxic Substances: Listed or Exempt from listing

U.S. TSCA: Listed

### 16. OTHER INFORMATION

**ABBREVIATIONS AND ACRONYMS:**

EPA: United States Environmental Protection Agency

ARD: European Agreement concerning the International Carriage of Dangerous Goods by Road

IMDG: International Maritime Code for Dangerous Goods

DOT: US Department of Transportation

IATA: International Air Transport Association

ACGIH: American Conference of Governmental Industrial Hygienists

NFPA: National Fire Protection Association (USA)

HMIS: Hazardous Materials Identification System (USA)

**PREPARED BY:** Paul Eigbrett – **(GHS MSDS Compliance PLUS)**

**DATE OF PRINTING:** January 16, 2016

The information contained herein is believed to be accurate but is not warranted to be so. Data and calculations are based on information furnished by the manufacturer of the product and manufacturers of the components of the product. Users are advised to confirm in advance of the need that information is current, applicable and suited to the circumstances of use. RNAS Remediation Products assumes no responsibility for injury to vendee or third party person proximately caused by the material if reasonable safety procedures are not adhered to as stipulated in the data sheet. Furthermore, RNAS Remediation Products assumes no responsibility for injury caused by abnormal use of this material even if reasonable safety procedures are followed.

**END OF SDS SHEET**



# SAFETY DATA SHEET

## 1. CHEMICAL IDENTIFICATION AND COMPANY INFORMATION

**Product Name:** KB-1®  
**Company Info:** SiREM  
 130 Stone Rd. W., Guelph, Ontario, Canada, N1G 3Z2  
 Phone: 519-822-2265  
 Toll Free, North America: 1-866-251-1747  
 Fax: 888-635-3470  
[www.siremlab.com](http://www.siremlab.com)

**Emergency Phone Number:** 519-822-2265 (for 24/7 assistance, contact poison center hotline in your jurisdiction).

**Description:** Microbial inoculum (non-pathogenic, non-hazardous) in growth media consisting of a dilute aqueous solution of mineral salts and nutrients.

**Recommended Use:** Bioremediation of contaminated groundwater.

**Restrictions on Use:** KB-1® product intended for laboratory research and field applications for cleanup of contaminated groundwater. Products are not intended to be used as human or animal therapeutics, cosmetics, agricultural or pesticide products, food additives, or as household chemicals.

## 2. HAZARDS IDENTIFICATION

**GHS Classification:** Not classified as “hazardous” per OSHA 29 CFR 1910.1200, “Hazard Communication”.

**GHS Label elements, including hazard and precautionary statements:** Not Applicable.

<b>HMIS Rating:</b>	<b>Health</b>	<b>Flammability</b>	<b>Physical Hazard</b>	<b>Personal Protection</b>
	1	0	0	B*
<b>NFPA Rating:</b>	<b>Health</b>	<b>Flammability</b>	<b>Reactivity</b>	<b>Special Hazard</b>
	1	0	0	N/A

\* B = Safety Glasses, Gloves.

A review of available data indicates minimal potential for health effects related to normal use of this product. Microbial components are non-pathogenic. The product is not expected to be a health hazard as a result of inhalation of mists, ingestion or skin contact. Eye contact may result in mild irritation/redness. Normal hygiene precautions should be observed, including eye protection, skin protection, and hand washing. The potential exists for individuals with hypersensitivity to biological materials to exhibit allergic sensitivity to biological components of this product (see Section 4, “First Aid Measures”).

### 3. COMPOSITION/INFORMATION ON INGREDIENTS

KB-1® is a microbial culture grown in an aqueous dilute solution of mineral salts and nutrients classified as non-hazardous in accordance with provisions of OSHA 29 CFR 1910.1200, "Hazard Communication."

The microbial composition of KB-1®, as determined by phylogenetic analysis, includes:

- Dehalococcoides sp.*
- Geobacter sp.*
- Methanomethylovorans sp.*

Identification of organisms was obtained by matching 16S rRNA gene sequence of organisms in KB-1® to other known organisms. The characteristics of related organisms can be used to identify potential or likely characteristics of organisms in KB-1®.

### 4. FIRST AID MEASURES

Avoid direct contact with skin and eyes. In any case of any exposure which elicits a response, a physician should be consulted immediately.

Route of Entry	Symptoms	First Aid Procedures
Ingestion	Upset stomach, irritation of digestive tract.	Do not induce vomiting. Drink several cups of water. Seek medical attention.
Skin contact	Skin irritation – reddening, itching or inflammation.	Remove contaminated clothes. Wash skin with plenty of water and soap. Seek medical attention if irritation develops or open wounds are present.
Eye contact	Eye irritation – redness, tearing, blurred vision.	Rinse immediately with plenty of water for 15 – 20 minutes, lifting lower and upper eyelids occasionally (remove contact lenses if easily possible). Seek medical attention if undue irritation or redness occurs.
Inhalation of mist	Respiratory irritation, coughing, breathing difficulty.	Remove victim to fresh air. Administer first aid as appropriate for symptoms. Seek medical attention if serious symptoms occur.

### 5. FIRE FIGHTING MEASURES

- General: This material is non-flammable, consisting primarily of water, and poses no special hazards if involved in a fire situation.
- Suitable extinguishing media: If material is involved in fire situation, use extinguishing media suitable for surrounding fire.
- Special protective equipment and precautions for firefighters: No special equipment necessary; use equipment appropriate for surrounding fire.
- Hazardous combustion products: Not applicable.
- Toxic gases produced: Not applicable.
- Shock/impact sensitivity: Not shock sensitive.

## 6. ACCIDENTAL RELEASE MEASURES

Method of containment and cleanup:

Spilled KB-1<sup>®</sup> should be soaked up with sorbent and saturated with a 10% bleach solution (prepared by making a one in ten dilution of diluted standard bleach [normally sold at a strength of 5.25% sodium hypochlorite] to disinfect affected surfaces. Sorbent should be double bagged and disposed of as indicated in Section 13. After removal of sorbent, area should be washed with 10% bleach solution to disinfect. If liquid from the culture vessel is present on the fittings, non-designated tubing or exterior of the stainless steel pressure vessel liquid should be wiped off and the area washed with 10% bleach solution.

Ventilation:

No special ventilation is required in the event of the spill, as the material consists of water and non-volatile constituents. If the potential for generation of mist exists, open windows and provide adequate ventilation. If high levels of mist are encountered, use personal protective equipment indicated below.

Eye/skin protection:

Have eye-washing facilities readily available where eye contact can occur. Wash skin with soap and water. Use appropriate protective gloves when handling. Showering and changing into street clothes after work is recommended.

Protective equipment for airborne mist:

A NIOSH/MSHA approved dust mask or air purifying respirator with dust/mist filter is recommended where elevated concentrations of airborne mist are expected.

## 7. HANDLING AND STORAGE

Handling and storage precautions:

Use personal protective equipment (eye & skin protection) and hygiene measures (hand washing) to minimize contact with the material.

KB-1<sup>®</sup> is shipped in stainless steel pressure vessels and connected to injection lines and inert gas is used to pressurize the vessel to displace the contents. KB-1<sup>®</sup> should be handled with care to avoid any spillage. Vessels are shipped with 1 to 5 pound per square inch (psi) pressure; valves should not be opened until connections to appropriate lines for subsurface injection are in place.

During storage, avoid exposing stainless steel pressure vessels to undue temperature extremes (i.e., temperatures less than 0°C or greater than 30°C may result in harm to the microbial cultures and damage to the vessels). All valves should be in the closed position when the vessel is not pressurized to prevent the escape of gases and to maintain anaerobic conditions in the vessel.

Incompatibilities:

Avoid exposure of the culture to air as the presence of oxygen will kill the microbes.

## 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

OSHA Permissible Exposure Limits (PELs):	No occupational exposure limits are established for microbial constituents. Mixture is not classified as “hazardous” in accordance with 29 CFR 1910.1200 “Hazard Communication,” exceedance of exposure limits is not anticipated either under normal conditions of use, or as the result of an accidental release.
ACHIH Threshold Limit Values (TLVs):	
Engineering controls:	Generally not required under normal conditions of use. If method of use will result in significant mist generation, use under conditions of adequate ventilation.
Work practices:	Use good hygiene practices, avoid mist generation, and minimize contact with the material as a general precautionary measure.
Personal protective equipment:	Under normal conditions of use, wear safety glasses, protective gloves (latex, vinyl or nitrile) and steel toed footwear as general precautionary measures, particularly when opening pressure vessel valves or when pressurizing vessels to inject contents into the subsurface environment. For laboratory use, also wear lab coat. For higher risk of eye contact, wear safety goggles or face shield, as appropriate. Respiratory protection is not required under normal conditions of use (see Section 6, “Accidental Release Measures.”

## 9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance, physical state:	Aqueous liquid, dark grey, slightly turbid under anaerobic conditions, pink if exposed to air (oxygen).
Odor:	Pungent (“skunky”) odor.
Solubility:	Soluble in water.
pH:	6.5 – 7.5
Melting range	Not determined, approximately equivalent to water.
Vapor density:	Not determined, approximately equivalent to water.
Vapor pressure:	Not determined, approximately equivalent to water.
Relative density:	Not determined, approximately equivalent to water.
Evaporation rate:	Not determined, approximately equivalent to water.
Initial Boiling point, boiling range	Not determined, approximately equivalent to water.
Flammability	Not flammable.
Partition coefficient	Not applicable
Auto-ignition temperature	Not applicable
Decomposition temperature:	No data, bacterial contents will decompose by heating.
Flash point	N/A

**10. STABILITY AND REACTIVITY**

Chemical stability and reactivity:	Stable and non-reactive.
Possibility of hazardous reactions:	Stable. Spontaneous hazardous chemical reactions / decomposition will not occur.
Conditions to avoid:	Maintain under anaerobic conditions to preserve product integrity (exposure to air/oxygen will kill microbes).
Incompatible materials:	Strong oxidizers, acids, water reactive materials.
Hazardous decomposition products:	Not applicable.
Shock sensitivity:	Not shock sensitive; will not decompose and form shock sensitive compounds.

**11. TOXICOLOGICAL INFORMATION**

Potential for pathogenicity: KB-1® has tested **negative** (i.e., the organisms are not present) for a variety of pathogenic organisms indicated below:

<b>Pathogenic Organisms</b>	<b>Disease(s) Caused</b>	<b>Test Results</b>
<i>Salmonella sp.</i>	<i>Typhoid fever, gastroenteritis</i>	Not Detected
<i>Listeria monocytogenes</i>	<i>Listerioses</i>	“
<i>Vibrio sp.,</i>	<i>Cholera, gastroenteritis</i>	“
<i>Campylobacter sp.,</i>	<i>Bacterial diarrhea</i>	“
<i>Clostridia sp.,</i>	<i>Food poisoning, botulism, tetanus, gas gangrene</i>	“
<i>Bacillus anthracis</i>	<i>Anthrax</i>	“
<i>Pseudomonas aeruginosa</i>	<i>Wound infection</i>	“
<i>Yersinia sp.,</i>	<i>Bubonic plague, intestinal infection</i>	“
<i>Yeast and Mold</i>	<i>Candidiasis, yeast infection etc.</i>	“
<i>Fecal coliforms</i>	<i>Indicator organisms for many human pathogens diarrhea, urinary tract infections</i>	“
<i>Enterococci</i>	<i>Various opportunistic infections</i>	“

While there is no evidence that virulent pathogenic organisms are present in KB-1®, there is potential that certain organisms in KB-1® may have the potential to act as opportunistic (mild) pathogens, particularly in individuals with open wounds and/or compromised immune systems. For this reason standard hygienic procedures such as hand washing after use should be observed.

## 12. ECOLOGICAL INFORMATION

This product is not rated as “hazardous” as either an acute or chronic ecological hazard, in accordance with the OSHA Hazard Communication standard, 29 CFR 1910.1200.

## 13. DISPOSAL CONSIDERATION

Material must be disinfected or sterilized prior to disposal. Consult local regulations prior to disposal.

## 14. TRANSPORT INFORMATION

U.S. (D.O.T.):	Proper Shipping Name:	Culture of Micro-organisms
	Hazard Class:	Not applicable
	UN/NA:	Not applicable
	Labels:	Not applicable

Canada (T.D.G.)	Proper Shipping Name:	Culture of Micro-organisms
	Hazard Class:	Not applicable
	UN/NA:	Not applicable
	Labels:	Not applicable

International: IMDG:	Proper Shipping Name:	Culture of Micro-organisms
	Hazard Class:	Not applicable
	UN/NA:	Not applicable
	Labels:	Not applicable

IATA:	Proper Shipping Name:	Culture of Micro-organisms
	Hazard Class:	Not applicable
	UN/NA:	Not applicable
	Labels:	Not applicable

## 15. REGULATORY INFORMATION

TSCA:	No
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### SARA TITLE III

Section 302 (EHS) Ingredients:	No
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Section 313 Ingredients:	No
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Section 304 (EHS/CERCLA) Ingredients:	No
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### SARA TITLE III NOTIFICATION INFORMATION

Acute Health Hazard:	No
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Chronic Health Hazard:	No
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Fire Hazard:	No
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Sudden Release of Pressure Hazard:	No
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## 16. OTHER INFORMATION

SiREM provides the information contained herein for hazard communication and safety planning purposes, based on existing information on each of the product components available in the literature; no independent testing was conducted on the final product. The above information is intended to be used only as a guide to the appropriate precautionary handling of this material by a properly trained person.

### SECTION 1 - PRODUCT AND COMPANY IDENTIFICATION

<b>1.1 PRODUCT NAME:</b>	<b>KB-1<sup>®</sup> Primer</b>
PRODUCT CODE:	N/A
CHEMICAL FAMILY NAME:	Mixture
U.N. NUMBER:	None
U.N. DANGEROUS GOODS CLASS:	Not Regulated
<b>1.2 PRODUCT USE:</b>	For preparation of anaerobic water for use in groundwater remediation. KB-1 <sup>®</sup> products are intended for laboratory research and field applications for groundwater remediation, and are not intended to be used as human or animal therapeutics, cosmetics, agricultural or pesticidal products, food additives, or as household chemicals.
<b>1.3 SUPPLIER/MANUFACTURER'S NAME:</b>	<b>SiREM</b>
ADDRESS:	130 Stone Road, West, Guelph, Ontario Canada N1G 3Z2
<b>1.4 EMERGENCY PHONE:</b>	519-515-0840
BUSINESS PHONE:	519-515-0840 (Product Information)
WEB SITE:	www.siremlab.com
<b>1.5 DATE OF PREPARATION:</b>	December 05, 2018
DATE OF LAST REVISION:	New

### SECTION 2 - HAZARDS IDENTIFICATION

#### 2.1 Classification of the mixture:

This product does meet the definition of a hazardous substance or preparation as defined by 29 CFR 1910. 1200 AND the European Union Council Directives 67/548/EEC, 1999/45/EC, 1272/2008/EC, 2015/830/EU and subsequent Directives.

#### Component(s) Contributing to Classification(s)

L-Cysteine

#### 2.2 GHS Label elements, including precautionary statements:

##### Pictogram(s):

None applicable.

##### Signal Word:

**Warning!**

##### GHS Hazard Classification(s):

Acute Toxicity Category 5 (Oral)

##### Hazard Statement(s):

H303: May be harmful if swallowed

##### Prevention Statement(s):

None Applicable

##### Response Statement(s):

P312: Call a POISON CENTER/doctor if you feel unwell.

##### Storage Statement(s):

None Applicable

##### Disposal Statement(s):

None Applicable.

#### 2.3 Other Hazards:

This mixture does not meet the criteria for PBT or vPvB in accordance with Annex VII.

### SECTION 3 - COMPOSITION and INFORMATION ON INGREDIENTS

**3.1 Substances:** Not applicable

**3.2 Mixtures:**

HAZARDOUS INGREDIENTS:	CAS #	EINECS #	Index #	WT %	GHS CLASSIFICATION
L-Cysteine	52-90-4	200-158-2	Not Listed	1-10%	ACUTE TOX. CAT 4 (ORAL)
Balance of other ingredients are non-hazardous or hazardous below the applicable cut-off level.					

**Additional Information:** See SECTION 16 for full classification phrases.

### SECTION 4 - FIRST-AID MEASURES

**4.1 Description of first aid measures:**

Contaminated individuals of chemical exposure must be taken for medical attention if any adverse effect occurs. Rescuers should be taken for medical attention, if necessary. Take copy of label and SDS to health professional with contaminated individual.

**EYE CONTACT:** If product enters the eyes, open eyes while under gentle running water for at least 15 minutes. Seek medical attention if irritation persists.

**SKIN CONTACT:** Wash skin thoroughly after handling. Seek medical attention if irritation develops and persists. Remove contaminated clothing. Launder before re-use.

**INHALATION:** If breathing becomes difficult, remove victim to fresh air. If necessary, use artificial respiration to support vital functions. Seek medical attention.

**INGESTION:** If product is swallowed, call physician or poison control center for most current information. If professional advice is not available, do not induce vomiting. Never induce vomiting or give diluents (milk or water) to someone who is unconscious, having convulsions, or who cannot swallow. Seek medical advice. Take a copy of the label and/or SDS with the victim to the health professional.

**4.2 Most important symptoms and effects, both acute and delayed:**

May be harmful if swallowed. See section 11 for additional information.

**MEDICAL CONDITIONS AGGRAVATED BY EXPOSURE:** Pre-existing skin problems may be aggravated by prolonged or repeated contact.

**4.3 Indication of immediate medical attention and special treatment needed:**

Treat symptoms and reduce over-exposure.

### SECTION 5 - FIRE-FIGHTING MEASURES

**5.1 Extinguishing media:**

Use media suitable for surrounding area. Carbon dioxide, foam, dry chemical, halon, water spray.

**5.2 Specific hazards arising from the chemical:**

No data available for this product.

<u>Explosion Sensitivity to Mechanical Impact:</u>	Not Sensitive.
<u>Explosion Sensitivity to Static Discharge:</u>	Not Sensitive
<u>Minimum Ignition Energy (M.I.E.)</u>	No Data at this time

**5.3 Special firefighting Procedure:**

Incipient fire responders should wear eye protection. Structural firefighters must wear Self-Contained Breathing Apparatus and full protective equipment. Isolate materials not yet involved in the fire and protect personnel. Move containers from fire area if this can be done without risk; otherwise, cool with carefully applied water spray. If possible, prevent runoff water from entering storm drains, bodies of water, or other environmentally sensitive areas.



### SECTION 6 - ACCIDENTAL RELEASE MEASURES

#### 6.1 Personal precautions, protective equipment and emergency procedures:

No action shall be taken involving any personal risk or without suitable training. Do not touch or walk through spilled material. Avoid breathing dust. Provide adequate ventilation. Use appropriate respirator when ventilation is inadequate and use personal protective clothing as described in Section 8 of this safety data sheet. See section 11 for additional information on health hazards.

#### 6.2 Environmental precautions:

No specific data available for this product.

#### 6.3 Methods and material for containment and cleaning up:

Wear suitable protective clothing. Avoid dust formation. Avoid breathing dust. Carefully sweep up and remove. Place material in a dry container and cover. Remove from the area. Flush spill area with water. Do not let products enter drains. Dispose of in accordance with applicable Federal, State, and local procedures (see Section 13, Disposal Considerations).

### SECTION 7 - HANDLING and STORAGE

#### 7.1 Precautions for safe handling:

As with all chemicals, avoid getting this product ON YOU or IN YOU. Wash thoroughly after handling this product. Do not eat, drink, smoke, or apply cosmetics while handling this product. Use in a well-ventilated location. Remove contaminated clothing immediately

#### 7.2 Conditions for safe storage, including any incompatibilities:

Store in a tightly sealed container in a cool, dry and well-ventilated place. Store away from direct light. Avoid generation of dust. Do not breathe dust. Wash thoroughly after handling. In case of contact with eyes, rinse immediately with plenty of water and seek medical advice. Wear suitable protective clothing. Segregate from strong oxidizing agents, acids, bases.

#### 7.3 Specific end uses:

See section 1.2.

### SECTION 8 - EXPOSURE CONTROLS - PERSONAL PROTECTION

#### 8.1. Control parameters:

**EXPOSURE LIMITS/GUIDELINES:** None established for this product.

#### 8.2 Exposure Controls:

Currently, International exposure limits are not established for the components of this product. Please check with competent authority in each country for the most recent limits in place.

**VENTILATION AND ENGINEERING CONTROLS:** Generally not required under normal conditions of use. If method of use will result in significant dust generation, use in lab hood or under conditions of adequate ventilation.

*The following information on appropriate Personal Protective Equipment is provided to assist employers in complying with OSHA regulations found in 29 CFR Subpart I (beginning at 1910.132) or equivalent standard of Canada, or standards of EU member states (including EN 149 for respiratory PPE, and EN 166 for face/eye protection), and those of Japan. Please reference applicable regulations and standards for relevant details.*

**RESPIRATORY PROTECTION:** Maintain airborne contaminant concentrations below guidelines listed above, if applicable.

If necessary, use only respiratory protection authorized in the U.S. Federal OSHA Respiratory Protection Standard (29 CFR 1910.134), equivalent U.S. State standards, Canadian CSA Standard Z94.4-93, the European Standard EN149, or EU member states.

**EYE PROTECTION:** Safety glasses or chemical goggles as appropriate to prevent eye contact. If necessary, refer to U.S. OSHA 29 CFR 1910.133 or appropriate Canadian Standards.

**HAND PROTECTION:** Use chemical resistant gloves to prevent skin contact. If necessary, refer to U.S. OSHA 29 CFR 1910.138 or appropriate Standards of Canada.

**BODY PROTECTION:** Use body protection appropriate to prevent contact (e.g. lab coat, overalls). If necessary, refer to appropriate Standards of Canada, or appropriate Standards of the EU, Australian Standards, or relevant Japanese Standards.

### SECTION 9 - PHYSICAL and CHEMICAL PROPERTIES

#### 9.1 Information on basic physical and chemical properties:

<b>PHYSICAL STATE:</b>	Solid (Granules)
<b>APPEARANCE:</b>	White to off-white powder or granules
<b>ODOR:</b>	Odorless
<b>ODOR THRESHOLD (PPM):</b>	Not Available
<b>pH:</b>	6-8 (aqueous solution)
<b>MELTING / FREEZING POINT (C°):</b>	Not Available
<b>BOILING POINT (C°):</b>	Not Available
<b>FLASH POINT:</b>	Not Available
<b>EVAPORATION RATE (nBuAc = 1):</b>	Not Available
<b>FLAMMABILITY (solid, gas):</b>	Not Available
<b>FLAMMABLE LIMITS (in air by volume, %):</b>	Not Available
<b>VAPOR PRESSURE (mmHg):</b>	Not Available
<b>VAPOR DENSITY (AIR=1):</b>	Not Available
<b>RELATIVE DENSITY</b>	2.4 to 2.6 g/cm <sup>3</sup> , depending on formulation
<b>SOLUBILITY IN WATER (%)</b>	Soluble
<b>PARTITION COEFFICIENT: N-OCTANOL/WATER:</b>	Not Available
<b>AUTOIGNITION TEMPERATURE:</b>	Not Available
<b>DECOMPOSITION TEMPERATURE:</b>	Not Available
<b>VISCOSITY:</b>	Not Available
<b>EXPLOSIVE PROPERTIES:</b>	Not Available
<b>OXIDISING PROPERTIES:</b>	Not Available
<b>9.2 Other Information:</b>	
<b>PACKING DENSITY:</b>	Not Available
<b>VOC:</b>	Not Available

### SECTION 10 - STABILITY and REACTIVITY

**10.1 Reactivity:** See section 10.5.

**10.2 Chemical Stability:** Product is stable.

**10.3 Possibility of Hazardous Reactions:** Under normal conditions of storage and use, hazardous reactions will not occur.

**10.4 Conditions to avoid:** Contact with incompatibles, exposure to light, and moist air.

**10.5 Incompatible materials:** Strong oxidizing agents, bases.

**10.6 Hazardous Decomposition Products:** Carbon monoxide, carbon dioxide, nitrogen oxides, sulfur oxides, potassium oxides.

### SECTION 11 - TOXICOLOGICAL INFORMATION

#### 11.1 Information on Toxicological Effects:

##### TOXICITY DATA:

L-Cysteine CAS# 52-90-4

Oral LD50 1890 mg/kg Rat

Oral LD50 660 mg/kg Mouse

### 11.1.2 Mixtures:

Acute toxicity	Acute Toxicity Category 5 (Oral)
Skin corrosion / irritation	Based on available data, the classification criteria are not met
Serious eye damage / irritation	Based on available data, the classification criteria are not met
Respiratory or skin sensitization	Based on available data, the classification criteria are not met
Germ cell mutagenicity	Based on available data, the classification criteria are not met
Carcinogenicity	Based on available data, the classification criteria are not met
Reproductive toxicity	Based on available data, the classification criteria are not met
STOT-single exposure	Based on available data, the classification criteria are not met
STOT-repeated exposure	Based on available data, the classification criteria are not met
Aspiration hazard	Based on available data, the classification criteria are not met

### Other Information

#### POTENTIAL HEALTH HAZARDS OR RISKS FROM EXPOSURE:

##### ACUTE:

**EYE CONTACT:** Eye exposure may produce irritation.

**SKIN CONTACT:** Prolonged or repeated skin exposure may cause irritation.

**INHALATION HAZARDS:** Inhalation of dusts may cause irritation.

**INGESTION HAZARDS:** May be harmful if swallowed. May cause gastrointestinal tract irritation.

**CHRONIC:** None Known

**TARGET ORGANS:** ACUTE: Organs CHRONIC: None Known

**CARCINOGENICITY:** None of the ingredients are found on the following lists: FEDERAL OSHA Z LIST, NTP, CAL/OSHA, IARC and therefore are not considered to be, nor suspected to be a cancer-causing agent by these agencies.

**IRRITANCY OF PRODUCT:** Contact with this product can be irritating to skin and eyes.

**SENSITIZATION OF PRODUCT:** This product is not considered a skin sensitizer.

**REPRODUCTIVE TOXICITY INFORMATION:** No information concerning the effects of this product and its components on the human reproductive system.

**MUTAGENICITY INFORMATION:** This product does not contain a component that is suspected to be a mutagenicity hazard.

**SPECIFIC TARGET ORGAN TOXICITY – SINGLE EXPOSURE:** Data not sufficient for classification.

**SPECIFIC TARGET ORGAN TOXICITY – REPEATED EXPOSURE:** Data not sufficient for classification.

**ASPIRATION HAZARD:** Not applicable

## SECTION 12 - ECOLOGICAL INFORMATION

### ALL WORK PRACTICES MUST BE AIMED AT ELIMINATING ENVIRONMENTAL CONTAMINATION.

#### 12.1 Toxicity:

No specific data available on this product.

#### 12.2 Persistence and Degradability:

No specific data available on this product.

#### 12.3 Bioaccumulative Potential:

No specific data available on this product.

#### 12.4 Mobility in Soil:

No specific data available on this product.

#### 12.5 Results of PBT and vPvB Assessment:

No specific data available on this product.

#### 12.6 Other Adverse Effects:

No specific data available on this product.

#### 12.7 Water Endangerment Class:

Not believed to be water endangering in accordance with EU Guideline 91/155-EWG. At present there are no ecotoxicological assessments for this product.

### SECTION 13 - DISPOSAL CONSIDERATIONS

#### 13.1 Waste Treatment Methods:

Waste disposal must be in accordance with appropriate Federal, State, and local regulations, those of Canada, Australia, EU Member States and Japan.

### SECTION 14 - TRANSPORTATION INFORMATION

#### 14.1 Transport Information:

##### US DOT; IATA; IMO; ADR:

**THIS PRODUCT IS NOT CLASSIFIED AS DANGEROUS GOODS AS DEFINED BY 49 CFR 172.101 BY THE U.S. DEPARTMENT OF TRANSPORTATION.**

**PROPER SHIPPING NAME:** None

**HAZARD CLASS NUMBER and DESCRIPTION:** Not Regulated

**UN IDENTIFICATION NUMBER:** None

**PACKING GROUP:** None

**DOT LABEL(S) REQUIRED:** None

**NORTH AMERICAN EMERGENCY RESPONSE GUIDEBOOK NUMBER (2016):** None

**MARINE POLLUTANT:** This product does not contain ingredients that are classified by the DOT as a Marine Pollutant (as defined by 49 CFR 172.101, Appendix B)

##### TRANSPORT CANADA, TRANSPORTATION OF DANGEROUS GOODS REGULATIONS:

This product is not classified as Dangerous Goods, per regulations of Transport Canada

##### INTERNATIONAL AIR TRANSPORT ASSOCIATION (IATA):

This product is not classified as Dangerous Goods, by rules of IATA:

##### INTERNATIONAL MARITIME ORGANIZATION SHIPPING and MARITIME DANGEROUS GOODS CODE SHIPPING INFORMATION (IMO / IMDG):

This product is not classified as Dangerous Goods.

##### EUROPEAN AGREEMENT CONCERNING THE INTERNATIONAL CARRIAGE OF DANGEROUS GOODS BY ROAD (ADR):

This product is not classified by the United Nations Economic Commission for Europe to be dangerous goods.

### SECTION 15 - REGULATORY INFORMATION

#### 15.1 Safety, Health and Environmental Regulations/Legislation Specific for the Substance or Mixture:

##### UNITED STATES REGULATIONS

**SARA REPORTING REQUIREMENTS:** This product is not subject to the reporting requirements of Sections 302, 304 and 313 of Title III of the Superfund Amendments and Reauthorization Act., as follows: None

**TSCA:** All components in this product are listed on the US Toxic Substances Control Act (TSCA) inventory of chemicals.

##### SARA 311/312:

Acute Health: No                      Chronic Health: No                      Fire: No                      Reactivity: No

**U.S. SARA THRESHOLD PLANNING QUANTITY:** There are no specific Threshold Planning Quantities for this product. The default Federal SDS submission and inventory requirement filing threshold of 10,000 lb (4,540 kg) may apply, per 40 CFR 370.20.

**U.S. CERCLA REPORTABLE QUANTITY (RQ):** None

**CALIFORNIA SAFE DRINKING WATER AND TOXIC ENFORCEMENT ACT (PROPOSITION 65):** None of the ingredients are on the California Proposition 65 lists.

##### CANADIAN REGULATIONS:

**CANADIAN DSL/NDSL INVENTORY STATUS:** All of the components of this product are on the DSL Inventory

**CANADIAN ENVIRONMENTAL PROTECTION ACT (CEPA) PRIORITIES SUBSTANCES LISTS:** No component of this product is on the CEPA First Priorities Substance Lists.

**CANADIAN WHMIS CLASSIFICATION and SYMBOLS:** This product is categorized as per WHMIS 2015 Hazardous Product Regulations.

**EUROPEAN ECONOMIC COMMUNITY INFORMATION:**

**EU LABELING AND CLASSIFICATION:**

Classification of the mixture according to Regulation (EC) No1272/2008. See section 2 for details.

**AUSTRALIAN INFORMATION FOR PRODUCT:**

**AUSTRALIAN INVENTORY OF CHEMICAL SUBSTANCES (AICS) STATUS:** Components of this product are listed on the AICS.

**STANDARD FOR THE UNIFORM SCHEDULING OF DRUGS AND POISONS:** Not applicable.

**JAPANESE INFORMATION FOR PRODUCT:**

**JAPAN INDUSTRIAL SAFETY AND HEALTH LAW:** This product has been classified per the Japan Industrial Safety and Health Law. See Section 2 for the GHS Classification.

**KOREA ACT ON REGISTRATION AND EVALUATION OF CHEMICAL SUBSTANCES (K-REACH):** This product has been classified per K-REACH. See Section 2 for the GHS Classification.

**INTERNATIONAL CHEMICAL INVENTORIES:**

Listing of the components on individual country Chemical Inventories is as follows:

Asia-Pac:	Listed
Australian Inventory of Chemical Substances (AICS):	Listed
Korean Existing Chemicals List (ECL):	Listed
Japanese Existing National Inventory of Chemical Substances (ENCS):	Listed
Philippines Inventory of Chemicals and Chemical Substances (PICCS):	Listed
Swiss Giftliste List of Toxic Substances:	Listed
U.S. TSCA:	Listed

**15.2 Chemical Safety Assessment:**

A chemical safety assessment has not been performed on this product.

### SECTION 16 - OTHER INFORMATION

**HMIS Rating (Scale 0-4)**

Health hazard: 1  
Flammability: 0  
Physical Hazard: 0

**NFPA Rating (Scale 0-4)**

Health hazard: 1  
Flammability: 0  
Physical Hazard: 0

**Caution: HMIS and NFPA ratings are based on a 0-4 rating scale**

0= Minimal Hazard

1= Slight

2= Moderate

3= High

4= Extreme

**Abbreviations and acronyms**

<b>ACGIH</b>	American Conference of Governmental Industrial Hygienists
<b>CFR</b>	Code of Federal Regulations
<b>DOT</b>	Federal Department of Transportation
<b>GHS</b>	The Globally Harmonized System of Classification and Labelling of Chemicals
<b>HMIS</b>	Hazardous Material Identification System
<b>HCS</b>	Hazard Communication Standard
<b>IARC</b>	International Agency for Research on Cancer
<b>IATA</b>	The International Air Transport Association
<b>ICAO</b>	The International Civil Aviation Organization
<b>IMDG</b>	International Maritime Dangerous Goods
<b>IMO</b>	International Maritime Organization
<b>LD50/LC50</b>	Lethal Concentration/Dose, 50 percent
<b>NFPA</b>	National Fire Protection Association
<b>NIOSH</b>	National Institute for Occupational Safety and Health

<b>NTP</b>	<i>National Toxicology Program</i>
<b>OSHA</b>	<i>Occupational Safety and Health</i>
<b>PEL</b>	<i>OSHA Permissible Exposure Limit</i>
<b>SARA</b>	<i>Superfund Amendments and Reauthorization Act</i>
<b>TLV</b>	<i>ACGIH Threshold Limit Value</i>
<b>TWA</b>	<i>Time-Weighted Average</i>
<b>Acute Tox</b>	<i>Acute Toxicity</i>
<b>Skin Corr</b>	<i>Skin Corrosion</i>

**PREPARED BY:** Chris Eigbrett

MSDS to GHS Compliance

**History Log:**  
December 05, 2018 - Document creation

**End of SDS Sheet**

### **3 - WPDES NOTICE OF INTENT**

**INFILTRATION/INJECTION REQUEST**

Enhanced In-Situ Bioremediation (EISB)  
Milwaukee Die Casting Company Site  
4132 North Holton Street, Milwaukee, Wisconsin  
WDNR BRRTS # 02-41-000023  
WDNR FID # 241228240

**ATTACHMENTS**

- 3-1 Notice of Intent (NOI), Contaminated Groundwater from Remedial Action Operations,  
WPDES Permit No. WI-0046566-07-0
- 3-2 Additive Review Worksheet

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# **ATTACHMENT 3-1**

**WDNR Notice of Intent (NOI), Contaminated  
Groundwater from Remedial Action Operations,  
WPDES Permit No. WI-0046566-07-0**

**Infiltration and Injection Request**  
Milwaukee Die Casting Company Site  
4132 North Holton Street  
Milwaukee, Wisconsin  
WDNR BRRTS # 02-41-000023  
WDNR FID # 241228240



**Notice:** Pursuant to chs. NR 200 and 205, Wis. Adm. Code, this notice of intent (NOI) is required to request coverage under the Wisconsin Pollutant Discharge Elimination System (WPDES) Permit No. WI-0046566-07-0 for discharges of contaminated groundwater to waters of the state of Wisconsin. Failure to complete this form in its entirety may result in a returned NOI or a denied NOI. Personal information collected will be used for administrative purposes and may be provided to requestors to the extent required by Wisconsin Open Records law [ss. 19.31-19.39, Wis. Stats.].

<b>SECTION I: FACILITY/PROJECT LOCATION INFORMATION</b>			
Facility/Project Name <b>Milwaukee Die Casting Company Site</b>		Facility Mailing Address (i.e. PO Box, Street, or Route) --	
Facility/Project Physical Address (i.e. Street or Route) <b>4132 North Holton Street</b>		City, State, Zip Code <b>Milwaukee, WI 53212</b>	
County <b>Milwaukee</b>	Facility Phone No. --	Facility Fax No. --	Facility Email Address --
<b>SECTION II: FACILITY CONTACT INFORMATION – NA (vacant property)</b>			
Facility Operator/Plant Manager --		Title --	
Company --		Contact Mailing Address (i.e., PO Box, Street, or Route) --	
City, State, Zip Code --		Contact Phone No. --	Alternative Phone No. --
Contact Fax No. --		Contact Email Address --	
Discharge Monitoring Contact Name <b>Greg Johnson</b>		Title <b>Consultant Project Manager</b>	
Company <b>Geosyntec Consultants</b>		Contact Mailing Address (i.e., PO Box, Street, or Route) <b>10600 N. Port Washington Road, Suite 100</b>	
City, State, Zip Code <b>Mequon, WI 53092</b>		Contact Phone No. <b>262.834.0226</b>	Alternative Phone No. <b>262.352.0182</b>
Contact Fax No. --		Contact Email Address <b>gjohnson@geosyntec.com</b>	
Authorized Representative Name <b>Mary Jo Anzia</b>		Title <b>Pharmacia Project Manager</b>	
Company <b>BSI</b>		AR Mailing Address (i.e., PO Box, Street, or Route) <b>216 N. Green Bay Rd., Suite 201</b>	
City, State, Zip Code <b>Thiensville, WI 53092</b>		AR Phone No. <b>262.292.6080</b>	Alternative Phone No. <b>414.553.6887</b>
AR Fax No. --		AR Email Address <b>MaryJo.Anzia@bsigroup.com</b>	

<b>SECTION III: FACILITY OWNER MAILING ADDRESS</b> (if different from Authorized Representative)					
<b>Facility Owner Name</b> <b>Redevelopment Authority of the City of Milwaukee (RACM)</b>			<b>Title</b> <b>David P. Misky, Assistant Executive Director</b>		
Parent Company --			Owner Mailing Address <b>809 N. Broadway</b>		
City, State, Zip Code <b>Milwaukee, WI 53202</b>			Owner Phone No. <b>(414) 286-5730</b>	Alternative Phone No. --	
Contact Fax No. --			Contact Email Address <b>dmisky@milwaukee.gov</b>		
<b>SECTION IV: DISCHARGE CHARACTERIZATION</b>					
<b>Type of Wastewater</b> (check all that apply):	<b>Discharge Frequency</b> (e.g. Annual, Monthly, Daily)	<b>Average Daily Flow</b> (gallons of water discharged per day)	<b>Type of Wastewater</b> (check all that apply):	<b>Discharge Frequency</b> (e.g. Annual, Monthly, Daily)	<b>Average Daily Flow</b> (gallons of water discharged per day)
<input type="checkbox"/> Treated wastewater from groundwater remediation project	--	--	<input type="checkbox"/> Cleaning or decontamination wastewaters from the cleaning of treatment equipment for a remediation project	--	--
<input checked="" type="checkbox"/> Infiltration or injection of a substance or remedial material for remediation of soil or groundwater	<b>single direct injection event (approximately 17 days)</b>	<b>approximately 38,000-gal total for 46 injection points (approximately 825 gallons per injection point)</b>	<input type="checkbox"/> Other (describe type)	--	--
<input type="checkbox"/> Treated wastewater from dewatering of construction trenches or pits	--	--	<input type="checkbox"/> Other (describe type)	--	--
<input type="checkbox"/> Landspreading or spray irrigation of agricultural chemical contaminated wastewater	--	--	<input type="checkbox"/> Other (describe type)	--	--

**SECTION V: ELIGIBILITY CHECKLIST**

1. Is the wastewater discharged from and/or to properties within tribal lands (i.e. land owned by or held in trust for the tribes and land within recognized reservation boundaries)?

Yes. **Your discharge is not eligible for this General Permit.** *If all discharges from your facility go to or come from properties in tribal lands, you do not require regulation under a WPDES discharge permit. Therefore, skip the rest of the NOI and sign the last page. We will remove you from our tracking system. The Tribe or United States Environmental Protection Agency (EPA) regulates discharges within tribal lands.*

No. **Proceed to question 2.**

2. Is the wastewater discharged to a Publicly Owned Treatment Works (i.e. sanitary sewer)? A septic system is not considered a sanitary sewer.

Yes. **Your discharge is not eligible for this General Permit.** *If all discharges from your facility go to a sanitary sewer, you do not require regulation under a WPDES discharge permit. Therefore, skip the rest of the NOI and sign the last page. We will remove you from our tracking system. If at some point in the future operations at your facility result in a discharge, you will need to inform the Department. If only some or no discharges from your facility go to the sanitary sewer, please proceed to question 3.*

No. **Proceed to question 3.**

3. Are any of the following wastewaters discharged or mixed with the above wastewaters to surface water or groundwater: Contact or noncontact cooling water, water from boiler cleaning operations, air compressor condensate contaminated with oil and grease, softener regeneration backwash, municipal wastewater, domestic wastewater, or process wastewaters from the production of any material or product, or other wastewater not otherwise cover by this general permit?

Yes. **Your discharge is not eligible for this General Permit.** *Skip the rest of the NOI and complete the certification on last page. Contact the Department to obtain application for an individual WPDES discharge permit.*

No. **Proceed to question 4.**

4. What is the receiving water for your discharge? If your facility has more than one outfall, indicate in the space provided which outfalls go to groundwater and which go to surface waters. *(check all that apply)*

**Groundwater Discharge** *(any wastewater that is allowed to infiltrate or seep into the soil from a permeable surface including but not limited to any drain field, agricultural field, ditch, swale, depression, trench or pit, adsorption pond, infiltration pond, rain garden, prairie, or vegetative area that may impact groundwater quality).* **If you will only be discharging to groundwater, please proceed to question 5.**

**Outfall #(s):**

**Wetland Discharge** *(any discernible, confined and discrete conveyance system including but not limited to any pipe, ditch, channel, tunnel, conduit, swale, or storm sewer that will carry wastewater to a wetland. Wetlands mean an area where water is at, near or above the land surface long enough to be capable of supporting aquatic or hydrophytic vegetation and which has soils indicative of wet conditions).* **If you will only be discharging to wetlands, please proceed to question 5.**

**Outfall #(s):**

**Note:** *The Department will need to determine if your discharge would cause significant adverse impacts to wetlands*

**Surface Water Discharge** *(any discernible, confined and discrete conveyance system including but not limited to any pipe, ditch, channel, tunnel, conduit, swale, or storm sewer that will carry wastewater to a creek, stream,*

pond, marsh, bay, reservoir, river, lake, or other surface water within the state of Wisconsin). **Proceed to question 4A.**

**Outfall #**(s):

A. What is the name(s) of the surface water your discharge enters?

**Proceed to question 4B.**

B. What is the Water Body Identification Code (WBIC) of the surface water your discharge enters?

**Proceed to question 4C.**

**Note:** The WBIC for a specific surface water can be found at: <http://dnr.wi.gov/water/waterSearch.aspx>.

C. Is the discharge directly to a surface water classified as an outstanding or exceptional resource waters as defined in ch. NR 102, Wis. Adm. Code.?

Yes. **Your discharge is not eligible for this General Permit.** *Skip the rest of the NOI and complete the certification on last page. Contact the Department to obtain application for an individual WPDES discharge permit.*

No. **Proceed to question 4D.**

D. Is the discharge directly to a surface water classified as a public water supply (i.e. Lake Superior, Lake Michigan and Lake Winnebago) in ch. NR 104, Wis. Adm. Code?

Yes. **Your discharge is not eligible for this General Permit.** *Skip the rest of the NOI and complete the certification on last page. Contact the Department to obtain application for an individual WPDES discharge permit.*

No. **Proceed to question 5.**

5. Does the discharge contain water treatment additives (i.e. biocides such as microbicides, fungicides, molluscicides, chlorine, etc.) or water quality conditioners (i.e. scale and corrosion inhibitors, pH adjustment chemicals, oxygen scavengers, conditioning agents, water softening compounds, etc.) that may enter surface water or groundwater without receiving wastewater treatment or that are used in a treatment process but are not expected to be removed by wastewater treatment?

Yes. **For each additive used, please fill out and attach an Additive Review Worksheet.** *Additive Review Worksheets must be completed to receive coverage under this general permit. The Additive Review Worksheet is not required for additives with active ingredients consisting of chlorine, hypochlorite, sulfuric acid, hydrochloric acid or sodium hydroxide. Also, chemicals used in an industrial process generating wastewater that eventually receives treatment or chemicals added as part of wastewater treatment process (such as ferric chloride, alum or pickle liquor) are not considered water treatment additives and need not require an additive review. **Proceed to question 6.***

No. **Proceed to question 6.**

6. Will chlorine-based compounds be used to control the growth of micro-organisms in the treatment system or used to decontaminate the treatment system after completion of the remediation project?

Yes. **Proceed to question 6A.**

No. **Proceed to question 7.**

A. Will chemicals be used to dechlorinate the wastewater prior to discharge to surface water? - **NA**

Yes. **The wastewater will be dechlorinated with chemicals. Proceed to question 7.**

No. **The wastewater will not be dechlorinated with chemicals. Proceed to question 7.**

7. Is a discharge management plan attached to this NOI that includes all the information necessary from Section 3 of the permit?

- Yes. **Proceed to question 8.**  
 No. **This form will be considered incomplete and returned to you.**

8. Has the groundwater at the site been analyzed for contaminants and are the results attach to the discharge management plan?

- Yes. **Proceed to question 9.**  
 No. **This form will be considered incomplete and returned to you.**

9. If a treatment facility is required for the treatment of contaminated groundwater, have the plans and specifications been submitted to or approved by the department under s. 281.41, Wis. Stats., and ch. NR 108, Wis. Adm. Code?

- Yes. **Proceed to Section VI. NOTE: A treatment facility is not required.**  
 No. **Please contact wastewater plan review staff to find out how to get the plans approved. Proceed to Section VI.**

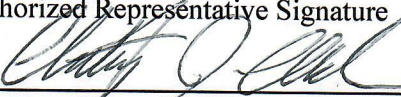
**Note:** Department wastewater plan review staff can be found here:  
<http://dnr.wi.gov/topic/wastewater/planreviewers.html>.

Additionally, department plan submittal requirements can be found here:  
<http://dnr.wi.gov/topic/wastewater/AdequateSubmittal.html>.

**SECTION VI: CERTIFICATION**

*This form must be signed by a responsible executive or municipal officer, manager, partner or proprietor as specified in s. 283.37(3), Wis. Stats., or a duly authorized representative of the officer, manager, partner or proprietor that has been delegated signature authority pursuant to s. NR 205.07(1)(g)2., Wis. Adm. Code. To delegate signatory authority to a duly authorized representative, please submit a Delegation of Signature Authority (DSA) form (Form 3400-220).*

I certify under penalty of law that these documents and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Authorized Representative Name <b>Christopher J. Clark, Pharmacia LLC</b>	Title <b>Vice President</b>
Authorized Representative Signature 	Date Signed 8/11/2023
Submitter Name (If different from Authorized Representative) <b>Greg Johnson</b>	Title <b>Consultant Project Manager</b>
Submitter Signature 	Date Signed 8/11/2023

Please print and sign this certification page. Scan and email the completed form, certification page and any other supporting information to the department regional general permit reviewer at least thirty (30) business days before the expected start date of discharge. A listing of the general permit reviewers for each region with mailing addresses and phone numbers can be found at <http://dnr.wi.gov/topic/wastewater/GeneralPermits.html>. Please scroll to the "How to Apply" section and click the department region that the discharge is located in.

# **ATTACHMENT 3-2**

## **Additive Review Worksheet (EVO)**

**Infiltration and Injection Request**  
Milwaukee Die Casting Company Site  
4132 North Holton Street  
Milwaukee, Wisconsin  
WDNR BRRTS # 02-41-000023  
WDNR FID # 241228240

# Additive Review Worksheet

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This worksheet summarizes the information to be submitted to the WDNR for review of additives. This information is required because additives are approved on a case-by-case basis.

The fields highlighted in orange are required for all additive reviews and are NOT typically found on a safety data sheet (SDS).

The fields highlighted in blue are required for all additive reviews and are typically found on a SDS.

Parts D and E need to be completed **for each species** (e.g. Daphnia -water flea); Pimephales (fathead minnow), etc) for which a toxicity test is conducted.

The fields highlighted in green are NOT typically found on a SDS and are required for toxicity tests conducted when “Other” is selected for Test Method in Part D-1.

If all of the needed information is not provided on the SDS, It is recommended that you contact the chemical distributor and/or manufacturer to obtain the required information. You do not need to conduct the toxicity test if the toxicity information is available on SDS or from the supplier/manufacturer. If the required toxicity data is not provided to the Department, the additive product may not be approved for use.

Note: Toxicity test results must address the **commercial product formulation**. The commercial product formulation is all active ingredients and any and all carriers, buffering agents, binding agents, and additional materials – the entire product as used. Information related to active ingredient alone is not sufficient.

For more information on the additive review process, see the [“Water Quality Review Procedures for Additives”](#) guidance document.

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**A. General Production Information**

Date of Request:   
 Permittee Facility Name:   
 Product Trade Name: Newman Zone EVO  
 Product Manufacturer: RNAS Remediation Products  
 Active Ingredients:

Ingredient Name*	CAS Number**	%wt or % vol
Food Grade Soybean Oil	8001-22-7	45 - 55%
Water	7732-18-5	35 - 45%
Food Grade Sodium-L-lactate	867-56-1	0 - 4%
Food Grade Surfactant Blend	Proprietary	4 - 6%
Sodium Bicarbonate	144-55-8	0 - 1%
* Must be provided unless noted to be proprietary information		
** If available		

Is this product replacing another additive (if yes, include product name)?  Yes  No  
 Current Product Name:

**B. Dosage or Application Information**

Purpose of additive: In-situ treatment of TCE/PCE impacted groundwater  
 Proposed dosage rate: 4,800 lbs/day  
 Estimated maximum discharge concentration: mg/L  
 mg/L

**C. Toxicity Test Results**

Test Species	Toxicity Value Type (e.g., LC50, EC50, NOAEL)	Toxicity Value	Toxicity Value Units (e.g., mg/L, µg/L, ppm)
No LD50 Data available for this product.			



**Print one copy of this page for each species that has been tested.**

**D. Toxicity Test Parameters**

1. Parameters needed for **ALL** reviews

Test species:	<input type="checkbox"/> Ceriodaphnia species (specify: _____ ) <input type="checkbox"/> Daphnia species (specify: _____ ) <input type="checkbox"/> Pimephales promelas (fathead minnow) <input type="checkbox"/> Lepomis macrochirus (bluegill) <input type="checkbox"/> Oncorhynchus mykiss (rainbow trout) <input type="checkbox"/> Salvelinus fontinalis (brook trout)								
Test method:	<input type="checkbox"/> WI certified WET testing lab/method <input type="checkbox"/> EPA method (select from those listed below) <table border="0" style="margin-left: 20px;"> <tr> <td><input type="checkbox"/> Acute-2002.0</td> <td><input type="checkbox"/> Chronic-1000.0</td> </tr> <tr> <td><input type="checkbox"/> Acute-2021.0</td> <td><input type="checkbox"/> Chronic-1001.0</td> </tr> <tr> <td><input type="checkbox"/> Acute-2000.0</td> <td><input type="checkbox"/> Chronic-1002.0</td> </tr> <tr> <td><input type="checkbox"/> Acute-2019.0</td> <td><input type="checkbox"/> Chronic-1003.0</td> </tr> </table> <input type="checkbox"/> Other (additional information needed; see part D2)	<input type="checkbox"/> Acute-2002.0	<input type="checkbox"/> Chronic-1000.0	<input type="checkbox"/> Acute-2021.0	<input type="checkbox"/> Chronic-1001.0	<input type="checkbox"/> Acute-2000.0	<input type="checkbox"/> Chronic-1002.0	<input type="checkbox"/> Acute-2019.0	<input type="checkbox"/> Chronic-1003.0
<input type="checkbox"/> Acute-2002.0	<input type="checkbox"/> Chronic-1000.0								
<input type="checkbox"/> Acute-2021.0	<input type="checkbox"/> Chronic-1001.0								
<input type="checkbox"/> Acute-2000.0	<input type="checkbox"/> Chronic-1002.0								
<input type="checkbox"/> Acute-2019.0	<input type="checkbox"/> Chronic-1003.0								
Test type:	<input type="checkbox"/> Static non-renewal <input type="checkbox"/> Static-renewal <input type="checkbox"/> Flow-through								
Control response:	<input type="checkbox"/> ≥ 90% survival <input type="checkbox"/> Other (Note: if this is selected, this data cannot be used)								

2. Parameters needed when using “**other**” test methods

Dilution water:	<input type="checkbox"/> Moderately hard synthetic water <input type="checkbox"/> Synthetic water <input type="checkbox"/> Receiving water <input type="checkbox"/> Ground water <input type="checkbox"/> Other (Specify: _____ )
Number of test concentrations:	
Dilution series:	
Water chemistry analyses (check all that apply):	<input type="checkbox"/> pH <input type="checkbox"/> Conductivity <input type="checkbox"/> Hardness <input type="checkbox"/> Alkalinity
Temperature:	<input type="checkbox"/> 12±1 °C <input type="checkbox"/> 20±1 °C <input type="checkbox"/> 25±1 °C <input type="checkbox"/> Other (Specify: _____ )
Number of organisms per test chamber:	
Number of replicate chambers per concentration:	
Number of organisms per concentration:	
Method for calculating the response endpoint:	