

Mr. Pete Quackenbush
Michigan Department of Environmental Quality
525 West Allegan Street
Constitution Hall, Atrium North
Lansing, MI 48909-7741

Subject:
Bedrock Sentinel Monitoring Well Installation
RACER TRUST, Plants 2, 3 & 6, Lansing, Michigan, March 2012

Dear Mr. Quackenbush:

ARCADIS is pleased to provide this general scope of work and plan to install four sentinel bedrock monitoring wells at the RACER Trust, Lansing Plants 2,3 and 6 (Site) in Lansing, Michigan (Site). Based on the results of the RFI Phase I activities, there is potential that contaminants of concern (COCs) detected in soil and groundwater at the Site are impacting the regional bedrock aquifer. The compound vinyl chloride has been detected at a concentration that exceeds the MDEQ Part 201 Drinking Water Criteria in a monitoring MW-04-02 located on the west property boundary of Plant 3.

The goal of the bedrock well installation is to both further characterize the bedrock aquifer and provide bedrock monitoring locations between the Site and the Lansing/Lansing Township municipal water supply wells.

Background

The City of Lansing and Lansing Township both obtain drinking water from the Saginaw and Grand River Bedrock formations. The Grand River formation is Pennsylvanian aged (280 to 310 million years [my] before present) sandstone that occupies erosional valleys within the Saginaw Formation. The Saginaw Formation consists primarily of sandstone, siltstone, and shale in the Lansing area. The bedrock surface is encountered at a depth of approximately 60 feet below grade beneath the central portion of Plant 6 and a depth of 110 feet below grade beneath the western portion of Plant 3, suggesting the bedrock surface has significant topography and, beneath Plant 3, slopes to the north-northwest. Bedrock borings have not been completed on Plant 2.

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ENVIRONMENT

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To date, seven monitoring wells at the Site are installed in bedrock. Groundwater elevation measurements at these locations suggest a radial groundwater flow pattern at the Site with a groundwater high located on the eastern portion of Plant 3. Regional sources of information, including investigations completed at other contaminated sites in the area and a groundwater flow model completed by the United States Geologic Survey (USGS), indicate a variable to southeasterly groundwater flow direction in the west Lansing area. Groundwater flow in bedrock is likely heavily influenced locally by pumping of the municipal water supply wells. There are several regional sources of vinyl chloride to the northeast of the Site including the Former Motorwheel Site, Ashland Chemical Site and Baxter Street Supplement Site that all contribute to the presence of vinyl chloride in the bedrock aquifer. Several municipal water supply wells located northeast of Plant 3 have been shut down due to vinyl chloride contamination.

Scope of Work

The locations of the proposed bedrock wells are provided on Figure 1. ARCADIS will obtain all necessary permits required to install bedrock monitoring wells within the City of Lansing and The Charter Township of Lansing, including permits to allow for the installation of wells located within the road right-of-way. To further assess the risk to the bedrock aquifer associated with the Site and to aid in communication with the stakeholders, ARCADIS will contract a licensed well driller to complete the following scope of work:

- Install four 4-inch sentinel bedrock monitoring wells to a depth consistent with 30 feet below the top of competent bedrock. The total depths of each well will likely range from 90 to 140 feet below ground surface. The depth to bedrock at the Site is variable and each well will be advanced a minimum of 10 ft into competent bedrock and constructed with a 30 ft open-hole (See Figure 2).
- The wells will consist of open borehole construction. The 4-inch steel casing will be fitted with a rubber boot, set into competent rock and cemented in place. The open borehole will consist of a 3 7/8-inch bore to the final depth of the well.
- Monitoring wells will be developed following installation until free of fine-grained material and fitted with a stick-up or flush mounted lockable well cover. Development water will be containerized pending characterization for proper disposal.

Methodology

The boreholes will be drilled using rotary-sonic drilling methods throughout the overburden. Upon reaching competent rock and following installation of the steel casing, the sonic rig will be converted to a wire-line coring setup to complete the borehole. Continuous sampling from the ground surface to the final boring depth will be completed at each well location. ARCADIS will log and describe the overburden and bedrock in accordance with the Standard Operating Procedures included with the Site approved Field Sampling Plan (FSP). Boring logs and well construction logs will be generated based on the field descriptions.

In addition, photo ionization (PID) monitoring, visual observations and oil-n-soil™ field screening (screening for non-aqueous phase liquids-NAPL) will be used to assess the soil borings for the presence of constituents of concern and/or NAPL. If, based on field screening, the soils appear to be impacted with COCs, samples will be collected for analysis of TCL VOCs, TCL SVOCs, TAL Metals and PCBs. Up to five samples will be collected at each boring location. Samples collected for analysis will be shipped to Merit Laboratories in Lansing, Michigan

After installation of the wells has been completed a stick-up protective casing will be installed on site and a flush mount well cover will be installed at the off site location. Any disturbance to the existing landscape, as a result of the off-site well installation, will be repaired back to its original condition.

Groundwater Sampling

Groundwater samples will be collected from the four new bedrock monitoring wells one to two weeks following installation. Groundwater samples will be collected in a manner consistent with the low-flow sampling techniques outlined in the RACER Lansing Field Sampling Plan (FSP). Additionally, a complete round of groundwater elevation measurements will be collected from all the bedrock monitoring wells to help determine groundwater flow in bedrock. Groundwater samples will be collected for analysis of TCL VOCs, TCL SVOCs, and TAL Metals. Samples collected for analysis will be shipped to Merit Laboratories.

Schedule

ARCADIS has contracted Boart-Longyear of Fenton, Michigan to provide the drilling services. Equipment is prepared to be mobilized to the Site on March 19, 2012 and drilling will begin at the proposed location on the southwest portion of Plant 2. ARCADIS will coordinate the field schedule with the MDEQ prior to beginning the well installation activities.

Sincerely,

ARCADIS G&M of Michigan, LLC



Patrick Curry, CPG
Project Geologist

Copies:

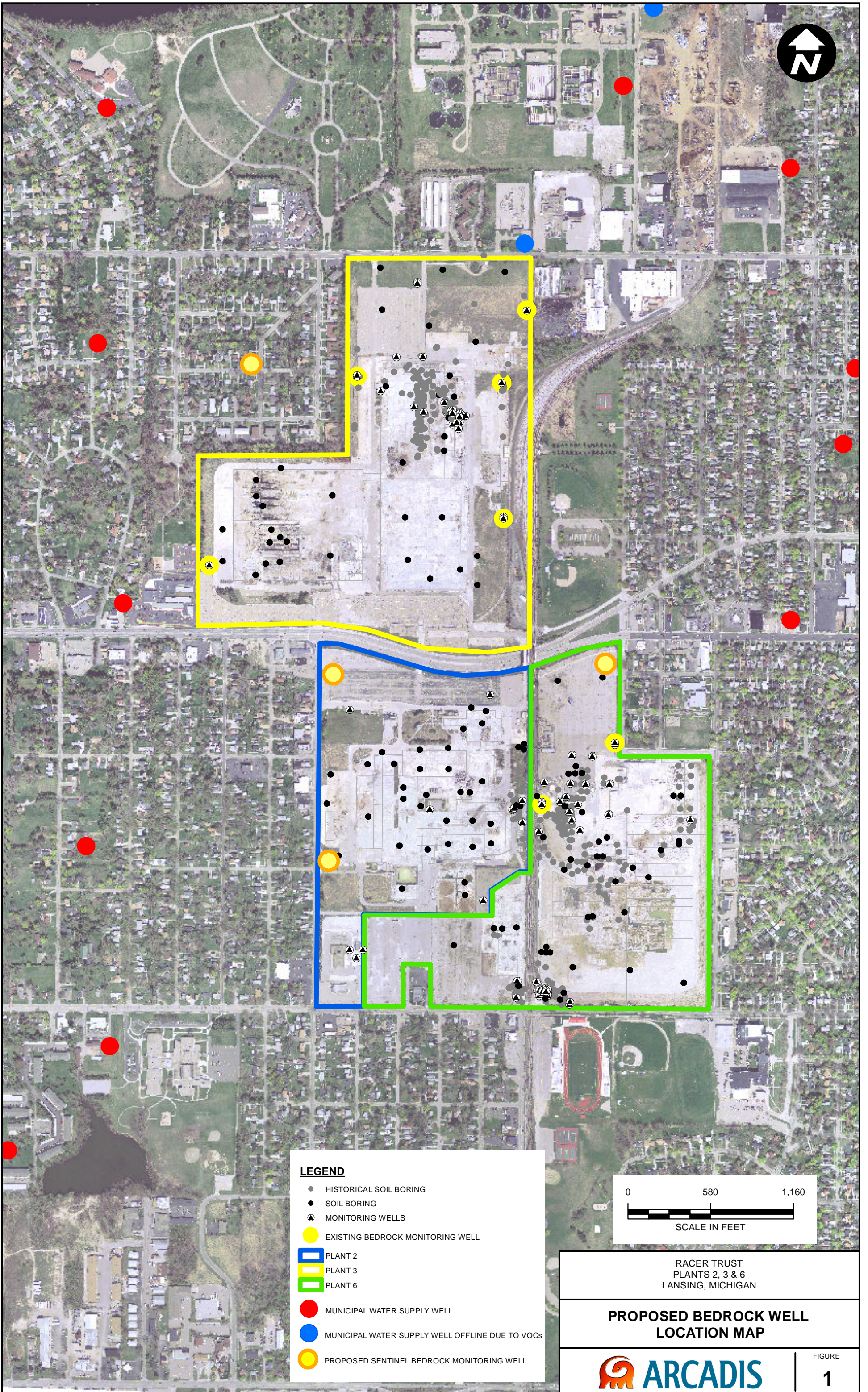
Dave Favero, RACER
Grant Trigger, RACER

Enclosures:

Well Location Map, Bedrock Well Schematic

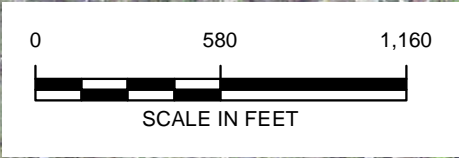
ARCADIS

Figures



LEGEND

- HISTORICAL SOIL BORING
- SOIL BORING
- ▲ MONITORING WELLS
- EXISTING BEDROCK MONITORING WELL
- PLANT 2
- PLANT 3
- PLANT 6
- MUNICIPAL WATER SUPPLY WELL
- MUNICIPAL WATER SUPPLY WELL OFFLINE DUE TO VOCs
- PROPOSED SENTINEL BEDROCK MONITORING WELL



RACER TRUST
PLANTS 2, 3 & 6
LANSING, MICHIGAN

**PROPOSED BEDROCK WELL
LOCATION MAP**

 **ARCADIS** | **FIGURE 1**

Figure 2
Bedrock Monitoring Well
Schematic

RACER Trust, Plants 2, 3 & 6,
Lansing, Michigan

