

APPENDIX A

GEOPHYSICAL SURVEY REPORT (NOVA)

GEOPHYSICAL ENGINEERING SURVEY REPORT

FONF Expansion / Sabre Park BCP
Factory Outlet Boulevard
Niagara Falls, New York
14304

NOVA PROJECT NUMBER

13-0680

DATED

JULY 12, 2013

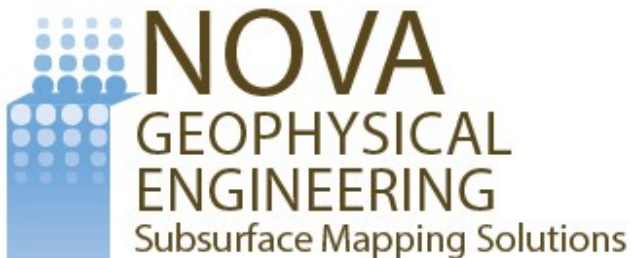
PREPARED FOR:

LANGAN

Long Warf Maritime Center
555 Long Warf Drive
New Haven, CT 06511

Tel 203-562-5771
Fax 203-781-6142

PREPARED BY:



56-01 Marathon Parkway # 765
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NOVA GEOPHYSICAL SERVICES

SUBSURFACE MAPPING SOLUTIONS

56-01 Marathon Parkway, # 765, Douglaston, New York 11362
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July 12, 2013

Mr. Kyle Zalaski

LANGAN

Long Warf Maritime Center
555 Long Warf Drive
New Haven, CT 06511

Tel 203-562-5771
Fax 203-781-6142

Re: Geophysical Engineering Survey (GES) Report
FONF Expansion / Sabre Park BCP
1705 Factory Outlet Boulevard,
Niagara Falls, New York 14304

Dear Mr. Zalaski:

Nova Geophysical Services (NOVA) is pleased to provide findings of the geophysical engineering survey (GES) at the above referenced project site: FONF Expansion / Sabre Park BCP 1705 Factory Outlet Boulevard, Niagara Falls, New York (the "Site"). Please see attached Site Location and Geophysical Survey maps for more details.

INTRODUCTION TO GEOPHYSICAL ENGINEERING SURVEY (GES)

NOVA performed a Geophysical engineering surveys consisting of Ground Penetrating Radar (GPR) and Electromagnetic (EM) surveys at the project Site. The purpose of this survey is to locate and identify any subsurface major anomalies consistent with underground storage tanks, other abnormalities and to clear and mark proposed soil borings (approximately 84), approximately 10 soil-gas and test pits (approximately 70) areas at the project site on June 23rd through June 28th, 2013.

The equipment selected for this investigation was an Electromagnetic Detector- Fisher T-6 Utility Locator, Schonstedt's Magnetometer and Noggin's GPR with 200 MHz & 250 MHz shielded antennas.

A GPR system consists of a radar control unit, control cable and a transducer (antenna). The control unit transmits a trigger pulse at a normal repetition rate of 200 MHz to 250 MHz. The trigger pulse is sent to the transmitter electronics in the transducer via the control cable. The transmitter electronics amplify the trigger pulses into bipolar pulses that are radiated to the surface.

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Factory Outlet Boulevard
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The transformed pulses vary in shape and frequency according to the transducer used. In the subsurface, variations of the signal occur at boundaries where there is a dielectric contrast (void, steel, soil type, etc.). Signal reflections travel back to the control unit and are represented as color graphic images for interpolation.

GEOPHYSICAL METHODS

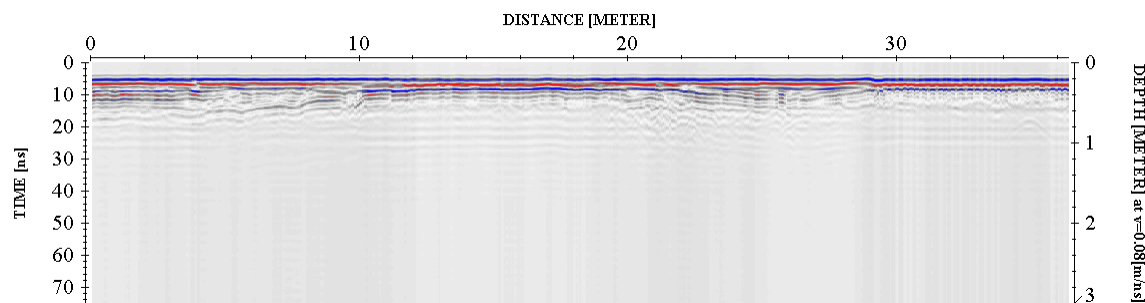
The project site was first screened using the Geonics(tm) electromagnetic detector by carrying the instrument over the project area at the site in 5' x 5' traverses. Finally, GPR profiles were collected over each anomaly and inspected for reflections, which could be indicative of major anomalies and substructures. Nova performed full scale multi-frequency GPR surveys for the targeted depths of approximately 10 to 15 feet below ground surface (bgs) pending quality of the data and sediments settings.

GPR data profiles were collected for the areas of the Site specified by the client. The surveyed areas consisted of unpaved areas with overgrown vegetation and paved (asphalt) roadways and parking lot.

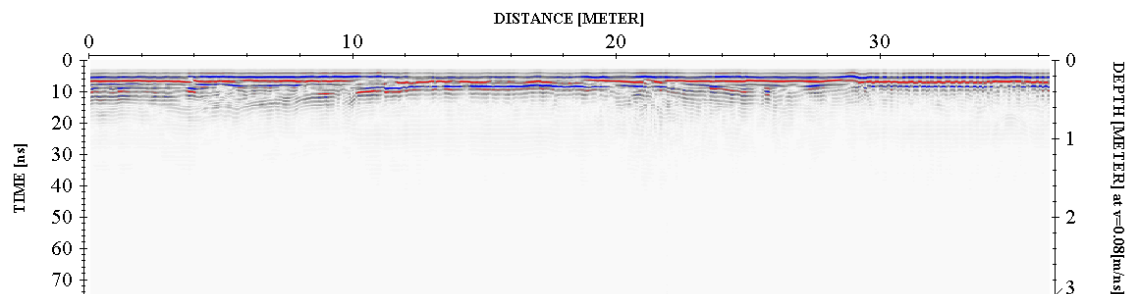
DATA PROCESSING

In order to improve the quality of the results and to better identify subsurface anomalies NOVA processed the collected data. The processes flow is briefly described at this section.

Step 1. Import raw RAMAC data to standard processing format



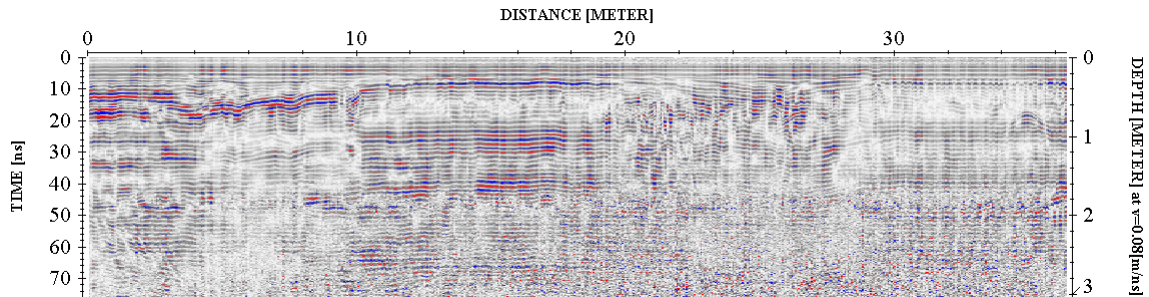
Step 2. Remove instrument noise (dewow)



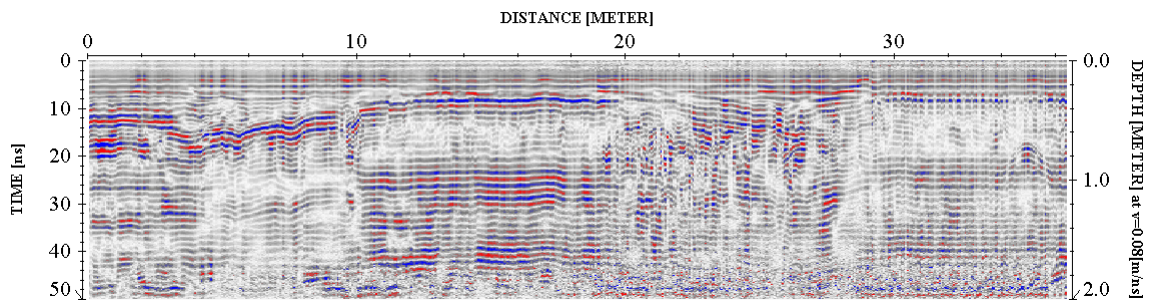
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Factory Outlet Boulevard
Niagara Falls, New York 14304

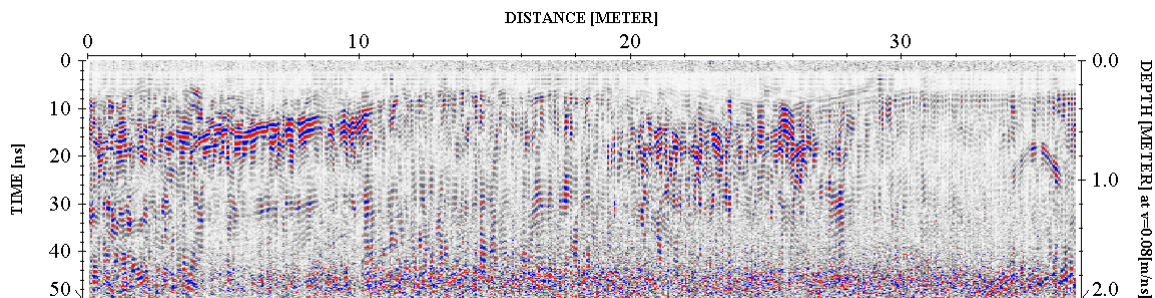
Step 3. Correct for attenuation losses (*energy decay function*)



Step 4. Remove static from bottom of profile (*time cut*)



Step 5. Mute horizontal ringing/noise (*subtracting average*)



The above example shows the significance of data processing. The last image (step 5) has higher resolution than the starting image (raw data – step 1) and describes the subsurface anomalies more accurately.

GEOPHYSICAL ENGINEERING SURVEY / GES REPORT

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Factory Outlet Boulevard
Niagara Falls, New York 14304

- GES identified anomalies with higher reflection rates located throughout the project area. Based on their reflection rate and proximity, these anomalies were consistent with concrete structured sewer lines located approximately 6 to 8 feet bgs.
- Nova cleared and marked all proposed soil boring, soil vapor, monitoring wells as well as test pit locations located throughout of the project site. Due to existing of subsurface utility lines and some other abnormalities some of these locations were adjusted accordingly.
- GES did not identify any other anomalies that maybe consistent with underground storage tanks (USTs) or any other major substructure.
- Geophysical Survey Plan portrays the areas investigated during the geophysical survey.

If you have any questions please do not hesitate to contact the undersigned.
Sincerely,

NOVA Geophysical Services



Levent Eskicakit, P.G., E.P.
Project Engineer

Appendix:

Figure 1 Site Location Map
Geophysical Survey Plan
Geophysical Survey Images
GPR & EM Images

FIGURE 1

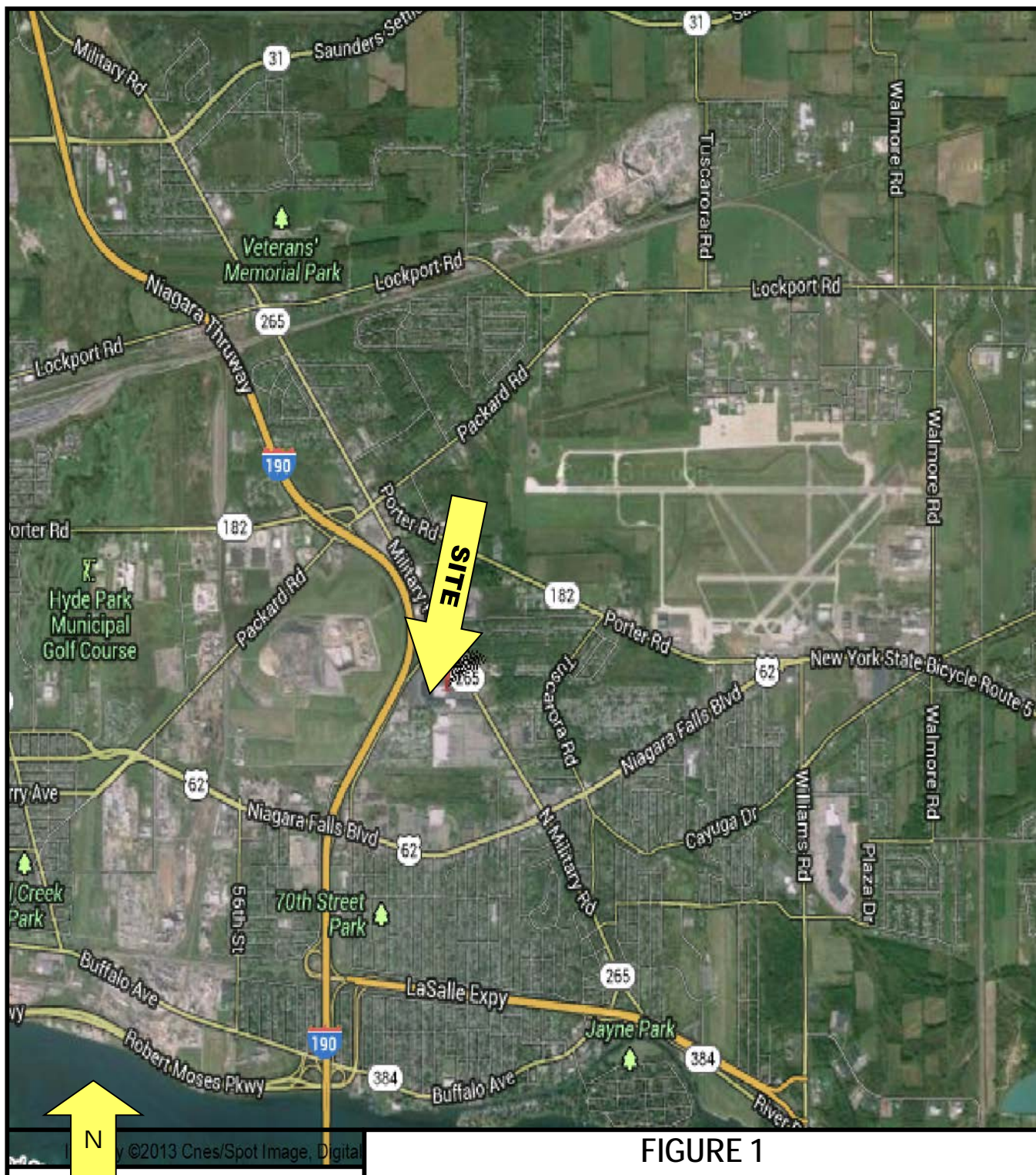


FIGURE 1
SITE LOCATION MAP

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Geophysical Services

Subsurface Mapping Solutions

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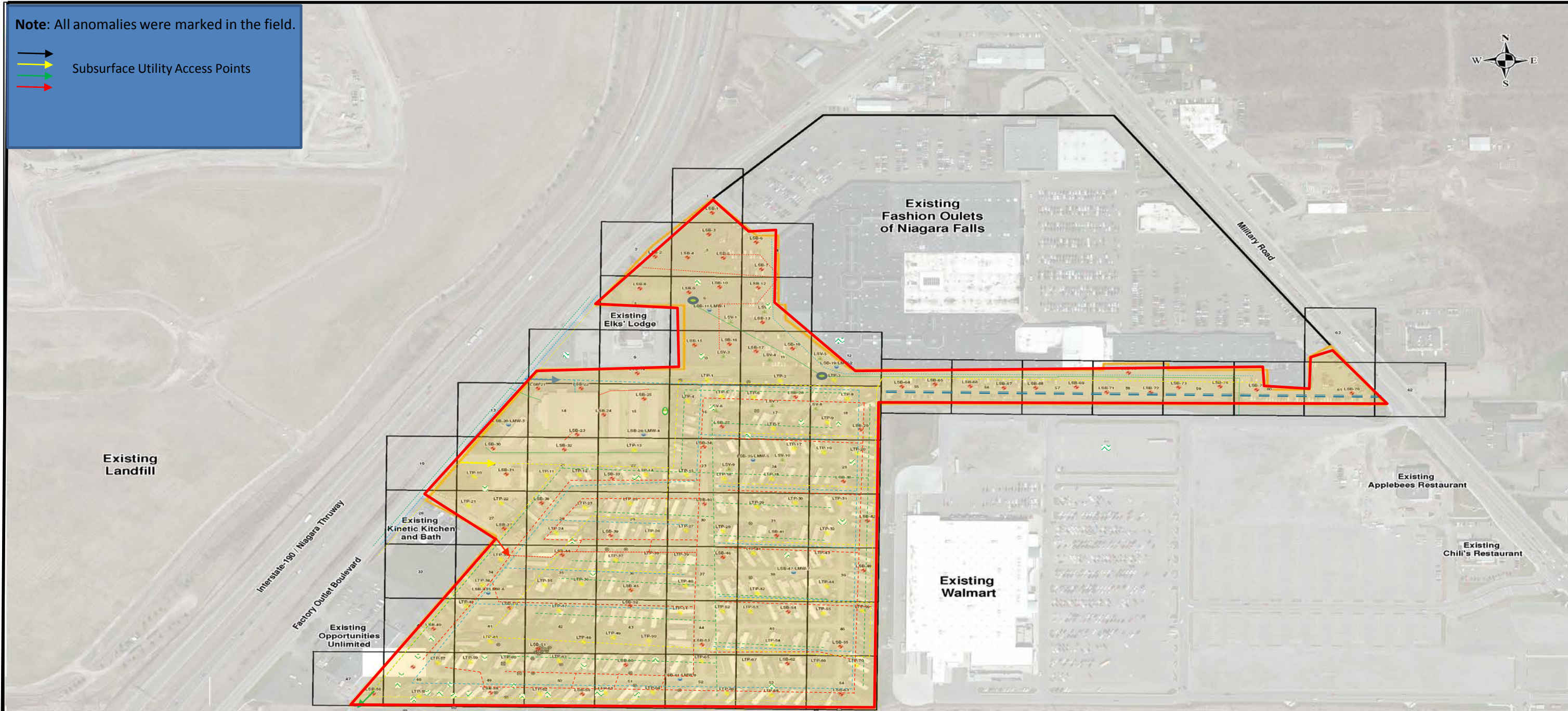
SITE: FONF Expansion / Sabre Park BCP
1 Factory Outlet Boulevard
Niagara Falls, New York

SCALE: See Map

GEOPHYSICAL SURVEY MAP

Note: All anomalies were marked in the field.

Subsurface Utility Access Points



NOVA
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GEOPHYSICAL SURVEY PLAN


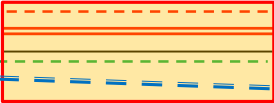



SITE : **FONF EXPANSION / SABRE PARK BCP**
Factory Outlet Boulevard, Niagara Falls, New York

CLIENT: **LANGAN**

DATE: June 23rd through June 28th, 2013

Scale See Map

INFORMATION

	GPR/EM Surveyed		Underground Utility Lines / Pipes
	Scattered Anomalies		Storm Drain
	Major Anomaly		

GEOPHYSICAL IMAGES & PHOTOS

GEOPHYSICAL IMAGES

FONF Expansion / Sabre Park BCP

Factory Outlet Boulevard, Niagara Falls, New York

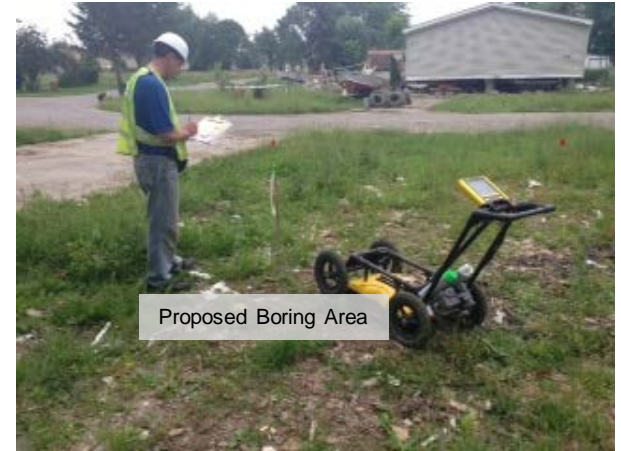
June 23rd – June 28th, 2013



GEOPHYSICAL IMAGES
FONF Expansion / Sabre Park BCP
Factory Outlet Boulevard, Niagara Falls, New York
June 23rd – June 28th, 2013



GEOPHYSICAL IMAGES
FONF Expansion / Sabre Park BCP
Factory Outlet Boulevard, Niagara Falls, New York
June 23rd – June 28th, 2013

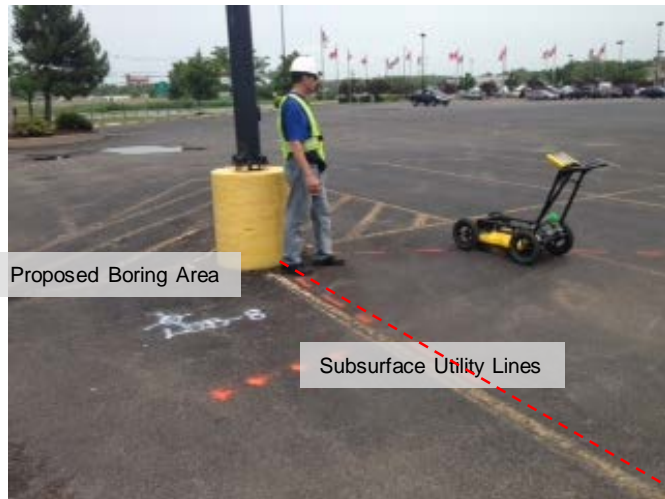
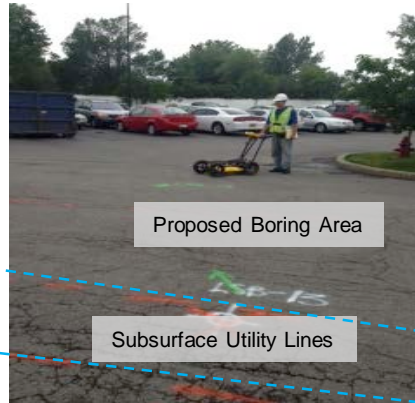


GEOPHYSICAL IMAGES

FONF Expansion / Sabre Park BCP

Factory Outlet Boulevard, Niagara Falls, New York

June 23rd – June 28th, 2013



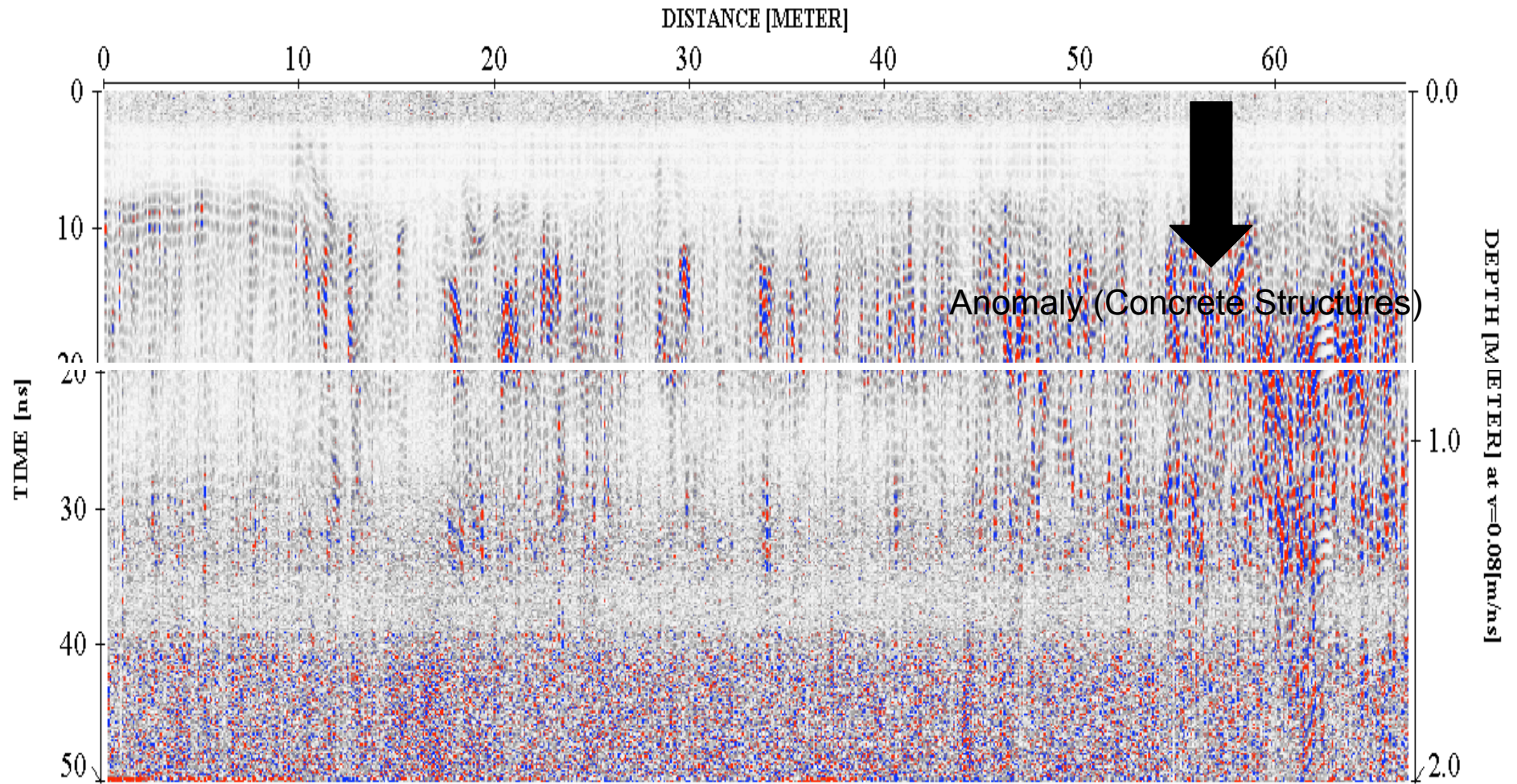
GEOPHYSICAL & GPR IMAGES

GEOPHYSICAL (GPR) IMAGES

FONF Expansion - Sabre Park BCP

Factory Outlet Boulevard, Niagara Falls, New York

June 23rd through June 28th, 2013

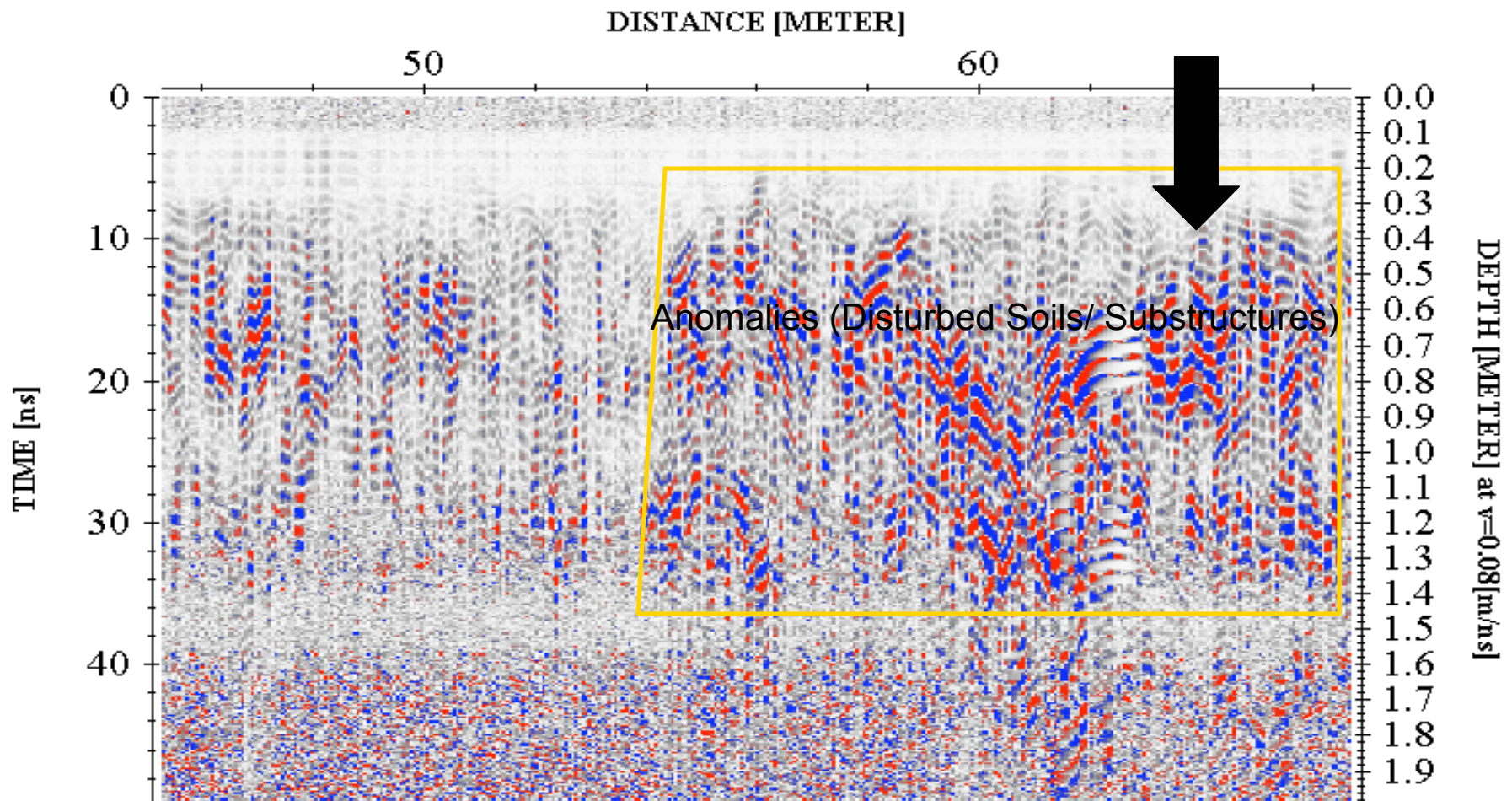


GEOPHYSICAL (GPR) IMAGES

FONF Expansion - Sabre Park BCP

Factory Outlet Boulevard, Niagara Falls, New York

June 23rd through June 28th, 2013



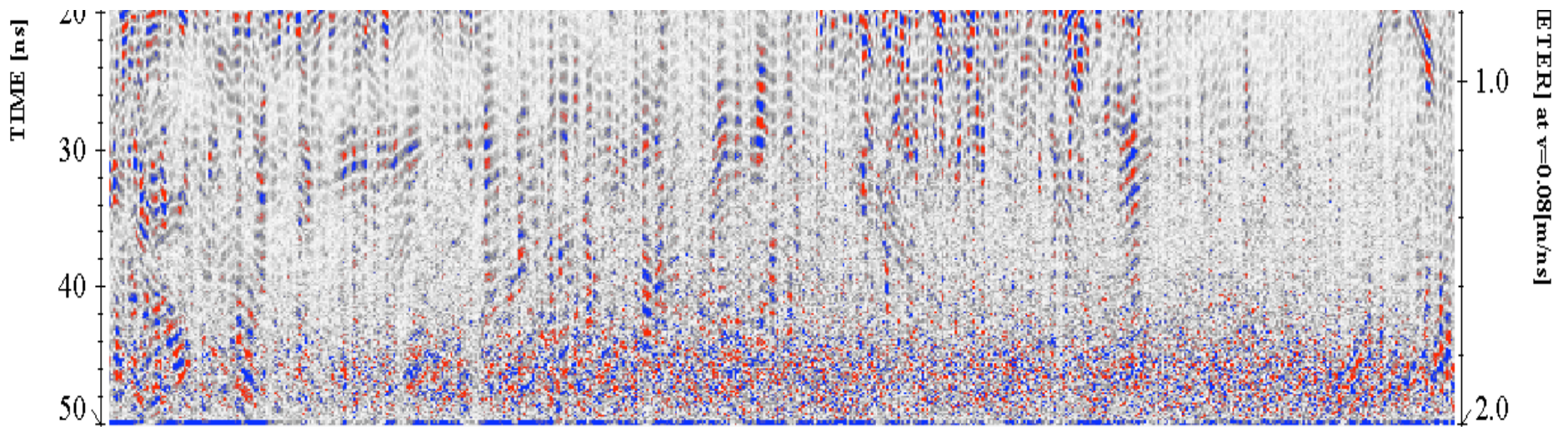
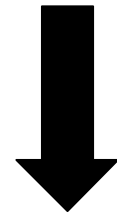
GEOPHYSICAL (GPR) IMAGES

FONF Expansion - Sabre Park BCP

Factory Outlet Boulevard, Niagara Falls, New York

June 23rd through June 28th, 2013

Anomaly (Utilities)



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GEOPHYSICAL (GPR) IMAGES

FONF Expansion - Sabre Park BCP

Factory Outlet Boulevard, Niagara Falls, New York

June 23rd through June 28th, 2013

