REI
CIVIL & ENVIRONMENTAL
ENGINEERING, SURVEYING

April 4, 2023

Wisconsin Department of Natural Resources
Attn: Ms. Josie Schultz
2984 Shawano Ave.
Green Bay, WI 54313

Subject:

Former V&L Stripping – Remedial Action Plan
864 Mather Street
Green Bay, WI 54303
BRRTS #02-05-216722

Dear Josie:

As we discussed, this letter will summarize the proposed source removal at the V&L Stripping site. The site location is shown on Figure 1.

Confirmation Soil Sampling

A Soil Vapor Extraction (SVE) system operated at the site intermittently from September 2007 through November 2009. Based on emissions, a significant volume of Chlorinated Volatile Organic Compounds (CVOCs) were removed from the site. The February 18, 2010 Status Report, submitted by Shaw Environmental, Inc. recommended system shut-down based on reconstruction of Mather Street, and cost effectiveness of the system operation. The report did not include flow rate data, or mass removal calculations. Therefore, the volume of CVOCs removed by the SVE system cannot be estimated.

On June 19 & 20, 2019, REI oversaw the injection of 1,648 pounds of CAP 18 in both the vadose zone and zone of saturation. The CAP 18 product is designed as a food source for microbes which digest the fatty acids and produce hydrogen. The hydrogen is then intended to enhance reductive dichlorination. The injection was summarized in the March 18, 2020 Remediation Documentation and Update Report, submitted by REI.

On October 26, 2021, REI conducted confirmation soil sampling via geoprobe to determine the effectiveness of previous remedial actions. The results of confirmation sampling indicated that overall, concentrations of Tetrachloroethylene have been reduced significantly since the investigation began in 1998. However, sample CGP1, 4-6 contained 198,000 ug/kg PCE, indicating a hotspot of contamination remains. Confirmation soil sampling results are summarized on Table 1b. Confirmation geoprobe locations and the area of residual soil contamination is shown on Figure 2.

Proposed Source Removal

The soil associated with CGP1, 4-6 currently exceeds TCLP. As such, it requires treatment before Waste Management will accept it. REI is recommending addition of PersulfOx, a Rgenesis product, to the excavated soil. Soil will be placed in lined roll-off boxes, mixed with PersulfOx, and allowed to react for a period of approximately three (3) weeks. Design calculations by Regenesis indicate that the final concentrations will be less than 2,000 ug/kg and will pass TCLP analysis. The design summary is included in Attachment A.

The proposed area of excavation is shown on Figure 2. Excavation will proceed to the water table at approximately seven (7) feet below land surface (bls) and expand laterally based on field screening. The estimated volume of soil to be excavated for treatment is twenty (20) cubic yards. Confirmation soil samples will be collected from the sidewalls of the excavation and analyzed for VOCs.

Following the required treatment time, follow-up samples will be collected from the soils in the roll-off boxes and profiled for disposal. A Construction Documentation Report will be submitted thereafter.

Conclusion and Recommendations

The excavation is scheduled to occur within the next several weeks. Since our December 15, 2022 conference, REI has conducted additional sub-slab and passive ambient air sampling at the off-site residences. Those results have been submitted. PFAS sampling was conducted March 9, 2023. Those results have recently been received, are below NR 140 and EPA standards, and will be included in subsequent submittals.

Thank you for your assistance with this project. Please contact me to discuss further at (715) 675-9784 or email me at Adelforge@REIengineering.com.

Sincerely,
REI Engineering, Inc.

WISCONSIN MICHAEL MOHR E-42273 WAUSAU WI 4-5-23 PROFESSIONAL ENGINEER

Andrew R. Delforge, P.G.
Senior Hydrogeologist/Project Manager

Michael Mohr, P.E.
Project Engineer

CC: Ken Juza, 1478 Norfield Road, Suamico, WI 54173

Enclosures

TABLE 1b
CONFIRMATION VOC SOIL ANALYTICAL RESULTS
FORMER V&L STRIPPING
864 MATHER STREET
GREEN BAY, WI 54303

				Date-->	***10/26/21***	***10/26/21***	***10/26/21***	***10/26/21***
				Boring-->	***CGP1***	***CGP2***	***CGP3***	***CGP4***
				Sample Depth--(Feet)>	***4-6***	***4-6***	***4-6***	***2-4***
Petroleum VOC's (ug/kg)	NR 605.08	NTEDC	GW					
Benzene	-	1,490	5.1	<63.3	<17.1	<14.2	<17.3	<13.2
Bromobenzene	-	354,000	NS	<104	<28.0	<23.2	<28.4	<21.7
Bromochloromethane	-	232,000	NS	<72.8	<19.7	<16.3	<19.9	<15.2
Bromodichloromethane	-	390	0.3	<63.3	<17.1	<14.2	<17.3	<13.2
Bromoform	-	61,500	2.3	<1170	<316	<262	<320	<244
Bromomethane	-	10,300	5.1	<373	<101	<83.4	<102	<77.8
n-Butylbenzene	-	108,000	NS	<122	<32.9	<27.2	<33.3	<25.4
sec-Butylbenzene	-	145,000	NS	<64.9	<17.5	<14.5	<17.8	<13.5
tert-Butylbenzene	-	183,000	NS	<83.5	<22.5	<18.7	<22.9	<17.4
Carbon Tetrachloride	-	854	3.9	<58.5	<15.8	<13.1	<16.0	<12.2
Chlorobenzene	-	392,000	NS	<31.8	<8.6	<7.1	<8.7	<6.7
Chloroethane	-	NS	226.6	<112	<30.3	<25.1	<30.7	<23.4
Chloroform	-	423	3.3	<190	<51.4	<42.6	<52.1	<39.8
Chloromethane	-	171,000	15.5	<101	<27.3	<22.6	<27.7	<21.1
2-Chlorotoluene	-	NS	NS	<86.1	<23.3	<19.3	<23.6	<18.0
4-Chlorotoluene	-	NS	NS	<101	<27.3	<22.6	<27.7	<21.1
1,2 Dibromo-3-chloropropane	-	8	0.2	<206	<55.7	<46.1	<56.5	<43.1
Dibromochloromethane	-	933	32	<909	<245	<203	<249	<190
1,2-Dibromoethane	-	47	0.0282	<72.8	<19.7	<16.3	<19.9	<15.2
Dibromomethane	-	35,000	NS	<78.7	<21.2	<17.6	<21.6	<16.4
1,2-Dichlorobenzene	-	376,000	1,168	<82.4	<22.2	<18.4	<22.6	<17.2
1,3-Dichlorobenzene	-	297,000	1,152.8	<72.8	<19.7	<16.3	<19.9	<15.2
1,4-Dichlorobenzene	-	3,480	144	<72.8	<19.7	<16.3	<19.9	<15.2
Dichlorodifluoromethane	-	135,000	3,086.3	<114	<30.9	<25.6	<31.3	<23.9
1,1-Dichloroethane	-	4,720	482.8	<68.1	<18.4	<15.2	<18.6	<14.2
1,2-Dichloroethane	-	608	2.8	<61.1	<16.5	<13.7	<16.7	<12.8
1,1-Dichloroethylene	-	342,000	5	<88.3	<23.8	<19.7	<24.2	<18.4
cis-1,2-Dichloroethylene	-	156,000	41.2	<56.9	<15.4	<12.7	<15.6	<11.9
trans-1,2-Dichloroethylene	-	1,560,000	58.8	<57.4	<15.5	<12.8	<15.7	<12.0
1,2-Dichloropropane	-	1,330	3.3	<63.3	<17.1	<14.2	<17.3	<13.2
1,3-Dichloropropane	-	1,490,000	NS	<58.0	<15.6	<13.0	<15.9	<12.1
2,2-Dichloropropane	-	527,000	NS	<71.8	<19.4	<16.1	<19.7	<15.0
1,1-Dichloropropylene	-	NS	NS	<86.1	<23.3	<19.3	<23.6	<18.0
cis-1,3-Dichloropropylene	-	1,220,000	NS	<175	<47.4	<39.2	<48.1	<36.6
trans-1,3-Dichloropropylene	-	1,570,000	NS	<760	<205	<170	<208	<159
(di)isopropyl ether	-	2,260,000	NS	<65.9	<17.8	<14.7	<18.1	<13.8
Ethylbenzene	-	7,470	1,570	<63.3	<17.1	<14.2	<17.3	<13.2
Hexachloro (1,3) butadiene	-	6,220	NS	<529	<143	<118	<145	<110
Isopropylbenzene	-	NS	NS	<71.8	<19.4	<16.1	<19.7	<15.0
p-Isopropyltoluene	-	162,000	NS	<80.8	<21.8	<18.1	<22.1	<16.9
Methylene Chloride	-	60,700	2.6	<73.9	<20.0	<16.5	<20.2	<15.4
Methly tert Butyl Ether	-	59,400	27	<78.2	<21.1	<17.5	<21.4	<16.3
Naphthalene	-	5,150	658.2	<82.9	<22.4	<18.6	<22.7	<17.3
n-Propylbenzene	-	NS	NS	<63.8	<17.2	<14.3	<17.5	<13.3
Styrene	-	867,000	220	<68.1	<18.4	<15.2	<18.6	<14.2
1,1,1,2-Tetrachloroethane	-	2,590	53.4	<63.8	<17.2	<14.3	<17.5	<13.3
1,1,2,2-Tetrachloroethane	-	753	0.2	<96.2	<26.0	<21.5	<26.4	<20.1
Tetrachloroethene	-	30,700	4.50	**198,000**	**148**	<23.1	**536**	<21.5
Toluene	-	818,000	1,107.2	<67.0	<18.1	<15.0	<18.3	<14.0
1,2,3-Trichlorobenzene	-	48,900	NS	<296	<79.9	<66.2	<81.1	<61.9
1,2,4-Trichlorobenzene	-	22,000	408	<219	<59.1	<49.0	<60.0	<45.8
1,1,1-Trichloroethane	-	640,000	140.2	<68.1	<18.4	<15.2	<18.6	<14.2
1,1,2-Trichloroethane	-	1,480	3.2	<96.8	<26.1	<21.6	<26.5	<20.2
Trichloroethene	-	1,260	3.6	**373**	<26.8	<22.2	<27.2	<20.8
Trichlorofluoromethane	-	1,120,000	4,475.8	<77.1	<20.8	<17.2	<21.1	<16.1
1,2,3-Trichloropropane	-	5	51.9	<129	<34.9	<28.9	<35.4	<27.0
1,2,4-Trimethylbenzene	-	89,800	1,382.1	<79.2	<21.4	<17.7	<21.7	<16.5
1,3,5-Trimethylbenzene	-	182,000		<85.6	<23.1	<19.1	<23.4	<17.9
Vinyl Chloride	-	67	0.1	<53.7	<14.5	<12.0	<14.7	<11.2
Xylenes (Total)	-	258,000	3,940	<199.8	<51.8	<32.9	<52.5	<40.1
TCLP Tetraclorothene (ug/L)	700	NS	NS	**862**	NA	NA	NA	NA

Notes:

NTEDC - Not To Exceed Direct Contact Residual Contaminant Level (RCL)

GW - RCL Protective of Groundwater Quality

< - Concentration below listed laboratory detection limit

GW RCL exceedences are bold **Bold**

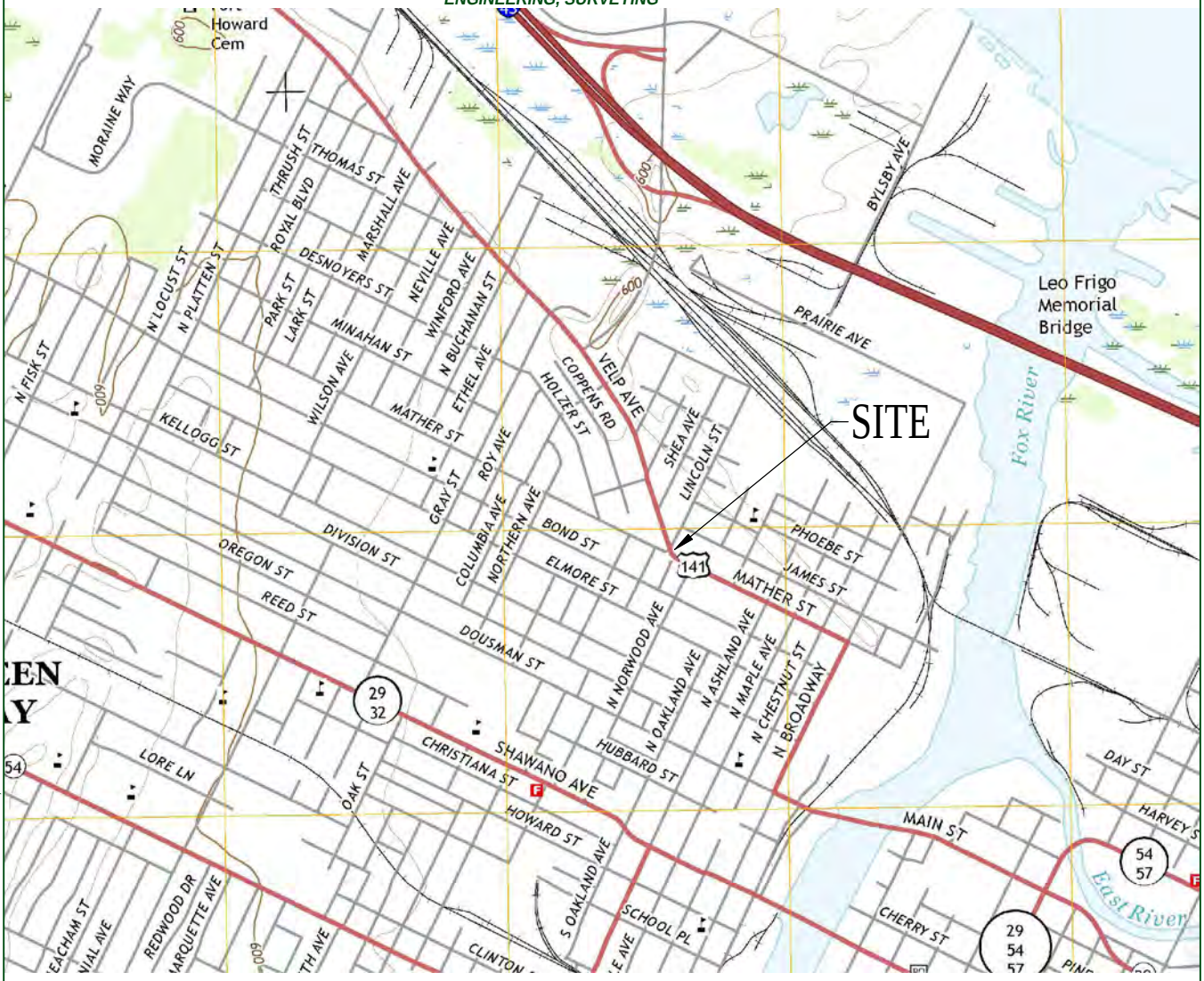
NTEDC RCL exceedances are outlined in bold **Bold**

NS - No Standard

NA - Not Analyzed

j - Estimated Value between detection limit and quantification limit

REI
CIVIL & ENVIRONMENTAL
ENGINEERING, SURVEYING



SCALE 1:24 000

1 0.5 0 KILOMETERS 1 2

1000 500 0 METERS 1000 2000

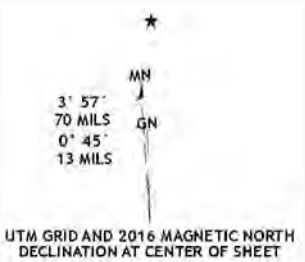
1 0.5 0 1

MILES

1000 0 1000 2000 3000 4000 5000 6000 7000 8000 9000 10000

FEET

CONTOUR INTERVAL 10 FEET
NORTH AMERICAN VERTICAL DATUM OF 1988



UTM GRID AND 2016 MAGNETIC NORTH DECLINATION AT CENTER OF SHEET

GREEN BAY WEST QUADRANGLE
WISCONSIN-BROWN CO.
7.5-MINUTE SERIES

QUADRANGLE LOCATION

REI ENGINEERING, INC.

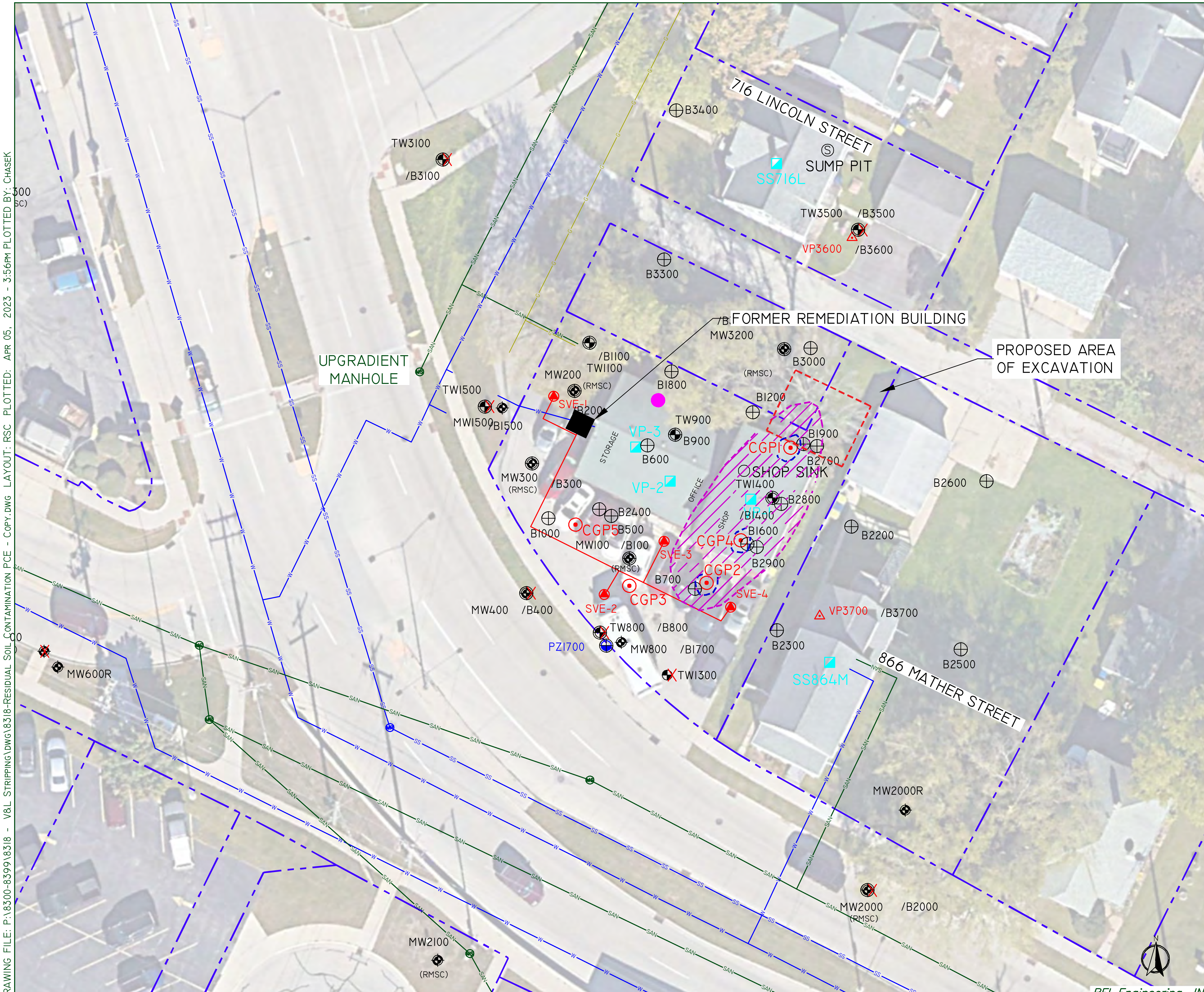
V&L STRIPPING (FORMER)
864 MATHER STREET
GREEN BAY, WISCONSIN 54303

N

FIGURE 1 : VICINITY MAP

PROJECT NO.	DRAWN BY:	DATE:
8318	MCM	9/10/2018

DRAWING FILE: P:\8300-8399\8318 - V&L STRIPPING\DWG\8318-VICN.DWG LAYOUT: VICN PLOTTED: JAN 10, 2022 - 2:21PM PLOTTED BY: NATHANP


716 LINCOLN STREET
SUMP PIT
SS716L
B3400
TW3100
/B3100
TW3500
/B3500
VP3600
/B3600
B3300
FORMER REMEDIATION BUILDING
MW3200
(RMSC)
B3000
PROPOSED AREA
OF EXCAVATION
UPGRADIENT
MANHOLE
/B1100
TW1100
MW200
(RMSC)
B1800
B1200
TW1500
SVE-1
B200
MW1500
/B1500
VP-3
TW900
B900
B1900
CGP1
B2700
B600
STORAGE
SHOP SINK
MW300
(RMSC)
/B300
VP-2
OFFICE
TW1400
/B1400
B2800
B2600
B2400
B1000
CGP5
B500
SHOP
B1600
B2200
MW100
/B100
(RMSC)
SVE-3
CGP4
B2900
B700
CGP2
MW400
/B400
SVE-2
CGP3
SVE-4
VP3700
/B3700
TW800
/B800
B2300
PZ1700
MW800
/B1700
B2500
MW600R
TW1300
SS864M
866 MATHER STREET
MW2000R
MW2000
(RMSC)
/B2000
MW2100
(RMSC)
LEGEND
0
30
SCALE: 1" = 30'
SOIL BORING (NORTHERN ENVIRONMENTAL - 2002)
VAPOR MITIGATION SYSTEM
RESIDUAL SOIL CONTAMINATION
(RMSC) INSTALLED AS PART OF RANDY'S MOBIL SERVICE CENTER CLOSED LUST SITE (BRRTS# 03-05-111777)
TEMPORARY MONITORING WELL (ABANDONED/DESTROYED)
MONITORING WELL (ABANDONED/DESTROYED)
MONITORING WELL
PIEZOMETER
TEMPORARY MONITORING WELL
SOIL VAPOR EXTRACTION WELL
VAPOR PROBE
SUMP
MANHOLE-SANITARY SEWER
MANHOLE-STORM SEWER
NATURAL GAS LINE
WATER LINE
SANITARY SEWER LINE
STORM SEWER LINE
PROPERTY BOUNDARY (APPROXIMATE)
REI Engineering, INC.

REI CIVIL & ENVIRONMENTAL ENGINEERING, SURVEYING

V&L STRIPPING (FORMER)
864 MATHER STREET
GREEN BAY, WISCONSIN 54303

FIGURE 2 : RESIDUAL SOIL CONTAMINATION (PCE)

PROJECT No.	DRAWN BY:	DATE:
8318	CJK	04/05/2023

DRAWING FILE: P:\8300-8399\8318 - V&L STRIPPING\DWG\8318-RESIDUAL SOIL CONTAMINATION PCE - COPY.DWG LAYOUT: RSC PLOTTED: APR 05, 2023 - 3:56PM PLOTTED BY: CHASEK

ATTACHMENT A

REGENESIS DESIGN CALCULATIONS

REGENESIS

Technology-Based Solutions for the Environment

PROJECT NAME

V&L Stripping Revised 3/15/23

PREPARED FOR

REI Engineering
Andy Delforge
adelforge@reiengineering.com

PREPARED BY

REGENESIS

Ryan Moore
rmoore@regenesis.com

March 15, 2023

Project Summary

REGENESIS appreciates the opportunity to provide REI Engineering our remedial design and cost estimate for the V&L Stripping project. This proposal includes an overview of our proposed solution, the project goals, technologies proposed, application design summary table and a treatment area map.

Proposed Solution

For your project, we propose that you mix our in-situ chemical oxidation (ISCO) reagent, PersulfOx® directly into the site soils for treatment of the chlorinated volatile organic compounds (CVOCs), primarily the Tetrachloroethene (PCE), found in the shallow vadose sandy soils.

Project Goals

- Reduce total PCE concentrations to below 2 parts per million
- Reduce leachablity of soils for a TCLP analysis

Technologies Proposed

- PersulfOx®

Click above to access product specification sheets

PERSULF Ox®

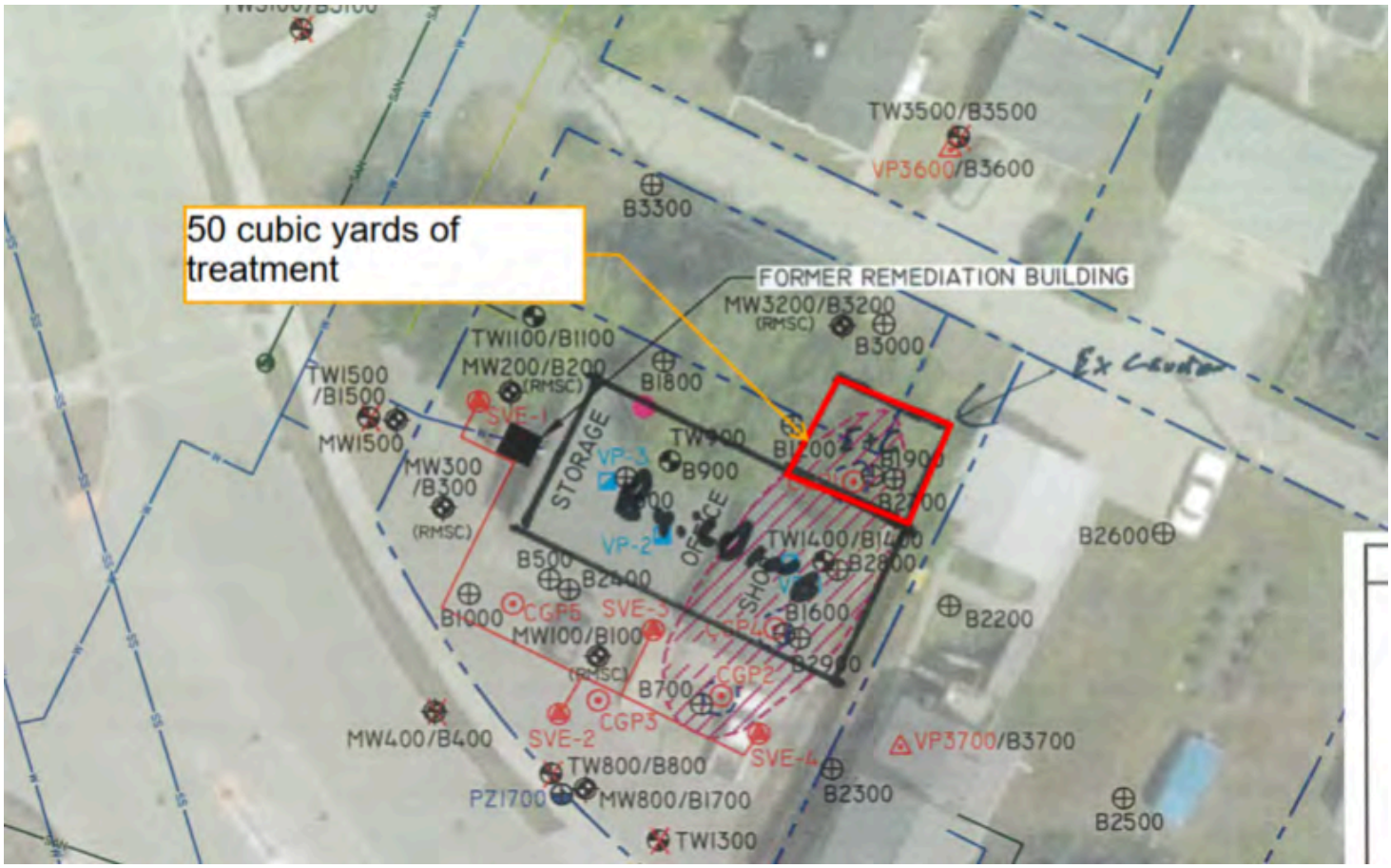
Technical Resources

- PersulfOx SDS
- PersulfOx® Technical Bulletin: Advantages of the PersulfOx Catalyst
- PersulfOx® Technical Bulletin: Contaminant Oxidation Data

Design Summary

PersulfOx® Application Design Summary

Soil Area		Field App. Instructions
Application Method	**Soil Mixing**	
Treatment Area ft2	225	
		See Attached
Number of Applications	**1**	
Cubic Yards	50	**Field Mixing Ratios**
Top Application Depth (ft bgs)	0	
Bottom Application Depth (ft bgs)	6	
PersulfOx to be Applied (lbs)	**771**	**PersulfOx per cubic yard (lbs)**
		15



V&L Stripping

REI Engineering

March 15, 2023

Figure 1-Treatment Area Map

REGENESIS

Technology-Based Solutions for the Environment

Technical Approach

PersulfOx is an *in-situ* chemical oxidation (ISCO) reagent that destroys organic contaminants found in groundwater and soil through powerful, yet controlled, chemical reactions. Contaminant destruction is achieved through both direct and radical oxidation. A sodium persulfate-based technology, PersulfOx employs a patented self-contained, amorphous silica catalyst to enhance the oxidative destruction of both hydrocarbons and chlorinated contaminants in the subsurface. The silica catalyst possesses a large surface area which traps contaminants and allows a surface for chemical oxidation to occur. Additionally, Regenesis recommends that you add lime or Portland cement as a stabilizing agent to each treatment cell after the PersulfOx has been thoroughly mixed into the soils at 1% of the soil weight. This will help activate the PersulfOx material and dry the soils for better handling for off-site disposal.

Suggested Soil Mixing Procedure

The following is a general recommended step by step procedure for a soil mixing/excavation application procedure using the PersulfOx treatment chemistry.

1. Mark out the entire hot spot treatment area and excavate all clean overburden soil and stockpile in a separate area. Break the treatment area into smaller cells so it is easier to manage PersulfOx dosing and mixing. Treat each of these smaller cells as individual **treatment cells.**
2. Using the trackhoe excavator, dig up and turn over the soil in the first treatment cell several times throughout the treatment area (both vertically and horizontally). The goal is to break up the soil into small pieces less than 2-3 inches in diameter. Keep all the soil within the footprint of the treatment cell being treated.
3. Once the soil in the first treatment cell has been mix and turned over down to the required treatment depth and the soil particles are not larger than 2-3 inches in dimension, it is time to add the dry PersulfOx. Mix the recommended quantity of PersulfOx into the soil within the treatment cell. The delivery of PersulfOx should be done in a manner that promotes good distribution throughout all the soil within the treatment cell both vertically and horizontally (i.e., do not pour the entire quantity in at one location and depth). It is very important that the soils are thoroughly mixed from top to bottom and side to side with the PersulfOx. Soils within this treatment cell should be turned multiple times before considering moving to the next step. Ideally, soil particles will not be greater than 1.0 inch in diameter.
4. To further distribute the PersulfOx throughout the treatment area, water should be added until saturated (standing). If saturated conditions are already present then additional water is not needed. Thoroughly mix the entire volume of soil again by turning it over several times as it was done in Steps 2 and 3. Generally, 7 to 15 gallons of water needs to be added per cubic yard of soil to provide sufficiently hydration for the chemical oxidation process to work.
5. Alternatively to steps 3 and 4, PersulfOx can be mixed with water into a solution that ranges from 5% to 20% weight/weight (w/w) and sprayed applied into the excavation prior to the soil mixing procedure. Mix the entire volume of soil again as done in Step 2.
6. Repeat Step 2, Step 3, and then Step 4 with each remaining treatment cells within the hotspot treatment area until the entire targeted volume has been treated.
7. Post application samples should not be collected until at least 21 days following treatment.

Pricing

Below is the cost estimate to provide the remediation technologies and execute the design provided in this proposal. Please also see the assumptions and qualifications section.

Description	Price	Qty (lbs.)	Subtotal
PersulfOx®	$2.86	771.4	$2,206.20
Subtotal			$2,206.20
Estimated Shipping and Tax (15%)			+$330.93
Total			**$2,537.13**

COST ESTIMATE DISCLAIMER: The cost listed assumes conditions set forth within the proposed scope of work and assumptions and qualifications. Changes to either could impact the final cost of the project. This may include final shipping arrangements, sales tax, or application-related tasks such as product storage and handling, access to water, etc. If items listed need to be modified, please contact Regenesis for further evaluation.

REGENESIS developed this Scope of Work in reliance upon the data and professional judgments provided by those who completed the earlier environmental site assessment(s), and in reliance upon REGENESIS' prior experience on similar project sites. The fees and charges associated with the Scope of Work were generated through REGENESIS' proprietary formulas and thus may not conform to billing guidelines, constraints, or other limits on fees. REGENESIS does not seek reimbursement directly from any government agency or any governmental reimbursement fund (the "Government"). In any circumstance where REGENESIS may serve as a supplier or subcontractor to an entity that seeks reimbursement from the Government for all or part of the services performed or products provided by REGENESIS, it is the sole responsibility of the entity seeking reimbursement to ensure the Scope of Work and associated charges are in compliance with and acceptable to the Government prior to submission. When serving as a supplier or subcontractor to an entity that seeks reimbursement from Government, REGENESIS does not knowingly present or cause to be presented any claim for payment to the government.

PROFESSIONAL JUDGEMENT: In generating this estimate, REGENESIS relied upon professional judgment and site-specific information provided by others. Using this information as input, we performed calculations based upon the known chemical and geologic relationships to generate an estimate of the mass of product and subsurface placement required to effect the remediation of the site.

Terms & Conditions

1. **PAYMENT TERMS.** Net 30 Days. Accounts outstanding after 30 days will be assessed 1.5% monthly interest. Volume discount pricing will be rescinded on all accounts outstanding over 90 days. An early payment discount of 1.5% Net 10 is available for cash or check payments only. We accept Master Card, Visa and American Express.
2. **RETURN POLICY.** A 15% re-stocking fee will be charged for all returned goods. All requests to return product must be pre-approved by seller. Returned product must be in original condition and no product will be accepted for return after a period of 90 days.
3. **FORCE MAJEURE.** Seller shall not be liable for delays in delivery or services or failure to manufacture or deliver due to causes beyond its reasonable control, including but not limited to acts of God, acts of buyer, acts of military or civil authorities, fires, strikes, flood, epidemic, war, riot, delays in transportation or car shortages, or inability to obtain necessary labor, materials, components or services through seller's usual and regular sources at usual and regular prices. In any such event Seller may, without notice to buyer, at any time and from time to time, postpone the delivery or service dates under this contract or make partial delivery or performance or cancel all or any portion of this and any other contract with buyer without further liability to buyer. Cancellation of any part of this order shall not affect Seller's right to payment for any product delivered or service performed hereunder.
4. **LIMITED WARRANTY.** Seller warrants the product(s) sold and services provided as specified on face of invoice, solely to buyer. Seller makes no other warranty of any kind respecting the product and services, and expressly DISCLAIMS ALL OTHER WARRANTIES OF WHATEVER KIND RESPECTING THE PRODUCT AND SERVICES, INCLUDING ALL WARRANTIES OF MERCHANTABILITY, FITNESS FOR PARTICULAR PURPOSE AND NON-INFRINGEMENT.
5. **DISCLAIMER.** Where warranties to a person other than buyer may not be disclaimed under law, seller extends to such a person the same warranty seller makes to buyer as set forth herein, subject to all disclaimers, exclusions and limitations of warranties, all limitations of liability and all other provisions set forth in the Terms and Conditions herein. Buyer agrees to transmit a copy of the Terms and Conditions set forth herein to any and all persons to whom buyer sells, or otherwise furnishes the products and/or services provided buyer by seller and buyer agrees to indemnify seller for any liability, loss, costs and attorneys' fees which seller may incur by reason, in whole or in part, of failure by buyer to transmit the Terms and Conditions as provided herein.
6. **LIMITATION OF SELLER'S LIABILITY AND LIMITATION OF BUYER'S REMEDY.** Seller's liability on any claim of any kind, including negligence, for any loss or damage arising out of, connected with, or resulting from the manufacture, sale, delivery, resale, repair or use of any goods or performance of any services covered by or furnished hereunder, shall in no case exceed the lesser of (1) the cost of repairing or replacing goods and repeating the services failing to conform to the foregoing warranty or the price of the goods and/or services or part thereof which gives rise to the claim. IN NO EVENT SHALL SELLER BE LIABLE FOR SPECIAL INCIDENTAL OR CONSEQUENTIAL DAMAGES, INCLUDING LOST PROFITS, OR FOR DAMAGES IN THE NATURE OF PENALTIES.
7. **INDEMNIFICATION.** Buyer agrees to defend and indemnify seller of and from any and all claims or liabilities asserted against seller in connection with the manufacture, sale, delivery, resale or repair or use of any goods, and performance of any services, covered by or furnished hereunder arising in whole or in part out of or by reason of the failure of buyer, its agents, servants, employees or customers to follow instructions, warnings or recommendations furnished by seller in connection with such goods and services, by reason of the failure of buyer, its agents, servants, employees or customers to comply with all federal, state and local laws applicable to such goods and services, or the use thereof, including the Occupational Safety and Health Act of 1970, or by reason of the negligence or misconduct of buyer, its agents, servants, employees or customers.

8. **EXPENSES OF ENFORCEMENT.** In the event seller undertakes any action to collect amounts due from buyer, or otherwise enforce its rights hereunder, Buyer agrees to pay and reimburse Seller for all such expenses, including, without limitation, all attorneys and collection fees.
9. **TAXES.** Liability for all taxes and import or export duties, imposed by any city, state, federal or other governmental authority, shall be assumed and paid by buyer. Buyer further agrees to defend and indemnify seller against any and all liabilities for such taxes or duties and legal fees or costs incurred by seller in connection therewith.
10. **ASSISTANCE AND ADVICE.** Upon request, seller in its discretion will furnish as an accommodation to buyer such technical advice or assistance as is available in reference to the goods and services. Seller assumes no obligation or liability for the advice or assistance given or results obtained, all such advice or assistance being given and accepted at buyer's risk.
11. **SITE SAFETY.** Buyer shall provide a safe working environment at the site of services and shall comply with all applicable provisions of federal, state, provincial and municipal safety laws, building codes, and safety regulations to prevent accidents or injuries to persons on, about or adjacent to the site.
12. **INDEPENDENT CONTRACTOR.** Seller and Buyer are independent contractors and nothing shall be construed to place them in the relationship of partners, principal and agent, employer/employee or joint ventures. Neither party will have the power or right to bind or obligate the other party except as may be expressly agreed and delegated by other party, nor will it hold itself out as having such authority.
13. **REIMBURSEMENT.** Seller shall provide the products and services in reliance upon the data and professional judgments provided by or on behalf of buyer. The fees and charges associated with the products and services thus may not conform to billing guidelines, constraints or other limits on fees. Seller does not seek reimbursement directly from any government agency or any governmental reimbursement fund (the "Government"). In any circumstance where seller may serve as a supplier or subcontractor to an entity that seeks reimbursement from the Government for all or part of the services performed or products provided by seller, it is the sole responsibility of the buyer or other entity seeking reimbursement to ensure the products and services and associated charges are in compliance with and acceptable to the Government prior to submission. When serving as a supplier or subcontractor to an entity that seeks reimbursement from the Government, seller does not knowingly present or cause to be presented any claim for payment to the Government.
14. **APPLICABLE LAW/JURISDICTION AND VENUE.** The rights and duties of the parties shall be governed by, construed, and enforced in accordance with the laws of the State of California (excluding its conflict of laws rules which would refer to and apply the substantive laws of another jurisdiction). Any suit or proceeding hereunder shall be brought exclusively in state or federal courts located in Orange County, California. Each party consents to the personal jurisdiction of said state and federal courts and waives any objection that such courts are an inconvenient forum.
15. **ENTIRE AGREEMENT.** This agreement constitutes the entire contract between buyer and seller relating to the goods or services identified herein. No modifications hereof shall be binding upon the seller unless in writing and signed by seller's duly authorized representative, and no modification shall be effected by seller's acknowledgment or acceptance of buyer's purchase order forms containing different provisions. Trade usage shall neither be applicable nor relevant to this agreement, nor be used in any manner whatsoever to explain, qualify or supplement any of the provisions hereof. No waiver by either party of default shall be deemed a waiver of any subsequent default.

Detailed Design Table

Soil Mixing
Green Bay, WI
Soil Area
Prepared For:
Andy Delforge (REI Engineering)

Target Treatment Zone (TTZ) Info	Unit	Value
Treatment Area	ft^2	225
Top Treat Depth	ft	0.0
Bot Treat Depth	ft	6.0
Vertical Treatment Interval	ft	6.0
Treatment Zone Volume	ft^3	1,350
Treatment Zone Volume	cy	50
Soil Type	---	sandy clay and silty sand
Porosity	cm^3/cm^3	0.33
Effective Porosity	cm^3/cm^3	0.20
Treatment Zone Pore Volume	gals	3,383
Treatment Zone Effective Pore Volume	gals	2,020
Fraction Organic Carbon (foc)	g/g	0.002
Soil Density	g/cm^3	1.7
Soil Density	lb/ft^3	108
Soil Weight	lbs	1.5E+05
Hydraulic Conductivity	ft./day	25.0
Hydraulic Conductivity	cm/sec	8.82E-03
Hydraulic Gradient	ft./ft.	0.003
GW Velocity	ft./day	0.38
GW Velocity	ft./yr.	137
Sources of Oxidant Demand	**Unit**	**Value**
Sorbed Phase Contaminant Mass	lbs	29
Dissolved Phase Contaminant Mass	lbs	0.0
Total Contaminant Mass	lbs	29
Stoichiometric PersulfOx Demand	lbs	102
Engineering/Safety Factor	---	**2.0**
Stoichiometric PersulfOx Required	lbs	204
Additional Soil Oxidant Demand	g/kg	3.0
SOD PersulfOx Required	lbs	485
Total PersulfOx Required	**lbs**	**689**

Soil Area		Field App. Instructions
Application Method	Soil Mixing	
Treatment Area ft2	225	See Attached
Number of Applications	1	
Cubic Yards	50	Field Mixing Ratios
Top Application Depth (ft bgs)	0	
Bottom Application Depth (ft bgs)	6	
PersulfOx to be Applied (lbs)	771	**PersulfOx per cubic yard (lbs)**
		15

Technical Notes/Discussion

PersulfOx is a catalyzed formulation of sodium persulfate ($Na_2S_2O_8$) designed to oxidize organic contaminants in groundwater and soil. In addition to sodium persulfate, this product contains a patented silica and silicate-based catalyst to optimize oxidative destruction of contaminants. Additionally, Regenesis recommends that you add lime or portland cement as a stabilizing agent to each treatmen cell after the PersulfOx has been throughly mixed into the soils at 1% of the soil weight. This will help activate the PersulfOx material and dry the soils for better handling for off-site disposal.

Prepared By: Ryan Moore-Great Lakes District Manager
Date: 3/15/2023