



May 17, 2019

Kevin McKnight
Wisconsin Department of Natural Resources
625 East County Road Y, Suite 700
Oshkosh, WI 54901-9731

**Re: Amendment to the Revised Remediation Injection Request
Appleton Wire (Former)
908 N. Lawe Street
Appleton, Wisconsin 54911
BRRTS# 02-45-000015**

Dear Mr. McKnight:

This letter presents an amendment to the revised Remediation Injection Request submitted to the department on April 30, 2019. This amendment has been prepared to include a request for approval of soil blending activities that will be performed to depths that will be near or below the water table in addition to the previously addressed injection activities. The primary objective of soil blending is to reduce hexavalent chromium concentrations in soil within the target treatment zones to levels that do not pose an industrial direct-contact risk or a continued threat of leaching to groundwater. Therefore, our goal is to reduce concentrations to below the soil to groundwater RCL of 3.84 milligrams per kilogram (mg/kg), which is less than the industrial direct-contact RCL of 6.36 mg/kg.

Soil blending with zero-valent iron (ZVI) powder will be performed within the warehouse and the outside area to the north of the warehouse. These areas are labeled Area A, Area B, and Area C on **Figure 1**. The treatment areas will be subdivided into smaller cells, typically 20 by 20 feet in dimension. The soil blending process will be performed to a depth of six (6) feet in each area. The ZVI powder will be added to each cell and blended with the soil using the in-situ blender. A rotary blending tool will be attached to a backhoe and used to break up the native clay soil into small clumps. The ZVI powder will be added and homogenized with the soil through the blending process. Potable water will be added as needed to aide in the blending process and establish the wet chemistry reactions that will sequester chromium.

A bench scale study will be performed prior to blending to identify areas where dosing may be increased or decreased to achieve a reduction of hexavalent chromium to the target cleanup level of 3.84 mg/kg in unsaturated soil. For planning purposes, an average dosage (loading rate) of application is 1.5% by weight (i.e. mass of ZVI to mass of soil) is estimated. Although some areas will require a higher percentage of ZVI and some areas a lower percentage, this average should be sufficient to achieve the cleanup objective in clay soil of the type encountered at the

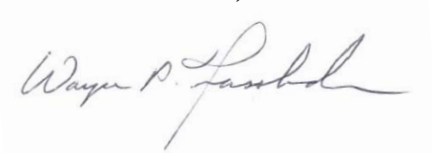
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site. Using 1,375 total cubic yards to be blended in Areas A, B, and C, and a bulk soil density of 128 pounds/cubic foot, we calculate that 71,280 pounds of ZVI will be required. The ZVI powder will have a particle size of 150 microns and will be supplied to the site in 2,200 pound sacks.

Samples of the blended soil will be collected upon completion of the initial blending process to determine residual levels of hexavalent chromium. The results will help determine whether treatment goals for unsaturated soil have been met. No additional soil blending with ZVI is planned due to project timing constraints associated with the displaced Luvata warehousing operations and cost considerations. Additional blending with Portland cement will be completed following sampling to increase structural support within the soil prior to re-paving.

Please include specific approval of the soil blending activities in the approval of the Injection Request. If you have any questions regarding this submittal, feel free to contact me at 414-982-3988 or by email at wfassbender@enviroforensics.com.

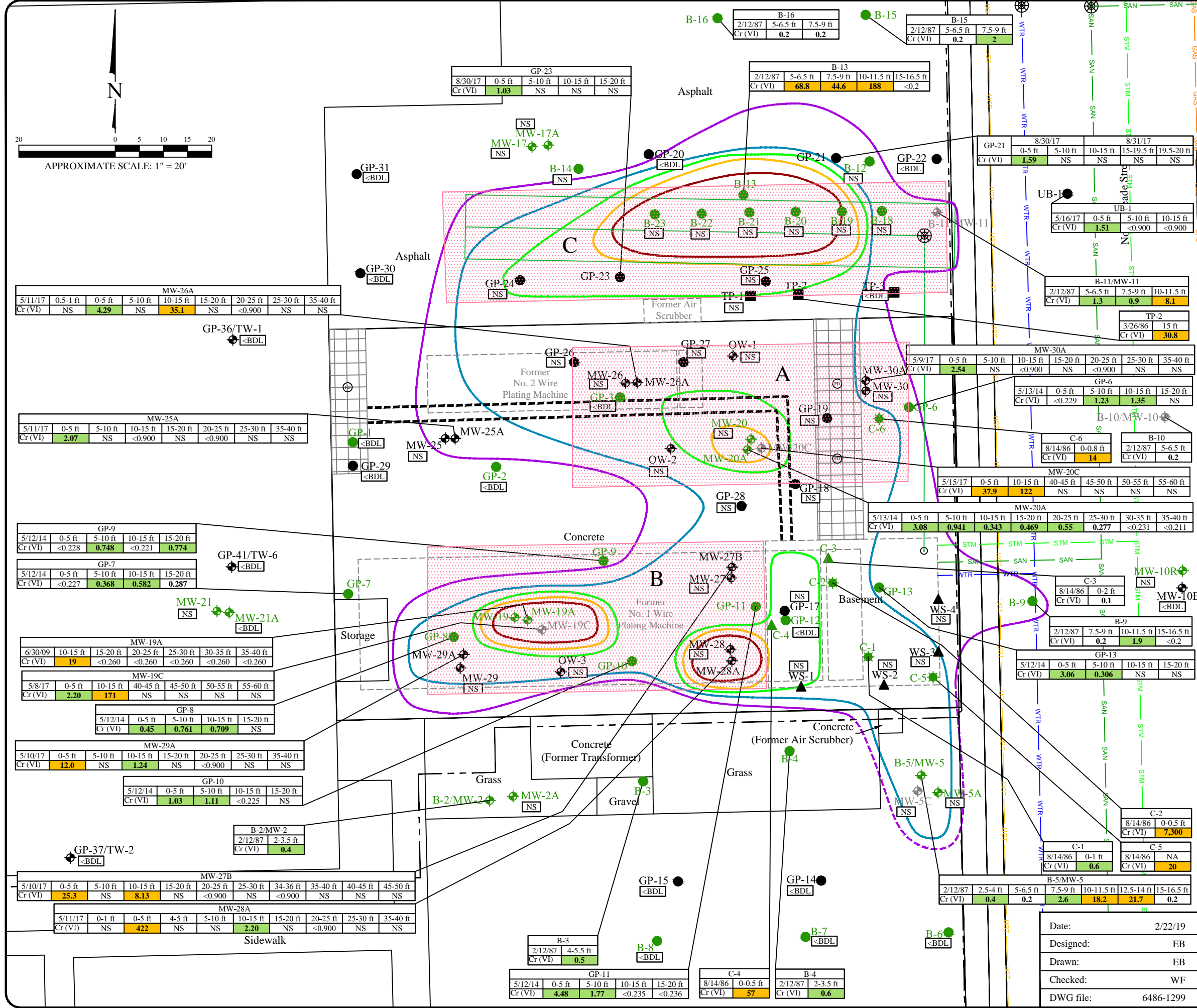
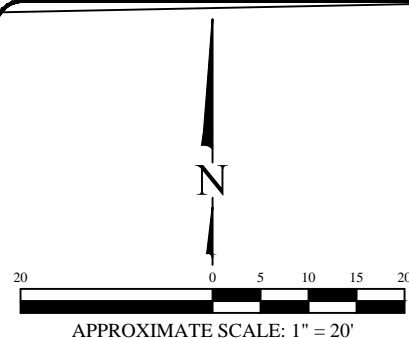
Sincerely,
EnviroForensics, LLC

A handwritten signature in black ink that reads "Wayne P. Fassbender".

Wayne Fassbender, PG, PMP
Senior Project Manager

enclosures

cc: Jennifer Borski, Wisconsin Department of Natural Resources



Legend

- Property boundary
- GAS
- WTR
- SAN
- UGT
- STM
- Pipe chase
- French drain and associated piping
- Sump
- Former Sump
- Floor drain
- B-1
- GP-1
- C-1
- C-3
- MW-1
- MW-18
- MW-19
- MW-10
- MW-4
- B-1
- Dairy tile floor

Analyte	Soil to Groundwater Residual Contaminant Level	Non-Industrial Residual Contaminant Level	Industrial Residual Contaminant Level
Cr (VI)	3.84*	0.301	6.36

- Note:
- Bold shaded blue values exceed WDNR Soil to Groundwater Residual Contaminant Level
 - Bold shaded green values exceed WDNR Non-Industrial Residual Contaminant Level
 - Bold shaded orange values exceed WDNR Industrial Residual Contaminant Level
 - Bold values exceed laboratory detection levels
 - Cr and Cr (VI) standards and analytical results are reported in milligram per kilogram (mg/kg)
 - Cr (VI) = Hexavalent Chromium
 - Cr = Chromium
 - NA = Not analyzed
 - NS = Not sampled
 - <BDL = Below laboratory detection limits
 - * = Calculated using EPA Risk-Based Screening Level Calculator
 - Lab LOD = Laboratory limit of detecting

- Chromium VI concentrations 1 mg/kg
- Chromium VI concentrations 5 mg/kg
- Chromium VI concentrations 50 mg/kg
- Chromium VI concentrations 100 mg/kg
- Chromium VI concentrations 150 mg/kg
- Dashed boundaries are inferred
- Proposed soil blending zones A, B, and C

PROPOSED SOIL BLENDING ZONES

Albany International - Luvata Site
908 North Lawe Street
Appleton, Wisconsin

Date: 2/22/19
Designed: EB
Drawn: EB
Checked: WF
DWG file: 6486-1299

825 North Capitol Avenue • Indianapolis, IN 46204
EnviroForensics.com

Figure	1
Project	6486