01-0497

Corporate Environmental Programs
General Electric Company
100 Woodlawn Avenue, Pittsfield, MA 01201

Transmitted Via Federal Express

July 9, 2002

Mr. Bryan Olson
Office of Site Remediation and Restoration
U.S. Environmental Protection Agency
One Congress Street
Boston, MA 02203-2211

**Re: General Electric - Pittsfield/Housatonic River Site
Hill 78 On-Plant Consolidation Area (GECD210)
Geophysical Testing Results and Proposed Deep Soil Borings**

Dear Mr. Olson:

This letter summarizes recent activities conducted by the General Electric Company (GE) related to the performance of geophysical surveys at the Hill 78 On-Plant Consolidation Area (OPCA) in Pittsfield, Massachusetts. In addition to summarizing the scope of recent activities and including a copy of the detailed technical report for these activities, this letter also provides GE's proposed course of action to address several subsurface anomalies detected during the survey. As presented herein, the proposed follow-up actions are consistent with the activities previously discussed between GE and the U.S. Environmental Protection Agency (EPA) and documented in several prior letters.

Separate from the geophysical surveys and related activities, this letter also includes GE's proposal concerning the location of two deep soil borings to be installed in the vicinity of the current Hill 78 OPCA. As discussed herein, GE concurs with EPA's prior recommendations related to the location of these borings and will proceed with their installation. Additional information is presented below.

A. Geophysical Survey Activities

In several OPCA-related correspondences between 1999 and 2000, EPA and GE have jointly developed and agreed to a scope of work for a geophysical survey related to the Hill 78 OPCA. In general, these activities required that GE perform a geophysical survey focusing on two areas of the Hill 78 OPCA: 1) portions of the outer perimeter associated with the anticipated final Hill 78 OPCA configuration, and 2) the area of existing monitoring well H78B-8R where non-aqueous phase liquid (NAPL) has been observed. Depending on the results of the geophysical survey (i.e., if subsurface anomalies were observed), several potential follow-up actions were identified including additional geophysical surveys, performance of subsurface soil explorations and/or monitoring well installations, or extension of the final OPCA cover system over the area in question. Following the establishment of the basic framework for the performance of the geophysical surveys, GE initiated survey activities in 2001. A chronology of activities related to the implementation of the survey is presented below:

- In a letter dated October 30, 2001, GE submitted a proposal to conduct a geophysical survey consistent with the scope of such activities as previously discussed between EPA and GE.

- Between November 26 and 27, 2001, GE retained Geophysical Applications, Inc. (GAI) to perform the survey. The preliminary results of these activities were submitted to EPA in a letter dated December 20, 2001. In that letter and accompanying figure, five potential subsurface anomalies were identified for further discussion between GE and EPA (i.e., Anomaly 1 through Anomaly 5, as shown on Figure 1).

- In a technical meeting held in Pittsfield on January 9, 2002, EPA and GE discussed the preliminary results of the geophysical survey and potential follow-up activities.

- Subsequent to the technical meeting and in a letter dated February 28, 2002, EPA provided conditional approval of GE's December 20, 2001 submittal and required that GE address certain comments.

- Between April 2 and 3, 2002, GAI performed supplemental geophysical surveys as required in EPA's February 28, 2002 conditional approval letter. The results of both the 2001 and 2002 surveys performed by GAI are summarized in their technical report, included as Attachment A to this letter.

As indicated above, the supplemental geophysical surveys focused on five anomalies identified by GE during the 2001 survey activities in addition to anomalies raised by EPA in their conditional approval letter. For each of these areas, the combination of geophysical surveys that were employed [e.g., electromagnetic (EM) and ground-penetrating radar (GPR)] was sufficient to either explain the cause(s) of the anomalies and/or generally delineate the horizontal extent of the anomalies. In particular, the new EM surveys were able to define the lateral extent of Anomalies 4 and 5 and the additional anomaly identified by EPA along the northeast side of the landfill. Additional EM surveys were also performed south of the landfill in an area of moderate-size EM anomalies, as requested by EPA. These moderate-size anomalies generally continue to the southern edge of the survey area, which is bordered by an aboveground pipe. A GPR survey was performed in the area south of the landfill. This survey only identified three small GPR reflection features and none of them were associated with an EM anomaly. A GPR survey was also performed over the EM anomaly located on the eastern side of the landfill and near Anomaly 4. Some small GPR reflections were observed near the eastern EM anomaly, but these reflections were not co-located with that anomaly. Several GPR reflections were also observed in the vicinity of EM Anomaly 4. Although a couple of the reflections appear to be coincident with portions of EM Anomaly 4, the majority of them are not. It should be noted that the high conductivity area along the east side of the shed appears to be primarily associated with a series of metal pipes in that area.

With regard to EPA's concern about the location accuracy of the geophysical survey, GAI confirmed the accuracy base on a review of survey stake locations, survey notes, and field observations of physical features. The detection of EM anomalies along the eastern edge of the landfill corresponds to the presence of surface metal rather than the concrete pads. Well H78B-18 is located between the actual traverses where the EM31 data were collected. The EM31 instrument was operated in the vertical mode to maximize the survey depth range, and the short monitoring well casing provided a small EM anomaly that was subsequently smoothed out during the contouring process. Figure 1 presents the results of the geophysical surveys on a site plan, while additional information is contained in GAI's attached technical report.

Based on the geophysical survey results and consistent with the options that have been previously documented, GE has elected to expand the limits of the final Hill 78 OPCA cover system to include the areas where the anomalies were identified. This future activity will involve the extension of the anticipated southwestern edge of the final Hill 78 OPCA in a southwesterly direction to address

Anomalies 2 through 5 depicted on Figure 1 (note that Anomaly 1 is located within an area that will already be subject to the installation of a final OPCA cap). Additional design details concerning this expansion will be developed as part of the final capping design.

With the completion of the geophysical survey and selection of an approach to address the subsurface anomalies detected as part of that survey (i.e., expansion of the final cap), GE has satisfied certain prior EPA requirements. Specifically, in a series of letters between GE and EPA in 2000 (i.e., April 27 and June 13) and 2001 (i.e., January 30 and March 9), it was agreed that consolidation of materials at the Hill 78 OPCA would not occur within the areas subject to the geophysical survey until the survey and any follow-up subsurface investigations were completed. Based on the activities completed to date and the course of action described above, the consolidation of materials within the Hill 78 OPCA can now include those areas that were subject to the geophysical survey. As such, as GE continues to perform its consolidation activities throughout this year, some material placement within the areas previously subject to the geophysical surveys (including areas located south of the existing access road) may occur.

B. Proposal for Deep Soil Borings

As part of its OPCA-related discussions with EPA, GE agreed to advance two deep soil borings to determine if dense non-aqueous phase liquid (DNAPL) may be present in topographically low areas of the till layer beneath the Hill 78 area. Subsequently, in a document entitled *Baseline Monitoring Program Proposal for Plant Site 3 Groundwater Management Area* (GMA 4 Baseline Monitoring Proposal) (July 2001), GE presented its proposal for the installation of deep soil borings RAA9-1 and RAA9-2. In a letter dated December 28, 2001, EPA approved the general approach presented for the proposed top of till investigations (i.e., two soil borings advanced to the top of till), but did not specifically approve the proposed investigation locations. Instead, EPA indicated that specific locations would be recommended once the results of a geophysical survey (performed by EPA and separate from GE's efforts summarized above) were evaluated. Subsequently, based on the results of its geophysical survey, EPA recommended alternative locations for soil borings RAA9-1 and RAA9-2 to coincide with the deepest portion of an apparent till trough. GE has reviewed and concurs with these EPA-recommended locations. As such, GE will proceed with the installation of these two soil borings in accordance with the details specified in the GMA 4 Baseline Monitoring Proposal. If either of these borings indicates the potential presence of DNAPL below the water table, a monitoring well will be installed with the well screen placed at the depth of concern. Following installation, GE will monitor such well(s) for groundwater elevation and the presence of DNAPL as part of the quarterly baseline monitoring performed for GMA 4.

As presented in the Addendum to the GMA 4 Baseline Monitoring Proposal (GE letter to EPA dated February 21, 2002), GE indicated that borings RAA9-1 and RAA9-2 would be installed upon final approval by EPA of the proposed locations. Since GE has agreed to install these borings at the locations recommended (and thus approved) by EPA, GE will proceed to install these borings within the next month or so. It is anticipated that a summary report on the boring installations, as well as any DNAPL found and, if necessary, the installation of monitoring wells in the borings, will be submitted to EPA within 60 days of this letter.

Please feel free to contact me at 413-494-3177 with any questions or comments.

Sincerely,

GENERAL ELECTRIC COMPANY

John F. Novotny / [signature] for

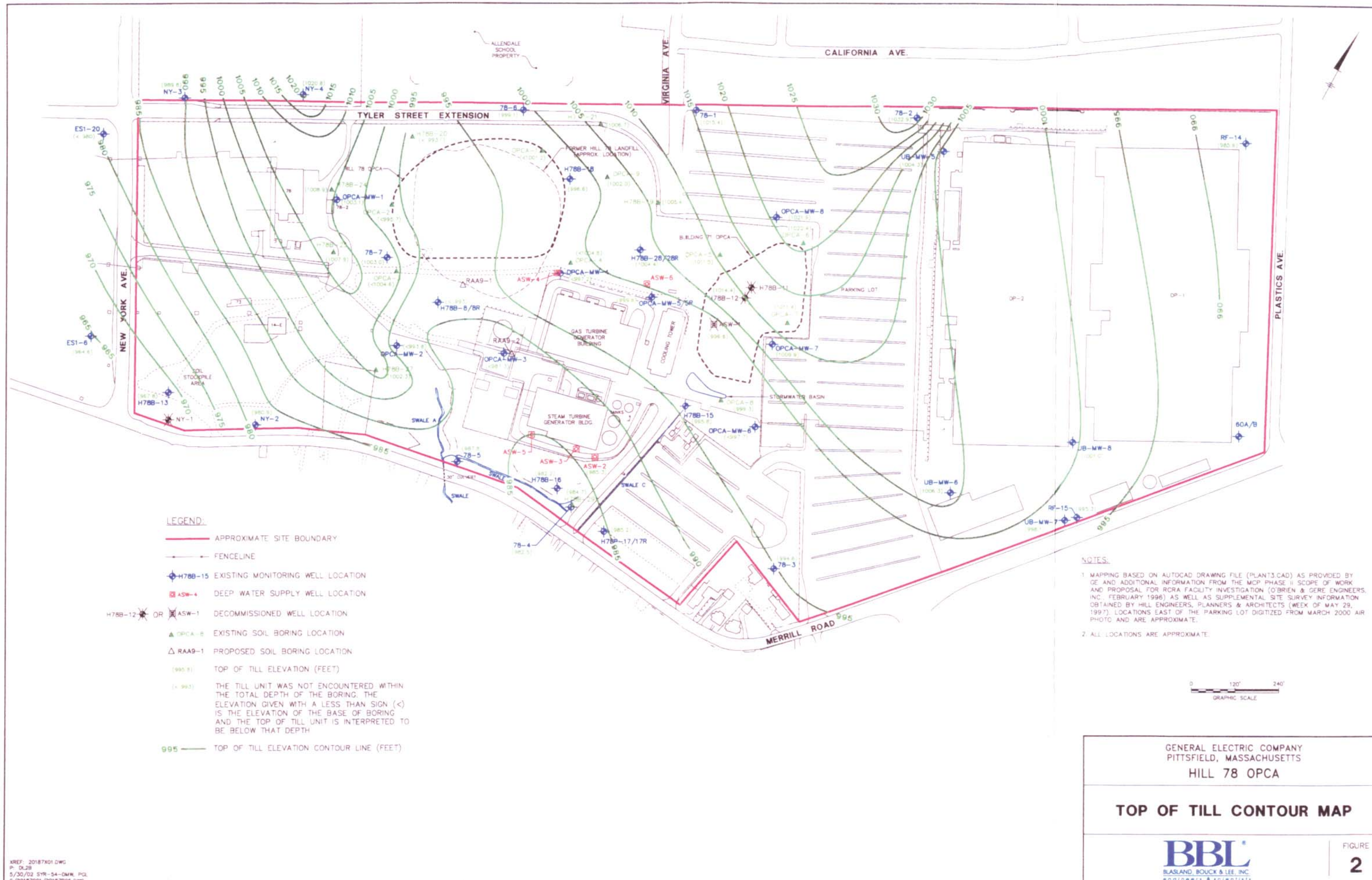
John F. Novotny, P.E.
Manager - Facilities & Brownfields Programs

Enclosures

U:\MEG02\3562199.doc

cc: M. Nalipinski, EPA
T. Conway, EPA (cover letter only)
H. Inglis, EPA
K.C. Mitkevicius, USACE
D. Jamros, Weston
S. Steenstrup, MDEP
S. Keydel, MDEP
Mayor S. Hathaway, City of Pittsfield
Pittsfield Commissioner of Public Health
J. Bernstein, Bernstein, Cushner & Kimmel
T. Bowers, Gradient
M. Carroll, GE (cover letter only)
A. Silfer, GE (cover letter only)
R. McLaren, Esq., GE (cover letter only)
J. Bieke, Esq., Shea & Gardner
J. Nuss, BBL
J. Ciampa, SPECTRA
Public Information Repositories
GE Internal Repositories


TYLER STREET EXTENSION
CONCRETE MANHOLE
CATCH BASIN:
RIM 1007.69'
INV 10" RCP UNOBTAINABLE
DRAIN MANHOLE:
RIM 1008.65'
INV 12" RCP UNOBTAINABLE
INV 10" RCP UNOBTAINABLE
DRAIN MANHOLE:
RIM 1010.88'
INV IN 10" RCP 1005.86'
SE INV 42" CMP 1000.09'
NW INV 42" CMP 999.99'
INV 18" CMP
1002.29'
INV 12" RCP UNOBTAINABLE
CATCH BASIN
RIM 1011.00'
INV 10" RCP 1006.16'
CONCRETE MANHOLE
DECOMMISSIONED PIPES
CONCRETE MANHOLE
1015
ANOMALY 1
MON. WELL
H78B18
CATCH BASIN:
RIM 1021.59'
INVERT UNOBTAINABLE
TOP OF WATER 1018.29'
EXISTING LEASE BOUNDARY
METAL FENCE
CONCRETE PADS
WELL #6
HILL 78
OPCA
WELL
WELL #4
METAL FENCE
GATE
SANITARY MANHOLE
RIM 1013.47'
CTR.996.07'
NOTE:
UNABLE TO GET A TRUE INVERT
MH RIM IS +/- 4' ABOVE GROUND
MH STRUCTURE IS MADE OUT OF BRICKS
AND IS FALLING APART.
CATCH BASIN
Rim 1016.68
INV. IN 8" VCP 1012.73'
INV. OUT 12" VCP 1012.20'
CATCH BASIN
Rim 1016.75
INV. 8" VCP 1013.30'
CATCH BASIN
Rim 1017.71
INV. IN 1012.61'
INV. OUT 1012.59'
ANOMALY 4
EXISTING CITY OF
PITTSFIELD SEWER
EASEMENT
ANOMALY 2
ANOMALY 5
OVERHEAD STEAM PIPE
CATCH BASIN
RIM 1016.75'
INV. IN 1010.05'
INV. OUT 1010.00'
NOTE:
UNABLE TO DETERMINE INVERT AT
EACH SIDE OF STORM/SANITARY
MH (+/-6' BELOW MH RIM IS AN
1'-2' BORE HOLE)
STORM MANHOLE
RIM 1022.89'
CTR. 996.04'
MON. WELL
H78B8
STORM MH
RIM 1016.70'
ANOMALY 3
SANITARY MANHOLE
RIM 1023.02'
CTR 994.12'
INVERTS
NW 8" VCP 1010.81
NE 12" VCP 1009.18
SE 12" VCP 1009.26
SW 12" VCP 1009.16
CATCH BASIN
RIM 1015.70'
INV 12" VCP 1013.02'
12" VCP
EXISTING WATER EASEMENT
10" VCP
OVERHEAD PIPE BRIDGE
OVERHEAD STEAM PIPE
INV. OUT
10" VCP 1006.62'
1010
1020
1025
LEGEND
INDEX CONTOUR LINE
INTERMEDIATE CONTOUR
LINE MONITORING WELL
STORM WATER MANHOLE
SANITARY SEWER MANHOLE
LIMIT OF GEOPHYSICAL SURVEY
EM31 IN PHASE CONTOUR
EM31 CONDUCTIVITY CONTOUR
EM61 CONTOUR
2.5 GPR REFLECTION LESS THAN 2-FEET WIDE (THE ASSOCIATED DEPTH SHOWN IN FEET)
2 GPR REFLECTION GREATER THAN 2-FEET WIDE (THE ASSOCIATED DEPTH SHOWN IN FEET)
NOTES:
1. BASE MAP INFORMATION SHOWN ON THIS DRAWING WAS DEVELOPED FROM FIELD SURVEY DATA OBTAINED BY BLASLAND, BOUCK & LEE, INC. ON FEBRUARY 10, 1999. CONDITIONS SHOWN ARE APPROXIMATE ONLY DUE TO SNOW AND ICE ACCUMULATIONS EXISTING AT TIME OF SURVEY.
2. ELEVATIONS SHOWN ARE REFERENCED TO NATIONAL GEODETIC VERTICAL DATUM (NGVD) 1929.
3. HORIZONTAL DATUM IS REFERENCED TO THE MASSACHUSETTS STATE PLANE COORDINATE SYSTEM (NAD 1927).
4. GEOPHYSICAL SURVEY CONDUCTED BY GEOPHYSICAL APPLICATIONS INC.
5. LOCATIONS ARE APPROXIMATE.
PITTSFIELD GENERATING COMPANY FACILITY
40' 0 40' 80'
1"=40'
GENERAL ELECTRIC COMPANY
PITTSFIELD MASSACHUSSETTS
HILL 78 OPCA
GEOPHYSICAL SURVEY
BBL
BLASLAND, BOUCK & LEE, INC.
engineers & scientists
FIGURE
1
X: 20187X03.DWG, 20187X04.DWG
L: ON=*, OFF=REF
P: PAGESET/PLT-DL
06/12/02 SYR-54-RLP GMS KMD
C/20187001/20187T01.DWG


CALIFORNIA AVE.
VIRGINIA AVE.
TYLER STREET EXTENSION
NEW YORK AVE.
PLASTICS AVE.
MERRILL ROAD
ALLENDALE SCHOOL PROPERTY
FORMER HILL 78 LANDFILL (APPROX. LOCATION)
BUILDING 71 OPCA
PARKING LOT
GAS TURBINE GENERATOR BUILDING
COOLING TOWER
STEAM TURBINE GENERATOR BLDG.
STORMWATER BASIN
SOIL STOCKPILE AREA
SWALE A
SWALE C
SWALE
OP-1
OP-2
NY-1
NY-2
NY-3
NY-4
ES1-6
ES1-20
78-1
78-2
78-3
78-4
78-5
78-6
78-7
RF-14
RF-15
60A/B
UB-MW-5
UB-MW-6
UB-MW-7
UB-MW-8
OPCA-MW-1
OPCA-MW-2
OPCA-MW-3
OPCA-MW-4
OPCA-MW-5/5R
OPCA-MW-6
OPCA-MW-7
OPCA-MW-8
H78B-6/8R
H78B-11
H78B-12
H78B-13
H78B-15
H78B-16
H78B-17/17R
H78B-28/28R
ASW-1
ASW-2
ASW-3
ASW-4
ASW-5
ASW-6
RAA9-1
RAA9-2
LEGEND:
APPROXIMATE SITE BOUNDARY
FENCELINE
H78B-15 EXISTING MONITORING WELL LOCATION
ASW-4 DEEP WATER SUPPLY WELL LOCATION
H78B-12 OR ASW-1 DECOMMISSIONED WELL LOCATION
OPCA-6 EXISTING SOIL BORING LOCATION
RAA9-1 PROPOSED SOIL BORING LOCATION
(995.9) TOP OF TILL ELEVATION (FEET)
(< 993) THE TILL UNIT WAS NOT ENCOUNTERED WITHIN THE TOTAL DEPTH OF THE BORING. THE ELEVATION GIVEN WITH A LESS THAN SIGN (<) IS THE ELEVATION OF THE BASE OF BORING AND THE TOP OF TILL UNIT IS INTERPRETED TO BE BELOW THAT DEPTH
995 TOP OF TILL ELEVATION CONTOUR LINE (FEET)
NOTES:
1. MAPPING BASED ON AUTOCAD DRAWING FILE (PLANT3.CAD) AS PROVIDED BY GE AND ADDITIONAL INFORMATION FROM THE MCP PHASE II SCOPE OF WORK AND PROPOSAL FOR RCRA FACILITY INVESTIGATION (O'BRIEN & GERE ENGINEERS, INC., FEBRUARY 1996) AS WELL AS SUPPLEMENTAL SITE SURVEY INFORMATION OBTAINED BY HILL ENGINEERS, PLANNERS & ARCHITECTS (WEEK OF MAY 29, 1997). LOCATIONS EAST OF THE PARKING LOT DIGITIZED FROM MARCH 2000 AIR PHOTO AND ARE APPROXIMATE.
2. ALL LOCATIONS ARE APPROXIMATE.
0 120' 240'
GRAPHIC SCALE
GENERAL ELECTRIC COMPANY
PITTSFIELD, MASSACHUSETTS
HILL 78 OPCA
TOP OF TILL CONTOUR MAP
BBL
BLASLAND, BOUCK & LEE, INC.
engineers & scientists
FIGURE
2
XREF: 20187X01.DWG
P: DL2B
5/30/02 SYR-54-DMW, PGL
C/20187001/20187B05.DWG

01-0497

Attachment A

Geophysical Survey Report
Perimeter of Hill 78 Consolidation Area
General Electric Site
Pittsfield, Massachusetts

Prepared for
GENERAL ELECTRIC COMPANY
June 2002

GEOPHYSICAL
APPLICATIONS
INCORPORATED

June 28, 2002

Mr. John Novotny
GENERAL ELECTRIC COMPANY
100 Woodlawn Avenue
Pittsfield, MA 01201

Subject: Geophysical Survey Report
Perimeter of Hill 78 Consolidation Area
General Electric Site
Pittsfield, Massachusetts

Dear Mr. Novotny:

Geophysical Applications, Inc. performed a geophysical survey designed to locate potential areas of buried metal within a 25- to 50-foot wide corridor around the perimeter of the Hill 78 Consolidation Area, and a 25- by 25-foot area centered on monitoring well H78B-8R. Additional survey coverage was added in areas where geophysical anomalies appeared to extend beyond the initial 50-foot wide survey region.

This survey was completed using electromagnetic metal locating (EM61) and terrain conductivity (EM31) instruments. Ground penetrating radar (GPR) was also utilized over selected EM anomalies.

METHOD OF INVESTIGATION

Survey Grid

Blasland Bouck and Lee (BBL) provided survey control for this project. BBL pre-staked survey points for the geophysical survey referenced to a centerline surrounding Hill 78. Stakes were placed every 50 feet along the centerline, with additional stakes placed at turning points. Stakes were also placed 25 feet to the left and right of each centerline stake, perpendicular to the centerline.

In areas where the EM61 instrument was used, Geophysical Applications added stakes every 5 feet between the centerline stakes and the stakes offset 25 feet from centerline. In areas where EM31 profiling was performed Geophysical Applications placed the additional survey stakes at 10-foot intervals. A 30- by 30-foot grid was spray painted around monitoring well H78B-8R with grid nodes marked every five feet.

Electromagnetic Profiling

Two electromagnetic (EM) techniques are commonly used to detect buried metal: the time domain and frequency domain methods. Both methods involve measuring the response of the ground to an induced electromagnetic field.

Both EM methods can locate buried metal objects. In addition, the EM frequency domain method can also map conductivity changes, e.g. inorganic contaminant plumes or clayey soils.

125 Washington Street • Suite Two • Foxboro • MA • 02035
508-543-1388 • FAX 508-543-1019

Time Domain Method

The time domain method involves measuring the time-varying response of the ground to an induced electromagnetic field. The Geonics EM61 instrument produces a pulsed electromagnetic field generated with a backpack-mounted transmitter. Eddy decay currents create a secondary magnetic field in the subsurface that is measured by two separate receiver coils. The EM measurements are taken after the ground current has dissipated and only secondary magnetic fields caused by metallic objects remain. EM61 data values are recorded in millivolts (mV).

Buried metal objects usually produce a well-defined secondary field allowing for precise locationing of discrete metal objects. The EM61 depth of investigation is approximately 6 feet below ground surface.

A Geonics model EM61 instrument coupled to an OMNI model 720 datalogger recorded EM data over accessible areas. EM61 data were acquired along traverses located parallel to the centerline and spaced 2.5 feet apart. EM61 data values were recorded at approximately 0.8- to 3-foot distance intervals depending upon the method of data collection permitted by surface conditions (odometer or time-interval modes). EM61 surveying was also performed around well H78B-8R.

An EM61 contour map of the lower coil's response was prepared using Surfer for Windows with a Kriging grid algorithm, for inclusion with this report.

Frequency Domain Method

The EM31 instrument contains transmitter and receiver coils at either end of a 14-foot boom. The fixed intercoil spacing allows the instrument to sense lateral variations in bulk electrical conductivity, at depths up to 15 feet below ground surface.

A transmitter coil applies a high-frequency electromagnetic field to the ground, creating current eddies within electrically-conductive earth materials. These eddies generate secondary electromagnetic fields proportionate to the true electrical conductivity of the subsurface materials. A receiver coil measures the strength of this secondary field.

There are two components of the induced magnetic field measured by the EM31, quadrature and in-phase. Both components are recorded simultaneously during data acquisition.

The ratio of the quadrature phase component of the secondary magnetic field to the primary field yields apparent ground conductivity in units of milli-Siemens/meter (mS/m) or millimhos/meter. The ratio of the inphase component of the secondary magnetic field to the primary field yields an in-phase data value recorded in parts/thousand (ppt).

Quadrature phase measurements respond to geologic materials such as clay, sand, and fill, inorganic leachate, and highly conductive materials such as metal. Inphase measurements are primarily sensitive to metallic objects. It should be noted that quadrature phase measurements are more sensitive than inphase measurements to long, linear buried-metal objects such as pipes.

An EM31 meter was used during this survey in areas inaccessible to the EM61 instrument. A Geonics model EM31-MK2 conductivity meter with a built-in datalogger recorded EM conductivity (quadrature-phase) and in-phase data values at approximately 2-foot intervals along traverses oriented parallel to the pre-staked centerline and spaced 10 feet apart. The EM31 was operated in the vertical dipole mode to maximize depth penetration.

EM31 inphase and quadrature phase contour maps were prepared using Surfer for Windows with a Kriging grid algorithm, for inclusion with this report.

Ground Penetrating Radar Profiling

GPR profiling is based on the principle that materials with contrasting electrical properties reflect radar signals back to the ground surface. Metal objects such as drums or pipes generally produce high-amplitude GPR reflections. Plotting observed reflections on a base map typically enables an interpreter to identify a target's lateral extent, or a pipe's trend.

GPR data were recorded using a GSSI model SIR-3 radar instrument with a 400 MHz antenna. Radar profiles were recorded continuously along perpendicular traverses located 5 or 10 feet apart. These profiles were displayed on a black-and-white chart recorder for immediate inspection and preliminary interpretation.

The horizontal scale on each GPR record was determined by the antenna speed, and survey stations were noted by pressing a marker button as the antenna passed each grid node. The vertical scale of radar cross sections recorded during this survey was 60 nanoseconds. This time interval was selected to be greater than the anticipated maximum two-way travel time during which real GPR reflections might be observed by the antenna. Maximum GPR-signal depth penetration at this site was approximately 4 to 6 feet.

GPR data was collected over several larger EM anomalies that could not be attributed to aboveground metal objects, to help ascertain the burial depth and shape of the EM anomaly sources.

SURVEY LIMITATIONS

GPR interpretations are subjective, based on identifying reflection patterns that may not uniquely represent a subsurface object. Profiling along perpendicular traverses helps determine the size and shape of buried objects. GPR interpretation is more subjective than most geophysical methods.

Varying a GPR antenna's speed along a survey traverse can cause slight errors in horizontal distance interpolations and inferred object positions. Distance interpolation errors were minimized during this survey by using 5-foot distance marks.

GPR signal-penetration depths may be reduced by shallow groundwater, roadway de-icing salt, steel-reinforced concrete, buried rubble or electrically conductive soils (especially clay). Materials deeper than the GPR signal's maximum penetration depth cannot be detected by the radar signal.

GPR is most likely to detect concrete or metallic objects. Plastic or vitreous clay pipes, or fiberglass objects, are unlikely to be detected with GPR.

EM data values may be adversely affected by power lines or aboveground metal objects located within approximately 20 feet of a survey traverse. Anomalies caused by buried metal objects within those regions may be difficult to distinguish from anomalies caused by aboveground objects. Visible metal objects encountered at this site included monitoring wells, steel-reinforced concrete pads, chain link fences, aboveground piping, a shed, concrete vaults with manhole covers, and reinforced concrete walls.

RESULTS

EM Survey Results

Figure 1 shows the locations of EM31 and EM61 data traverses, and visible metal objects.

Figure 2 shows the EM31 and EM61 contour maps with interpreted GPR reflections superimposed. EM61 contours are shown in gray, EM31 inphase contours are shown in blue, and EM31 conductivity contours are shown in green. The EM31 conductivity contour maps are shown adjacent to the inphase contour maps for the reader's convenience. Two survey points are shown on each conductivity contour map to aid in superimposing the maps on the inphase contours if desired.

Numerous anomalies indicating nearby metal objects were detected with the EM instruments. Many of the large EM anomalies can be attributed to visible metal at the ground surface. There are a few large anomalies that cannot be attributed to visible features that are listed below and labeled on Figure 2.

- Anomaly 1 – High EM61 values within a 10-foot wide region, located on (or beside) a holding pond berm.
- Anomaly 2 – An area of high EM61 values, approximately 15 to 20 feet wide.
- Anomaly 3 – An area of high EM61 values, approximately 20 to 25 feet wide.
- Anomaly 4 – High EM61 values, approximately 25 feet wide in the east-west direction and 40 to 90 feet long in the north-south direction.
- Anomaly 5 – High EM61 values, approximately 20 feet wide.

The irregular EM61 contours south and east of approximately stake 2504_+50_25O (i.e., beginning between EM anomalies 3 and 5, and extending east and south) are probably due to many small buried-metal objects. An aboveground pipe probably caused the EM anomaly contours that parallel the southernmost edge of this survey region.

The largest EM61 anomalies near the H78B-8 monitoring well couplet probably represent only the steel well casings. Adjacent irregular EM contours in the small survey grid around the well may represent small buried-metal objects.

The absence of contours at the westernmost EM survey region (i.e. north of EM anomaly 4, up to the northern perimeter fence) indicates a general lack of buried metal in that area.

The largest EM anomalies within the narrow survey region along the northern perimeter fence were caused by a buried pipe (no longer in service, according to BBL), and two concrete vaults. The smaller EM61 anomalies within this region may represent small buried-metal objects.

High EM31 in-phase contours indicate possible metallic objects near stake 2524_CL (east side of survey region). GPR profiling (where possible within this wooded area) did not disclose significant buried-metal objects. Therefore this EM anomaly may be primarily due to the nearby chain fencing.

The EM61 survey region between stakes 2519_CL and 2524_BK_GRIDCRN (east side of survey area) exhibited some EM anomalies that coincide with visible metal objects, and others that do not. The EM61 contours immediately north of stake 2519_CL probably represent only the wall, fence, manhole, and possibly a pipe presumably serviced by the manhole. The low-intensity EM61 anomaly trending east-west across this survey grid, 30 feet north of stake 2519_CL, may represent a buried pipe near a monitoring well. The east-west trending anomaly approximately 65 feet north of stake 2519_CL coincides with metal objects on the ground surface. The anomaly contours located 125 to 165 feet north of stake 2519_CL do not coincide with visible concrete slabs, and therefore may represent buried metal objects.

GPR Survey Results

Figure 3 shows GPR survey coverage and interpretations. GPR data was acquired over selected EM anomalies and along part of the survey's outer edge.

GPR detected a few point targets (small objects) within each survey area, as shown on Figure 3. However, for the most part, GPR anomalies were not coincident with EM anomalies (see Figure 2). GPR signal penetration varied from area to area due to differences in soil type. In some areas the fill was electrically conductive, possibly due to small scrap metal objects within the fill.

Several individual point targets (small GPR reflections) were detected near EM anomaly 4, indicating small buried-metal objects below those GPR traverses. The largest GPR reflections near EM anomaly 4 (i.e., reflections that appeared greater than two feet wide) resemble clusters of small objects, instead of discrete large objects.

* * * * *

We appreciate this opportunity to provide geophysical services. Please contact us if you have any questions regarding our report.

Sincerely,

GEOPHYSICAL APPLICATIONS, INC.

P.A. Giger cvs
Peter A. Giger
Geophysicist

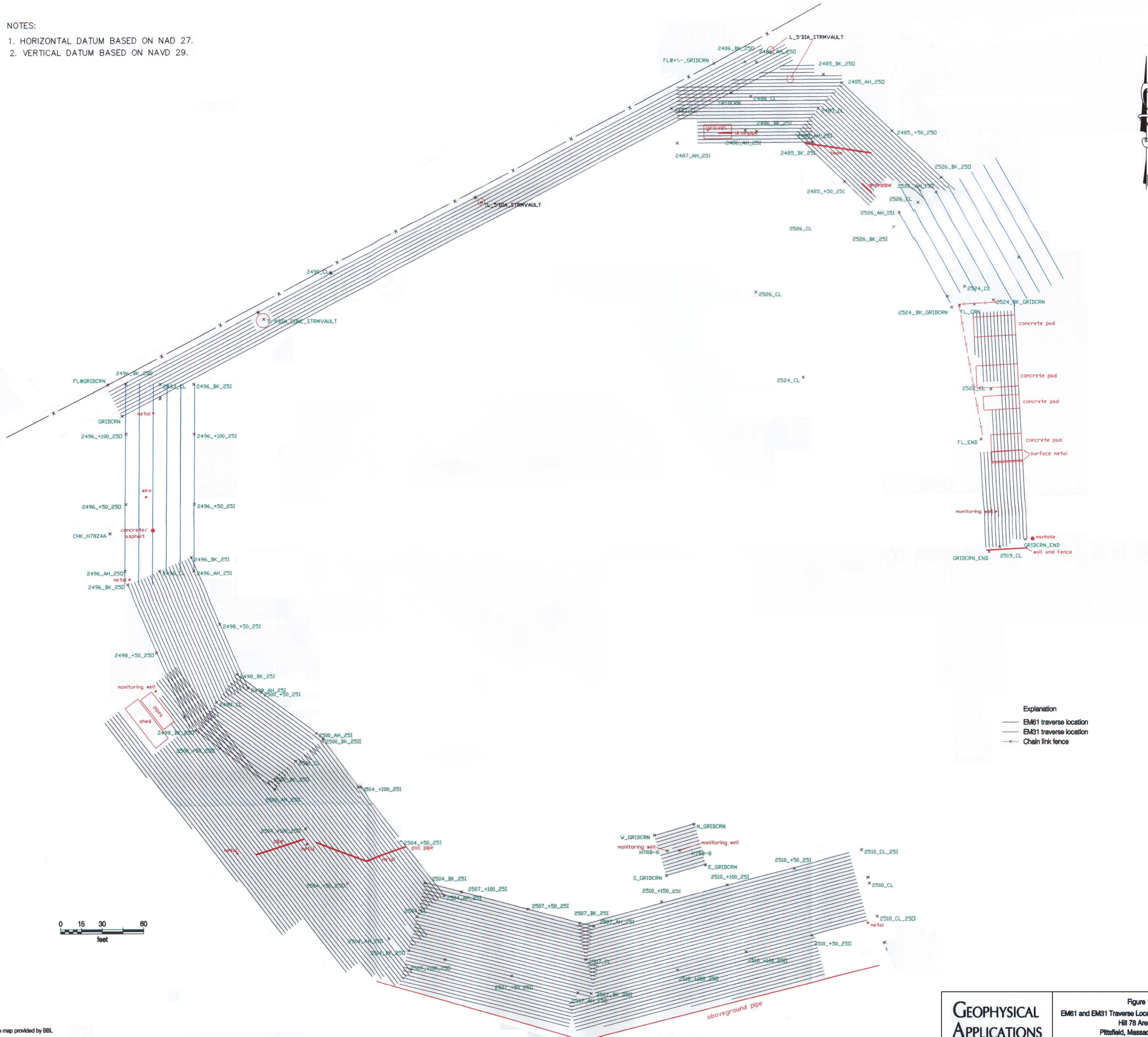
C.V. Sullivan
Charlene V. Sullivan
Geophysicist

M. Blackey
Mark E. Blackey
Principal and Geophysicist

101457d.rpt

NOTES:

1. HORIZONTAL DATUM BASED ON NAD 27.
2. VERTICAL DATUM BASED ON NAVD 29.



Explanation

- EM61 traverse location
- EM31 traverse location
- Chain link fence

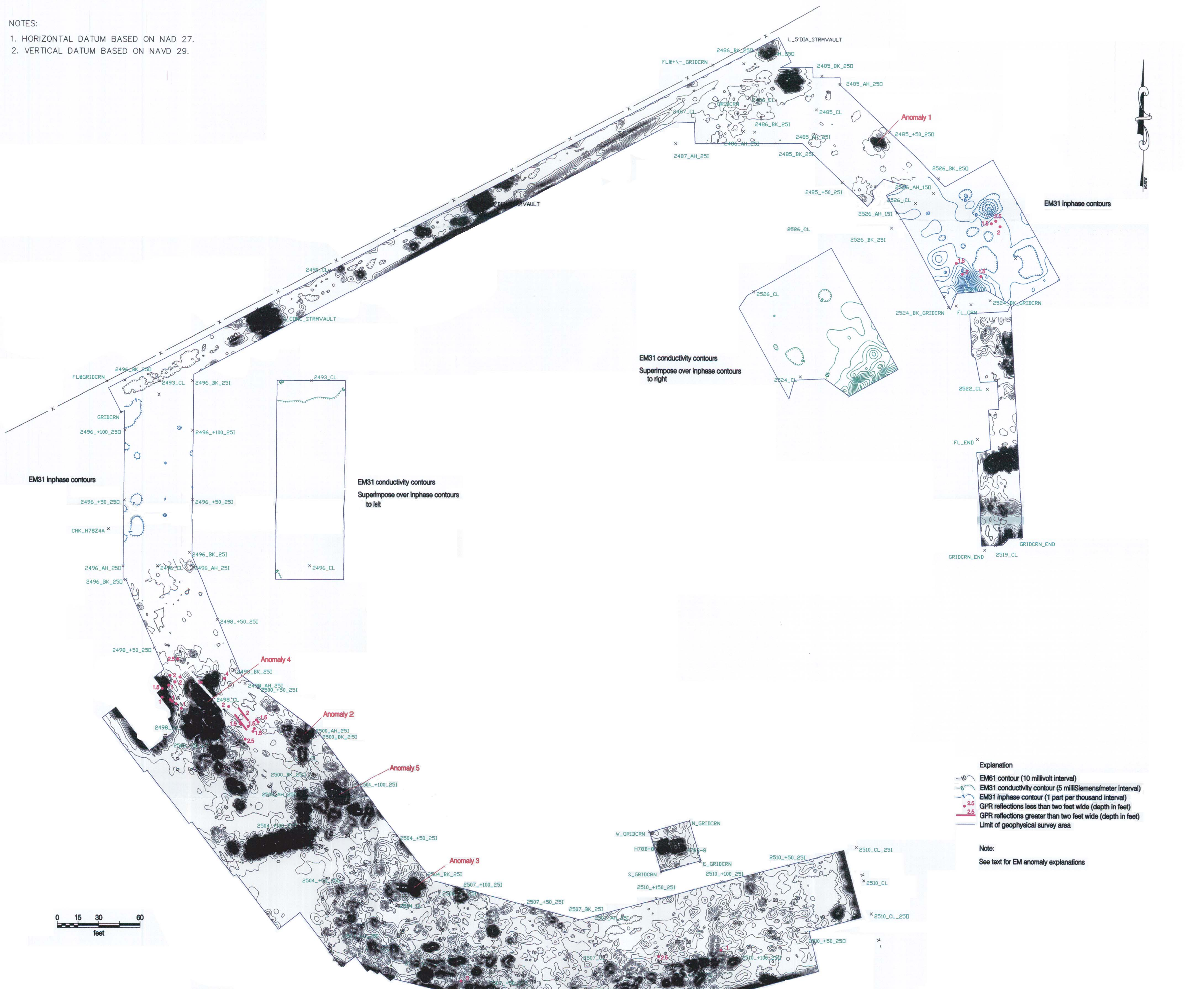
Base map provided by BBL

J:/WP/20185037/DWG/HILL78GRID.DWG
GE PITTSFIELD

101457 - 101457.dwg
last modified 6/27/02

GEOPHYSICAL APPLICATIONS INCORPORATED

Figure 1
EM61 and EM31 Traverse Locations and Surface Metal
Hill 78 Area
Pittsfield, Massachusetts
prepared for
GENERAL ELECTRIC COMPANY

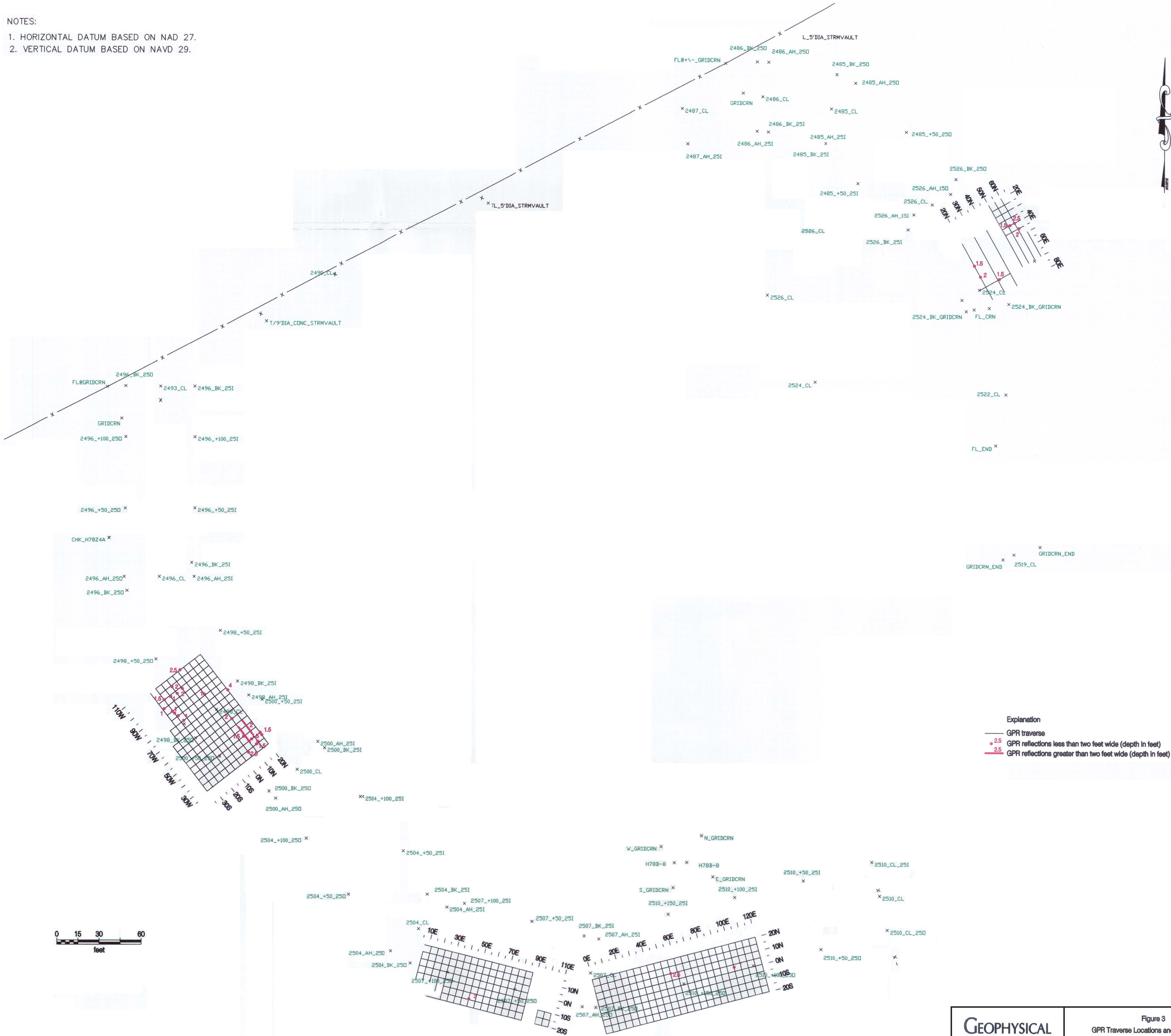


GEOPHYSICAL APPLICATIONS INCORPORATED

Figure 2
EM Contours and GPR Interpretations
Hill 78 Area
Pittsfield, Massachusetts
prepared for
GENERAL ELECTRIC COMPANY

NOTES:

1. HORIZONTAL DATUM BASED ON NAD 27.
2. VERTICAL DATUM BASED ON NAVD 29.



Explanation
- GPR traverse
- 2.5 GPR reflections less than two feet wide (depth in feet)
- 2.5 GPR reflections greater than two feet wide (depth in feet)

Base map provided by BBL

J:/WP/20185037/DWG/HILL78GRID.DWG
GE PITTSFIELD

101457 - 101457.dwg
last modified 6/27/02

GEOPHYSICAL APPLICATIONS INCORPORATED

Figure 3
GPR Traverse Locations and Interpetations
Hill 78 Area
Pittsfield, Massachusetts
prepared for
GENERAL ELECTRIC COMPANY