Stericycle
Environmental Solutions

November 17, 2016

Mr. David Slayton
Michigan Department of Environmental Quality
Permits and Corrective Action Unit
Hazardous Waste Section
PO Box 30241
Lansing, MI 48909

Subject: **Sewer Evaluation**
Petro-Chem Processing Group of Nortru, LLC
Detroit, MI MID 980 615 298

Dear Mr. Slayton:

Bureau Veritas has evaluated the potential for the storm sewer located beneath St. Jean Avenue to influence groundwater flow on the west side of the Petro-Chem facility, and has concluded that the sewer system likely does not act as a preferential pathway for groundwater flow. Please see the attached evaluation for more details.

If you have any questions, please contact me at 425-227-6170.

Sincerely,

Andy Maloy
Director, Environmental Liability Management

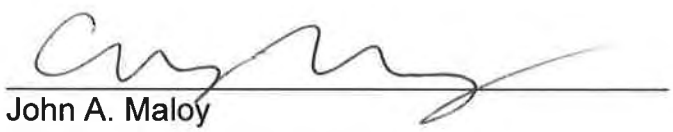
cc: Ed Burke, Stericycle
Kellie Wing, Bureau Veritas

Sewer Evaluation
Nortru, LLC
Petro-Chem Processing Group Facility
421 Lycaste Street, Detroit, MI

November 17, 2016

CERTIFICATION STATEMENT

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision according to 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.



John A. Maloy
Director, EH&S Risk Management

Storm Sewer Conduit Evaluation

Stericycle Environmental Solutions, Inc.,
Petro-Chem Processing Group Facility
421 Lycaste Street
Detroit, Michigan

November 17, 2016
11016-000171.00

Prepared for:
Stericycle Environmental Solutions, Inc.
Detroit, Michigan

BUREAU VERITAS
For the benefit of business and people

Bureau Veritas North America, Inc.
22345 Roethel Drive
Novi, Michigan 48375
248.344.2661

Bureau Veritas North America, Inc. (Bureau Veritas) has evaluated the potential for the storm sewer conduit, located along the eastern side of Old St. Jean Avenue, to act as a preferential pathway for groundwater contamination which could migrate beyond the boundaries of the Petro-Chem Processing Group facility located at 421 Lycaste in Detroit, Michigan. A 24-inch storm water sewer line is present along the western boundary (i.e., downgradient side) of the subject property, within the right-of-way of Old St. Jean Avenue.

The storm sewer along Old St. Jean Avenue originates just to the north of the subject property and flows southward into either the 36-inch or 42-inch storm sewer that runs along the south side of Freud Street. The Old St. Jean Avenue storm sewer and appears to have been installed in 1937, after the larger sewers in the area were installed. Based on field measurements taken at two catch basins along Old St. Jean Avenue, the top of the sewer at the northwest manhole is approximately 12 feet 10-inches below the ground surface, while the top of the sewer in the southwest manhole is approximately 13 feet 3-inches below the ground surface. The measurements corroborate the southward flow (to 20 feet deep) shown on the engineering drawing. See Figure 1.

Based on the well-documented subsurface soil types that exist along the western boundary of the subject property, the storm sewer was installed within the dry clay till formation (i.e., aquitard) that uniformly underlies a perched water-bearing unit consisting of sand, peat, or sand and peat. See Figures 2 and 3 for cross-sections showing the lithology and location of the storm sewer.

Based on typical sewer installation methods from the 1920s and 1930s, it is likely that the sewer installation trench was backfilled with the native clay soil excavated from the trench and not with engineered bedding material (i.e., crushed gravel or sand). The permeability of the native clay is expected to minimize flow along the sewer trench and prevent flow beyond the walls of the sewer trench.

Although unlikely, if contaminated groundwater were to infiltrate into the storm sewer along Old St. Jean Avenue, the exposure pathway is not complete because this storm sewer (and others in the area) are part of a combined sewer system that discharges to a City of Detroit Waste Water Treatment Plant (WWTP).

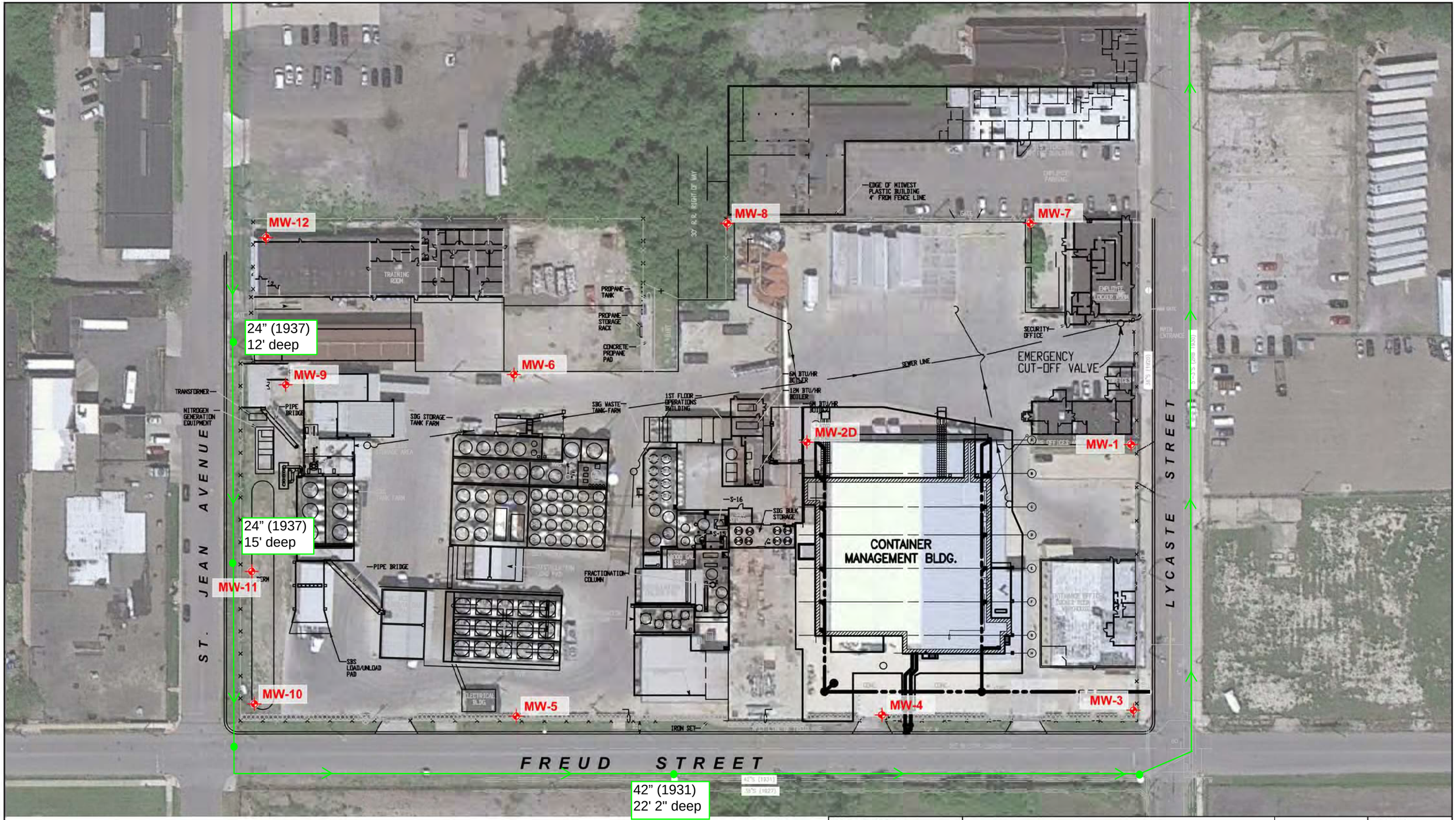
Additionally, the groundwater flow direction was evaluated to determine the potential for the storm sewer to influence the groundwater flow direction due to mounding. Based on the relative uniformity of the groundwater flow gradient (i.e., absence of the stacking of contours) on the west side of the site, as well as, the absence of bending of contours to indicate that groundwater is changing direction to the north or south due to the presence of the sewer line, it does not appear that the sewer line is prohibiting the flow of groundwater or that ground water is infiltrating into the sewer line itself.

Based on Bureau Veritas' interpretation of "relevant pathway[1]" defined in the rules promulgated under Part 201 of Act 451, 1994, as amended, the adjacent storm sewer conduit (i.e., sewer pipe and trench) may be considered a relevant pathway solely on the basis that there is a reasonable potential for a municipal utility worker to be exposed to hazardous substances during sewer repair operations; however, no cleanup criteria that are applicable for utility workers have been exceeded by the concentrations of hazardous substances that have been detected in groundwater.

[1] ***"Relevant pathway" means an exposure pathway that is reasonable and relevant because there is a reasonable potential for exposure to a hazardous substance to occur to a human or nonhuman receptor. The components of an exposure pathway are a source or release of a hazardous substance, an exposure point, and, if the exposure point is not the source or point of release, a transport medium. The existence of a municipal water supply, exposure barrier, or other similar feature does not automatically make an exposure pathway irrelevant.***

The storm sewer conduit is not a relevant pathway for any other types of human or nonhuman exposure because the groundwater in the conduit is (1) not a potable source of water and (2) not hydraulically connected to surface water. The GSI pathway[2] is not relevant pathway (as defined by Part 201) because the storm sewer conduit ultimately discharges to a municipal WWTP and not to surface water.

[2] ***The pathway addressed by GSI criteria under subsection (1) shall be considered a relevant pathway when a remedial investigation or application of best professional judgment leads to the conclusion that a hazardous substance in groundwater is reasonably expected to vent to surface water in concentrations that exceed the generic GSI criteria.***



LEGEND

MW-# MONITORING WELL LOCATION

SCALE IN FEET

0 40 80 160

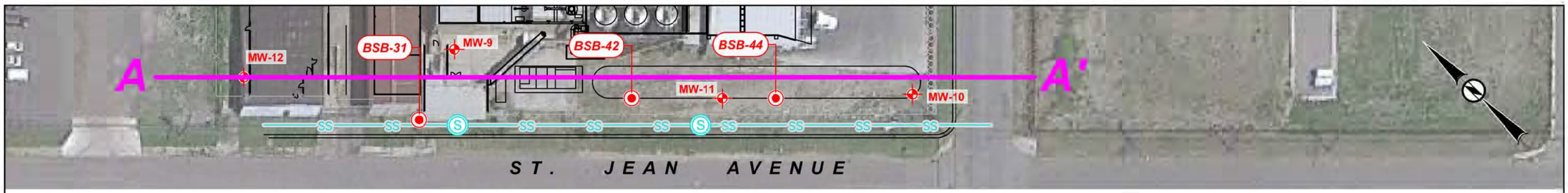
CHECK BY	KW
DRAWN BY	JL
DATE	6/24/2016
SCALE	AS SHOWN
CAD NO.	11.16.143.00b
PRJ NO.	11016-000143.00

STORM SEWER FLOW PATH

PETRO-CHEM PROCESSING GROUP
421 LYCASTE STREET
DETROIT, MICHIGAN

BUREAU VERITAS

FIGURE 1



NORTHWEST

A

SOUTHEAST

A'

MW-12 (579.55)

BSB-31 (580.19)

MW-9 (580.31)

BSB-42 (583.20)

MW-11 (584.20)

BSB-44 (584.50)

MW-10 (579.70)

NW MANHOLE

SW MANHOLE

24" STORM SEWER

GRADE SURFACE LEVEL

585

580

575

570

565

560

555

550

6.58 | 9.0 | 7.21 | 9.5 | 11.4 | 6.0 | 6.96

ELEVATION (FEET) ABOVE MEAN SEA LEVEL
VERTICAL EXAGGERATION X10

LEGEND

— WELL/BORING IDENTIFICATION (GROUND ELEVATION LEVEL)

6.58 — GROUNDWATER ELEVATION (FT.)

WELL SCREENING

WELL/BORING DEPTH

FILL

SILT

PEAT

SAND

CLAY

NOTE: CROSS SECTION IS BASED ON BEST PROFESSIONAL JUDGMENT USING AVAILABLE DATA. THE THICKNESS AND EXTENT OF THE LITHOLOGIC UNITS ARE APPROXIMATED AND GEOLOGIC CONTACTS BETWEEN WELL LOCATIONS ARE INFERRED.

LEGEND

MW-# MONITORING WELL

BSB-# SOIL BORING LOCATION

SS—S—SS STORM SEWER/MANHOLE

SCALE IN FEET

0 30 60 120

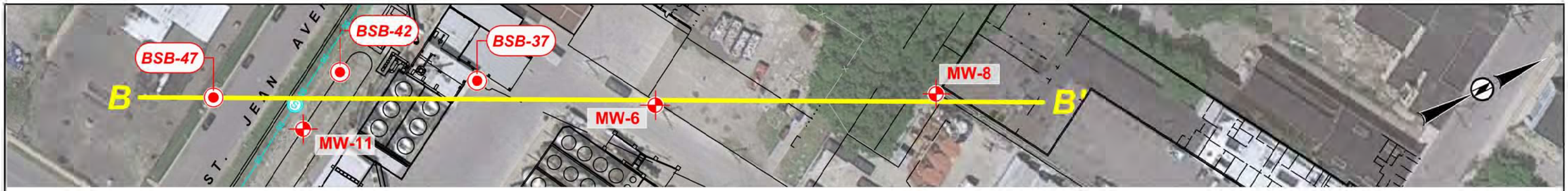
CHECK BY	KW
DRAWN BY	JL
DATE	9/6/2016
SCALE	AS SHOWN
CAD NO.	11.16.171x1
PRJ NO.	11016-000171.00

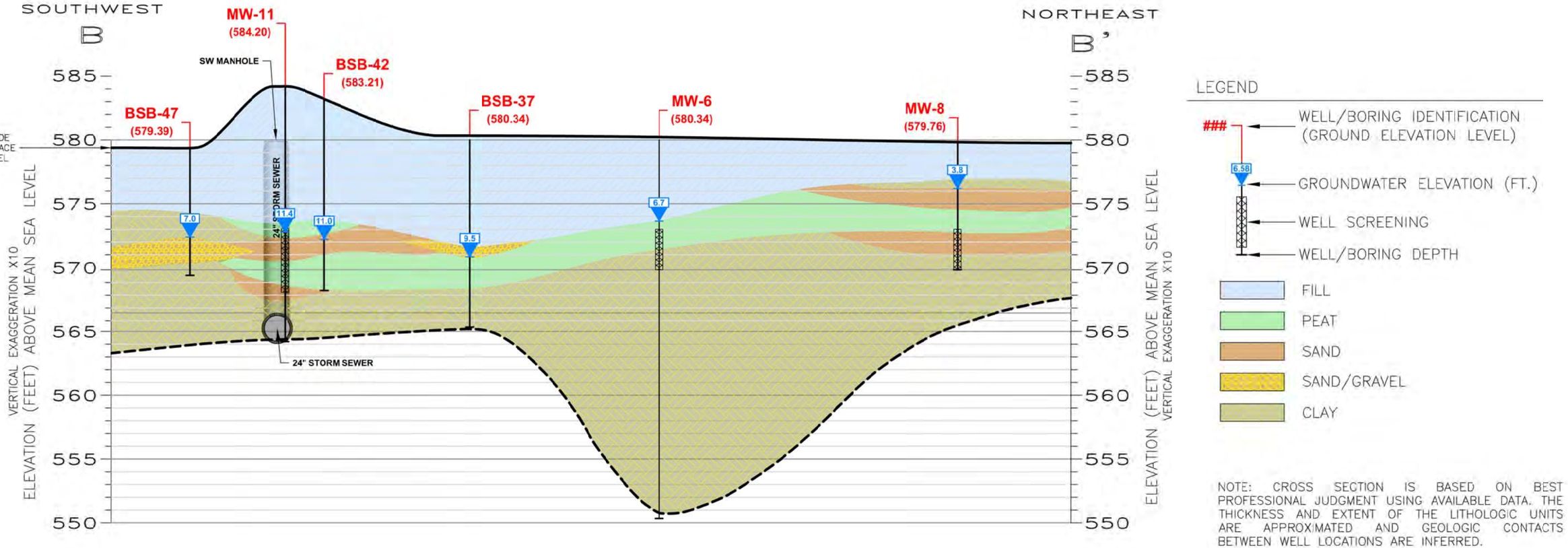
CROSS SECTION A–A'

PETRO–CHEM PROCESSING GROUP
421 LYCASTE STREET
DETROIT, MICHIGAN

BUREAU VERITAS 1828

FIGURE 2





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LEGEND

- MW-# MONITORING WELL
- BSB-# SOIL BORING LOCATION
- SS-S-SS STORM SEWER/MANHOLE

SCALE IN FEET

0 40 80 160

CHECK BY	KW
DRAWN BY	JL
DATE	9/6/2016
SCALE	AS SHOWN
CAD NO.	11.16.171x1
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CROSS SECTION B–B'

PETRO-CHEM PROCESSING GROUP
421 LYCASTE STREET
DETROIT, MICHIGAN

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FIGURE 3