Appendix A: Hydrogeological Study (Leggette, Brashears & Graham, Inc.)

**HYDROGEOLOGIC STUDY FOR
SUBSURFACE SEWAGE DISPOSAL SYSTEM
LUTHERAN HOME OF SOUTHBURY
SOUTHBURY, CONNECTICUT**

Prepared For:

Lutheran Home of Southbury

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HYDROGEOLOGIC STUDY FOR
SUBSURFACE SEWAGE DISPOSAL SYSTEM
LUTHERAN HOME OF SOUTHBURY
SOUTHBURY, CONNECTICUT

1.0 INTRODUCTION

Leggette, Brashears & Graham, Inc. (LBG), on behalf of Lutheran Home of Southbury, Inc. (Lutheran) has completed a hydrogeologic study of a planned modification of the existing subsurface sewage disposal system (SSDS) at the convalescent nursing home and rest home for the aged located in Southbury, Connecticut.

The study was undertaken to obtain site-specific hydrogeologic data. As part of this evaluation, LBG reviewed all available published geologic and hydrogeologic data along with data from hydrogeologic investigations conducted by Beta Group, Inc. (Beta) in 2015 and Dudley Ashwood (Ashwood) in 1994 and 1995. This study was completed between July 2015 and March 2016, and included the drilling of thirteen test borings/monitor wells, the installation of four piezometers, the completion of in-situ permeability tests to estimate aquifer permeability, measurement of water levels in groundwater-monitoring wells and existing test pit stand pipes, the collection of water quality data and development of a groundwater flow model to estimate mounding and travel times at specified discharge rates.

2.0 BACKGROUND

Lutheran Home of Southbury (Lutheran) is a convalescent nursing home and rest home for the aged, located at 990 Main Street South in Southbury, Connecticut (figure 1). The property consists of 13.3 acres of land and is occupied by one main building and a storage building. The main building was expanded in 1982 to accommodate more residence. The main building is served by two SSDS. The original system (SSDS-A) is located in the northwest corner of the property and services a portion of the original building. A second system (SSDS-B) is located east of the existing building and was constructed as part of the building expansion in 1982.

In 1993 system SSDS-B failed. As a result, modifications were made to the sanitary plan and design. The proposed modifications of system SSDS-B were approved and permitted by the Connecticut Department of Energy and Environmental Protection (CTDEEP) in 1995. The existing SSDSs were permitted to discharge a combined maximum average daily flow of 13,110 gallons per day (gpd). Lutheran is currently evaluating a proposed modification of the SSDS-B to address a CTDEEP Consent Order issued as a result of a second SSDS-B failure in 2009.

The design flows for each of the existing SSDSs after the planned modification of SSDS-B are shown on table 1. The table shows that the combined SSDS design flow following the planned modification of SSDS-B is less than the 1995 permitted flow at 13,110 gpd. If a 50-percent hydraulic reserve is accounted for in the analysis, the design flow is estimated at 19,665 gpd. The design flow and 50-percent reserve flow of the modified SSDS-B evaluated for this analysis were provide by Beta. The locations of the SSDS-A and SSDS-B are shown on figure 2.

As the effluent is discharged into the soil through leaching systems, groundwater mounds are formed. The goal of this analysis was to provide a conservative estimate of potential groundwater mounding after the modifications are made to SSDS-B. Predictions from this analysis were used to determine: 1) if the soils could accept the design flow rate without excessive mounding up into the leaching systems; 2) the potential for premature breakout on side slopes using conservative assumptions; 3) the potential for mounding up into nearby storm-water infiltration systems and 4) the estimated 21-day travel distance for groundwater as it flows from the mounds, in order to make certain that any pathogenic bacteria in the effluent has sufficient time in the soil to die off.

This report addresses only issues related to mounding and travel time, and does not evaluate treatment levels. Beta is responsible for all issues related to the design of the systems.

3.0 PHYSICAL SETTING

The study area is shown in figure 1. The bedrock beneath the study area is mapped as the Portland Arkose is a reddish-brown, medium to coarse-grained, sedimentary rock composed of quarts, feldspar and rock fragments (Rogers, 1985). The surficial materials are mapped as sand and gravel beneath the northwestern half of the Site with the southeastern half of the property mapped as glacial till (Stone, 1992).

The soils beneath the majority (54 percent) of the Lutheran property are classified as Canton and Charlton Soils. Canton and Charlton soils are described as well-drained gravelly loam with depth to water more than 6.5 feet below grade (ft bg). The soils beneath the central portion of the Lutheran property are classified as Sutton Soils. Sutton Soils are described as moderately well-drained fine sandy loam over gravelly sandy loam with depth to water greater than 6.5 ft bg. The soils beneath the easternmost portion of the property are classified as Ridgebury, Leicester and Whitman Soils, theses soils are poorly drained with a depth to water of less than 1.5 ft bg (NRCS web page, http://websoilsurvey.nrcs.usda.gov).

The nearest surface-water bodies to the existing SSDS areas are the wetland complex located in the central portion of the property approximately 60 feet east of SSDS-B, Stiles Creek located in the eastern portion of the property approximately 650 feet east of SSDS-B and a pond located near the intersection of Hidden Brook Drive and Dublin Hill Road approximately 900 feet from SSDS-B.

4.0 PREVIOUS SUBSURFACE INVESTIGATIONS

LBG reviewed the data from previous subsurface investigations completed by Beta (2015) and Ashwood (1994 and 1995) to obtain information on the hydrogeology beneath the Site. The information obtained from these investigations is summarized in the following sections of this report.

4.1 Beta Investigation

In 2015, Beta completed a preliminary subsurface investigation on the property. The assessment included digging 12 test pits designated as TP-1 through TP-12 (figure 2). The test pits were completed to depths ranging from 5.9 to 13 ft bg. The test pit geologic logs are included in Appendix I.

The data obtained from this investigation indicate that the unconsolidated material approximately 100 to 200 feet east of the central wetland buffer area is comprised primarily of very fine to medium sand with some coarse sand intermixed with silt and clay. Laboratory falling head permeability tests were conducted on soil samples collected from 5 of the test pits. Data from these tests were used to estimate hydraulic conductivity (ranging from 0.26 to 1.54 ft/day) of the unconsolidated material in the study (Appendix II).

Ground water was observed in 4 of the test pits at depths ranging from approximately 5.6 to 11.5 ft bg. Soil mottling, which is an indication of seasonal high groundwater levels, was observed in B1 at 4 ft bg and in B3 at 4.62 ft bg. Perforated stand pipes were placed in each of the test pits.

4.2 Dudley Ashwood Investigations

A subsurface investigation was completed by Dudley Ashwood (1995 and 1996) to obtain the site-specific hydrogeologic data necessary to repair SSDS-B in 1995. The assessment included the digging of 15 test pits (DP-101 through DP-104, DP-200 through DP-203 and DP-110 through DP-115) and permeability tests under laboratory conditions of the soil samples collected from 2 of the 15 test pits. The test pit geologic logs are included in Appendix I. Each test pit was completed to a depth of 9.5 to 14 ft bg. The data obtained from this investigation indicate that the unconsolidated material in the study area is comprised primarily of fine to medium sand with some coarse sand, fine gravel and silt. Data from these permeability tests were used to estimate hydraulic conductivity values for the study area (ranging from 0.7 to 2.1 ft/day) (Appendix II).

Groundwater was observed in 4 of the test holes at depths ranging from approximately 7.5 to 13.5 ft bg. No mottling was observed in any of the test pits. Perforated stand pipes were placed in 7 of the 15 test holes and depth-to-water data was collected inside the 7 new and 2 existing test pit stand pipes from April 2, 1994 through August 1, 1994 in order to verify the seasonal high water-table in the study area (Appendix III)

5.0 HYDROGEOLOGIC INVESTIGATION

Between June 2015 and March 2016 LBG completed a hydrogeologic investigation to define the aquifer characteristics, groundwater configuration and water quality beneath the Site. The investigations included drilling 13 test borings, installing 13 groundwater-monitoring wells (MW-1 through MW-13), and installing 4 piezometers (PZ-A through PZ-D). Data from sieve analyses conducted on selected sediment samples collected from test borings were used to estimate hydraulic conductivity. LBG also completed in-situ permeability tests in monitoring wells MW-1 through MW-8 to estimate hydraulic conductivity of the onsite unconsolidated deposits, collected water-level measurements in existing standpipes, monitoring wells and piezometers to determine the groundwater configuration and collected groundwater samples from the 13 new monitoring wells.

5.1 Drilling and Monitoring Well Installation

Between June 23 and 29, 2015 and February 2 and 3, 2016, LBG supervised the advancement of 13 soil borings throughout the study area using the hollow-stem auger drilling method (figure 2). Soil descriptions were logged by LBG personnel with soil samples collected with a split-spoon sampler over 2-foot intervals based on change in lithology or to identify the depth of saturation between grade and 42 ft bg. Select soil samples collected from zones above, at and below the water table were retained for sieve analysis.

The borings were advanced to depths ranging from 12 to 42 ft bg. Groundwater-monitoring wells were installed in the 13 borings at depths of 11 to 41 ft bg. The monitoring wells were constructed with 5 feet of 10-slot, schedule 40 PVC well screen, with the top of the screen set below the water table. Copies of the geologic logs, including well construction details, are included in Appendix I.

5.2 Piezometer Installation

Four piezometers (PZ-A through PZ-D) were installed in the study area (figure 2). PZ-A and PZ-B were installed in the wetland complex located in the central portion of the property southeast of SSDS-B and PZ-C and PZ-D were installed in Stiles Creek located in the eastern portion of the property.

The piezometers were constructed with a 1-foot long, stainless-steel, wire-wrapped screen affixed to one or two 5-foot lengths of galvanized steel pipe. The piezometers were installed using a slide hammer until the top of the screen was a minimum of 1-foot below the bottom of the streambed or wetland ground surface.

5.3 Permeability Testing

5.3.1 In-Situ Permeability Tests in Monitoring Wells

LBG conducted slug tests in 8 of the newly installed monitoring wells (MW-1 through MW-8) to provide permeability (hydraulic conductivity) data for the saturated sediments beneath site. The slug test for each well followed the same procedure, as summarized below.

Following the measurement of the static depth-to-water (DTW), an automated pressure transducer with a built-in datalogger (MiniTroll®) was installed in the well to allow for automated water-level measurements throughout the testing period. The MiniTroll® was programmed to make and record measurements at one-second intervals to ensure an adequate number of data points would be recorded.

The slug tests were conducted pneumatically by fitting a valve assembly with a regulator, pressure gauge and compressed air feed to the well head. The well-head assembly was used to seal the well from the ambient air, and then compressed air was introduced into the monitoring well, forcing the downward displacement of the water column. The valve was then opened, releasing the pressure in the well and initiating an instantaneous rise in the water column, followed by a slower return to the static level. Water-level measurements were recorded every second by the MiniTroll®. This testing method is commonly referred to as a “rising head” test. The resulting water-level data was used to calculate the permeability of the saturated sediments.

5.3.2 Permeability Test by Sieve Analysis

Sieve analyses were conducted on select soil samples collected from soil borings MW-1 though MW-8. The soil samples were initially dried by heating, weighed, and placed atop a series of wire screens of decreasing mesh size. The samples were mechanically shaken at a constant frequency for a period of five minutes. The amount of sample retained by each screen in the series was then weighed to obtain the grain-size distribution for the sample. The grain-size distribution data was input into the computer program SizePerm® to calculate theoretical hydraulic conductivity.

5.4 Water-Level Monitoring in Wells and Piezometers

On July 3, 2015, HOBO® water-level recording devices were installed in monitoring wells MW-2 and MW-5 and set to record water levels at 30-minute intervals. The MiniTrolls were removed on September 11, 2015. The nearly continuous DTW data obtained over this 10 week period was used to assess the water-level fluctuation near SSDS-B. The water-level data is presented in Appendix III.

To supplement the automated data, manual DTW measurements were made in the 12 test pit stand pipes, 1 existing environmental monitoring well, 13 newly installed monitor wells and 4 newly installed piezometers on July 1, 2015, July 16, 2015, July 28, 2015, August 11, 2015, September 24, 2015, October 15, 2015, January 18, 2016 and March 17, 2016 with a clean steel tape and chalk. Hydrographs of the data are included in Appendix III.

5.5 Survey of Monitoring Points

The location, top-of casing (TOC) and grade elevations at each monitoring well included in the data collection of groundwater measurements were surveyed by Stuart Somers CO., LLC. The vertical and horizontal locations were referenced to the Connecticut State Plan North American Datum 1983 and North American Vertical Datum of 1988 (NAVD88), respectively.

5.6 Water-Quality Sampling

LBG completed three groundwater quality sampling events at the Site. A sampling event occurred between September 23 and October 1, 2015, a second sampling event on February 9 and 10, 2016 and a third event on March 17, 2016. The work was completed to develop information about the groundwater quality that would be used by Beta to develop an appropriate septic system design and included collecting groundwater samples that were submitted to the laboratory for analysis.

Whenever possible, based on the amount of available water, groundwater samples were collected in accordance with the EPA low-flow sampling technique guidelines or via grab sampling. Groundwater quality samples were collected from select sampling locations for total nitrogen, nitrite, nitrate, ammonia, total phosphorous orthophosphate, total kjeldahl nitrogen (TKN), total dissolved phosphorous and fecal coliform. Field parameters were monitored with a calibrated YSI meter and flow-thru cell for pH, conductivity, turbidity, dissolved oxygen (DO), temperature and oxidation reduction potential (ORP). The low-flow sampling logs and laboratory reports are attached in Appendix IV.

6.0 INVESTIGATION RESULTS

The data obtained from the above-described investigations were used to determine the groundwater configuration beneath the property and develop a groundwater-flow model that was used to simulate various load conditions for the SSDSs, evaluate the associated groundwater mound and estimate the 21-day travel distance for groundwater as it flows from the mound.

6.1 Composition of Unconsolidated Sediments

A generalized cross section, A-A' (figure 3), was constructed to transect the property. The location of the cross section is shown on figure 2. The cross section was utilized to identify any significant confining or stratigraphically different units, transecting the study area, which was then incorporated into the mounding analysis. Analysis of the well logs and the geologic cross sections revealed that the unconsolidated material beneath the upper 10 to 20 feet of the site is comprised mainly of fine to coarse sand with varying amounts of silt, gravel and cobbles. The unconsolidated material below these deposits consist primarily of very fine to fine sand and silt. The geologic boring logs including descriptions of the overburden material are included in Appendix I.

Groundwater was encountered at depths ranging from 1.2 to 25.2 ft bg. Based on data collected from the test borings, the depth to rock beneath the site ranges from 12 ft bg to greater than 42 ft bg.

6.2 Permeability of Unconsolidated Sediments

6.2.1 In-Situ Permeability Results

The computer program AQTESOLV® was used to interpret the slug test data and calculate hydraulic conductivity values for the saturated soils beneath the site. The program requires basic input parameters including the initial water-level displacement following the insertion/removal of the slug (H0), water-level measurements at various times throughout the test, radius of the well and borehole, length of the well screen, depth of the base of the well screen, and saturated thickness of the aquifer. Using these parameters, the program generates a graph of the water-level displacement versus time.

The KGS Model (Hyder, Butler, McElwee and Liu, 1994) for slug test analysis was used for the calculation of conductivity values for the slug test data, as it readily applies to both fully and partially penetrating wells in unconfined aquifers and is suitable for highly permeable sands and gravel. Using the computer program, a best-fit line is placed on the earliest straight line segment of the graph plot of water-level displacement versus time. The slope of the line is then used with the other input parameters to calculate an average hydraulic conductivity value.

The average hydraulic conductivity values calculated for the saturated soils using slug test data ranged from 0.3 to 6.8 ft/day (feet per day) with an average of 1.9 ft/day (table 2). The results of the individual slug test analyses are included in Appendix II.

6.2.2 Sieve Analysis Permeability Results

A summary of sieve analysis results and graphs of the grain-size distribution for each sample are included in Appendix II.

The computer program SizePerm© was used to calculate theoretical hydraulic conductivities in the unsaturated soil. Sieve analysis data for soil samples collected from the soil borings and test pits were entered into the program, which uses a number of methods to calculate hydraulic conductivity. The methods are generally specific to certain soil types and are applicable based on average grain-size diameter and the uniformity coefficient of the sample.

For the purposes of this study, the Sauerbrei method was used for calculation of hydraulic conductivity. The Sauerbrei method applies to fine- to coarse-grained sands and is preferred due to increased accuracy over older methods, particularly the Hazen method, which does not consider the entire particle-size distribution of the sample (Carrier III, 2003). Using the sieve data, SizePerm© calculates a theoretical horizontal hydraulic conductivity of the subsurface material in centimeters per second, which is then converted to feet per day.

The hydraulic conductivity values calculated for the unsaturated materials ranged from 3.9 to 16 ft/day with an average of 8.1 ft/day (table 2). The hydraulic conductivity values calculated for the saturated materials using sieve data ranged from 3 to 10 ft/day with an average of 6.6 ft/day (table 2). The results of the SizePerm© analyses are included in Appendix II.

6.3 Water-Level Monitoring Results

The water-level monitoring data reflect groundwater conditions inclusive of discharge from the existing SSDSS and discharge from the onsite storm water infiltration system. The groundwater beneath the site exists in the unconsolidated sediments under phreatic, water-table conditions at depths ranging from 1.4 feet above grade at PZ-C to 27.9 ft bg at LBGMW-8 (table 3). Hydrographs depicting changes in water levels measured during the monitoring period from July 1, 2015 through March 17, 2016 are included in Appendix III.

Data presented on the table and hydrographs show that the water-level at each monitoring location declined between 0.4 and 4.9 feet from the start of the monitoring period in July 2015 to October 2015 and recovered 2.8 to 5.4 feet from October 2015 to March 2016. The water-level data and hydrographs also show that the monitoring locations with the greatest fluctuations are located in the upland area on the eastern portion of the property.

The groundwater-level measurements made on March 17, 2016, elevations of nearby surface water from topographic maps and survey data were used to construct a groundwater elevation contour map (figure 4). This date was selected because the water levels in most of the monitoring wells were either at or near the highest levels recorded during the monitoring period (July 1 through March 17, 2016). Figure 4 shows a groundwater flow divide near LBGMW-5. The groundwater to the west of the divide flows in a westerly direction toward the Pomperaug River and groundwater to the east of the divide flows in a northeasterly direction toward Stiles Creek. Figure 4 also shows the groundwater mound resulting from discharge to the existing SSDS-B.

The water-level measurements at the United States Geological Survey (USGS) Station SB-42 in Southbury, CT were used to characterize the seasonal high groundwater level in the area. This is the closest USGS well to the property with a sufficiently long period of water-level measurements. Well SB-42 is installed in a glacial sand and gravel aquifer. A hydrograph of water-level measurements made in SB-42 is included in Appendix III. Water-level data from SB-42 shows that the regional water level on March 17, 2016 was higher than 85 percent of the daily water-level measurements made between October 2002 and March 2016 (see table and figure in Appendix III). This confirms that it is reasonable to use the March 17, 2016 groundwater elevation as the seasonal high.

6.3.1 Piezometer

Hydrographs showing groundwater and surface-water levels containing the measurements collected from each piezometer are provided in Appendix III. Table 4 shows the magnitude and direction of vertical flow through the stream/wetland bed for each of the piezometers.

With the exception of the July 28, 2015 water-level observed in PZ-B (likely impacted by discharge to SSDS-B) and the August 11, 2015 water-levels observed in PZ-C and PZ-D (impacted by a 1.5 inch precipitation event), the water-level data for the onsite wetland (PZ-A and PZ-B) and Stiles Creek (PZ-C and PZ-D) piezometers show a declining trend from July 16 through September 26, 2015. This was a seasonal decline which occurs in the late spring through early fall of each year because of increased evapotranspiration and higher intensity, lower duration, rainfall. The seasonal decline in water levels was reversed in October 2016.

Stiles Creek Piezometer PZ-C showed a downward or neutral hydraulic gradient between surface water (exterior measurement) and groundwater (interior measurement) during the study period, indicating that the upgradient portion of the creek near Hidden Brook Drive is a groundwater source or recharge location. With one exception (a downward gradient of 0.6 foot on August 11, following a 1.5 inch precipitation event), the downgradient portion of the creek showed a steady upward or neutral vertical flow gradient throughout the study period. No surface water was observed at piezometer locations PZ-A and PZ-B, therefore, the hydraulic gradient between the surface water and groundwater could not be determined.

6.4 Water-Quality Results

The results from the sampling event are presented in table 5. Parameter pH ranged from 6.35 to 10.95 in wells where there was enough water to measure. Fecal coliform was detected in samples from MW-3, MW-4, MW-5 and MW-7; the highest concentration was in MW-7, in excess of 2,419 colony forming units per 100 milliliters during the first sampling event. The fecal coliform detection in MW-7 has been attributed to wildlife in the area and not the existing SSDSs. Total Nitrogen and Total Kjeldahl Nitrogen was detected in excess for sample MW-12 (98 mg/L), collected during the second sampling event. The high nitrogen concentration in MW-12 may be attributable to the organic material observed in the geologic log 10 feet to 12 ft bg. Sample results for the third event are currently being processed. The laboratory reports are included in Appendix IV.

7.0 MOUNDI G ANALYSIS

A computer model was developed to simulate various load conditions for the SSDS, evaluate the associated groundwater mound and estimate the maximum load capacity for the site soils. The computer model was developed using MODFLOW-2005 by Harbaugh (2005). This code, published by the USGS, is currently the most widely used and accepted groundwater modeling code and has been used in numerous mounding projects in Connecticut that have been accepted by the CTDEEP.

7.1 Model Layers

The Lutheran Home Model (LHM) was developed as a two-dimensional, one-layer model. The hydrogeologic system was simulated as a water-table or unconfined aquifer. The bottom elevation for the LHM was assumed to be the top of bedrock. Bedrock elevation contours for the area were calculated using well log information from existing and new borings and the published USGS bedrock elevation maps (Mazzaferro, 1986A and 1986B) for the area.

7.2 Grid Design

Finite difference models, such as MODLFOW, require that the areas under investigation be divided into discrete sub-areas (blocks). The finite-difference grid developed for this model consists of 363 rows and 414 columns. The model utilized a variable-spaced grid. The grid spacing is finest in the SSDS areas, with node area dimensions of 10 feet by 10 feet. The distant areas have node area dimensions up to 78 feet by 79 feet. The model grid and boundary conditions for Layer 1 are shown on Plate 1.

7.3 Boundary Conditions

The eastern physical limit of the LHM is located along drainage basin divides. This boundary was simulated as a no-flow boundary in the model. The western LHM boundary, with the exception of the southern portion along the Pomperaug River, corresponds to the 10-foot saturated thickness contour line shown on Plate 1. This boundary was simulated as a flux boundary in the model. The flux boundaries add water to model boundaries that are normally no-flow boundaries in MODFLOW. A flux boundary is desirable along this model boundary to simulate lateral recharge entering the model from upland regions adjacent to the simulated area. The boundary was simulated by adding wells to the model nodes along the boundary. Each well represents groundwater underflow from the upland regions adjacent to the well. The amount of recharge that each region contributes to the aquifer is calculated by delineating (based on surface topography) the watershed area of the boundary region represented by the well and applying a recharge value to each area. The resulting rate was assigned to the well. For average conditions, the amount of recharge each simulated well contributed to the aquifer system was calculated using an average annual recharge to till of 8 inches per year and an average annual recharged to stratified drift of 24 inches per year over the areas drained by each portion of the model boundary.

The northern physical limit of the simulated area is located approximately 2,500 feet north of the Southbury-Woodbury town line and the southern physical limit of the area modeled is located approximately 2,700 feet north of the Heritage Road Bridge. These boundaries simulate water entering and leaving the modeled area via groundwater underflow. The locations of these boundaries (Plate 1) were chosen because they are sufficiently distant from the area of interest as to not affect model predictions. In this case the flux boundary was simulated using the General Head (GHB) package in MODFLOW. The heads in the GHB package were depicted based on the regional groundwater contour map presented Mazzaferro (1986). The flux across a GHB boundary is dependent on the difference between a user-supplied specified head on one side of the boundary and the model calculated head on the other side.

The top boundary of the aquifer is the water-table and is treated in the model as a free-surface recharge boundary. Recharge from precipitation is added uniformly to each cell in Layer 1 of the model grid. The water-table can move up and down depending on the stresses in the model.

The bottom boundary of the model was chosen to be the contact between unconsolidated deposits and the bedrock interface.. Some water may flow upward or downward from the bedrock to the unconsolidated deposits. However, the amount should be small enough such that no significant error will be introduced by assuming the no-flow boundary.

The Pomperaug, Stiles Brook, two unnamed tributaries and four ponds (two located near the northern model boundary, one located near the southern boundary and one located near the intersection of Hidden Brook Drive and Dublin Hill Road approximately 700 feet from SSDSB) are the only surface-water bodies that have been incorporated into the model. The Pomperaug River, Stiles Brook and the unnamed tributaries were simulated using the Stream Flow Routing Package (SFR) in MODFLOW. The locations of the SFR nodes are shown on Plate 1. The SFR package allows initial flow values to be entered at the model boundaries keeps track of flows into and out of the stream from the underlying aquifer and allows stream cells to go dry if the streamflow goes to zero. The SFR package also estimates stream stage utilizing a derivation of the Manning equation. Stream conductance (C) values (in feet per day) for each cell containing a stream were initially calculated by LBG as described below. Stream conductance values were further adjusted during model calibration.

Conductance values were calculated to simulate leakage to and from the node by the equation:

$$C=KA/b$$

where:

C = stream conductance (feet2/day);

K = vertical hydraulic conductivity of the streambed (feet/day);

A = area of the stream within the node (feet2); and

b = streambed thickness (feet).

In calculating the initial streambed conductance, the thickness of the streambed was assumed to be 1 foot. Initially, a uniform vertical hydraulic conductivity of 1.5 ft/day, 1.0 ft/day and 0.5 ft/day were used for the Pomperaug River, Stiles Brook and the unnamed tributaries, respectively. These values were estimated based on data presented in Mazzaferro (1986) and characteristics of streambed material observed by LBG personnel. Stream elevation and stream width data and average stage for the Pomperaug River, Stiles Brook and the unnamed tributaries were obtained from the USGS topographic map. The SRF also requires that the initial discharge be inputed in the first cell of each stream. Initial stream discharge values used for the Pomperaug River and Stiles Brook during model calibration was derived from the published stage and flow at the USGS Pomperaug River stream gage located approximately 0.7 mile downstream of the model domain.

Four ponds, two at the northern boundary, one near the southern boundary and one located approximately 700 feet for SSDSB are simulated with the Drain Package in MODFLOW. The drain package works in much the same way as the SRF Package, except that leakage from the drain to the aquifer is not allowed (Anderson and Woessner, 1992) and flow is not tracked throughout the area. This makes the drain package ideal for simulating small ponds. The location of the drain nodes are shown on Plate 1. Drain elevation and pond bed hydraulic conductance (identical to stream conductance) are the values required for the drain package. The drain elevations were determined from topographic maps. The initial vertical hydraulic conductivity was assumed to be 1 ft/day (based on field observations by LBG).

7.4 Model Input

The model requires three basic input parameters; recharge rates, horizontal and vertical hydraulic conductivity, and the size and shape of the proposed SSDS.

7.4.1 Recharge

The recharge rate used in the LHM is based on the average annual recharge for the Southbury area; estimated to be 24 inches per year to Layer 1. Recharge from infiltration of precipitation that falls directly on the aquifer is conservatively assumed to be approximately one-half of average annual precipitation. The other half of the total precipitation is lost to surface-water runoff and evapotranspiration. This estimate is based upon work by MacNish and Randall (1982) in New York State but is reasonable to apply to the study area because of the similarity of climates. The average annual precipitation recorded at the Northeast Regional Central data (NRCD) gage located in Woodbury, Connecticut for the period 1966-2006 was 50.40 inches, which correlates to a recharge rate of about 23.60 inches. A groundwater recharge rate for the LHM of 24 inches per year from precipitation falling directly on stratified-drift deposits is reasonable given these precipitation totals.

Average recharge values for the calibration and simulations were estimated by analyzing Pomperaug River stream flow records at the USGS gage in 2015 and 2016 (Appendix V). Data from the Pomperaug River gaging station was used for this analysis because of the stations close proximity and long-term continuous record (1932 – 2015). Estimated groundwater recharge was calculated using “WHAT” a web-based hydrograph separation system (K.J. Lim, et al., 2005). WHAT is a computer program that separates stream flow into groundwater and surface-water components and is used to estimate groundwater discharge (or recharge) from a basin (Starn and Brown, 2007).

7.4.2 Horizontal and Vertical Hydraulic Conductivity

The second input parameter required by the model is the horizontal hydraulic conductivity of the aquifer. The distribution of the initial horizontal hydraulic conductivity values for Layer 1 were derived from slug tests, sieve analysis, laboratory permeability tests, surficial geologic mapping for the area (Stone, Schafer, London and Thompson, 1992), boring logs and the published soil survey mapping for the area (NRCS Webpage, http://soildatamart.nrcs.usda.gov).

The initial horizontal hydraulic conductivity values input into the LHM for Layer 1 ranged from 0.5 ft/day for the tighter units located throughout the region to 350 ft/day for the coarse sand and gravel glacial outwash deposits in the study area. All initial horizontal hydraulic conductivity values and distributions were adjusted during model calibration. For the LHM, the initial ratio of vertical to horizontal hydraulic conductivity was assumed to be 1:10, a value supported in published literature. This ratio was also adjusted during calibration.

Initial storage coefficient (specific storage in the model) and specific yield values for the study area were also derived from published data and professional judgment. The specific yield values input into the LHM was 0.01. These values were adjusted during model calibration.

7.4.3 Proposed and Existing SSDS Areas

The third input parameter required by the model, is the size and shape of the SSDS areas and the onsite storm water infiltration systems. Figure 2 shows the layout of the SSDS areas. The SSDS was simulated using the well package in MODFLOW.

The layout of the storm water infiltration systems are also shown on figure 2. The estimated daily infiltration from each of the systems was provided by Beta in the form of charts that showed total daily precipitation versus average daily storm water discharge (Appendix VI)

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7.5 Model Calibration

Calibration is the process of adjusting the model input to produce the best match between simulated and observed water levels and groundwater runoff. For the LHM, a limited calibration was completed to ensure that the simulated surface-water vertical conductivity values were reasonable. The limited calibration was also used to ensure that the magnitude and orientation of the simulated groundwater contours was representative of the contours observed during the study period. The model was calibrated utilizing data from the 91-day transient period from July 1, 2015 through September 30, 2015. The water-level data recorded during the period, coupled with the abundance of other hydrogeologic data in the study area provide good data sets for model calibration. The data are also useful for evaluating streambed conductivity and leakage values because the simulated groundwater elevations would be in error throughout the duration of the simulation if the model values were significantly in error.

The model was calibrated with the aid of the parameter estimation tools available in PEST-ASP (Watermark Computing, 2002). PEST-ASP is an automatic calibration computer program that uses nonlinear regression methods to minimize the sum of least squared-weighted residuals between simulated and observed hydraulic heads and groundwater discharges. At the end of the PEST-ASP simulations the aquifer parameters are reviewed to ensure that the resulting solution is hydrogeologically sound. If the solution is not reasonable, the process is repeated.

7.5.1 PEST-ASP Calibration Set-up

Four major steps must be completed before using PEST-ASP in the calibration process. The first step involves selection of the calibration targets. As stated above, the LHM was calibrated using groundwater-elevation data from the 2015 monitoring period.

The second step is to define the distribution (or zones) for each parameter. As discussed above, the distribution of hydraulic conductivity zones in the LHM were based on slug tests, sieve analysis, laboratory permeability tests, surficial geology mapping for the area (Stone, Schafer, London and Thompson, 1992), boring logs and the published soil survey mapping for the area (NRCS Webpage, http://soildatamart.nrcs.usda.gov). The distribution of storage zones for the model was initially uniform throughout the model domain. The calibrated horizontal conductivity values were then reviewed following the initial PEST-ASP calibration run to ensure a hydrogeologically-sound solution.

The next step is to determine what model parameters should be varied. For the LHM, all of the hydraulic conductivity values along with storage, areal recharge and pond/stream/bed conductance were allowed to vary during the limited calibration process.

Once the parameters to be varied were identified, the next (and last) step in the PEST-ASP calibration set-up was to determine reasonable upper and lower values for each zoned parameter. For the hydraulic conductivity the upper and lower bounds were based on data derived from the slug-test, boring data and professional judgment. For the pond/stream bed conductance parameter the upper and lower bounds were based on field observations and professional judgment.

7.5.2 Calibration Results

A comparison between groundwater elevation contour map generated using the July 16, 2016 water-level data and the simulated groundwater elevation contour map (figure 5) show that the orientation of the groundwater contours and distribution of heads are reasonably similar.

The 91-day aquifer monitoring period from July 1 to September 31, 2015 was simulated to calibrate the model. The period was simulated using fourteen stress periods. The areal recharge and storm water infiltration for each stress period was estimated utilizing precipitation and/or stream-flow data recorded during the study period. Discharge from SSDS-A and SSDS-B were simulated at a constant rates of 280 gpd and 11,420 gpd, respectively during the calibration simulation.

The initial phase of the calibration process involved comparing simulated groundwater elevations to those recorded throughout the monitoring period. Hydrographs of simulated and observed water elevations are presented in Appendix VII. The plots show that the model is simulating the change in hydrologic stress reasonably well.

The monitoring location showing the greatest discrepancy is LBGMW-7. The discrepancies between the observed and simulated water levels at LBGMW-7 have been attributed to the well's shallow depth. The small discrepancies observed at the other monitoring locations are attributed the location proximity to an existing SSDS, storm water infiltration, surface bodies or localized variation in vertical conductivity that could not be incorporated into the model.

Water-level measurements made on July 16, July 28, August 11 and September 11, 2015 and the related simulated water elevations are presented in table 6. The table shows that 77 percent of the simulated water-level elevations are within 2.0 feet of the measured water-level elevations and that all are within 5 feett of the measured water-level elevations.

7.5.3 Calibrated Values

Final horizontal and vertical hydraulic conductivity values reached through the model calibration process are presented in Appendix VII. The calibrated values for hydraulic conductivity range from 0.1 ft/day to 115 ft/day. The simulated hydraulic conductivity beneath SSDS-A and SSDS-B was 1.1 ft/day, a value comparable to the 95-percent lower confidence interval for geometric mean of 1.9 ft/day calculated from data derived from the field investigation.

The specific yield ranges from 0.0033 to 0.35. The simulated bottom permeability for the surface-water bodies simulated in the model ranged from 0.05 ft/day to 20 ft/day. The calibrated model files are contained on the attached Compact Disk.

7.6 Simulation Setup

The simulated average daily discharge from the existing SSDSs during the model calibration simulations and the groundwater-mounding simulations are shown on table 7. The average and design flows were provided by Beta. Beta estimated the average flow for each of the SSDSs using water-meter data obtained from Heritage Village Water Company.

The estimated daily infiltration from each of the storm water infiltration systems was based on an average daily precipitation of 0.138 inch which corresponds to 50.40 inches of precipitation per year. The layout of the storm water infiltration systems are shown on figure 2.

7.6.1 Mounding Criteria

Prior to the analysis, the following criteria were developed to evaluate if the onsite soils could accept the proposed design flow rate of 13,110 gpd.

Criteria #1 - Post-mounding seasonal high groundwater could not be within 2 feet of the bottom of the modified SSDS-B leaching galleries. This criterion was selected (for treatment purposes) to prevent mounding into or within the proposed leaching beds.

Criteria #2 - For areas outside the SSDS-B area the mounded water levels could not intersect land surfaces in areas not in close proximity to existing surface-water bodies. This criterion was selected to ensure that any renovated discharge breakout would enter directly into an existing surface water body and prevent exposure to non-renovated discharge water along hillside slopes.

Criteria #3 - The mounded water levels could not intersect the existing stormwater infiltration systems located downgradient of the SSDS-B. This criterion was selected to ensure that the proposed modifications to the SSDS-B would not adversely impact the operation of these systems.

7.6.2 Model Simulations

Two model simulations were required to predict the amount of groundwater mounding that would result from the proposed design flow of 13,110 gpd. The first simulation was run so that the measured (March 17, 2016) season-high groundwater elevation, which already accounts for the average discharge of 11,700 gpd, could be corrected to be reflective of the proposed design flow of 11,700 gpd. To do this, the model was run to steady-state with the SSDSs discharging 1,410 gpd. The locations of the modified SSDS-B leaching galleries are shown on figure 6.

The simulated head difference between the average discharge of 11,700 gpd and the design flow of 13,110 gpd is reflective of the simulated additional groundwater mounding at the proposed design flow. This predicted additional mounding was then superimposed onto the season high (March 17, 2016) water-table contour map. Figure 6 shows the resulting post-mounding groundwater-elevation contour map at the design discharge flow and table 8 shows the difference between the bottom elevation of the SSDS-B and the existing stormwater infiltration system and the maximum post mounding groundwater elevation beneath the SSDS-B and stromwater infiltration disposal trenches.

Table 8 and figure 6 show that the maximum post-mounding groundwater elevation for SSDS-B is greater than 2 feet below the bottom of the SSDS. Thus, LHM demonstrates conformance with Criteria #1 and confirms the area should accept the proposed design rate without excess mounding beneath the proposed SSDSs. In addition, table 8 shows that the post-mounding groundwater elevations were below the bottom of the stormwater infiltration disposal trenches. Thus, LHM demonstrates conformance with Criteria #3.

Figure 7 shows the simulated post-mounding DTW in the study area for the design flow simulation. The figure shows that the post-mounding groundwater elevations do no intersect land surfaces outside the SSDS-B area in locations that are not near existing surface-water bodies. The LHM demonstrates conformance with Criteria #2 and confirms that, as currently designed, the areas outside the SSDS should accept the design disposal rate without unwanted breakout.

A second steady-state simulation was run to account for a 50-percent reserve in the mounding analysis. For this simulation a discharge rate of 19,665 gpd was simulated in the SSDS areas. The simulated groundwater mound was calculated for the design flow plus

50-percent reserve using the same methodology discussed above. The predicted groundwater mound was then superimposed onto the season high water-table contour map. The results from this analysis are summarized in table 8 and show that the maximum post-mounding groundwater elevation for SSDS-B is less than 2 feet below the bottom of each of the modified dispersal trenches. Table 8 also shows that the post-mounding groundwater elevations would mound into the stormwater infiltration disposal trenches. Based on these results, Criteria #1 and Criteria #3 were not met.

Based on the simulation results, the modified SSDS-B design would be viable in the designated are. aAlthough a secondary location would be necessary to account for the 50-percent reserve area.

8.0 TRAVEL TIME ANALYSIS

A travel-time analysis was conducted to ensure there is sufficient time for full die-off of pathogenic bacteria (about 21 days per Healy & May, 1982) prior to reaching any downgradient sensitive receptors, including property boundaries, surface-water bodies, and groundwater-supply wells. The analysis was completed using the post-mound, groundwater-elevation data and PATH3D (S.S. Papadopulos and Associates, Inc. 1989). PATH3D is a general particle tracking program for calculating groundwater paths and travel times. The program incorporates a velocity interpolator that converts hydraulic heads, hydraulic conductivity and porosity into a velocity and a numerical solver for tracing the movement of fluid particles in the groundwater flow system.

Figure 8 is a plot showing the predicted flow paths and 21-day travel distances of groundwater emanating from the SSDS areas. This evaluation was made more conservative by increasing the hydraulic conductivity values derived during model calibration in the SSDS areas to 4.3 ft/day, the 95-percent upper confidence interval for geometric mean derived from the field investigation data. A porosity of 0.30 was used for this analysis. The post-mounding, groundwater velocities ranged from less than 0.15 ft/day to 0.95 ft/day, which equate to 21-day travel distances of approximately 3 feet and 20 feet, respectively. These results indicate that the groundwater will not cross an adjacent property boundary, enter a surface-water body or reach any other downgradient sensitive receptor before 21 days of travel time is achieved.

9.0 CONCLUSION

The results of the above described mounding analyses indicate that the soil beneath the existing proposed SSDS areas should be able to accept the design flow of 13,110 gpd without excessive mounding although a secondary location would be necessary to account for the 50-percent reserve area. The analysis also indicates that the 21-day travel distance from the SSDS areas is adequate to prevent potential impact to downgradient sensitive receptors from pathogenic bacteria and breakout prior to bacteria die-off.

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REFERENCES

Anderson, M.P., and W. W. Woessner, 1992, "Applied Groundwater Modeling, Simulating of Flow and Advective Transport", Academic Press.

Duffield, G.M., 2002, "AQTESOLV for Windows Version 3.5", HydroSolve, Inc., Reston, Virginia.

EasySolve Software, LLC, 1998, "SizePerm©".

Grossman, I.G. and Wilson, William E., 1970, "Hydrogeologic Data for the Lower Housatonic River Basin, Connecticut", U.S. Geologic Survey, Hartford, Connecticut" Connecticut Water Resources Bulletin No. 20.

Harbaugh, A.W., 2005, MODFLOW-2005, The U.S. Geological Survey modular ground-water model—the Ground-Water Flow Process: U.S. Geological Survey Techniques and Methods 6-A16, variously p.

Healy, Kent A. and Randy May, 1982, "Seepage and Pollutant Renovation Analysis for Land Treatment, Sewage Disposal Systems", Connecticut Department of Environmental Protection, Water Compliance Unit.

Hyder, Z, J.J. Butler, Jr., C.D. McElwee and W. Liu ,1994, Slug test in partially penetrating wells, Water Resources Research, vol. 30, no. 11, pp. 2945-2957.

Mazzaferro, David, 1988, "Ground-Water Availability and Water Quality at Southbury and Woodbury, Connecticut", Water Resources Investigations Report 84-4221, U.S. Geological Survey, Hartford, Connecticut.

Mazzaferro, David, 1986A, "Ground-Water Availability and Water Quality at Southbury and Woodbury, Connecticut", Connecticut Water Resources Inventory Report, 84-4221.

Mazzaferro, David, 1986B, "Depth to Bedrock, Depth to Water table and Classification of Unconsolidated Materials Above the Water Table in Stratified-Drift Areas of Part of the Pomperaug River Valley, Southbury and Woodbury, Connecticut", U.S. Geological Survey, Hartford, Connecticut.

McDonald, M.G. and Harbaugh, A.W., 1988, "A Modular Three-Dimensional Finite-Difference Ground-Water Flow Model" U.S. Geological Survey Techniques of Water Resources Investigations, Book 6, Chapter A1, P. 576.

Nathan L. Jacobson & Associates, Inc., "Guidance for Design of Large-Scale On-Site Wastewater Renovation Systems", February 2006, Connecticut Department of Environmental Protection, Bureau of Materials Management and Compliance Assurance.

REFERENCES
(continued)

Pessl, Fred, Jr., 1966, “Surficial geologic map of the Southbury quadrangle” State Geological and Natural History Survey of Connecticut, Hartford, Connecticut.

Rodgers, John (compiler), 1985, “Bedrock geological map of Connecticut”, Connecticut Geological and Natural History Survey, Natural Resources Atlas Series Map, 2 sheets, scale 1:125,000.

Rawson, Catherine et al, 2005, “Assessment of Current Conditions in the Pomperaug River Watershed”, The Pomperaug River Watershed Coalition, Inc.

Rumbaugh, James O. and Douglas B. Raumbaugh, 2004, “Targpest Version 2.2”, Environmental Simulations, Inc., Reinholds, PA.

Ruskauff, G.J., 1995, “User’s Guide to Stochastic MODFLOW/MODPATH, A Monte-Carlo Version of MODFLOW and MODPATH”, Proceedings of the 1994 Groundwater Modeling Conference, J.W. Warner and P. van der Heijde (eds), Fort Collins, Colorado, August 10-12

Soil Survey Staff, Natural Resources Conservation Service, United States Department of Agriculture. Official Soil Series Descriptions [Online WWW]. Available URL: “http://soils.usda.gov/technical/classification/osd/index.html” [Accessed 4 December 2013]. USDA-NRCS, Lincoln, NE.

Starn, Jeffery J., Janet Radway Stone and John R. Mullaney, “ Delineation and Analysis of Uncertainty of Contributing Areas to Wells at the Southbury Training School, Southbury, Connecticut”, Water-Resources Investigations Report 00-4158, U.S. Geological Survey, East Hartford, Connecticut.

Stone, Janet Radway, John P. Schafer, Elizabeth Haley London and Woodrow B. Thompson, 1992, "Surficial Materials Map of Connecticut", U.S. Geological Survey, Hartford, Connecticut.

Tecsoft Inc., 1985-2001, “TECHMOUND Version 2.8”.

Vukovic, M., Soro A., 1992, Water Resource Publication, “Determination of Hydraulic Conductivity of Porous Media from Grain Size Composition”.

Watermark Computing, 2002, “PEST-ASP, Model-Independent Parameter Estimation, Version 5”, Corinda, Australia.

Wilson, William E., Edward Burke, Chester E. Thomas, 1975. "Hydrologic Data for the Lower Housatonic River Basin, Connecticut", Water Resources Inventory of Connecticut, Part 5, Connecticut Water Resources Bulletin No. 19.

TABLES

TABLE 1

LUTHERAN HOME OF SOUTHBURY
990 MAIN STREET NORTH
SOUTHBURY, CONNECTICUT

SSDS Discharge CTDEEP Permitted Discharge

SSDS	1995 CTDEEP Permitted Discharge (gpd)	Average Discharge (October 2015 – February 2016) (gpd)	Proposed Discharge (Post Modification) (gpd)
A	3,230	280	280
B	10,930	11,420	12,830
Total	14160	11,700	13,110

gpd gallons per day

SSDS subsurface sewage disposal system

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TABLE 2

LUTHERAN HOME OF SOUTHBURY
990 MAIN STREET NORTH
SOUTHBURY, CONNECTICUT

Estimated Hydraulic Conductivity Values

Location ID	Hydraulic Conductivity (ft/day)	Method	Material	Sample Depth (ft bg)	Sample Saturated
LBGMW-1	6.8	Slug Test	fine to medium sand	15 - 20	yes
	3.9	Sauerbrei (sieve)	fine sand	8 -10	no
	6.9	Sauerbrei (sieve)	fine sand	19 - 20	yes
LBGMW-2	1.3	Slug Test	fine sand	15 - 20	yes
	4.8	Sauerbrei (sieve)	medium sand	4 - 6	no
	8.7	Sauerbrei (sieve)	medium sand	16 - 17	yes
LBGMW-3	2.2	Slug Test	fine to medium sand	15 - 20	yes
	5.3	Sauerbrei (sieve)	medium sand	6 - 8	no
	3.0	Sauerbrei (sieve)	medium sand	19 - 20	yes
LBGMW-4	2.1	Slug Test	fine to medium sand	16 - 21	yes
	16.0	Sauerbrei (sieve)	very fine gravel	4 - 6	no
	5.8	Sauerbrei (sieve)	fine sand	25 - 27	yes
LBGMW-5	1.7	Slug Test	fine to medium sand	10 - 15	yes
	6.7	Sauerbrei (sieve)	fine sand	6 - 8	no
	4.1	Sauerbrei (sieve)	medium sand	12 - 14	yes
	5.6	Sauerbrei (sieve)	fine sand	29 - 30	yes
LBGMW-6	0.3	Slug Test	silt and clay	34 - 39	yes
	8.6	Sauerbrei (sieve)	fine sand	10 - 12	no
	10.0	Sauerbrei (sieve)	fine sand	39 -40	yes
LBGMW-7	0.5	Slug Test	medium sand	6 - 11	Yes
	12.1	Sauerbrei (sieve)	medium sand	4 - 6	no
	8.5	Sauerbrei (sieve)	medium sand	10 - 11	yes
LBGMW-8	0.4	Slug Test	fine sand and silt	36 - 41	yes
	6.9	Sauerbrei (sieve)	fine sand	15 - 17	no
B-1	1.5	Laboratory Permeability Test	fine sand	7	no
B-2	0.8	Laboratory Permeability Test	fine sand	5.5	no
	0.3	Laboratory Permeability Test	fine sand	8	yes
B-3	0.5	Laboratory Permeability Test	fine sand	5.5	no
B-5	0.7	Laboratory Permeability Test	fine to medium sand	4.0	no
	1.5	Laboratory Permeability Test	fime sand	9.3	no
B-9	0.6	Laboratory Permeability Test	fine to medium sand	3.5	no
	0.7	Laboratory Permeability Test	fine sand	7.5	no

ft/day feet per day
ft bg feet below grade

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TABLE 3

LUTHERAN HOME OF SOUTHBURY
990 MAIN STREET NORTH
SOUTHBURY, CONNECTICUT

Groundwater Measurements

Location	Depth To Groundwater (feet below grade)							
Date	**7/1/2015**	**7/16/2015**	**7/28/2015**	**8/11/2015**	**9/24/2015**	**10/15/2015**	**1/18/2015**	**3/17/2016**
LBGMW-1	13.35	13.05	12.96	13.15	14.15	14.34	NM	11.40
LBGMW-2	8.03	8.50	9.51	10.52	10.13	11.63	9.07	8.76
LBGMW-3	13.49	10.41	11.11	11.45	12.41	12.56	10.81	9.76
LBGMW-4	8.36	8.13	6.96	8.32	9.70	8.80	5.82	5.26
LBGMW-5	12.19	12.57	12.98	13.46	NM	14.40	Dry	11.40
LBGMW-6	21.12	22.41	22.94	23.45	25.44	26.03	26.03	21.14
LBGMW-7	5.03	5.26	5.85	6.43	8.10	9.85	Dry	4.47
LBGMW-8	23.69	24.26	24.73	25.27	27.17	27.85	27.10	22.73
LBGMW-9	NM	NM	NM	NM	NM	NM	NM	10.20
LBGMW-10	NM	NM	NM	NM	NM	NM	NM	1.70
LBGMW-11	NM	NM	NM	NM	NM	NM	NM	1.23
LBGMW-12	NM	NM	NM	NM	NM	NM	NM	7.60
LBGMW-13	NM	NM	NM	NM	NM	NM	NM	9.37
MW-A	NM	6.98	7.92	8.62	NM	NM	NM	NM
B-1	NM	12.13	Dry	Dry	Dry	NM	NM	Dry
B-2	NM	7.05	7.85	Dry	Dry	NM	NM	6.01
B-3	NM	9.54	9.98	dry	Dry	NM	NM	6.96
B-4	NM	7.21	7.84	8.65	Dry	NM	NM	5.39
B-5	NM	Dry	Dry	Dry	Dry	NM	NM	Dry
B-6	NM	Dry	Dry	Dry	Dry	NM	NM	Dry
B-7	NM	12.42	12.50	12.50	Dry	NM	NM	Dry
B-8	NM	Dry	Dry	Dry	Dry	NM	NM	Dry
B-9	NM	9.03	9.52	9.98	Dry	NM	NM	8.20
B-10	NM	Dry	Dry	Dry	Dry	NM	NM	Dry
B-11	NM	Dry	Dry	Dry	Dry	NM	NM	8.64
B-12	NM	Dry	Dry	Dry	Dry	NM	NM	Dry
PZ-A	NM	0.11	0.34	0.53	1.59	0.84	0.01	0.97
PZ-B	NM	1.00	1.22	2.43	3.73	3.28	1.17	0.50
PZ-C	NM	-0.96	-0.82	-1.39	NM	NM	-0.98	-1.11
PZ-D	NM	-0.89	-1.21	-0.68	NM	NM	-0.79	-0.85

TABLE 3
(continued)

LUTHERAN HOME OF SOUTHBURY
990 MAIN STREET NORTH
SOUTHBURY, CONNECTICUT

Groundwater Measurements

Groundwater Elevation (feet mean sea level)								
LBGMW-1	272.19	272.49	272.58	272.39	271.39	271.20	NM	274.14
LBGMW-2	270.02	269.55	268.54	267.53	267.92	266.42	268.98	269.29
LBGMW-3	264.02	267.10	266.40	266.06	265.10	264.95	266.70	267.75
LBGMW-4	249.45	249.68	250.85	249.49	248.11	249.01	251.99	252.55
LBGMW-5	295.75	295.37	294.96	294.48	NM	293.54	Dry	296.54
LBGMW-6	283.39	282.10	281.57	281.06	279.07	278.48	278.48	283.37
LBGMW-7	291.14	290.91	290.32	289.74	288.07	286.32	Dry	291.70
LBGMW-8	294.18	293.61	293.14	292.60	290.70	290.02	290.77	295.14
LBGMW-9	NM	NM	NM	NM	NM	NM	NM	273.48
LBGMW-10	NM	NM	NM	NM	NM	NM	NM	274.34
LBGMW-11	NM	NM	NM	NM	NM	NM	NM	273.45
LBGMW-12	NM	NM	NM	NM	NM	NM	NM	272.29
LBGMW-13	NM	NM	NM	NM	NM	NM	NM	270.79
MW-A	NM	253.99	253.05	252.35	NM	NM	NM	NM
B-1	NM	294.43	Dry	Dry	Dry	NM	NM	Dry
B-2	NM	284.66	283.86	Dry	Dry	NM	NM	285.70
B-3	NM	279.64	279.20	Dry	Dry	NM	NM	282.22
B-4	NM	280.99	280.36	279.55	Dry	NM	NM	282.81
B-5	NM	Dry	Dry	Dry	Dry	NM	NM	Dry
B-6	NM	Dry	Dry	Dry	Dry	NM	NM	Dry
B-7	NM	294.47	294.39	294.39	Dry	NM	NM	Dry
B-8	NM	Dry	Dry	Dry	Dry	NM	NM	Dry
B-9	NM	289.83	289.34	288.88	Dry	NM	NM	290.66
B-10	NM	NM	Dry	Dry	Dry	NM	NM	Dry
B-11	NM	NM	Dry	Dry	Dry	NM	NM	272.58
B-12	NM	NM	Dry	Dry	Dry	NM	NM	Dry
PZ-A	NM	267.34	267.11	266.92	265.86	266.61	267.44	266.48
PZ-B	NM	268.88	268.66	267.45	266.15	266.60	268.71	269.38
PZ-C	NM	284.09	283.95	284.52	NM	NM	284.11	284.24
PZ-D	NM	275.65	275.97	275.44	NM	NM	275.55	275.61

NM not measured

ft btoc feet below top of casing.
ft msl feet above mean sea level

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TABLE 4

LUTHERAN HOME OF SOUTHBURY
990 MAIN STREET NORTH
SOUTHBURY, CONNECTICUT

Piezometer Water Level Measurements

WETLAND									
Date	Measured Ground Water Elevation (ft msl)	Measured Surface Water Elevation (ft msl)	Field Head Difference (ft)	Field Gradient Direction	Date	Measured Ground Water Elevation (ft msl)	Measured Surface Water Elevation (ft msl)	Field Head Difference (ft)	Field Gradient Direction
PZ-A					PZ-B				
7/16/2015	267.34	Dry	--	--	7/16/2015	268.88	Dry	--	--
7/28/2015	267.11	Dry	--	--	7/28/2015	269.66	Dry	--	--
8/11/2015	266.92	Dry	--	--	8/11/2015	267.45	Dry	--	--
9/23/2015	265.86	Dry	--	--	9/23/2015	266.15	Dry	--	--
10/15/2015	266.61	Dry	--	--	10/15/2015	266.6	Dry	--	--
1/18/16	267.44	Dry	--	--	1/18/16	268.71	Dry	--	--
3/17/2016	266.48	Dry	--	--	3/17/2016	269.38	Dry	--	--
STILES CREEK									
Date	Measured Ground Water Elevation (ft msl)	Measured Surface Water Elevation (ft msl)	Field Head Difference (ft)	Field Gradient Direction	Date	Measured Ground Water Elevation (ft msl)	Measured Surface Water Elevation (ft msl)	Field Head Difference (ft)	Field Gradient Direction
PZ-C					PZ-D				
7/16/2015	284.09	284.12	0.03	Down	7/16/2015	275.71	275.54	-0.17	UP
7/28/2015	283.94	283.94	0.00	Neutral	7/28/2015	276.03	275.34	-0.69	UP
8/11/2015	284.52	284.62	0.10	Down	8/11/2015	275.50	276.07	0.57	Down
9/23/2015	NM	NM	--	--	9/23/2015	NM	NM	--	--
10/15/2015	NM	NM	--	--	10/15/2015	NM	NM	--	--
1/18/16	284.11	284.15	0.04	Down	1/18/16	284.55	284.52	-0.03	UP
3/17/2016	284.62	284.27	0.03	Down	3/17/2016	284.61	284.61	0.01	Neutral

Dry Dry
NA No data available
-- Not calculated

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TABLE 5

LUTHERAN HOME OF SOUTHBURY
990 MAIN STREET NORTH
SOUTHBURY, CONNECTICUT

Summary of Laboratory Water-Quality Data

Well/PZ ID	Date	pH	Total Nitrogen	Nitrite	Nitrate	Ammonia	Total Phosphorous	Orthophosphate	Total Kjeldahl Nitrogen	Total Dissolved Phosphorous	Fecal Coliform
			(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(CFU/100 ml)
MW-1	9/23/2015	7.73	19	ND<0.10	ND<0.10	22	2.6	1.9	19	2.4	0
	11/6/2015	6.42	21	ND<0.10	ND<0.10	21	2.3	1.4	21	0.19	NS
MW-2	9/23/2015	10.95 [/1]	13	ND<0.10	ND<0.10	12	2.1	1.6	13	1.9	0
	11/6/2015	6.35	12	ND<0.10	ND<0.10	12	2.3	2.3	12	0.73	NS
	2/10/2016	6.59 [/3]	14	ND<0.10	ND<0.10	12	2.5	0.74	14	NS	NS
MW-3	9/23/2015	7.2	5.1	ND<0.10	0.16	4.4	ND<0.10	0.12	4.9	ND<0.10	3
	11/6/2015	6.37	4.8	ND<0.10	ND<0.10	4.2	ND<0.10	ND<0.10	3.4	0.2	NS
	2/10/2016	6.62 [/3]	5.5	ND<0.10	ND<0.10	4.5	ND<0.10	0.11	5.5	NS	NS
MW-4	9/23/2015	7.16	2.8	ND<0.10	2.8	ND<0.10	ND<0.10	ND<0.10	ND<1.0	ND<0.10	2
	2/10/2016	6.91 [/3]	2.8	ND<0.10	2.8	0.2	ND<0.10	ND<0.10	ND<1.0	NS	NS
MW-5	9/24/2015	[/2]	Well went dry - not enough water for analysis								10
MW-6	9/24/2015	8.37	ND<1.2	ND<0.10	0.37	ND<0.10	ND<0.10	ND<0.10	ND<1.0	ND<0.10	<1
	2/10/2016	8.02 [/3]	ND<1.2	ND<0.10	0.38		ND<0.10	ND<0.10	ND<1.0	NS	NS
MW-7	9/24/2015	[/2]	2.2	ND<0.10	ND<0.10	0.14	3.6	ND<0.10	2.2	1.6	>2419
MW-8	9/24/2015	8.22	1.4	ND<0.10	ND<0.10	ND<0.10	0.11	ND<0.10	1.4	0.1	<1
	2/10/2016	7.97 [/3]	4.8	ND<0.10	0.1	0.24	29	0.85	4.7	NS	NS
MW-9	2/9/2016	6.77 [/3]	12	ND<0.10	ND<0.10	12	0.36	0.33	12	NS	NS
MW-10	2/10/2016	6.59 [/3]	6.1	ND<0.10	4.4	0.13	0.87	0.13	1.7	NS	NS
MW-11	2/9/2016	6.81 [/3]	ND<1.2	ND<0.10	ND<0.10	ND<0.10	ND<0.10	0.16	ND<1.0	NS	NS

TABLE 5

LUTHERAN HOME OF SOUTHBURY
990 MAIN STREET NORTH
SOUTHBURY, CONNECTICUT

Summary of Laboratory Water-Quality Data

Well/PZ ID	Date	pH	Total Nitrogen	Nitrite	Nitrate	Ammonia	Total Phosphorous	Orthophosphate	Total Kjeldahl Nitrogen	Total Dissolved Phosphorous	Fecal Coliform
			(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(CFU/100 ml)
MW-12	2/10/2016	6.43 /3	98	ND<0.10	ND<0.10	ND<0.10	31	ND<0.10	98	NS	NS
MW-13	2/10/2016	6.98 /3	2.7	ND<0.10	ND<0.10	2.6	ND<0.10	ND<0.10	2.7	NS	NS
PZ-A	10/1/2015	/2	NS	NS	NS	NS	NS	NS	NS	NS	0
	11/6/2015	6.5	3.4	ND<0.10	ND<0.10	0.16	0.44	ND<0.10	3.4	0.18	NS
	2/10/2016	10.0 /3	3.3	ND<0.10	ND<0.10	0.5	0.32	0.13	3.3	NS	NS
PZ-B	10/1/2015	/2	NS	NS	NS	NS	NS	NS	9	NS	0
	11/6/2015	6.7	18	ND<0.10	ND<0.10	1.3	8.1	ND<0.10	18	ND<0.10	NS
	2/10/2016	10.3 /3	1.8	ND<0.10	ND<0.10	0.23	ND<0.10	ND<0.10	1.8	NS	NS

mg/L milligrams per liter
CFU/100 ml Colony Forming Units per 100 milliliter
ND Not Detected
NS Not Sampled
/1 May be erroneous reading, YSI malfunctioned during sampling
/2 Not enough water in well to low-flow sample, sample was collected as a grab sample and pH was not measured.
/3 pH analyzed by laboratory vs. field measurement

TABLE 6

LUTHERAN HOME OF SOUTHBURY
990 MAIN STREET NORTH
SOUTHBURY, CONNECTICUT

Observed versus Simulated Groundwater Elevations

Name	Date	Simulation Time (days)	Observed Groundwater Elevation (ft msl)	Simulated Groundwater Elevation (ft msl)	Residual (feet)
MW-1	7/16/2015	15.5	273.24	273.02	0.22
MW-1	7/28/2015	27.4	272.33	272.84	-0.51
MW-1	8/11/2015	41.4	272.14	272.62	-0.48
MW-1	9/23/2015	84.4	271.14	271.99	-0.85
MW-2	7/16/2015	15.7	269.66	269.88	-0.22
MW-2	7/28/2015	27.4	268.15	269.62	-1.47
MW-2	8/11/2015	41.4	267.14	269.28	-2.14
MW-2	9/23/2015	84.4	267.53	268.32	-0.79
MW-3	7/16/2015	15.7	266.65	265.26	1.39
MW-3	7/28/2015	27.4	265.95	265.12	0.83
MW-3	8/11/2015	41.4	265.61	264.90	0.71
MW-3	9/23/2015	84.5	264.65	264.18	0.47
MW-4	7/1/2015	0.6	249.07	248.96	0.11
MW-4	7/28/2015	27.4	250.47	247.63	2.84
MW-4	8/11/2015	41.4	249.10	246.85	2.25
MW-4	9/23/2015	84.5	247.73	244.83	2.90
MW-5	7/1/2015	0.6	293.98	294.09	-0.11
MW-5	7/2/2015	1.3	295.75	294.08	1.67
MW-5	7/16/2015	15.5	295.37	293.81	1.56
MW-5	7/28/2015	27.5	294.96	293.52	1.44
MW-5	8/11/2015	41.0	294.48	293.19	1.29
MW-6	7/16/2015	15.5	282.10	282.94	-0.84
MW-6	7/28/2015	27.5	281.57	282.53	-0.96
MW-6	8/11/2015	41.4	281.06	282.03	-0.97
MW-6	9/24/2015	85.4	279.07	280.51	-1.44
MW-7	7/16/2015	15.5	290.91	287.13	3.78
MW-7	7/28/2015	27.5	290.32	287.06	3.26
MW-7	8/11/2015	41.4	289.74	286.97	2.77
MW-7	9/23/2015	84.4	288.07	286.60	1.47
MMW-8	7/16/2015	15.5	293.31	294.73	-1.42
MMW-8	7/28/2015	27.5	293.14	294.39	-1.25
MMW-8	8/11/2015	41.4	292.60	293.97	-1.37
MMW-8	9/23/2015	84.5	290.70	292.67	-1.97

TABLE 6

LUTHERAN HOME OF SOUTHBURY
990 MAIN STREET NORTH
SOUTHBURY, CONNECTICUT

Observed versus Simulated Groundwater Elevations

Name	Date	Simulation Time (days)	Observed Groundwater Elevation (ft msl)	Simulated Groundwater Elevation (ft msl)	Residual (feet)
B-1	7/16/2015	15.5	294.43	291.51	2.92
B-2	7/16/2015	15.5	284.66	281.94	2.72
B-2	7/28/2015	27.5	283.86	281.55	2.31
B-3	7/16/2015	15.5	280.64	279.13	1.51
B-3	7/28/2015	27.5	279.20	278.72	0.48
B-4	7/16/2015	15.4	280.99	280.13	0.86
B-4	7/28/2015	27.5	280.36	279.73	0.63
B-4	8/11/2015	41.4	279.55	279.29	0.26
B-7	7/28/2015	27.5	294.39	294.47	-0.08
B-7	8/11/2015	41.4	294.39	294.47	-0.08
B-9	7/16/2015	15.5	289.83	287.23	2.60
B-9	7/28/2015	27.5	289.34	287.06	2.28
B-9	8/11/2015	41.4	288.88	286.86	2.02
MW-A	7/16/2015	15.7	253.99	254.99	-1.00
MW-A	7/28/2015	27.4	253.05	254.46	-1.41
MW-A	8/11/2015	41.4	252.35	253.91	-1.56
PZ-A	7/16/2015	15.5	267.34	267.09	0.25
PZ-A	7/28/2015	27.5	267.11	267.07	0.04
PZ-A	8/11/2015	41.5	266.92	267.05	-0.13
PZ-B	7/16/2015	15.5	268.88	270.10	-1.22
PZ-B	7/28/2015	27.5	269.66	270.08	-0.42
PZ-B	8/11/2015	41.5	267.45	270.07	-2.62
PZ-C	7/16/2015	15.5	284.09	285.20	-1.11
PZ-C	7/28/2015	27.5	283.94	285.10	-1.16
PZ-C	8/11/2015	41.4	284.52	285.04	-0.52
PZ-D	7/16/2015	15.5	275.71	274.27	1.44
PZ-D	7/28/2015	27.5	276.03	274.21	1.82
PZ-D	8/11/2015	41.5	275.50	274.16	1.34

TABLE 6

LUTHERAN HOME OF SOUTHBURY
990 MAIN STREET NORTH
SOUTHBURY, CONNECTICUT

Observed versus Simulated Groundwater Elevations

Name	Date	Simulation Time (days)	Observed Groundwater Elevation (ft msl)	Simulated Groundwater Elevation (ft msl)	Residual (feet)
Summary Statistics for Targets Above					
Residual Mean				0.40	ft
Abs. Residual Mean				1.32	ft
Res. Standard Deviation				1.56	ft
root mean squared (RMS)				1.60	ft
Residual Sum of Squares				156.38	
Percent Within 1 ft				41.1%	
Percent Within 2 ft				77.7%	
Percent Within 5 ft				100.0%	
Min Residual				-2.62	ft
Max Residual				3.78	ft
Range of observations				48.02	
Number of targets				61	

gpd gallons per day

SSDS subsurface sewage disposal system

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TABLE 7

LUTHERAN HOME OF SOUTHBURY
990 MAIN STREET NORTH
SOUTHBURY, CONNECTICUT

Simulated SSDS Discharge

SSDS	Calibration Simulation (gpd)	Mounding Simulations Average Discharge (October 29, 2015 – February 29, 2016) (gpd)
A	280	280
B	11,420	No Simulated
Modified B	Not Simulated	12,830
Total	11,700	13,110

gpd gallons per day
SSDS subsurface sewage disposal system

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TABLE 8

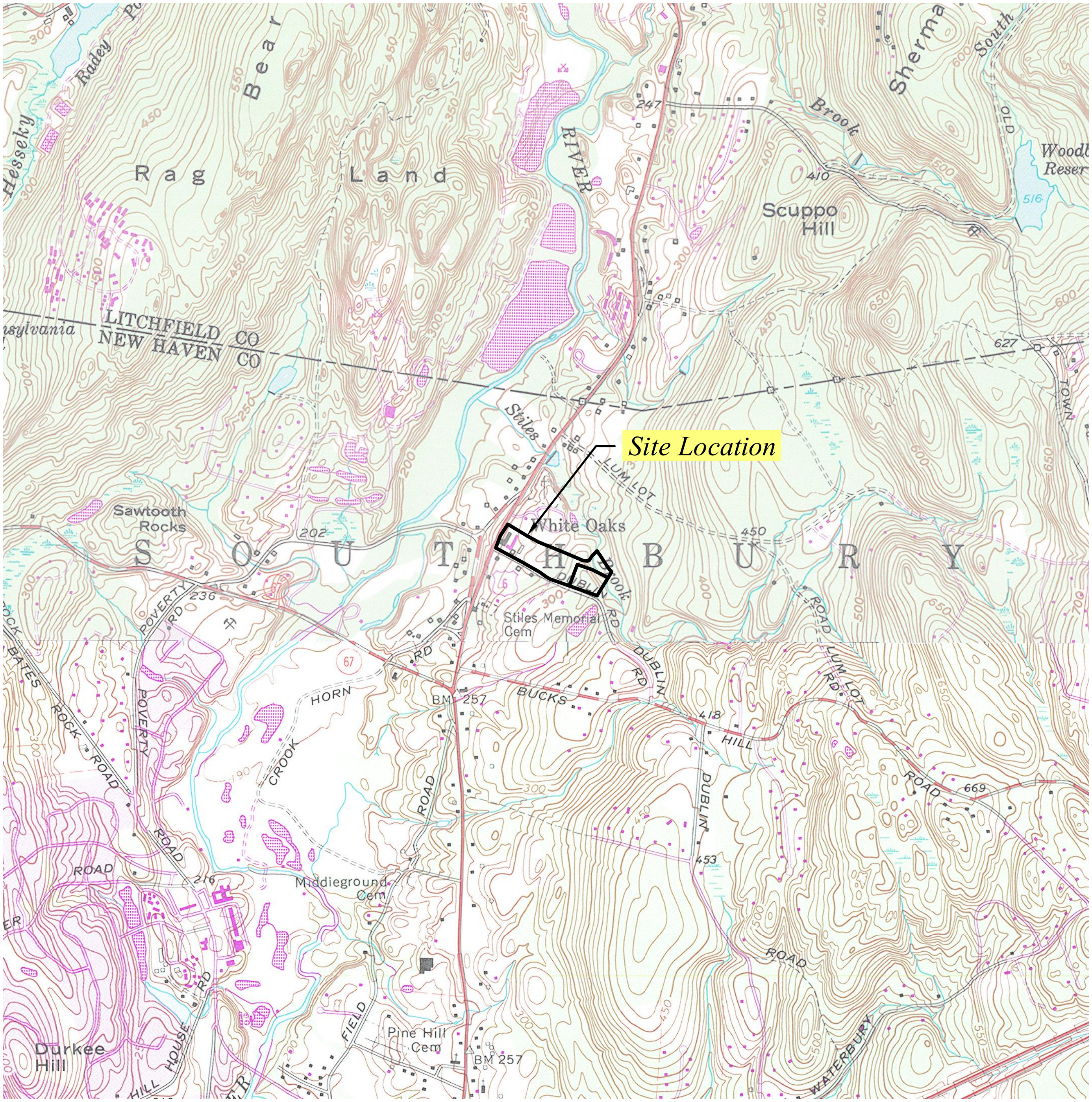
LUTHERAN HOME OF SOUTHBURY
990 MAIN STREET NORTH
SOUTHBURY, CONNECTICUT

SSDS Bottom Elevations and Post-Mounding Groundwater Elevations

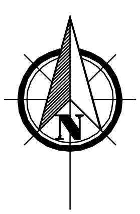
Dispersal Trench	**Bottom of SSDS Elevation (ft msl)**	**Maximum Post-Mounding Groundwater Elevation (ft msl)**	**Difference Between Bottom of System and Maximum Groundwater Elevation (feet)**
Design Flow			
Modified SSDS-B			
1	277.83	272.23	5.60
2	278.83	273.44	5.39
3	279.83	274.41	5.42
4	279.83	275.11	4.72
5	279.83	275.15	4.68
6	279.83	275.15	4.68
Stormwater Infiltration System			
DMH-6	265.1	265.03	0.07
DMH-7	267.80	266.92	0.88
DMH-8	266.85	263.77	3.08
DMH-9	266.85	265.41	1.44
DMH-10	266.35	262.52	3.83
DMH-11	266.50	264.22	2.28
Design Flow Plus 50-Percent Reserve			
1	277.83	276.51	1.32
2	278.83	277.88	0.95
3	279.83	278.89	0.94
4	279.83	279.44	0.39
5	279.83	279.47	0.36
6	279.83	279.27	0.56
Stormwater Infiltration System			
DMH-6	265.1	267.04	-1.94
DMH-7	267.80	269.08	-1.28
DMH-8	266.85	265.54	1.31
DMH-9	266.85	267.84	-0.99
DMH-10	266.35	264.27	2.08
DMH-11	266.50	266.23	0.27

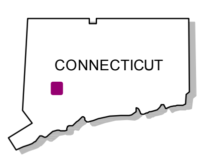
ft msl feet above mean sea level
SSDS subsurface sewage disposal system

FIGURES



USGS TOPOGRAPHIC QUADRANGLES SOUTHBURY AND WOODBURY, CONNECTICUT (PHOTOREVISED 1984).





QUADRANGLE LOCATION

0 2000

SCALE IN FEET

LUTHERAN HOME OF SOUTHBURY 990 MAIN STREET NORTH SOUTHBURY, CONNECTICUT							
SITE LOCATION MAP							
DATE	REVISED	PREPARED BY: LEGGETTE, BRASHEARS & GRAHAM, INC. Professional Groundwater and Environmental Engineering Services 4 Research Drive Suite 204 Shelton, Connecticut 06484 (203) 929-8555					
DRAWN:	RAC	CHECKED:	KT	DATE:	03/24/16	FIGURE:	1

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LEGEND

	PROPERTY BOUNDARY	PZ-D	PIEZOMETER LOCATION
	WATER	A — A'	CROSS-SECTION
	WETLAND BOUNDARY		SSDS - DISPOSAL SYSTEM
	WETLAND BUFFER		STORM WATER INFILTRATION SYSTEM
B-12	BETA TEST PIT		
MW-13	WELL LOCATION		

0 100
SCALE IN FEET

LUTHERAN HOME OF SOUTHBURY
990 MAIN STREET NORTH
SOUTHBURY, CONNECTICUT

MONITORING LOCATIONS

DATE	REVISED

PREPARED BY: LEGGETTE, BRASHEARS & GRAHAM, INC.
Professional Groundwater and Environmental Engineering Services
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Shelton, Connecticut 06484
(203) 929-8555

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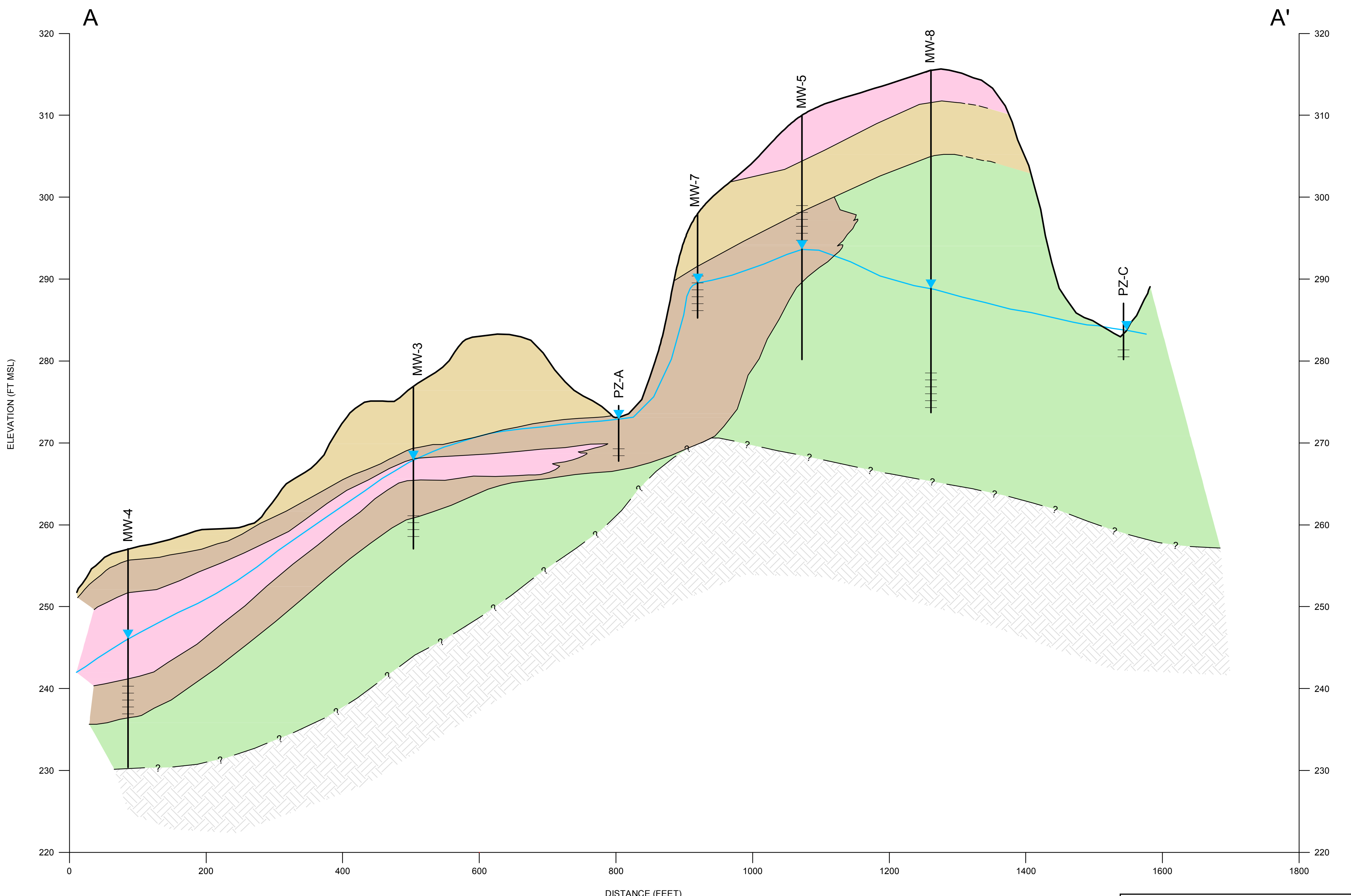

LEGEND

WELL

SCREEN SETTING

WATER-TABLE

VERY FINE TO FINE SAND WITH SILT

MEDIUM TO FINE SAND

FINE SAND

MEDIUM TO COARSE SAND

BEDROCK

LUTHERAN HOME OF SOUTHBURY
990 MAIN STREET NORTH
SOUTHBURY, CONNECTICUT

GENERALIZED CROSS-SECTION A-A'

DATE	REVISED

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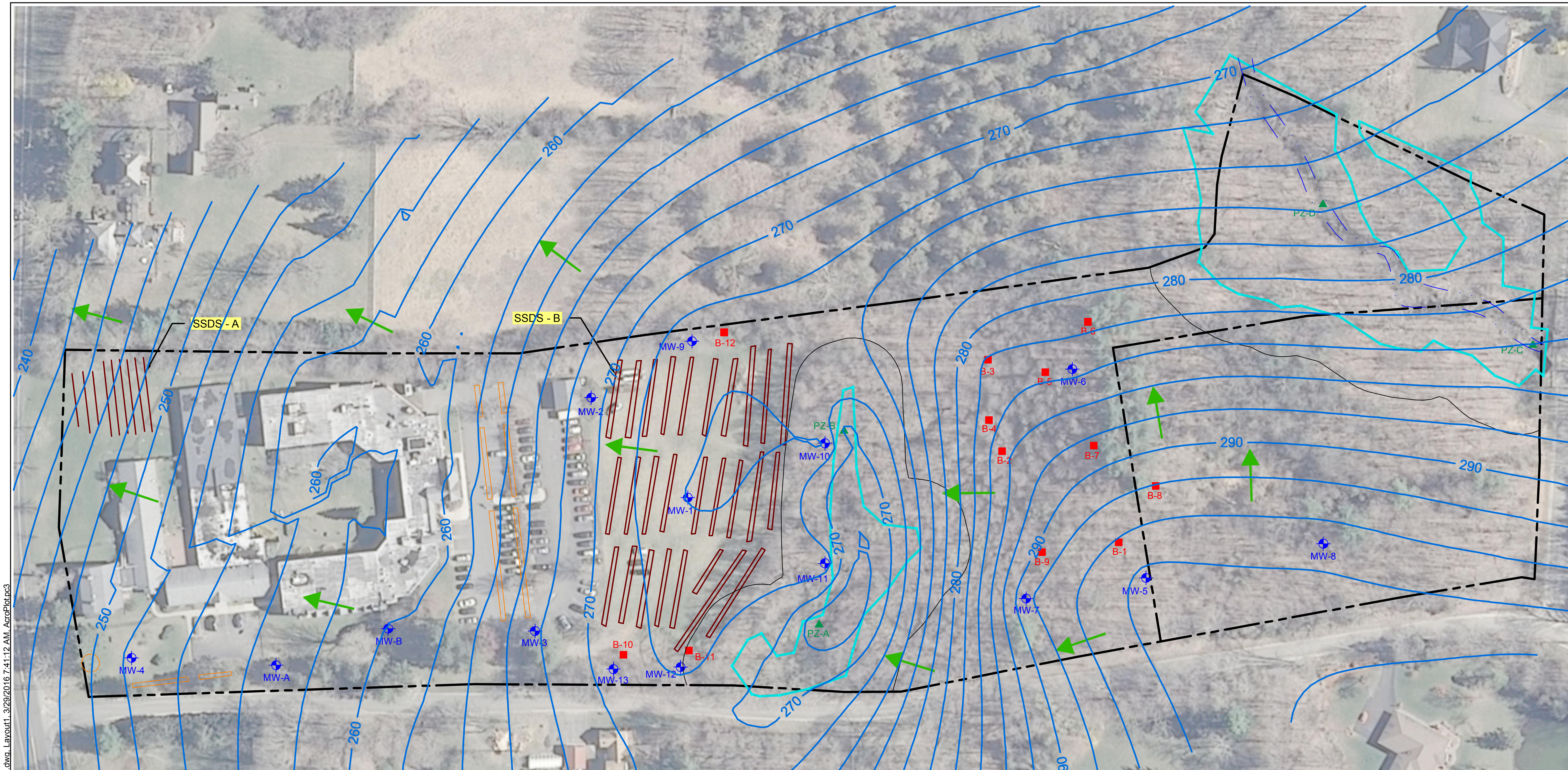

LUTHERAN HOME OF SOUTHBURY
990 MAIN STREET NORTH
SOUTHBURY, CONNECTICUT

MARCH 17, 2016 - SEASONAL HIGH GROUNDWATER ELEVATION CONTOUR MAP

DATE	REVISED

PREPARED BY: LEGGETTE, BRASHEARS & GRAHAM, INC.
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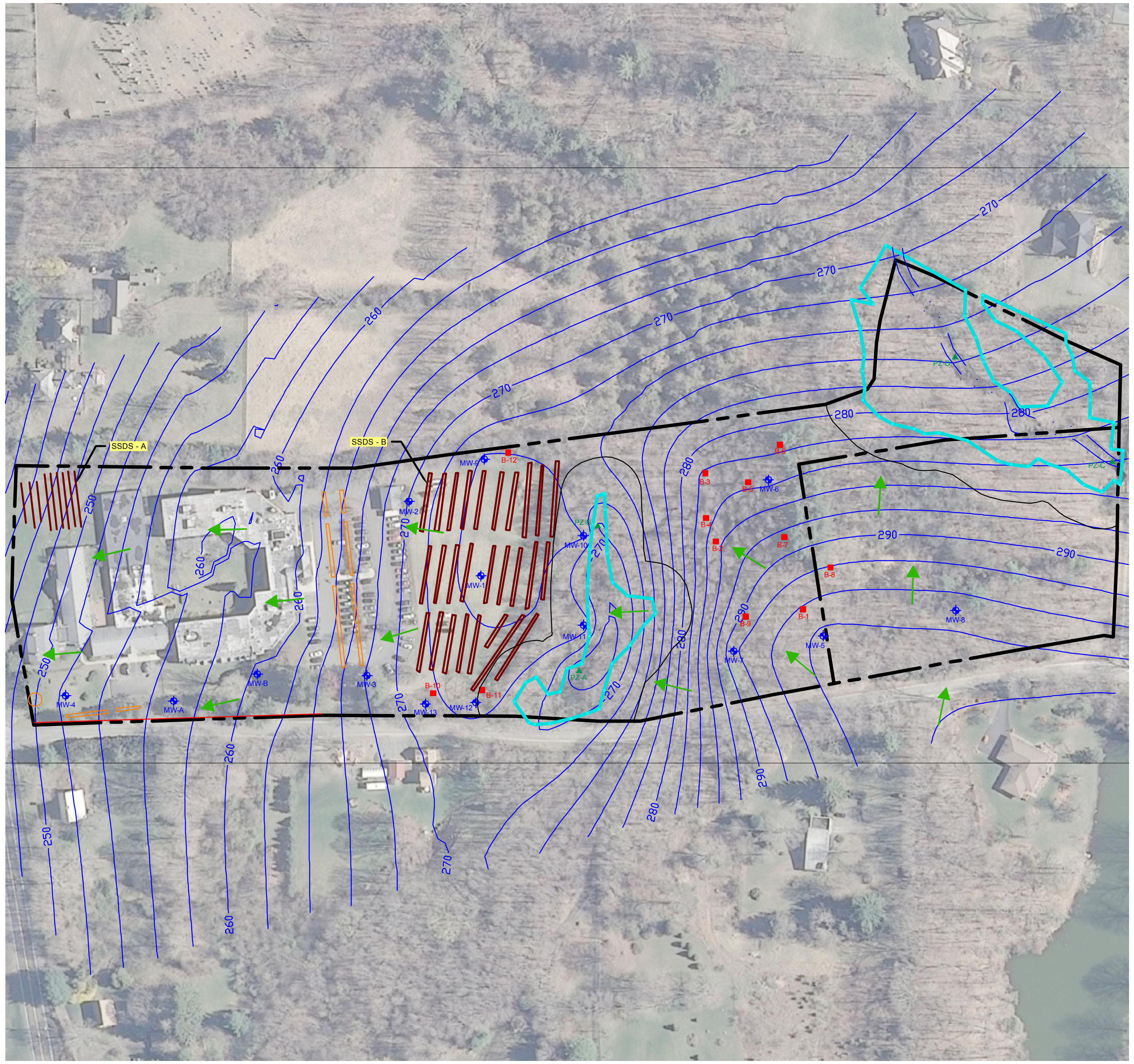
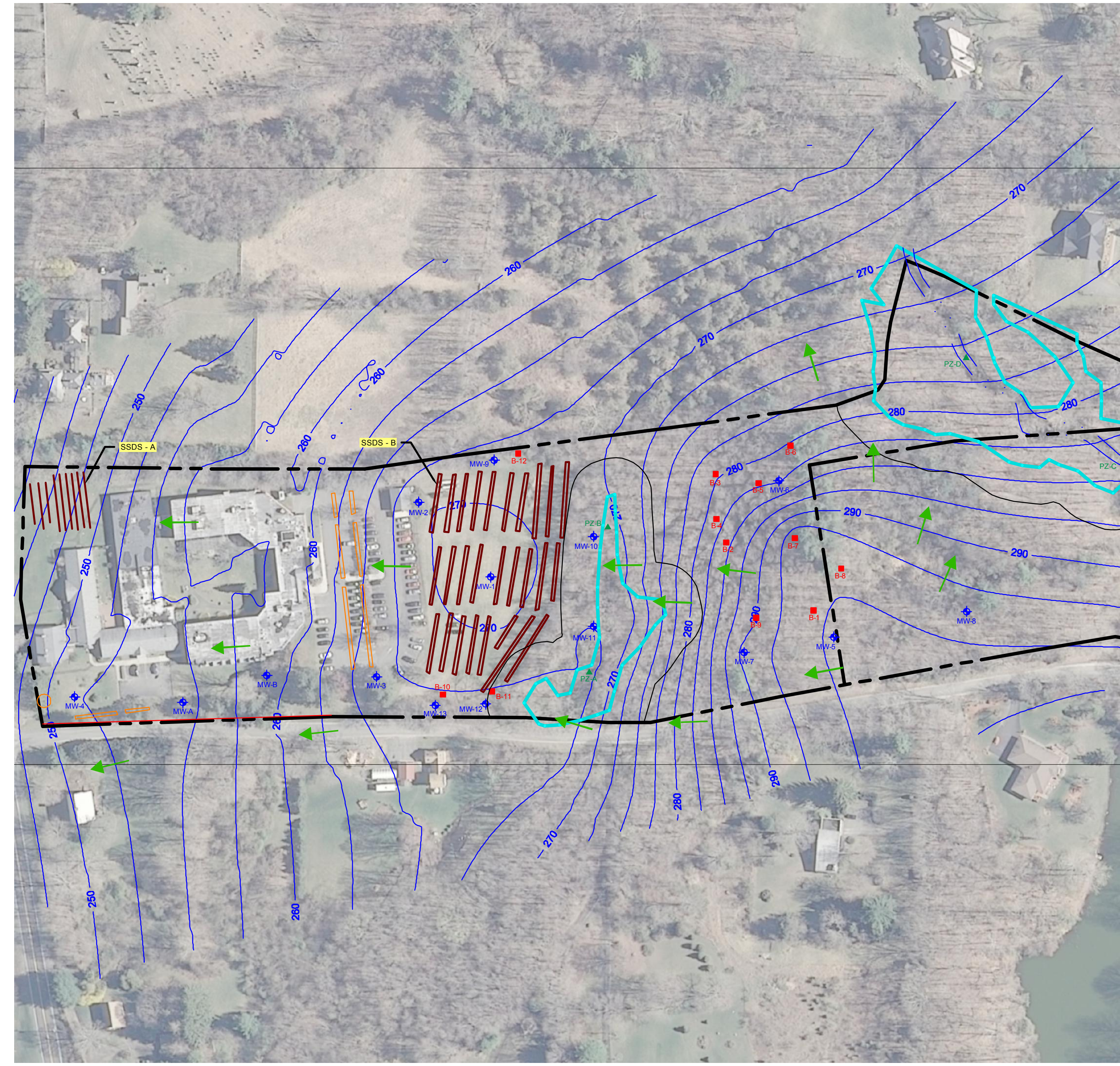


SIMULATED GROUNDWATER ELEVATION



MEASURED GROUNDWATER ELEVATION

LEGEND

PROPERTY BOUNDARY

WATER

WETLAND BOUNDARY

WETLAND BUFFER

B-12 BETA TEST PIT

MW-13 WELL LOCATION

PZ-D PIEZOMETER LOCATION

SSDS - DISPOSAL SYSTEM

STORM WATER INFILTRATION SYSTEM

260 GROUNDWATER ELEVATION CONTOUR

DIRECTION FOR GROUNDWATER FLOW

0 200
SCALE IN FEET

LUTHERAN HOME OF SOUTHBURY
990 MAIN STREET NORTH
SOUTHBURY, CONNECTICUT

JULY 16, 2015 - SIMULATED VERSUS MEASURED
GROUNDWATER ELEVATION CONTOUR MAP

DATE	REVISED

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(203) 929-8555

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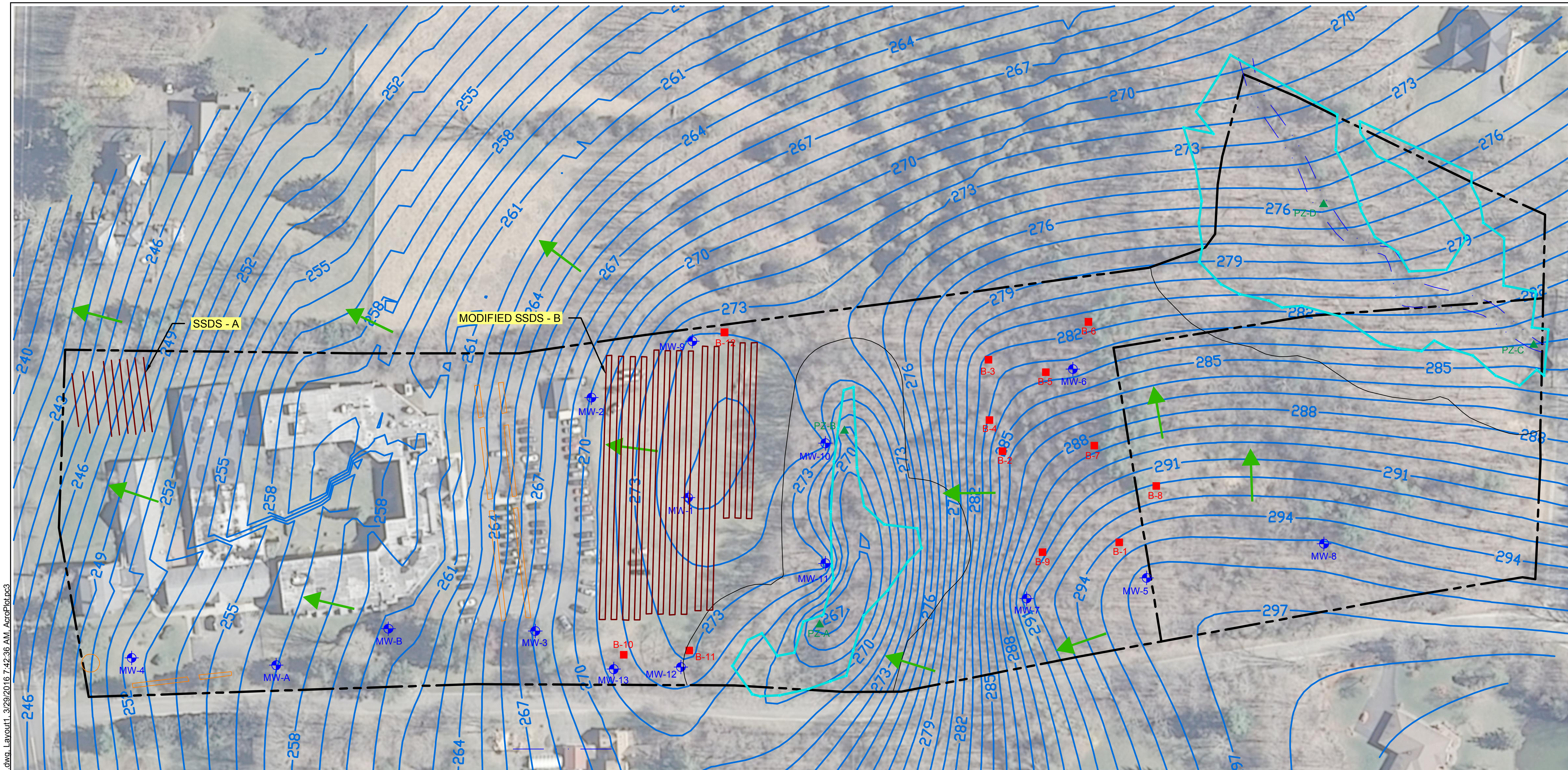

LEGEND

PROPERTY BOUNDARY

WATER

WETLAND BOUNDARY

WETLAND BUFFER

B-12 BETA TEST PIT

MW-13 WELL LOCATION

PZ-D PIEZOMETER LOCATION

SSDS - DISPOSAL SYSTEM

STORM WATER INFILTRATION SYSTEM

261 GROUNDWATER ELEVATION CONTOUR

DIRECTION FOR GROUNDWATER FLOW

0 100

SCALE IN FEET

LUTHERAN HOME OF SOUTHBURY
990 MAIN STREET NORTH
SOUTHBURY, CONNECTICUT

SIMULATED POST MOUND GROUNDWATER ELEVATION, DESIGN FLOW OF 13,110 GPD

DATE	REVISED

PREPARED BY: LEGGETTE, BRASHEARS & GRAHAM, INC.
Professional Groundwater and Environmental Engineering Services
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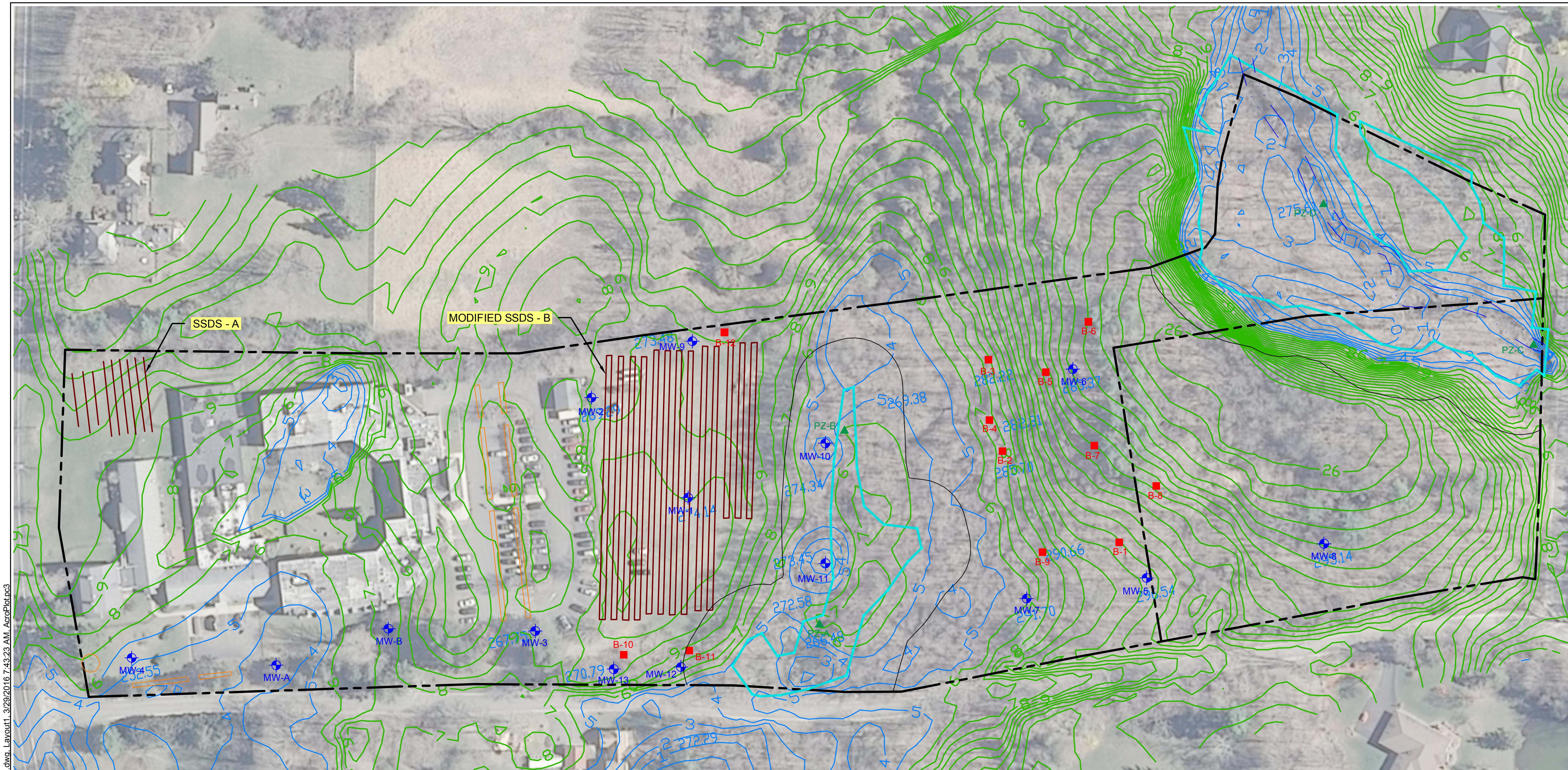

LEGEND

	PROPERTY BOUNDARY	PZ-D	PIEZOMETER LOCATION
	WATER		SSDS - DISPOSAL SYSTEM
	WETLAND BOUNDARY		STORM WATER INFILTRATION SYSTEM
	WETLAND BUFFER		SIMULATED DEPTH TO WATER
B-12	BETA TEST PIT	-1	0 to -5 FEET
MW-13	WELL LOCATION	1	1 TO 5 FEET
		6	6 TO 26 FEET

0 100
SCALE IN FEET

LUTHERAN HOME OF SOUTHBURY
990 MAIN STREET NORTH
SOUTHBURY, CONNECTICUT

SIMULATED POST MOUND DEPTH TO WATER, DESIGN FLOW

DATE	REVISED

PREPARED BY: LEGGETTE, BRASHEARS & GRAHAM, INC.
Professional Groundwater and Environmental Engineering Services
4 Research Drive
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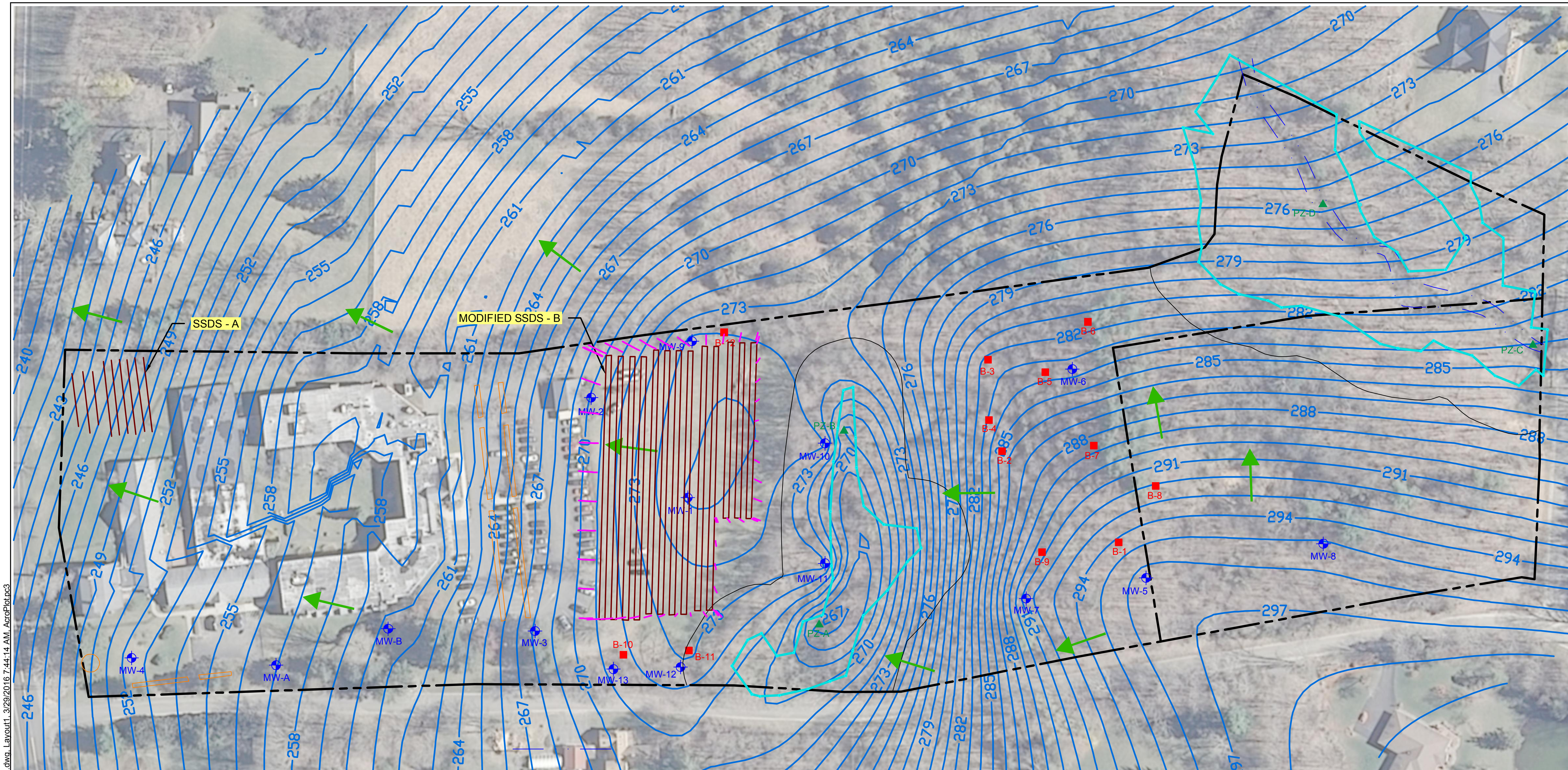

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LEGEND

	PROPERTY BOUNDARY	PZ-D	PIEZOMETER LOCATION		FLOW PATHS
	WATER		SSDS - DISPOSAL SYSTEM		
	WETLAND BOUNDARY		STORM WATER INFILTRATION SYSTEM		
	WETLAND BUFFER	261	GROUNDWATER ELEVATION CONTOUR		
B-12	BETA TEST PIT		DIRECTION FOR GROUNDWATER FLOW		
MW-13	WELL LOCATION				

0 100
SCALE IN FEET

LUTHERAN HOME OF SOUTHBURY
990 MAIN STREET NORTH
SOUTHBURY, CONNECTICUT

SIMULATED POST MOUND GROUNDWATER ELEVATION
AND SIMULATED GROUNDWATER FLOW PATHS

DATE	REVISED

PREPARED BY: LEGGETTE, BRASHEARS & GRAHAM, INC.
Professional Groundwater and Environmental Engineering Services
4 Research Drive
Suite 204
Shelton, Connecticut 06484
(203) 929-8555

DRAWN: RAC | CHECKED: KT | DATE: 03/28/16 | FIGURE: 8

APPENDIX I

GEOLOGIC LOGS

BETA TEST PIT AND WELL LOGS

Test Hole ID:	B-1	(See map for location)	
Weather	Overcast, 50-60 deg.F		
Date:	May 21, 2015	(Thursday)	
Soil Evaluator	Robert Baglini - BETA Group, Inc. / Joseph Federico - BETA Group, Inc,		
Present	Joe Kmetz (Pomperaug BOH), Ramona Goode (CT DEEP), Pete (Harwinton Paving), Welti Associates		
Project:	Lutheran Home of Southbury - Wastewater Treatment and Dispersal System Improvements		
Project / Number	05051.035		

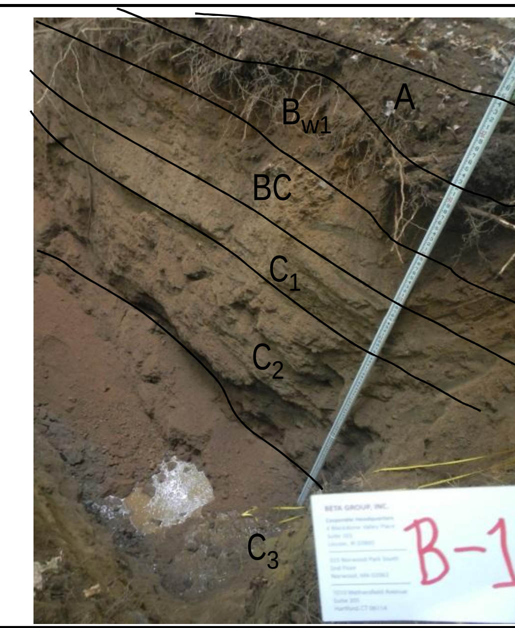
Groundwater Data	Standing Water Depth	132"	Sc
Sh = Sc - [(Sr/Owr)*(Owc-Owmax)]	or, Depth Weeping from Pit Face	132"	Sc
Frimpter Adjustment	USGS Index Well(s) Number/ID	-	per USGS
	Reading Date	-	-
	Index Well Max Level	-	Owmax
	Index Well Level	-	Owc
	Max Range for well	-	Owr
	Range in levels for Similar Topography (5% exceedence, Figure 11)	-	Sr
	Predicted Adjusted Depth (Frimpter), ft	-	Sh

Test Hole Log

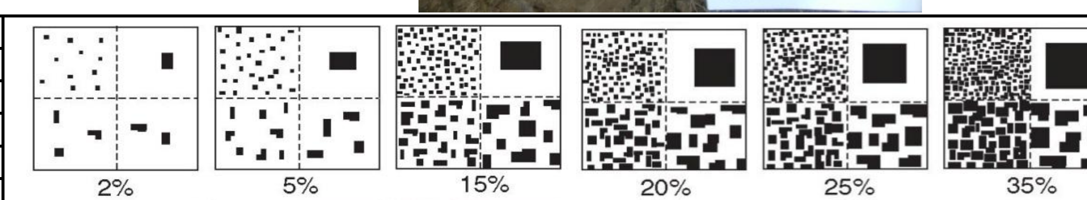
Depth (inches)	Soil Horizon (Layer)	Soil Matrix Color - Moist (Munsell)	Soil Texture (USDA) (USDA)	Coarse Fragments % by Volume: Gravel	Coarse Fragments % by Volume: Cobbles & Stones	Structure	Consistence	Redoximorphic Features (mottles): Depth	Color	Percent	Other (Roots, Etc.)
0 - 14"	A	10YR 4/3	Fine Sandy Loam	-	-	GR	FR	-	-	-	
14 - 32"	B_w	10YR 4/4	Fine Sandy Loam	1%	0%	SBK	FIP-FIH	-	-	-	Roots to 31"
32 - 60"	BC	7.5YR 4/4	Fine Sandy Loam	1%	0%	MA	FIP-FIH	48"	2.5YR4/6 to 7.5RY 4/2	5%	
60 - 72"	C_1	10YR 5/4	Fine Sandy Loam	25%	0%	MA	FIP-FIH	-	-	-	
72 - 128"	C_2	10YR 5/4	Fine Sandy Loam	2%	2%	MA	FIP-FIH	-	-	-	
128" +	C_3	7.5YR 4/4	Sandy Loam	0%	0%	MA	FIP-FIH				

Geologic Setting and Topography / Textural and Structure / Photo

Landform	Landscape Position	Parent Material	Texture (USDA)	Coarse Fragments		Structure	Consistence	Redox %
Drumlin	Summit (SU)	Dense Compact (Lodgement) Glacial Till	Coarse Sand	Gravel = 2mm to 3"	Cobble = 3" to 10"	Granular (GR)	Loose (L)	Few (F) <2%
Till Ridge	Shoulder (SH)	Loose Ablation (Melt-out) Till	Sand		Stone = 10" to 25"	Angular Blocky (ABK)	Very Friable (VFR)	Common 2 to <20%
Ground Moraine	Backslope (BS)	Shallow to Bedrock Area	Fine Sand		Boulder = >25"	Subangular Blocky (SBK)	Friable (FR)	Many >20%
Moraine (End / Recessional)	Footslope (FS)	Lacustrine	Loamy Sand			Platy (PL)	Firm (FI)	
Kettle	Toeslope (TS)	Ice-Contact Outwash	Sandy Loam			Structureless	Very Firm (VFI)	
Kame	Channel (CH)	Proglacial Outwash	Fine Sandy Loam			Single Grain (SG)	Extremely Firm (EF)	
Esker		Alluvium	Loam			Massive (MA)	Firm in Place, Friable in Hand (FIP-FIH)	
Outwash Plain		Organic Deposits	Silt Loam					
Lacustrine Plain		Eolian Deposits	Sandy Clay Loam					
Floodplain		Marine Silts & Clays	Silty Clay					
Swamp		Human-Made/Transported Materials (Fill)	Clay					
Other		Other						



Comments:



Test Hole ID:	**B-2**	(See map for location)	
Weather	Overcast, 50-60 deg.F		
Date:	May 21, 2015	(Thursday)	
Soil Evaluator	Robert Baglini - BETA Group, Inc. / Joseph Federico - BETA Group, Inc,		
Present	Joe Kmetz (Pomperaug BOH), Ramona Goode (CT DEEP), Pete (Harwinton Paving), Welti Associates		
Project:	Lutheran Home of Southbury - Wastewater Treatment and Dispersal System Improvements		
Project / Number	05051.035		

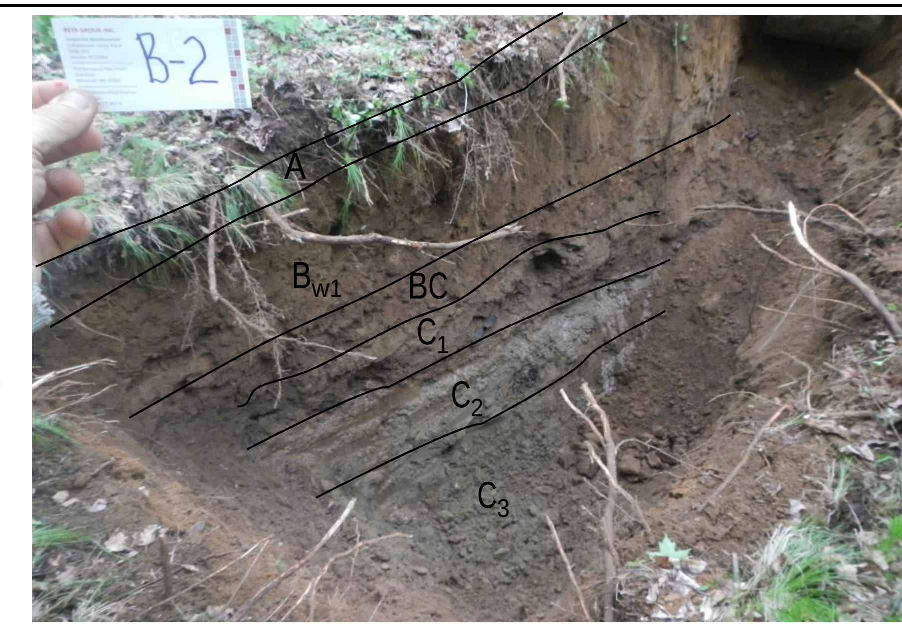
Groundwater Data			
	Standing Water Depth	-	Sc
Sh = Sc - [(Sr/Owr)*(Owc-Owmax)]	or, Depth Weeping from Pit Face	67"	Sc
Frimpter Adjustment	USGS Index Well(s) Number/ID	-	per USGS
	Reading Date	-	-
	Index Well Max Level	-	Owmax
	Index Well Level	-	Owc
	Max Range for well	-	Owr
	Range in levels for Similar Topography (5% exceedence, Figure 11)	-	Sr
	Predicted Adjusted Depth (Frimpter), ft	-	Sh

Test Hole Log

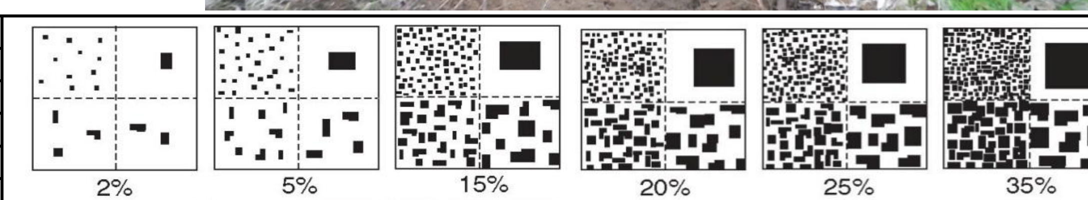
Depth (inches)	Soil Horizon (Layer)	Soil Matrix Color - Moist (Munsell)	Soil Texture (USDA) (USDA)	Coarse Fragments % by Volume: Gravel	Coarse Fragments % by Volume: Cobbles & Stones	Structure	Consistence	Redoximorphic Features (mottles): Depth	Redoximorphic Features (mottles): Color	Redoximorphic Features (mottles): Percent	Other (Roots, Etc.)
0 - 8"	A	-	Fine Sandy Loam	-	-	GR	FR	-	-	-	
8 - 23" (35)	B_{w1}	7.5YR 4/4	Fine Sandy Loam	2%	0%	SBK	FIP-FIH	-	-	-	Roots
23 - 40"	BC	7.5YR 3/4	Fine Sandy Loam	2%	2%	MA	FIP-FIH	-	-	-	
40 - 61"	C_1	2.5Y 4/3	Fine Sandy Loam	25%	0%	SG	Loose (L)	-	-	-	Weeping groundwater
61 - 71"	C_2	2.5Y 4/3	Fine Sandy Loam	0%	0%	MA	FIP-FIH	-	-	-	appears perched on C2
71"+	C_3	2.5Y 4/3	Fine Sandy Loam	10%	0%	MA	FIP-FIH	-	-	-	

Geologic Setting and Topography / Textural and Structure / Photo

Landform	Landscape Position	Parent Material	Texture (USDA)	Coarse Fragments		Structure	Consistence	Redox %
Drumlin	Summit (SU)	Dense Compact (Lodgement) Glacial Till	Coarse Sand	Gravel = 2mm to 3"	Cobble = 3" to 10"	Granular (GR)	Loose (L)	Few (F) <2%
Till Ridge	Shoulder (SH)	**Loose Ablation (Melt-out) Till**	Sand		Stone = 10" to 25"	Angular Blocky (ABK)	Very Friable (VFR)	Common 2 to <20%
Ground Moraine	**Backslope (BS)**	Shallow to Bedrock Area	Fine Sand		Boulder = >25"	Subangular Blocky (SBK)	Friable (FR)	Many >20%
Moraine (End / Recessional)	Footslope (FS)	Lacustrine	Loamy Sand			Platy (PL)	Firm (FI)	
Kettle	Toeslope (TS)	Ice-Contact Outwash	Sandy Loam			Structureless	Very Firm (VFI)	
Kame	Channel (CH)	Proglacial Outwash	Fine Sandy Loam			Single Grain (SG)	Extremely Firm (EF)	
Esker		Alluvium	Loam			Massive (MA)	Firm in Place, Friable in Hand (FIP-FIH)	
Outwash Plain		Organic Deposits	Silt Loam					
Lacustrine Plain		Eolian Deposits	Sandy Clay Loam					
Floodplain		Marine Silts & Clays	Silty Clay					
Swamp		Human-Made/Transported Materials (Fill)	Clay					
Other		Other						



Comments:
Tube Test Samples Taken from C1 Layer at 5'-6", and C2 Layer at 8'-0"
Initial field reference measurement began with tape at 12-inches at ground, corrected accordingly



Test Hole ID:	B-3	(See map for location)	Groundwater Data	Standing Water Depth	-	Sc
Weather	Overcast, 50-60 deg.F		Sh = Sc - [(Sr/Owr)*(Owc-Owmax)]	or, Depth Weeping from Pit Face	138"	Sc
Date:	May 21, 2015	(Thursday)	Frimpter Adjustment	USGS Index Well(s) Number/ID	-	per USGS
Soil Evaluator	Robert Baglini - BETA Group, Inc. / Joseph Federico - BETA Group, Inc,			Reading Date	-	-
Present	Joe Kmetz (Pomperaug BOH), Ramona Goode (CT DEEP), Pete (Harwinton Paving), Welti Associates			Index Well Max Level	-	Owmax
				Index Well Level	-	Owc
Project:	Lutheran Home of Southbury - Wastewater Treatment and Dispersal System Improvements			Max Range for well	-	Owr
Project / Number	05051.035			Range in levels for Similar Topography (5% exceedence, Figure 11)	-	Sr
				Predicted Adjusted Depth (Frimpter), ft	-	Sh

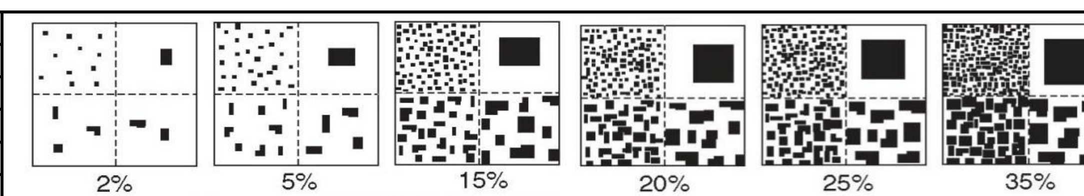
Test Hole Log

Depth (inches)	Soil Horizon (Layer)	Soil Matrix Color - Moist (Munsell)	Soil Texture (USDA) (USDA)	Coarse Fragments % by Volume: Gravel	Coarse Fragments % by Volume: Cobbles & Stones	Structure	Consistence	Redoximorphic Features (mottles): Depth	Redoximorphic Features (mottles): Color	Redoximorphic Features (mottles): Percent	Other (Roots, Etc.)
0 - 8"	A	-	-	-	-	GR	FR	-	-	-	
8 - 41"	B_w	5YR 5/8	Fine Sandy Loam	10%	2%	SBK	FR	-	-	-	Roots to 30"
40" - 55"	C_1	7.5YR 5/8	Loamy Sand	20%	15%	MA	FIP-FIH	-	-	-	
55 - 144"	C_2	7.5YR 5/2	Fine Sandy Loam	25%	1%	MA	FIP-FIH	55"	10R 5/2 to 10R 4/6 (throughout C2)	10%	Ocassional Boulder
144" +	C_3	7.5YR 6/2	Fine Sandy Loam	0%	0%	MA	FIP-FIH	-	-	-	

Geologic Setting and Topography / **Textural and Structure** / **Photo**

Landform	Landscape Position	Parent Material	Texture (USDA)	Coarse Fragments		Structure	Consistence	Redox %
Drumlin	Summit (SU)	Dense Compact (Lodgement) Glacial Till	Coarse Sand	Gravel = 2mm to 3"	Cobble = 3" to 10"	Granular (GR)	Loose (L)	Few (F) <2%
Till Ridge	Shoulder (SH)	Loose Ablation (Melt-out) Till	Sand		Stone = 10" to 25"	Angular Blocky (ABK)	Very Friable (VFR)	Common 2 to <20%
Ground Moraine	Backslope (BS)	Shallow to Bedrock Area	Fine Sand		Boulder = >25"	Subangular Blocky (SBK)	Friable (FR)	Many >20%
Moraine (End / Recessional)	Footslope (FS)	Lacustrine	Loamy Sand			Platy (PL)	Firm (FI)	
Kettle	Toeslope (TS)	Ice-Contact Outwash	Sandy Loam			Structureless	Very Firm (VFI)	
Kame	Channel (CH)	Proglacial Outwash	Fine Sandy Loam			Single Grain (SG)	Extremely Firm (EF)	
Esker		Alluvium	Loam			Massive (MA)	Firm in Place, Friable in Hand (FIP-FIH)	
Outwash Plain		Organic Deposits	Silt Loam					
Lacustrine Plain		Eolian Deposits	Sandy Clay Loam					
Floodplain		Marine Silts & Clays	Silty Clay					
Swamp		Human-Made/Transported Materials (Fill)	Clay					
Other		Other						

Comments:
Tube Test Samples Taken from C2 Layer at 5'-6"



Test Hole ID:	B-5	(See map for location)		
Weather	Sunny Clear mid 80's			
Date:	May 26, 2015 (Tuesday)			
Soil Evaluator	Robert Baglini - BETA Group, Inc. / Joseph Federico - BETA Group, Inc,			
Present	Ramona Goode (CT DEEP), Pete (Harwinton Paving), Welti Associates, Brandon Bairos (BETA)			
Project:	Lutheran Home of Southbury - Wastewater Treatment and Dispersal System Improvements			
Project / Number	05051.035			

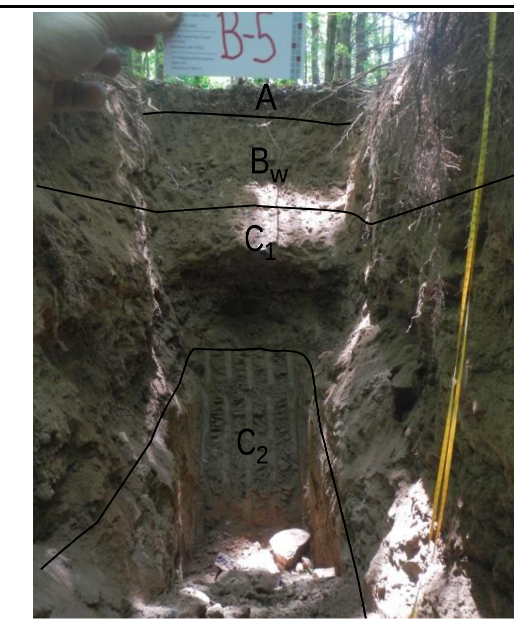
Groundwater Data			
	Standing Water Depth	None	Sc
Sh = Sc - [(Sr/Owr)*(Owc-Owmax)]	or, Depth Weeping from Pit Face	None	Sc
Frimpter Adjustment	USGS Index Well(s) Number/ID	-	per USGS
	Reading Date	-	-
	Index Well Max Level	-	Owmax
	Index Well Level	-	Owc
	Max Range for well	-	Owr
	Range in levels for Similar Topography (5% exceedence, Figure 11)	-	Sr
	Predicted Adjusted Depth (Frimpter), ft	-	Sh

Test Hole Log

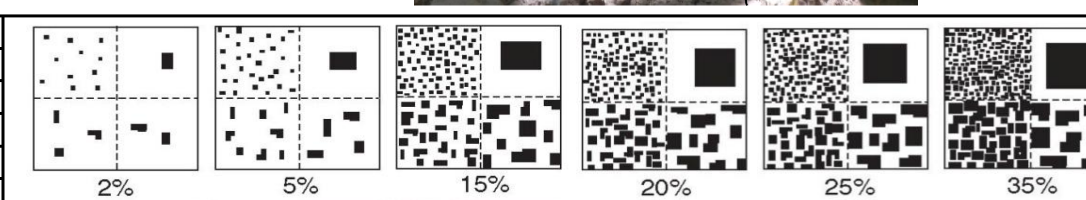
Depth (inches)	Soil Horizon (Layer)	Soil Matrix Color - Moist (Munsell)	Soil Texture (USDA) (USDA)	Coarse Fragments % by Volume: Gravel	Coarse Fragments % by Volume: Cobbles & Stones	Structure	Consistence	Redoximorphic Features (mottles): Depth	Color	Percent	Other (Roots, Etc.)
0 - 12"	A	7.5YR 4/2	Loam	-	-	GR	FR	-	-	-	
12 - 43"	B_w	7.5YR 4/4	Fine Loamy Sand	2%	2%	SBK	FR	-	-	-	Roots in C1 Layer
43 - 96"	C_1	10YR 4/4	Sandy Loam	15%	15%	MA	FIP-FIH	-	-	-	Bony, Ocassional Boulder
96 - 144"	C_2	10YR 4/3	Fine Loamy Sand	25%	0%	MA	FIP-FIH	-	-	-	

Geologic Setting and Topography / Textural and Structure / Photo

Landform	Landscape Position	Parent Material	Texture (USDA)	Coarse Fragments		Structure	Consistence	Redox %
Drumlin	Summit (SU)	Dense Compact (Lodgement) Glacial Till	Coarse Sand	Gravel = 2mm to 3"	Cobble = 3" to 10"	Granular (GR)	Loose (L)	Few (F) <2%
Till Ridge	Shoulder (SH)	Loose Ablation (Melt-out) Till	Sand		Stone = 10" to 25"	Angular Blocky (ABK)	Very Friable (VFR)	Common 2 to <20%
Ground Moraine	Backslope (BS)	Shallow to Bedrock Area	Fine Sand		Boulder = >25"	Subangular Blocky (SBK)	Friable (FR)	Many >20%
Moraine (End / Recessional)	Footslope (FS)	Lacustrine	Loamy Sand			Platy (PL)	Firm (FI)	
Kettle	Toeslope (TS)	Ice-Contact Outwash	Sandy Loam			Structureless	Very Firm (VFI)	
Kame	Channel (CH)	Proglacial Outwash	Fine Sandy Loam			Single Grain (SG)	Extremely Firm (EF)	
Esker		Alluvium	Loam			Massive (MA)	Firm in Place, Friable in Hand (FIP-FIH)	
Outwash Plain		Organic Deposits	Silt Loam					
Lacustrine Plain		Eolian Deposits	Sandy Clay Loam					
Floodplain		Marine Silts & Clays	Silty Clay					
Swamp		Human-Made/Transported Materials (Fill)	Clay					
Other		Other						



Comments:
C1 Layer very bony, 15% cobbles, stones, roots throughout to 70"
Tube Test Samples Taken from C1 Layer at 48", and C2 Layer at 112"
Note: Excavator ruptured O-ring on hydraulic line, down for repair 9 - 10am
Soil Profile similar to B-6, B-7, B-8



Test Hole ID:	**B-6**	(See map for location)	Groundwater Data	Standing Water Depth	None	Sc
Weather	Sunny Clear mid 80's		Sh = Sc - [(Sr/Owr)*(Owc-Owmax)]	or, Depth Weeping from Pit Face	None	Sc
Date:	May 26, 2015	(Tuesday)	Frimpter Adjustment	USGS Index Well(s) Number/ID	-	per USGS
Soil Evaluator	Robert Baglini - BETA Group, Inc. / Joseph Federico - BETA Group, Inc,			Reading Date	-	-
Present	Ramona Goode (CT DEEP), Pete (Harwinton Paving), Welti Associates, Brandon Bairos (BETA)			Index Well Max Level	-	Owmax
				Index Well Level	-	Owc
Project:	Lutheran Home of Southbury - Wastewater Treatment and Dispersal System Improvements			Max Range for well	-	Owr
Project / Number	05051.035			Range in levels for Similar Topography (5% exceedence, Figure 11)	-	Sr
				Predicted Adjusted Depth (Frimpter), ft	-	Sh

Test Hole Log

Depth (inches)	Soil Horizon (Layer)	Soil Matrix Color - Moist (Munsell)	Soil Texture (USDA) (USDA)	Coarse Fragments % by Volume: Gravel	Coarse Fragments % by Volume: Cobbles & Stones	Structure	Consistence	Redoximorphic Features (mottles): Depth	Color	Percent	Other (Roots, Etc.)
0 - 6"	A	-	Loam	-	-	GR	FR	-	-	-	
6 - 21"	B_w	7.5YR 2.5/3	Fine Sandy Loam	3%	2%	SBK	FIP-FIH	None	-	-	Roots throughout
21 - 48"	C_1	2.5Y 4/4	Sandy Loam	15%	15%	SG	Loose	None	-	-	Ocassional Boulder
48 - 144" +	C_2	2.5Y 4/4	Fine Sandy Loam	25%	0%	Massive	FIP-FIH	None	-	-	

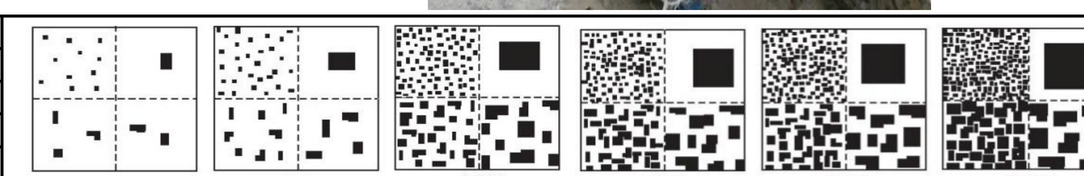
Geologic Setting and Topography / **Textural and Structure** / **Photo**

Landform	Landscape Position	Parent Material	Texture (USDA)	Coarse Fragments		Structure	Consistence	Redox %
Drumlin	Summit (SU)	Dense Compact (Lodgement) Glacial Till	Coarse Sand	Gravel = 2mm to 3"	Cobble = 3" to 10"	Granular (GR)	Loose (L)	Few (F) <2%
Till Ridge	Shoulder (SH)	**Loose Ablation (Melt-out) Till**	Sand		Stone = 10" to 25"	Angular Blocky (ABK)	Very Friable (VFR)	Common 2 to <20%
Ground Moraine	**Backslope (BS)**	Shallow to Bedrock Area	Fine Sand		Boulder = >25"	Subangular Blocky (SBK)	Friable (FR)	Many >20%
Moraine (End / Recessional)	Footslope (FS)	Lacustrine	Loamy Sand			Platy (PL)	Firm (FI)	
Kettle	Toeslope (TS)	Ice-Contact Outwash	Sandy Loam			Structureless	Very Firm (VFI)	
Kame	Channel (CH)	Proglacial Outwash	Fine Sandy Loam			Single Grain (SG)	Extremely Firm (EF)	
Esker		Alluvium	Loam			Massive (MA)	Firm in Place, Friable in Hand (FIP-FIH)	
Outwash Plain		Organic Deposits	Silt Loam					
Lacustrine Plain		Eolian Deposits	Sandy Clay Loam					
Floodplain		Marine Silts & Clays	Silty Clay					
Swamp		Human-Made/Transported Materials (Fill)	Clay					
Other		Other						

Comments:

No tube samples collected

Soil Profile similar to B-5, B-7, B-8



2% 5% 15% 20% 25% 35%

Test Hole ID:	B-7	(See map for location)	Groundwater Data	Standing Water Depth	None	Sc
Weather	Sunny Clear mid 80's		Sh = Sc - [(Sr/Owr)*(Owc-Owmax)]	or, Depth Weeping from Pit Face	None	Sc
Date:	May 26, 2015	(Tuesday)	Frimpter Adjustment	USGS Index Well(s) Number/ID	-	per USGS
Soil Evaluator	Robert Baglini - BETA Group, Inc. / Joseph Federico - BETA Group, Inc,			Reading Date	-	-
Present	Ramona Goode (CT DEEP), Pete (Harwinton Paving), Welti Associates, Brandon Bairos (BETA)			Index Well Max Level	-	Owmax
				Index Well Level	-	Owc
Project:	Lutheran Home of Southbury - Wastewater Treatment and Dispersal System Improvements			Max Range for well	-	Owr
Project / Number	05051.035			Range in levels for Similar Topography (5% exceedence, Figure 11)	-	Sr
				Predicted Adjusted Depth (Frimpter), ft	-	Sh

Test Hole Log

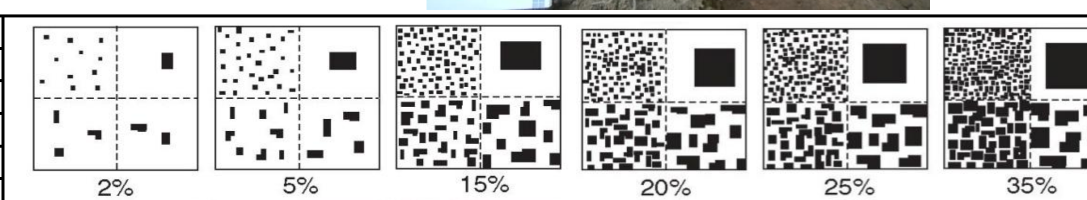
Depth (inches)	Soil Horizon (Layer)	Soil Matrix Color - Moist (Munsell)	Soil Texture (USDA) (USDA)	Coarse Fragments % by Volume: Gravel	Coarse Fragments % by Volume: Cobbles & Stones	Structure	Consistence	Redoximorphic Features (mottles): Depth	Color	Percent	Other (Roots, Etc.)
0 - 9"	A	-	Loam	-	-	GR	FR	None	-	-	
9 -54"	B_{w1}	7.5YR 2.5/3	Fine Sandy Loam	5%	2%	SBK	FIP-FIH	None	-	-	Roots througout to 60"
54 - 120"	BC	2.5Y 4/4	Fine to Med. Sand	15 - 20%	5%	MA	FIP-FIH	None	-	-	Ocassional Boulder
120 - 156"	2C	10YR 4/3	Fine Sandy Loam	25%	0%	MA	FIP-FIH	None	-	-	Possible Loess Layer

Geologic Setting and Topography / Textural and Structure

Landform	Landscape Position	Parent Material	Texture (USDA)	Coarse Fragments		Structure	Consistence	Redox %
Drumlin	Summit (SU)	Dense Compact (Lodgement) Glacial Till	Coarse Sand	Gravel = 2mm to 3"	Cobble = 3" to 10"	Granular (GR)	Loose (L)	Few (F) <2%
Till Ridge	Shoulder (SH)	**Loose Ablation (Melt-out) Till**	Sand		Stone = 10" to 25"	Angular Blocky (ABK)	Very Friable (VFR)	Common 2 to <20%
Ground Moraine	**Backslope (BS)**	Shallow to Bedrock Area	Fine Sand		Boulder = >25"	Subangular Blocky (SBK)	Friable (FR)	Many >20%
Moraine (End / Recessional)	Footslope (FS)	Lacustrine	Loamy Sand			Platy (PL)	Firm (FI)	
Kettle	Toeslope (TS)	Ice-Contact Outwash	Sandy Loam			Structureless	Very Firm (VFI)	
Kame	Channel (CH)	Proglacial Outwash	Fine Sandy Loam			Single Grain (SG)	Extremely Firm (EF)	
Esker		Alluvium	Loam			Massive (MA)	Firm in Place, Friable in Hand (FIP-FIH)	
Outwash Plain		Organic Deposits	Silt Loam					
Lacustrine Plain		Eolian Deposits	Sandy Clay Loam					
Floodplain		Marine Silts & Clays	Silty Clay					
Swamp		Human-Made/Transported Materials (Fill)	Clay					
Other		Other						

Photo

Comments:
No tube samples collected
Soil Profile similar to B-5, B-6, B-8



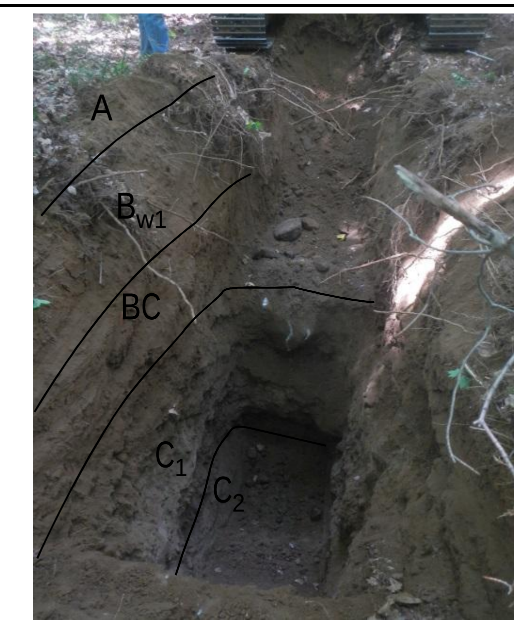
Test Hole ID:	B-8	(See map for location)	Groundwater Data	Standing Water Depth	None	Sc
Weather	Sunny Clear mid 80's		Sh = Sc - [(Sr/Owr)*(Owc-Owmax)]	or, Depth Weeping from Pit Face	None	Sc
Date:	May 26, 2015	(Tuesday)	Frimpter Adjustment	USGS Index Well(s) Number/ID	-	per USGS
Soil Evaluator	Robert Baglini - BETA Group, Inc. / Joseph Federico - BETA Group, Inc,			Reading Date	-	-
Present	Ramona Goode (CT DEEP), Pete (Harwinton Paving), Welti Associates, Brandon Bairos (BETA)			Index Well Max Level	-	Owmax
				Index Well Level	-	Owc
Project:	Lutheran Home of Southbury - Wastewater Treatment and Dispersal System Improvements			Max Range for well	-	Owr
Project / Number	05051.035			Range in levels for Similar Topography (5% exceedence, Figure 11)	-	Sr
				Predicted Adjusted Depth (Frimpter), ft	-	Sh

Test Hole Log

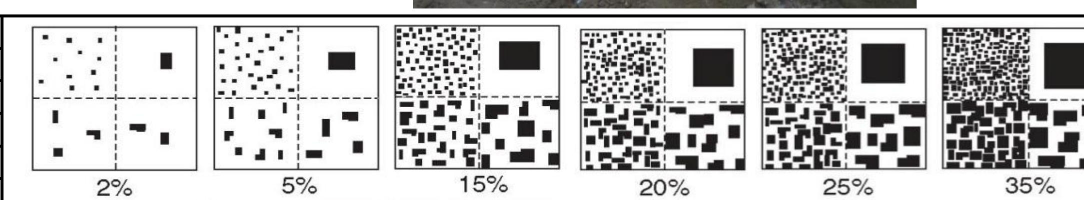
Depth (inches)	Soil Horizon (Layer)	Soil Matrix Color - Moist (Munsell)	Soil Texture (USDA) (USDA)	Coarse Fragments % by Volume: Gravel	Coarse Fragments % by Volume: Cobbles & Stones	Structure	Consistence	Redoximorphic Features (mottles): Depth	Color	Percent	Other (Roots, Etc.)
0 - 8"	A	-	Loam	-	-	GR	FR	-	-	-	
8 - 36"	B_{w1}	7.5YR 4/4	Fine Sandy Loam	2%	2%	SBK	FIP-FIH	None	-	-	
36 - 68"	BC	10YR 4/6	Fine Sandy Loam	2%	5%	MA	FIP-FIH	None	-	-	Roots into BC Layer
68 - 120"	C_1	10YR 4/4	Fine to Med. Sand	25%	5%	MA	FIP-FIH	None	-	-	Ocassional Boulder
120 - 144"	C_2	10YR 4/3	Fine Sandy Loam	0%	0%	MA	FIP-FIH	None	-	-	

Geologic Setting and Topography / **Textural and Structure** / **Photo**

Landform	Landscape Position	Parent Material	Texture (USDA)	Coarse Fragments		Structure	Consistence	Redox %
Drumlin	Summit (SU)	Dense Compact (Lodgement) Glacial Till	Coarse Sand	Gravel = 2mm to 3"	Cobble = 3" to 10"	Granular (GR)	Loose (L)	Few (F) <2%
Till Ridge	Shoulder (SH)	**Loose Ablation (Melt-out) Till**	Sand		Stone = 10" to 25"	Angular Blocky (ABK)	Very Friable (VFR)	Common 2 to <20%
Ground Moraine	**Backslope (BS)**	Shallow to Bedrock Area	Fine Sand		Boulder = >25"	Subangular Blocky (SBK)	Friable (FR)	Many >20%
Moraine (End / Recessional)	Footslope (FS)	Lacustrine	Loamy Sand			Platy (PL)	Firm (FI)	
Kettle	Toeslope (TS)	Ice-Contact Outwash	Sandy Loam			Structureless	Very Firm (VFI)	
Kame	Channel (CH)	Proglacial Outwash	Fine Sandy Loam			Single Grain (SG)	Extremely Firm (EF)	
Esker		Alluvium	Loam			Massive (MA)	Firm in Place, Friable in Hand (FIP-FIH)	
Outwash Plain		Organic Deposits	Silt Loam					
Lacustrine Plain		Eolian Deposits	Sandy Clay Loam					
Floodplain		Marine Silts & Clays	Silty Clay					
Swamp		Human-Made/Transported Materials (Fill)	Clay					
Other		Other						



Comments:
Boulder at 60" on southeast side of hole
ESHGW at 120", top of C2 Layer
C1 layer very bony, roots through to 60"
No tube samples collected
Soil Profile similar to B-5, B-6, B-7



Test Hole ID:	B-9	(See map for location)
Weather	Sunny Clear mid 80's	
Date:	May 26, 2015	(Tuesday)
Soil Evaluator	Robert Baglini - BETA Group, Inc. / Joseph Federico - BETA Group, Inc,	
Present	Ramona Goode (CT DEEP), Pete (Harwinton Paving), Welti Associates, Brandon Bairos (BETA)	
Project:	Lutheran Home of Southbury - Wastewater Treatment and Dispersal System Improvements	
Project / Number	05051.035	

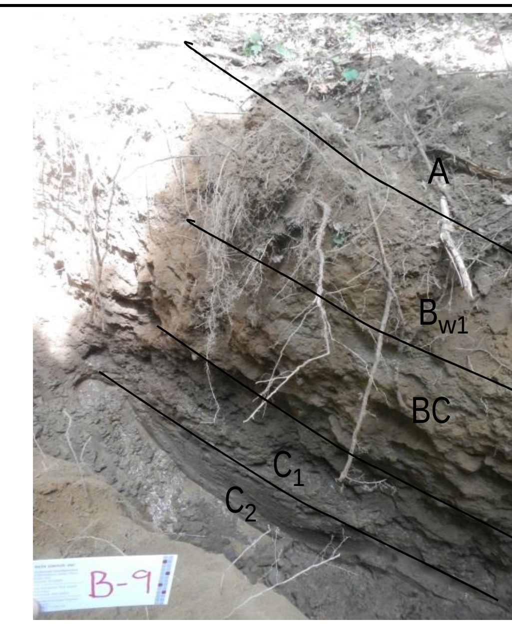
Groundwater Data	Standing Water Depth	116"	Sc
Sh = Sc - [(Sr/Owr)*(Owc-Owmax)]	or, Depth Weeping from Pit Face	78"	Sc
Frimpter Adjustment	USGS Index Well(s) Number/ID	-	per USGS
	Reading Date	-	-
	Index Well Max Level	-	Owmax
	Index Well Level	-	Owc
	Max Range for well	-	Owr
	Range in levels for Similar Topography (5% exceedence, Figure 11)	-	Sr
	Predicted Adjusted Depth (Frimpter), ft	-	Sh

Test Hole Log

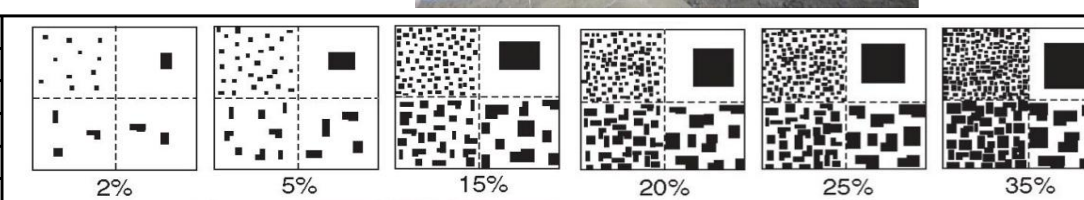
Depth (inches)	Soil Horizon (Layer)	Soil Matrix Color - Moist (Munsell)	Soil Texture (USDA) (USDA)	Coarse Fragments % by Volume		Structure	Consistence	Redoximorphic Features (mottles)			Other
				Gravel	Cobbles & Stones			Depth	Color	Percent	
0 - 6"	A	7.5YR 4/2	Fine Sandy Loam	-	-	GR	FR	-	-	-	
6 - 33"	B_{w1}	10YR 4/3	Fine Sandy Loam	5%	-	SBK	FIP-FIH	None	-	-	
33 - 72"	BC	10YR 4/4	F/Med. Sandy Loam	5%	-	Massive	FIP-FIH	None	-	-	Roots to 72"
72 - 88"	C_1	10YR 5/2	F/Med. Sandy Loam	25%	15%	SG	Loose	None	-	-	Ocassional Boulder
88" +	C_2	10YR 6/2	Fine Sandy Loam	1%	0%	Massive	FIP-FIH	None	-	-	

Geologic Setting and Topography / Textural and Structure / Photo

Landform	Landscape Position	Parent Material	Texture (USDA)	Coarse Fragments		Structure	Consistence	Redox %
Drumlin	Summit (SU)	Dense Compact (Lodgement) Glacial Till	Coarse Sand	Gravel = 2mm to 3"	Cobble = 3" to 10"	Granular (GR)	Loose (L)	Few (F) <2%
Till Ridge	Shoulder (SH)	Loose Ablation (Melt-out) Till	Sand		Stone = 10" to 25"	Angular Blocky (ABK)	Very Friable (VFR)	Common 2 to <20%
Ground Moraine	Backslope (BS)	Shallow to Bedrock Area	Fine Sand		Boulder = >25"	Subangular Blocky (SBK)	Friable (FR)	Many >20%
Moraine (End / Recessional)	Footslope (FS)	Lacustrine	Loamy Sand			Platy (PL)	Firm (FI)	
Kettle	Toeslope (TS)	Ice-Contact Outwash	Sandy Loam			Structureless	Very Firm (VFI)	
Kame	Channel (CH)	Proglacial Outwash	Fine Sandy Loam			Single Grain (SG)	Extremely Firm (EF)	
Esker		Alluvium	Loam			Massive (MA)	Firm in Place, Friable in Hand (FIP-FIH)	
Outwash Plain		Organic Deposits	Silt Loam					
Lacustrine Plain		Eolian Deposits	Sandy Clay Loam					
Floodplain		Marine Silts & Clays	Silty Clay					
Swamp		Human-Made/Transported Materials (Fill)	Clay					
Other		Other						



Comments:
Tube Test Samples Taken from C1 Layer at 40", and C2 Layer at 90"
ESHGW estimated at 72", top of C1 Layer



Test Hole ID:	B-10	(See map for location)	Groundwater Data	Standing Water Depth -	Sc
Weather	Sunny mid-90's, humid		Sh = Sc - [(Sr/Owr)*(Owc-Owmax)]	or, Depth Weeping from Pit Face -	Sc
Date:	June 23, 2015	(Tuesday)	Frimpter Adjustment	USGS Index Well(s) Number/ID -	per USGS
Soil Evaluator	Robert Baglini - BETA Group, Inc. / Joseph Federico - BETA Group, Inc,			Reading Date -	-
Present	Ramona Goode (CT DEEP), Pete (Harwinton Paving)			Index Well Max Level -	Owmax
				Index Well Level -	Owc
Project:	Lutheran Home of Southbury - Wastewater Treatment and Dispersal System Improvements			Max Range for well -	Owr
Project / Number	05051.035			Range in levels for Similar Topography (5% exceedence, Figure 11) -	Sr
				Predicted Adjusted Depth (Frimpter), ft -	Sh

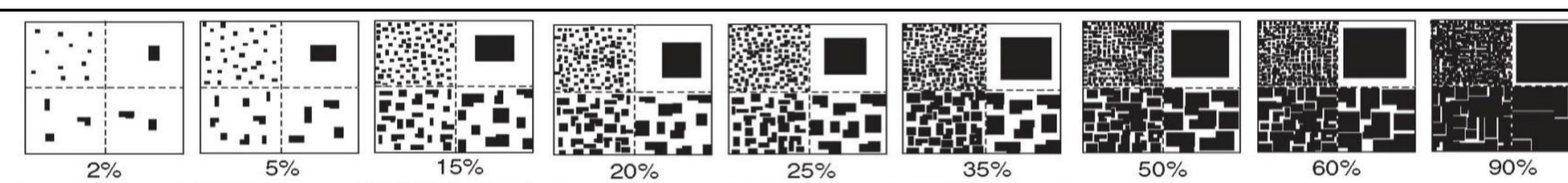
Test Hole Log

Depth (inches)	Soil Horizon (Layer)	Soil Matrix Color - Moist (Munsell)	Soil Texture (USDA) (USDA)	Coarse Fragments % by Volume: Gravel	Coarse Fragments % by Volume: Cobbles & Stones	Structure	Consistence	Redoximorphic Features (mottles): Depth	Color	Percent	Other
0 - 31"	A / HTM	7.5YR 3/3	-	-	-	GR	FR	-	-	-	
31 - 41"	B_b	10YR 4/4	F. Sandy Loam	-	-	SBK	FR	-	-	-	
41 - 120"	C_1	10YR 6/2	F. Sandy Loam	5%	5%	Massive	Firm	-	-	-	Roots to 84"

Geologic Setting and Topography / Textural and Structure / Photo

Landform	Landscape Position	Parent Material	Texture (USDA)	Coarse Fragments		Structure	Consistence	Redox %
Drumlin	Summit (SU)	Dense Compact (Lodgement) Glacial Till	Coarse Sand	Gravel = 2mm to 3"	Cobble = 3" to 10"	Granular (GR)	Loose (L)	Few (F) <2%
Till Ridge	Shoulder (SH)	**Loose Ablation (Melt-out) Till**	Sand		Stone = 10" to 25"	Angular Blocky (ABK)	Very Friable (VFR)	Common 2 to <20%
Ground Moraine	**Backslope (BS)**	Shallow to Bedrock Area	Fine Sand		Boulder = >25"	Subangular Blocky (SBK)	Friable (FR)	Many >20%
Moraine (End / Recessional)	Footslope (FS)	Lacustrine	Loamy Sand			Platy (PL)	Firm (FI)	
Kettle	Toeslope (TS)	Ice-Contact Outwash	Sandy Loam			Structureless	Very Firm (VFI)	
Kame	Channel (CH)	Proglacial Outwash	Fine Sandy Loam			Single Grain (SG)	Extremely Firm (EF)	
Esker		Alluvium	Loam			Massive (MA)		
Outwash Plain		Organic Deposits	Silt Loam					
Lacustrine Plain		Eolian Deposits	Sandy Clay Loam					
Floodplain		Marine Silts & Clays	Silty Clay					
Swamp		Human-Made/Transported Materials (Fill)	Clay					
Other		Other						

Comments:
Tube Test sample obtained at 56" in C1 Layer
Pit is located adjacent to SWAS / Driveway entrance road and Trench No.17



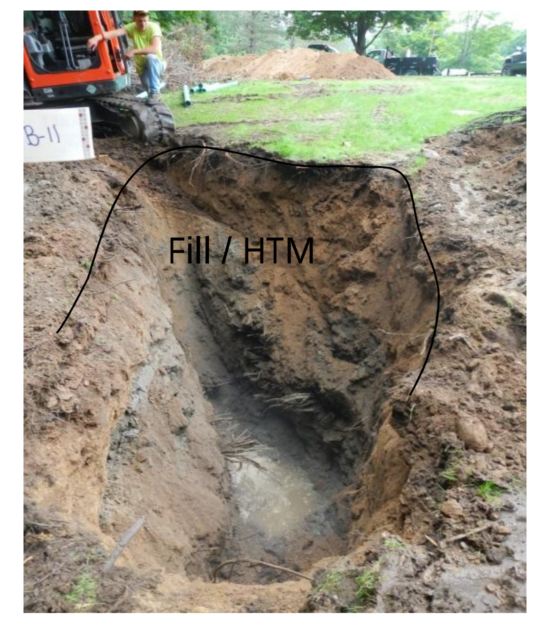
Test Hole ID:	B-11	(See map for location)	Groundwater Data	Standing Water Depth -	Sc
Weather	Sunny mid-90's, humid		Sh = Sc - [(Sr/Owr)*(Owc-Owmax)]	or, Depth Weeping from Pit Face -	Sc
Date:	June 23, 2015	(Tuesday)	Frimpter Adjustment	USGS Index Well(s) Number/ID -	per USGS
Soil Evaluator	Robert Baglini - BETA Group, Inc. / Joseph Federico - BETA Group, Inc,			Reading Date -	-
Present	Ramona Goode (CT DEEP), Pete (Harwinton Paving)			Index Well Max Level -	Owmax
				Index Well Level -	Owc
Project:	Lutheran Home of Southbury - Wastewater Treatment and Dispersal System Improvements			Max Range for well -	Owr
Project / Number	05051.035			Range in levels for Similar Topography (5% exceedence, Figure 11) -	Sr
				Predicted Adjusted Depth (Frimpter), ft -	Sh

Test Hole Log

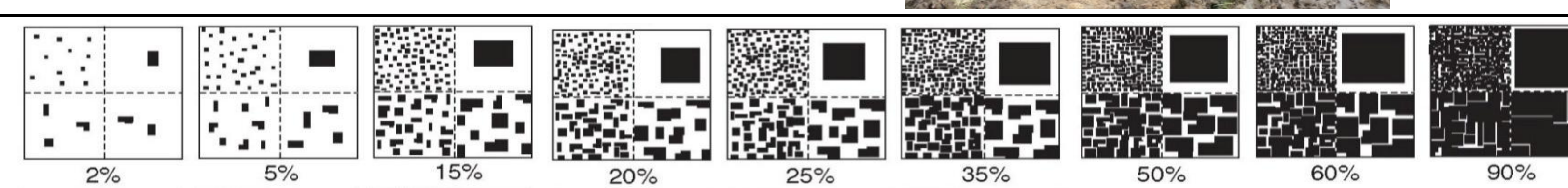
Depth (inches)	Soil Horizon (Layer)	Soil Matrix Color - Moist (Munsell)	Soil Texture (USDA) (USDA)	Coarse Fragments % by Volume: Gravel	Coarse Fragments % by Volume: Cobbles & Stones	Structure	Consistence	Redoximorphic Features (mottles): Depth	Color	Percent	Other
0 - 144"	A / HTM	7.5YR 3/3	-	-	-	-	-	-	-	-	Roots, Cut branches/tree

Geologic Setting and Topography / **Textural and Structure** / **Photo**

Landform	Landscape Position	Parent Material	Texture (USDA)	Coarse Fragments		Structure	Consistence	Redox %
Drumlin	Summit (SU)	Dense Compact (Lodgement) Glacial Till	Coarse Sand	Gravel = 2mm to 3"	Cobble = 3" to 10"	Granular (GR)	Loose (L)	Few (F) <2%
Till Ridge	Shoulder (SH)	Loose Ablation (Melt-out) Till	Sand		Stone = 10" to 25"	Angular Blocky (ABK)	Very Friable (VFR)	Common 2 to <20%
Ground Moraine	Backslope (BS)	Shallow to Bedrock Area	Fine Sand		Boulder = >25"	Subangular Blocky (SBK)	Friable (FR)	Many >20%
Moraine (End / Recessional)	Footslope (FS)	Lacustrine	Loamy Sand			Platy (PL)	Firm (FI)	
Kettle	Toeslope (TS)	Ice-Contact Outwash	Sandy Loam			Structureless	Very Firm (VFI)	
Kame	Channel (CH)	Proglacial Outwash	Fine Sandy Loam			Single Grain (SG)	Extremely Firm (EF)	
Esker		Alluvium	Loam			Massive (MA)		
Outwash Plain		Organic Deposits	Silt Loam					
Lacustrine Plain		Eolian Deposits	Sandy Clay Loam					
Floodplain		Marine Silts & Clays	Silty Clay					
Swamp		Human-Made/Transported Materials (Fill)	Clay					
Other		Other						



Comments:
Water / Sewage weeping, then standing at 132" (11-ft)
Sewage Odor



Test Hole ID:	B-12	(See map for location)
Weather	Sunny mid-90's, humid	
Date:	June 23, 2015	(Tuesday)
Soil Evaluator	Robert Baglini - BETA Group, Inc. / Joseph Federico - BETA Group, Inc,	
Present	Ramona Goode (CT DEEP), Pete (Harwinton Paving)	
Project:	Lutheran Home of Southbury - Wastewater Treatment and Dispersal System Improvements	
Project / Number	05051.035	

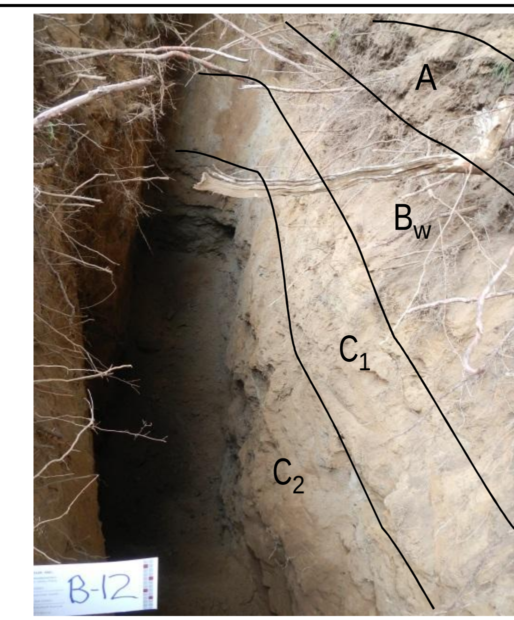
Groundwater Data			
	Standing Water Depth	-	Sc
Sh = Sc - [(Sr/Owr)*(Owc-Owmax)]	or, Depth Weeping from Pit Face	-	Sc
Frimpter Adjustment	USGS Index Well(s) Number/ID	-	per USGS
	Reading Date	-	-
	Index Well Max Level	-	Owmax
	Index Well Level	-	Owc
	Max Range for well	-	Owr
	Range in levels for Similar Topography (5% exceedence, Figure 11)	-	Sr
	Predicted Adjusted Depth (Frimpter), ft	-	Sh

Test Hole Log

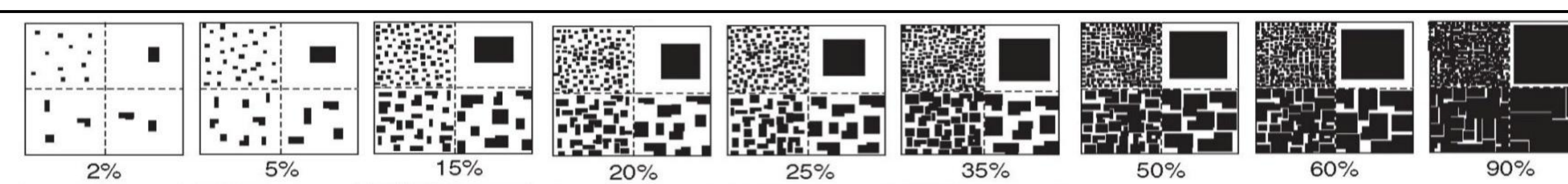
Depth (inches)	Soil Horizon (Layer)	Soil Matrix Color - Moist (Munsell)	Soil Texture (USDA) (USDA)	Coarse Fragments % by Volume: Gravel	Coarse Fragments % by Volume: Cobbles & Stones	Structure	Consistence	Redoximorphic Features (mottles): Depth	Redoximorphic Features (mottles): Color	Redoximorphic Features (mottles): Percent	Other
0 - 8"	A	7.5YR 3/3	-	-	-	GR	FR	-	-	-	
8 - 38"	B_w	7.5YR 4/6	F. Sandy Loam	-	-	SBK	FR	-	-	-	
38 - 62"	C_1	7.5YR 5/2	F. Sandy Loam	10%	5%	Massive	V. Firm (VFI)	-	-	-	Roots to 6'-6", Lighter Color
62 - 120"	C_2	7.5YR 4/3	F. Sandy Loam	5%	5%	Massive	Firm (FI)	-	-	-	

Geologic Setting and Topography / Textural and Structure / Photo

Landform	Landscape Position	Parent Material	Texture (USDA)	Coarse Fragments		Structure	Consistence	Redox %
Drumlin	Summit (SU)	Dense Compact (Lodgement) Glacial Till	Coarse Sand	Gravel = 2mm to 3"	Cobble = 3" to 10"	Granular (GR)	Loose (L)	Few (F) <2%
Till Ridge	Shoulder (SH)	Loose Ablation (Melt-out) Till	Sand		Stone = 10" to 25"	Angular Blocky (ABK)	Very Friable (VFR)	Common 2 to <20%
Ground Moraine	Backslope (BS)	Shallow to Bedrock Area	Fine Sand		Boulder = >25"	Subangular Blocky (SBK)	Friable (FR)	Many >20%
Moraine (End / Recessional)	Footslope (FS)	Lacustrine	Loamy Sand			Platy (PL)	Firm (FI)	
Kettle	Toeslope (TS)	Ice-Contact Outwash	Sandy Loam			Structureless	Very Firm (VFI)	
Kame	Channel (CH)	Proglacial Outwash	Fine Sandy Loam			Single Grain (SG)	Extremely Firm (EF)	
Esker		Alluvium	Loam			Massive (MA)		
Outwash Plain		Organic Deposits	Silt Loam					
Lacustrine Plain		Eolian Deposits	Sandy Clay Loam					
Floodplain		Marine Silts & Clays	Silty Clay					
Swamp		Human-Made/Transported Materials (Fill)	Clay					
Other		Other						



Comments:




N/F
THOMAS A. & MARY JANE
HOULE
LOT 13, T.C. MAP # 1113
WIRE
ON
FENCE
POSTS
B-10
B-11
B-12
B-1
B-2
B-4
B-5
B-6
B-7
B-8
B-9
AREA = 13.287 AC.
CONC. MH (TYP.)
GENERATOR
TRANSFORMER
HYDRANT
WATER VALVES
GARAGE
LIGHT
TELE MH
ELEC MH
15" CMP
HILL
ROAD
WOOD ROAD

DR. CLARENCE WELTI, P.E., P.C.

GEOTECHNICAL ENGINEERING

227 Williams Street · P.O. Box 397
Glastonbury, CT 06033-0397

(860) 633-4623 / FAX (860) 657-2514

June 3, 2015

Mr. Robert M. Baglini, P. E.
BETA Group, Inc.

Re: **Permeability Testing Soils from Test Pits at Waste Water Disposal Site at Lutheran Home of Southbury, CT**

Dear Mr. Baglini:

Herewith are the results of permeability tests on insitu soil samples taken at the subject site. Eight soil samples were taken during two days of test pit exploration. Two inch diameter tubes were driven into the soils at directed locations

If you have any questions please call me.

Very truly yours,

Clarence Welti, PhD, P.E.
Pres. Dr. Clarence Welti, P. E., P. C.

LUTHERAN HOME
SOUTHBURY, CT

Permeability Test Results

Location/Depth	Thickness	Max Head	Permeability
B-1 @ 7 feet	2.75"	7"	1.54 feet/day
B-2 @ 8 feet	3"	7"	0.26 feet/day
B-3 @ 5.5 feet	3"	7"	0.50 feet/day
B-2 @ 5.5 feet	3"	7"	0.81 feet/day
B-5 @ 4 feet	3.25"	7"	0.67 feet/day
B-5 @ 112"	3.5"	7"	1.53 feet/day
B-9 @ 3.5 feet	2.5"	7"	0.61 feet/day
B-9 @ 7.5 feet	2"	7"	0.65 feet/day

Notes: 1. Samples were obtained by driving a 2" diameter (1/16" wall) tube into the undisturbed soil surface. Samples were tested in the tubes with the falling head type permeability test.

2. All tubes were sealed immediately after extraction.

3. Laboratory testing done was within 3 days of sample extraction.

ASHWOOD TEST PIT AND WELL LOGS

SOIL TEST RESULTS

The Lutheran Home of Southury
990 Main Street North
Southbury, CT

Test date: 5/2/94

DP 100

0" - 4"	topsoil
4" - 18"	brown gravel fill
18" - 24"	orange brown fine sandy loam, and fine sahrp sand & gravel
24" - 120"	firm, light grey brown fine sharp sand & gravel, with silt no mottling, water, ledge

DP 101

0 - 4"	topsoil
4" - 30"	orange brown fine sandy loam and gravel
30" - 72"	firm, brown fine sand & gravel, some silt
72" - 168"	light grey brown fine sharp sand, with silt water @ 162"

DP 102

0" - 4"	topsoil
4" - 32"	orange brown fine sandy loam and gravel
32" - 132"	loose, light grey brown fine sand & gravel, with silt
132"- 156"	dark grey very fine sand, and silt

DP 103

0" - 4"	topsoil
4" - 24"	orange brown fine sandy loam
24" - 114"	light brown very fine sand, with silt

DP 104

0" - 16"	topsoil
16" - 44"	orange brown fine sandy loam
44" - 132"	grey brown very fine sand, with silt water @ 90"

DP 200

0" - 10"	topsoil
10" - 36"	orange brown silt loam
36" - 72"	firm, brown medium coarse sand & gravel, and silt
72" - 132"	firm , brown fine sharp sand & gravel, some silt

DP 201

0" - 20" topsoil
20" - 48" orange brown fine sandy loam
48" - 96" firm, light grey brown fine sand & gravel, with silt
96" - 144" dense, dark grey brown sandy till

DP 202

0" - 72" light grey brown fine sand & gravel, with silt
72" - 144" dense, dark grey brown sandy till

DP 203

0" - 72" light grey brown fine sand & gravel, with silt
72" - 120" dense, dark grey brown sandy till

Test Date: 6/28/94

DP 110

0" - 6" topsoil
6" - 30" light brown form fine sand and gravel, and silt
30" - 48" dense, brown loamy fine sand and gravel, and silt, with lenses brown fine sahrp sand
48" - 160" firm, light brown fine sharp sand and gravel, and silt
water @ 160"

DP 111

0" - 6" topsoil
6" - 16" orange brown fine sandy loam
16" - 38" dense light grey fien sharp sand and gravel, and silt
38" - 50" dense, brown loamy fine sand, some silt
50" - 84" firm, light brown fine sharp sand and gravel, and silt
84" - 118" brown medium coarse sharp sand and gravel, and silt
118"- 158" grey brown fine sand and silt
water @ 158"

DP 112

0" - 3" topsoil
3" - 23" brown fine sandy loam
23" 106" firm, light grey brown fine sand and gravel, and silt
106"- 168" light brown fine sand, some silt

DP 113

0" - 8" topsoil
8" - 29" orange brown fine sandy loam
29" - 86" moderately compact, grey brown sandy till
86" - 159" grey fine sand, some silt

DP 114

0"	- 9"	topsoil
9"	- 20"	orange brown fine sandy loam
20"	- 84"	moderately compact, grey brown sandy till
84"	- 100"	brown fine to coarse sand, with gravel
100"-	156"	grey fine sand and silt

DP 115

0"	- 10"	topsoil
10"	- 27"	brown fine sandy loam
27"	- 94"	moderately compact, grey brown sandy till
94"	- 150"	grey fine sand and silt

Note: Deep Test Pits 200, 201, 202, 203, 113, 114, 115 located in eastern portion of property, and not in proposed system area.

LBG GEOLOGIC BORING LOGS

GEOLOGIC LOG LEGGETTE, BRASHEARS & GRAHAM, INC. FARMINGTON, CONNECTICUT	**OWNER:** Beta Group **BORING NO:** MW-1 **PAGE** 1 **OF** 2 **PAGE**

SITE LOCATION: 990 Main Street Southbury, Connecticut	**SCREEN SIZE & TYPE:** 2" PVC **SLOT NO:** 0.010 **SETTING:** 15-20
DATE COMPLETED: 6/23/15	**SAND PACK SIZE & TYPE:** Filpro #1 **SETTING:** 13-20'
DRILLING COMPANY: Connecticut Test Boring Seymour, Connecticut	**CASING SIZE & TYPE:** 2" PVC **SETTING:** 10-15'
DRILLING METHOD: Hollow Stem Auger	
SAMPLING METHOD: Split Spoon	**SEAL TYPE:** Bentonite
OBSERVER: Caitlin Bajorek	**SETTING:** 11-13'
REFERENCE POINT (RP): Grade	**BACKFILL TYPE:** Native
ELEVATION OF RP: --	**STATIC WATER LEVEL:**
STICK-UP:	**DEVELOPMENT METHOD:**
SURFACE COMPLETION: curb box, flush mount	**DURATION:** **YIELD:**
REMARKS:	
GPS COORDINATES:	
ABBREVIATIONS: SS = split spoon W = wash C = cuttings G = grab ST = shelby tube REC = recovery PPM = parts per million	

DEPTH (FEET)		SAMPLE TYPE	BLOW COUNT	REC. (FEET)	PID READING (PPM)	DESCRIPTION
FROM	TO					
0	2	SS	2-2-4-3	1.2	--	0-1.2 ft: SAND, medium; little fine to coarse sand; trace medium angular gravel; trace grass/organics; brown; semi-compact; dry.
2	4	SS	2-1-3-8	1.4	--	2-2.4 ft: SAND, medium; little fine to coarse sand; trace medium angular gravel; brown; semi-compact; dry.
					--	2.4-2.8 ft: SAND, medium to coarse; brown; semi-compact; dry.
					--	2.8-3.4 ft: SAND, medium; little fine to coarse sand; trace medium angular gravel; brown; semi-compact; dry.
4	6	SS	4-4-8-12	2.0	--	4-5 ft: SAND, medium to fine; trace fine angular gravel; brown; semi-compact; dry.
					--	5-6 ft: SAND, medium; some fine sand; gray/brown; semi-compact; dry.
6	8	SS	10-8-8-6	1.3	--	6-6.3 ft: SAND, medium; some fine sand; gray/brown; semi-compact; dry.
					--	6.3-6.4 ft: ROCK, black.
					--	6.4-7.3 ft: SAND, medium to fine; gray/brown; semi-compact; moist.

OWNER: Beta Group

WELL NO.: MW-1 **PAGE** 2 **OF** 2 **PAGES**

DEPTH (FEET)		SAMPLE TYPE	BLOW COUNT	REC. (FEET)	PID READING (PPM)	DESCRIPTION
FROM	TO					
8	10	SS	7-11-11-13	1.7	--	8-8.5 ft: SAND, fine; brown; semi-compact; moist.
						8.5-9.7 ft: SAND, medium to fine; gray/brown; little fine angular gravel; semi-compact; moist.
10	12	SS	10-8-8-8	0.15	--	10-10.15 ft: SAND, medium to fine; brown; semi-compact; moist.
12	14	SS	10-13-14-16	0.5	--	12-12.1 ft: ROCK; gray.
						12.1-12.5 ft: SAND, medium to fine; brown; semi-compact; moist.
14	16	SS	9-9-11-13	2.0	--	14-16 ft: SAND, medium to fine; gray; semi-compact; saturated.
16	20	Auger	--	--	--	Cuttings; sand; medium; brown/orange; loose; saturated.
						Well Installed at 20 ft.

GEOLOGIC LOG LEGGETTE, BRASHEARS & GRAHAM, INC. FARMINGTON, CONNECTICUT	**OWNER:** Beta Group **BORING NO:** MW-2 **PAGE** 1 **OF** 2 **PAGE**
SITE LOCATION: 990 Main Street Southbury, Connecticut	**SCREEN SIZE & TYPE:** 2” PVC **SLOT NO:** 0.010 **SETTING:** 15-20’
DATE COMPLETED: 6/23/15 **DRILLING COMPANY:** Connecticut Test Boring Seymour, Connecticut	**SAND PACK SIZE & TYPE:** Filpro #1 **SETTING:** 13-20’
DRILLING METHOD: Hollow Stem Auger	**CASING SIZE & TYPE:** 2” PVC **SETTING:** 0-15’
SAMPLING METHOD: Split Spoon **OBSERVER:** Caitlin Bajorek	**SEAL TYPE:** Bentonite **SETTING:** 11-13’
REFERENCE POINT (RP): Grade	**BACKFILL TYPE:** Native
ELEVATION OF RP: --	**STATIC WATER LEVEL:**
STICK-UP:	**DEVELOPMENT METHOD:**
SURFACE COMPLETION: curb box, flush mount	**DURATION:** **YIELD:**
REMARKS:	
GPS COORDINATES:	
ABBREVIATIONS: SS = split spoon W = wash C = cuttings G = grab ST = shelby tube REC = recovery PPM = parts per million	

DEPTH (FEET)		SAMPLE TYPE	BLOW COUNT	REC. (FEET)	PID READING (PPM)	DESCRIPTION
FROM	TO					
0	2	SS	2-2-3-5	1.5	--	0-1.5 ft: SAND; medium to fine; little roots/wood at 1.2-1.3; brown; semi-compact; dry.
2	4	SS	5-5-5-8	1.3	--	2-3.3 ft: SAND; medium to fine; trace fine angular gravel; brown; semi-compact; dry.
4	6	SS	7-18-20-14	1.1	--	4-4.5 ft: SAND, fine to medium; some medium angular gravel; brown; semi-compact; dry.
					--	4.5-4.7 ft: Rock, pulverized; gray.
					--	5-5.1 ft: SAND, coarse; brown/red; loose; dry.
6	8	SS	14-15-16-16	1.3	--	6-7.3 ft: SAND, fine; trace fine to medium angular gravel; semi-compact; brown; moist.
8	10	SS	14-13-11-14	1.1	--	8-9.1 ft: SAND, fine; little fine to medium angular gravel; semi-compact; brown; moist.
10	12	SS		1.3	--	10-11.3 ft: SAND, fine; little fine to medium angular gravel; semi-compact; brown; wet.

OWNER: Beta Group

WELL NO.: MW-2 **PAGE** 2 **OF** 2 **PAGES**

DEPTH (FEET)		SAMPLE TYPE	BLOW COUNT	REC. (FEET)	PID READING (PPM)	DESCRIPTION
FROM	TO					
12	17	A	--	--	--	12-17 ft: SAND, fine; little fine to medium angular gravel; semi-compact; brown; saturdated.
17	20	A				17-20 ft: SAND, fine; little fine to medium angular gravel; semi-compact; brown; saturdated.
						Well installed at 20 ft.

GEOLOGIC LOG LEGGETTE, BRASHEARS & GRAHAM, INC. FARMINGTON, CONNECTICUT	**OWNER:** Beta Group **BORING NO:** MW-3 **PAGE** 1 **OF** 2 **PAGE**

SITE LOCATION: 990 Main Street Southbury, Connecticut	**SCREEN SIZE & TYPE:** 2" PVC **SLOT NO:** 0.010 **SETTING:** 15-20'
DATE COMPLETED: 6/24/15	**SAND PACK SIZE & TYPE:** Filpro #1
DRILLING COMPANY: Connecticut Test Boring Seymour, Connecticut	**SETTING:** 13-20' **CASING SIZE & TYPE:** 2" PVC
DRILLING METHOD: Hollow Stem Auger	**SETTING:** 0-15'
SAMPLING METHOD: Split Spoon	**SEAL TYPE:** Bentonite
OBSERVER: Caitlin Bajorek	**SETTING:** 11-13'
REFERENCE POINT (RP): Grade	**BACKFILL TYPE:** Native
ELEVATION OF RP: --	**STATIC WATER LEVEL:**
STICK-UP:	**DEVELOPMENT METHOD:**
SURFACE COMPLETION: curb box, flush mount	**DURATION:** **YIELD:**
REMARKS:	
GPS COORDINATES:	
ABBREVIATIONS: SS = split spoon W = wash C = cuttings G = grab ST = shelby tube REC = recovery PPM = parts per million	

DEPTH (FEET)		SAMPLE TYPE	BLOW COUNT	REC. (FEET)	PID READING (PPM)	DESCRIPTION
FROM	TO					
0	2	SS	2-5-8-10	1.2	--	0-1.2 ft: SAND, fine; some medium; some organics (grass/roots); some fine angular gravel; brown; semi-compact; dry.
2	4	SS	10-10-11-8	1.6	--	2-3.6 ft: SAND, fine; little medium; trace fine angular gravel; brown; semi-compact; dry.
4	6	SS	7-10-13-20	1.7	--	4-5.7 ft: SAND, fine; little medium; trace fine angular gravel; brown; semi-compact; dry.
6	8	SS	32-18-16-20	1.75	--	6-7.75 ft: SAND, fine; little medium; trace fine angular gravel; brown; semi-compact; dry.
8	10	SS	15-15-17-20	1.9	--	8-8.5 ft: SAND, medium to coarse; little medium; trace fine angular gravel; brown; semi-compact; moist.
					--	8.5-8.6 ft: Rock; black.
					--	8.6-9.9 ft: SAND, fine; little medium; trace fine angular gravel; brown; semi-compact; moist.

OWNER: Beta Group

WELL NO.: MW-3 **PAGE** 2 **OF** 2 **PAGES**

DEPTH (FEET)		SAMPLE TYPE	BLOW COUNT	REC. (FEET)	PID READING (PPM)	DESCRIPTION
FROM	TO					
10	12	SS	11-19-20-27	1.3	--	10-10.4 ft: Rock, black; some medium to coarse sand; brown; compact; moist.
					--	10.4-11.3 ft: SAND, fine to medium; some fine to medium angular gravel; brown; semi-compact; moist.
12	14	SS	31-15-12-15	1.6	--	12-12.2 ft: SAND, medium; brown; semi-compact; wet.
						12.2-12.3 ft: Rock; gray.
						12.3-12.8 ft: SAND, medium; little angular gravel; brown; semi-compact; wet.
						12.8-13.1 ft: ROCK; black.
						13.1-13.6 ft: SAND, medium; little angular gravel; brown; semi-compact; wet.
14	16	SS	13-15-21-30	2.0	--	14-15.2 ft: SAND, medium to fine; little medium to fine angular gravel; brown; compact; saturated.
						15.2-16 ft: SAND, medium to coarse; little medium to coarse angular gravel; brown; compact; saturated.
16	20	A	--	--		16-20 ft: SAND, fine; little fine to medium angular gravel; brown; loose; saturated.
						Well installed at 20'.

GEOLOGIC LOG LEGGETTE, BRASHEARS & GRAHAM, INC. FARMINGTON, CONNECTICUT	**OWNER:** Beta Group **BORING NO:** MW-4 **PAGE** 1 **OF** 2 **PAGE**

SITE LOCATION: 990 Main Street Southbury, Connecticut	**SCREEN SIZE & TYPE:** 2” PVC **SLOT NO:** 0.010 **SETTING:** 16-21’
DATE COMPLETED: 6/24/15	**SAND PACK SIZE & TYPE:** Filpro #1
DRILLING COMPANY: Connecticut Test Boring Seymour, Connecticut	**SETTING:** 13-26’
	CASING SIZE & TYPE: 2” PVC
DRILLING METHOD: Hollow Stem Auger	**SETTING:** 0-16’; 21-26’
SAMPLING METHOD: Split Spoon	**SEAL TYPE:** Bentonite
OBSERVER: Caitlin Bajorek	**SETTING:** 11-13’
REFERENCE POINT (RP): Grade	**BACKFILL TYPE:** Native
ELEVATION OF RP: --	**STATIC WATER LEVEL:**
STICK-UP:	**DEVELOPMENT METHOD:**
SURFACE COMPLETION: curb box, flush mount	**DURATION:** **YIELD:**
REMARKS:	
GPS COORDINATES:	
ABBREVIATIONS: SS = split spoon W = wash C = cuttings G = grab ST = shelby tube REC = recovery PPM = parts per million	

DEPTH (FEET) FROM	DEPTH (FEET) TO	SAMPLE TYPE	BLOW COUNT	REC. (FEET)	PID READING (PPM)	DESCRIPTION
0	2	SS	4-7-6-6	1.4	--	0-0.7 ft: SAND, fine; some organics; little fine angular gravel; gray; semi-compact; dry.
						0.7-0.8 ft: ROCK; gray.
						0.8-0.9 ft: SAND, medium to fine; black; semi-compact; dry.
						0.9-1.4 ft: SAND, medium; some coarse to fine; little brick pieces; brown; loose; dry.
2	4	SS	6-8-9-9	0.3	--	2-2.3 ft: SAND, medium; some coarse to fine; brown; loose; dry.
4	6	SS	7-10-15-9	1.0	--	4-4.6 ft: SAND, medium to coarse; some fine to coarse angular gravel; brown; loose; dry.
						4.6-5.0 ft: ROCK; pulverized; red.

OWNER: Beta Group

WELL NO.: MW-4 **PAGE** 2 **OF** 2 **PAGES**

DEPTH (FEET)		SAMPLE TYPE	BLOW COUNT	REC. (FEET)	PID READING (PPM)	DESCRIPTION
FROM	TO					
6	8	SS	7-8-6-3	1.1	--	6-6.5 ft: SAND, fine; brown; semi-compact; moist.
						6.5-6.8 ft: Rock; gray/red.
						6.8-7.1 ft: SAND, medium; some medium to coarse angular gravel; brown/red; semi-compact; moist.
8	10	SS	6-8-5-5	1.6	--	8-8.4 ft: SAND, fine; brown; semi-compact; wet.
						8.4-9.1 ft: SAND, medium; little fine angular gravel; brown; semi-compact; wet.
						9.1-9.3 ft: SAND, fine; brown; semi-compact; wet.
						9.3-9.6 ft: SAND, medium; some coarse sand; some medium to fine angular gravel; semi-compact; wet.
15	17	SS	3-7-5-5	2.0	--	15-16 ft: SAND, fine; some medium; reddish brown; semi-compact; saturated.
						16-17 ft: SAND, medium to coarse; brown; semi-compact; saturated.
20	22	SS	10-13-18-38	2.0	--	20-20.7 ft: SAND, medium to coarse; some fine; some silt; brown; semi-compact; saturated.
						20.7-22 ft: SILT, some very fine to fine sand; trace fine angular gravel; brown; compact; wet.
25	27	SS	35-50/4	1.0	--	25-26 ft: SILT, very fine sand; trace fine angular gravel; light brown/gray; compact; wet.
						Refusal at 26'. Well Installed, screened 16-21'

GEOLOGIC LOG
LEGGETTE, BRASHEARS & GRAHAM, INC.
FARMINGTON, CONNECTICUT

OWNER: Beta Group

BORING NO: MW-5

SITE LOCATION: 990 Main Street Southbury, Connecticut	**SCREEN SIZE & TYPE:** 2” PVC **SLOT NO:** 0.010 **SETTING:** 10-15’
DATE COMPLETED: 6/24/15	**SAND PACK SIZE & TYPE:** Filpro #1
DRILLING COMPANY: Connecticut Test Boring Seymour, Connecticut	**SETTING:** 9-15’
	CASING SIZE & TYPE: 2” PVC
DRILLING METHOD: Hollow Stem Auger	**SETTING:** 0-10’
SAMPLING METHOD: Split Spoon	**SEAL TYPE:** Bentonite
OBSERVER: Caitlin Bajorek	**SETTING:** 7-9’
REFERENCE POINT (RP): Grade	**BACKFILL TYPE:** Native
ELEVATION OF RP: --	**STATIC WATER LEVEL:**
STICK-UP: PVC 2.5’ above grade	**DEVELOPMENT METHOD:**
SURFACE COMPLETION: Stick-up	**DURATION:** **YIELD:**

REMARKS:

GPS COORDINATES:

ABBREVIATIONS: SS = split spoon W = wash C = cuttings G = grab ST = shelby tube REC = recovery PPM = parts per million

DEPTH (FEET) FROM	DEPTH (FEET) TO	SAMPLE TYPE	BLOW COUNT	REC. (FEET)	PID READING (PPM)	DESCRIPTION
0	2	SS	1-0-1-3	1.6	--	0-0.3 ft: Organics; leaves; twigs.
						0.3-1.6 ft: SAND, fine to very fine; trace organics (roots); brown; semi-compact; dry.
2	4	SS	3-7-11-11	1.3	--	2-3.3 ft: SAND, fine to very fine; trace organics (roots); little medium to coarse angular gravel; brown; semi-compact; dry.
4	6	SS	12-10-12-14	2.0	--	4-6 ft: SAND, fine to very fine; little medium to coarse angular gravel; brown; semi-compact; dry.
6	8	SS	10-9-8-8	2.0	--	6-8 ft: SAND, fine to medium; little medium to coarse angular gravel; rock at 7.3-7.4; brown/light brown; semi-compact; dry.
8	10	SS	10-10-11-11	1.8	--	8-9.8 ft: SAND, fine to medium; little medium to coarse angular gravel; brown/light brown; semi-compact; moist.
10	12	SS	10-12-18-19	1.4	--	10-11.4 ft: SAND, fine to medium; little medium to coarse angular gravel; brown/light brown; semi-compact; moist.

OWNER: Beta Group

WELL NO.: MW-5 **PAGE** 2 **OF** 2 **PAGES**

DEPTH (FEET)		SAMPLE TYPE	BLOW COUNT	REC. (FEET)	PID READING (PPM)	DESCRIPTION
FROM	TO					
12	14	SS	17-26-18-16	1.9		12-12.3 ft: SAND, medium; some fine angular gravel; brown; loose; moist.
						12.3-12.6 ft: SAND, medium to coarse; some very coarse; brown/red; loose; moist.
						12.6-13 ft: Rock; black.
						13-13.9 SAND, fine to coarse; brown; semi-compact; wet.
14	16	SS	15-30-45-50	2.0		14-15.8 ft: SAND, fine to medium; brown; semi-compact; wet.
						15.8-16 ft: Silt and Sand, very fine; brown/gray; semi-compact; wet.
16	20	A				Silt and Sand, very fine; brown/gray; semi-compact; wet.
Continue to Auger per Tunde. No split spoon required.						
20	25	A				Silt, gray wet.
25	30	A				Silt, gray wet.
						Well installed. Set at ~15’

GEOLOGIC LOG LEGGETTE, BRASHEARS & GRAHAM, INC. FARMINGTON, CONNECTICUT	OWNER: Beta Group BORING NO: MW-6 PAGE 1 OF 2 PAGE
SITE LOCATION: 990 Main Street Southbury, Connecticut	**SCREEN SIZE & TYPE:** 2” PVC **SLOT NO:** 0.010 **SETTING:** 34-39’
DATE COMPLETED: 6/25/15	**SAND PACK SIZE & TYPE:** Filpro #1 **SETTING:** 33-39’
DRILLING COMPANY: Connecticut Test Boring Seymour, Connecticut	**CASING SIZE & TYPE:** 2” PVC **SETTING:** 0-34’
DRILLING METHOD: Hollow Stem Auger	
SAMPLING METHOD: Split Spoon	**SEAL TYPE:** Bentonite **SETTING:** 31-33’
OBSERVER: Caitlin Bajorek	
REFERENCE POINT (RP): Grade	**BACKFILL TYPE:** Native
ELEVATION OF RP: --	**STATIC WATER LEVEL:**
STICK-UP: PVC 3’ above grade	**DEVELOPMENT METHOD:**
SURFACE COMPLETION: Stick-up	**DURATION:** **YIELD:**
REMARKS: Offset from stake ~15’, moved away from test pit areas	
GPS COORDINATES:	
ABBREVIATIONS: SS = split spoon W = wash C = cuttings G = grab ST = shelby tube REC = recovery PPM = parts per million	

DEPTH (FEET) FROM	DEPTH (FEET) TO	SAMPLE TYPE	BLOW COUNT	REC. (FEET)	PID READING (PPM)	DESCRIPTION
0	2	SS	1-8-1-2	1.4	--	0-0.3 ft: ORGANICS; medium to fine sand; leaves; roots; black; loose; dry.
						0.3-0.8 ft: SAND, fine; some medium; little organics/roots; dark brown; semi-compact; dry.
						0.8-1.4 ft: SAND, fine; brown; semi-compact; dry.
2	4	SS	5-5-6-6	0.7	--	2-2.7 ft: SAND, fine; brown; semi-compact; dry.
4	6	SS	26-34-20-29	1.4	--	4-5 ft: SAND, fine; some medium to coarse angular gravel; brown; semi-compact; dry.
						5-5.4 ft: Crushed rock; trace fine to medium sand; brown.
6	8	SS	15-13-14-14	1.5	--	6-6.5 ft: SAND, fine; some fine to medium angular gravel; brown; semi-compact; dry.
						6.5-7.1 ft: Sand and Silt; very fine to fine sand; little fine angular gravel; brown; compact; dry.
						7.1 -7.5 ft: SAND; fine to medium; brown/light brown; loose; dry.

OWNER: Beta Group

WELL NO.: MW-6 **PAGE** 2 **OF** 2 **PAGES**

DEPTH (FEET)		SAMPLE TYPE	BLOW COUNT	REC. (FEET)	PID READING (PPM)	DESCRIPTION
FROM	TO					
8	10	SS	15-16-17-20	1.4	--	8-8.2 ft: ROCK; crushed; gray.
						8.2-8.4 ft: SAND, fine; some medium; little fine angular gravel; dark brown; semi-compact; dry.
						8.4-9.4 ft: SAND, fine; light brown; semi-compact; moist.
10	12	SS	30-33-37-39	2.0	--	10-12 ft: Sand and Silt, very fine; little sand; brown; semi-compact; moist.
12	14	SS	46-34-37-39	2.0	--	12-12.2 ft: Sand and Silt; very fine; some angular gravel; reddish brown; semi-compact; moist.
						12.2-14 ft: SAND, brown; compact; moist.
14	16	SS	29-33-46-52	2.0	--	14-16 ft: Sand and Silt; brown; compact; moist.
20	22	SS	17-29-37-35	1.8	--	20-21.8 ft: SILT; little very fine to fine sand; rock at 21.2; compact; wet.
25	27	SS	19-22-27-25	2.0	--	25-27 ft: Silt and Clay; rock at 26.5 ft; light brown/gray; compact; wet.
30	32	SS	16-16-17-17	2.0	--	30-32 ft: Silt and Clay; trace fine to coarse angular gravel; brown; very compact; wet.
35	37	SS	17-35-34-40	1.6		35-36.6 ft: Silt and Clay; trace fine to coarse angular gravel; brown; very compact; wet.
	40	A				Silt and Clay; trace fine to coarse angular gravel; brown; very compact; wet.
						Install well at ~39 ft.

GEOLOGIC LOG **LEGGETTE, BRASHEARS & GRAHAM, INC.** **FARMINGTON, CONNECTICUT**	**OWNER:** Beta Group **BORING NO:** MW-7 **PAGE** 1 **OF** 2 **PAGE**

SITE LOCATION: 990 Main Street Southbury, Connecticut	**SCREEN SIZE & TYPE:** 2" PVC **SLOT NO:** 0.010 **SETTING:** 6-11'
DATE COMPLETED: 6/25/15	**SAND PACK SIZE & TYPE:** Filpro #1 **SETTING:** 3-11'
DRILLING COMPANY: Connecticut Test Boring Seymour, Connecticut	**CASING SIZE & TYPE:** 2" PVC
DRILLING METHOD: Hollow Stem Auger	**SETTING:** 0-6'
SAMPLING METHOD: Split Spoon	**SEAL TYPE:** Bentonite
OBSERVER: Caitlin Bajorek	**SETTING:** 2-3'
REFERENCE POINT (RP): Grade	**BACKFILL TYPE:** Native
ELEVATION OF RP: --	**STATIC WATER LEVEL:**
STICK-UP:	**DEVELOPMENT METHOD:**
SURFACE COMPLETION: Stick up	**DURATION:** **YIELD:**
REMARKS: Offset about 5' from stake; too many trees to cut down.	
GPS COORDINATES:	
ABBREVIATIONS: SS = split spoon W = wash C = cuttings G = grab ST = shelby tube REC = recovery PPM = parts per million	

DEPTH (FEET)		SAMPLE TYPE	BLOW COUNT	REC. (FEET)	PID READING (PPM)	DESCRIPTION
FROM	TO					
0	2	SS	1-1-2-2	1.2	--	0-0.4 ft: Organics; leaves; roots; some medium to fine sand; dark brown; loose; dry.
						0.4-0.8 ft: SAND, fine to medium; little organics; brown; loose; dry.
						0.8-1.2 ft: SAND, medium; little fine angular gravel; brown; semi-compact; dry.
2	4	SS	7-12-7-6	1.2	--	2-3.4 ft: SAND, medium; little fine angular gravel; brown/light brown; semi-compact; dry.
4	6	SS	6-9-6-19	1.4	--	4-4.8 ft: SAND, medium; some fine to coarse; little medium rounded gravel; brown; semi-compact; moist.
						4.8-4.9 ft: SAND, medium to coarse; some fine to medium angular gravel; brown; semi-compact; moist.
						4.9-5.0 ft: ROCK; crushed; dark gray.
						5-5.4 ft: SAND, medium ;some fine to coarse; little fine angular gravel; brown; semi-compact; moist.

OWNER: Beta Group

WELL NO.: MW-7 **PAGE** 2 **OF** 2 **PAGES**

DEPTH (FEET)		SAMPLE TYPE	BLOW COUNT	REC. (FEET)	PID READING (PPM)	DESCRIPTION
FROM	TO					
6	8	SS	9-13-17-19	1.4		6-6.5 ft: SAND, medium; some medium angular gravel; reddish brown; loose; wet.
						6.5-6.6 ft: Rock; crushed; dark gray.
						6.6-7.4 ft: SAND, medium; some fine to coarse sand; some medium to coarse angular gravel; brown/red; loose; wet.
8	10	SS		1.6		8-8.6 ft: Sand and Gravel; medium to coarse sand; fine to medium angular gravel; loose; saturated.
						8.6-9.6 ft: SAND, medium; some fine; trace coarse; trace fine angular gravel; semi-compact; saturated.
Tried to Auger to 15. Hitting refusal at 11’. Will try to split spoon to see if we can get by.						
10	12	SS				Cannot get by. Refusal at ~11’. Set well.

GEOLOGIC LOG LEGGETTE, BRASHEARS & GRAHAM, INC. FARMINGTON, CONNECTICUT	**OWNER:** Beta Group **BORING NO:** MW-8 **PAGE** 1 **OF** 3 **PAGE**

SITE LOCATION: 990 Main Street Southbury, Connecticut	**SCREEN SIZE & TYPE:** 2" PVC **SLOT NO:** 0.010 **SETTING:** 36-41'
DATE COMPLETED: 6/29/15	**SAND PACK SIZE & TYPE:** Filpro #1
DRILLING COMPANY: Connecticut Test Boring Seymour, Connecticut	**SETTING:** 33.5-41'
	CASING SIZE & TYPE: 2" PVC
DRILLING METHOD: Hollow Stem Auger	**SETTING:** 0-36'
SAMPLING METHOD: Split Spoon	**SEAL TYPE:** Bentonite
OBSERVER: Caitlin Bajorek	**SETTING:** 31.5-33.5'
REFERENCE POINT (RP): Grade	**BACKFILL TYPE:** Native
ELEVATION OF RP: --	**STATIC WATER LEVEL:**
STICK-UP: ~2' above grade	**DEVELOPMENT METHOD:**
SURFACE COMPLETION: Stick up	**DURATION:** **YIELD:**

REMARKS: Well installed ~10 ft away from stake, too many trees to cut down.

GPS COORDINATES:

ABBREVIATIONS: SS = split spoon W = wash C = cuttings G = grab ST = shelby tube REC = recovery PPM = parts per million

DEPTH (FEET) FROM	DEPTH (FEET) TO	SAMPLE TYPE	BLOW COUNT	REC. (FEET)	PID READING (PPM)	DESCRIPTION
0	2	SS	1-1-1-4	0.6	--	0-0.6 ft: SAND, fine; some medium; some organics; little medium to fine angular gravel; brown; loose; dry.
2	4	SS	4-4-9-13	1.6	--	2-2.6 ft: SAND, fine; some medium; some organics; little medium to fine angular gravel; brown; semi-compact; dry.
						2.6-3.4 ft: SAND, medium to fine; little fine angular gravel; brown; semi-compact; dry.
						3.4-3.6 ft: SAND, medium; some fine sand; little fine angular gravel; light brown; loose; dry.
4	6	SS	8-25-25-30	1.4	--	4-4.5 ft: SAND, medium; some fine sand; little fine angular gravel; light brown; loose; dry.
						4.5-5.0 ft: ROCK; gray; some fine to medium sand; gray/brown; loose; dry.
						5-5.4 ft: SAND, medium to fine; some fine to medium angular gravel; light brown; loose; dry.

OWNER: Beta Group

WELL NO.: MW-8 **PAGE** 2 **OF** 3 **PAGES**

DEPTH (FEET)		SAMPLE TYPE	BLOW COUNT	REC. (FEET)	PID READING (PPM)	DESCRIPTION
FROM	TO					
6	8	SS	38-47-25-24	1.8	--	6-6.2 ft: ROCK; gray; some fine to medium sand; gray/brown; loose; dry.
						6.2-6.8 ft: SAND, fine; some medium; some fine to medium angular gravel; brown; reddish; semi-compact; dry.
						6.8-7.8 ft: SAND, fine; little medium gravel; some fine to medium angular gravel; brown; semi-compact; dry; moist at 7.8ft.
8	10	SS	22-26-26-45	1.8	--	8-9.8 ft: SAND, fine; little medium; little silt; little medium to coarse gravel; semi-compact; moist.
10	12	SS	30-36-44-46	1.9	--	10-11.9 ft: Sand and Silt; very fine sand; brown; compact; moist.
12	14	SS	58-30-56-108	2.0	--	12-12.4 ft: Sand and Silt; little fine angular gravel; dark brown/red; very compact; moist.
						12.4-12.6 ft: SAND, fine; little medium angular gravel; brown; compact; moist.
						12.6-12.9 ft: Sand and Silt; little fine angular gravel; dark brown/red; very compact; moist.
						12.9-13.9 ft: SILT; little very fine sand; brown; very compact; moist.
						13.9-14 ft: Rock; gray.
Due to very compact soil; auger to 15						
15	17	SS	25-41-116-100/3	2.0	--	15-17 ft: SILT; very fine sand; some fine angular gravel; brown; very compact; moist.
20	22	SS	22-23-27-29	2.0	--	20-20.3 ft: Sand and Silt; very fine to fine sand; brown; compact; wet.
						20.3-20.6 ft: Rock and Silt; gray rock; brown silt.
						20.6-22 ft: Sand and Silt; very fine to fine sand; trace fine angular gravel; brown; compact; wet.
25	27	SS	13-19-27-25	2.0	--	25-27 ft: Sand and Silt; very fine to fine sand; interbedded fine sand; fine angular gravel; brown; very compact; wet.
30	32	SS	15-21-40-37	2.0	--	30-31.2 ft: Sand and Silt; very fine to fine sand; fine angular gravel; brown; compact; wet.
						31.2-31.6 ft: SAND, medium to fine; brown; semi-compact; wet.
						31.6-32 ft: Sand and Silt; very fine to fine sand; fine angular gravel; brown; very compact; wet.

OWNER: Beta Group

WELL NO.: MW-8 **PAGE** 3 **OF** 3 **PAGES**

DEPTH (FEET)		SAMPLE TYPE	BLOW COUNT	REC. (FEET)	PID READING (PPM)	DESCRIPTION
FROM	TO					
35	37	SS	17-23-37-39	1.6		35-36.1 ft: Sand and Silt; very fine to fine sand; fine angular gravel; brown; very compact; wet.
						36.1-36.3 ft: ROCK; dark gray.
						36.3-36.6 ft: Sand and Silt; very fine to fine sand; fine angular gravel; interbedded fine sand; brown; very compact; wet.
40	42	SS	26-35-38-43	2.0		40-41.1 ft: SAND, fine; brown; semi-compact; saturated.
						41.1-42 ft: Sand and Silt; very fine to fine sand; fine angular gravel; brown; very compact; wet.
						Well Installed at 41'.

GEOLOGIC LOG LEGGETTE, BRASHEARS & GRAHAM, INC. SHELTON, CONNECTICUT	**OWNER:** Beta Group **WELL NO:** MW-9 **PAGE** 1 **OF** 2 **PAGES**
SITE LOCATION: 990 Main Street South Southbury, CT	**SCREEN SIZE & TYPE:** 2" PVC **SLOT NO.:** 0.010 **SETTING:** 18-23 ft bg
DATE COMPLETED: February 2, 2016	**SAND PACK SIZE & TYPE:** Filpro #1 **SETTING:** 16-23 ft bg
DRILLING COMPANY: ADT	**CASING SIZE & TYPE:** 2" PVC **SETTING:** 0.5-18 ft bg
DRILLING METHOD: Hollow stem auger	
SAMPLING METHOD: Split spoon	**SEAL TYPE:** Bentonite chips
OBSERVER: Pamela Lind	**SETTING:** 14-16 ft bg
REFERENCE POINT (RP): Grade	**BACKFILL TYPE:** Native
ELEVATION OF RP: Not measured	**STATIC WATER LEVEL:** ~16
STICK-UP: NA	**DEVELOPMENT METHOD:**
SURFACE COMPLETION: flush/curb box	**DURATION:** **YIELD:**

REMARKS: (0-1) (2-3) (4-5) (6-7) (8-9) (15-16) (20-21) rods are wet past 16' drilling to 23' to have 2' above screen of saturation

ABBREVIATIONS: SS = split spoon W = wash C = cuttings G = grab ST = shelby tube REC = recovery PPM = parts per million

DEPTH (FEET)		SAMPLE TYPE	BLOW COUNT	REC. (FEET)	PID READING (PPM)	DESCRIPTION
FROM	TO					
0	2	SS	5-2-3-5	1.2	--	0-1.2: SAND, medium to fine; trace gravel, gray, angular, fine to coarse; brown; semi-compact; dry.
2	4	SS	2-5-16-24	1.2	--	2-3.2: SAND, medium to fine; trace gravel, gray, angular, fine to coarse; brown; semi-compact; dry.
4	6	SS	6-18-20-33	1.6	--	4-5.6: SAND, medium to fine; trace gravel, gray, angular, fine to coarse; brown; semi-compact; dry.
6	8	SS	23-22-28-20	1.2	--	6-7.2: SAND, medium to fine; trace gravel, fine to medium, sub-angular/sub-rounded; brown; semi-compact; moist.
8	10	SS	15-23-17-35	1.4	--	8-9: SAND, medium to fine; trace gravel, fine to medium, sub-angular/sub-rounded; brown; semi-compact; moist. 9-9.1: SAND, medium; peastone layer below sand; light brown, dry, loose. 9.1-9.4: SAND, medium to fine; trace gravel, fine to medium, sub-angular/sub-rounded; brown; semi-compact; moist.

OWNER: Beta Group

WELL NO.: MW-9 **PAGE** 2 **OF** 2 **PAGES**

DEPTH (FEET)		SAMPLE TYPE	BLOW COUNT	REC. (FEET)	PID READING (PPM)	DESCRIPTION
FROM	TO					
15	17	SS	15-16-22-27	1.6	--	15-16.6: SAND, very fine to fine; trace gravel; fine to medium, sub-rounded; brown; semi-compact; moist.
20	22	SS	20-27-29-51	1.7	--	20-21.7: SAND, very fine; trace gravel; fine to coarse; sub-angular/sub-rounded; compact; wet.
						Well installed at 23 ft bg.

GEOLOGIC LOG LEGGETTE, BRASHEARS & GRAHAM, INC. SHELTON, CONNECTICUT	**OWNER:** Beta Group **WELL NO:** MW-10 **PAGE** 1 **OF** 1 **PAGES**
SITE LOCATION: 990 Main Street South Southbury, CT	**SCREEN SIZE & TYPE:** 2” PVC **SLOT NO.:** 0.010 **SETTING:** 8-13 ft bg
DATE COMPLETED: February 3, 2016 **DRILLING COMPANY:** ADT	**SAND PACK SIZE & TYPE:** Filpro #1 **SETTING:** 6-13 ft bg
DRILLING METHOD: Hollow stem auger	**CASING SIZE & TYPE:** 2” PVC **SETTING:** 2 ft above grade – 8 ft bg
SAMPLING METHOD: Split spoon **OBSERVER:** Pamela Lind	**SEAL TYPE:** Bentonite chips **SETTING:** 4-6 ft bg
REFERENCE POINT (RP):	**BACKFILL TYPE:** Native
ELEVATION OF RP: --	**STATIC WATER LEVEL:** ~6
STICK-UP: ~2	**DEVELOPMENT METHOD:**
SURFACE COMPLETION: stick-up	**DURATION:** **YIELD:**
REMARKS: (0-1) (2-3) (4-6) (6-7) (8-9) (10-11)	
ABBREVIATIONS: SS = split spoon W = wash C = cuttings G = grab ST = shelby tube REC = recovery PPM = parts per million	

DEPTH (FEET)		SAMPLE TYPE	BLOW COUNT	REC. (FEET)	PID READING (PPM)	DESCRIPTION
FROM	TO					
0	2	SS	1-1-2-2	1.3	--	0-1.3: SAND, very fine; trace gravel, fine sub-rounded; dark brown; semi-compact; dry.
2	4	SS	3-9-9-10	1.3	--	2-3.3: SAND, very fine/silt; trace gravel, medium to coarse, sub-rounded; orange-gray; compact; moist.
4	6	SS	6-17-18-13	2	--	4-6: SAND, medium to very fine, trace gray clay; some gravel, fine to coarse, sub-angular/sub-rounded; dark brown/orange; semi-compact; moist.
6	8	SS	18-28-21-19	0.9	--	6-6.9: SAND, medium to very fine; some gravel, fine to medium, sub-angular/sub- rounded; dark brown/red/orange; very compact; wet.
8	10	SS	5-7-16-33	0.9	--	8-8.9: SAND, coarse to fine, brown, loose, wet.
10	12	SS	10-13-39-41	0.9	--	10-10.9: SAND, coarse to fine; some gravel, fine to coarse, sub-rounded; brown; loose; wet.
						Well installed at @ 13 ft bg.

GEOLOGIC LOG LEGGETTE, BRASHEARS & GRAHAM, INC. SHELTON, CONNECTICUT	**OWNER:** Beta Group **WELL NO:** MW-11 **PAGE** 1 **OF** 1 **PAGES**
SITE LOCATION: 990 Main Street South Southbury, CT	**SCREEN SIZE & TYPE:** 2" PVC **SLOT NO.:** 0.010 **SETTING:** 8-13 ft bg
DATE COMPLETED: February 3, 2016	**SAND PACK SIZE & TYPE:** Filpro #1
DRILLING COMPANY: ADT	**SETTING:** 6-13 ft bg
	CASING SIZE & TYPE: 2" PVC
DRILLING METHOD: Hollow stem auger	**SETTING:** 2 ft above grade – 8 ft bg
SAMPLING METHOD: Split spoon	**SEAL TYPE:** Bentonite chips
OBSERVER: Pamela Lind	**SETTING:** 4-6 ft bg
REFERENCE POINT (RP):	**BACKFILL TYPE:** Native
ELEVATION OF RP: --	**STATIC WATER LEVEL:** ~3
STICK-UP: ~2	**DEVELOPMENT METHOD:**
SURFACE COMPLETION: stick-up	**DURATION:** **YIELD:**
REMARKS: (0-1) (2-3) (4-5) (8-9) (10-11)	
ABBREVIATIONS: SS = split spoon W = wash C = cuttings G = grab ST = shelby tube REC = recovery PPM = parts per million	

DEPTH (FEET)		SAMPLE TYPE	BLOW COUNT	REC. (FEET)	PID READING (PPM)	DESCRIPTION
FROM	TO					
0	2	SS	1-2-2-5	1	--	0-1: SAND, very fine; organics; dark brown; semi-compact; dry.
2	4	SS	4-4-6-10	0.9	--	2-2.9: SAND, medium to very fine, some clay; trace gravel, fine to coarse; sub-angular; gray/brown; compact; wet.
4	6	SS	7-10-23-21	0.6	--	4-4.6: SAND, medium to very fine, some clay; trace gravel; fine to coarse, sub-angular; gray/brown; compact; wet.
6	8	SS	12-12-9-8	0	--	6-8: No recovery.
8	10	SS	10-7-6-5	1	--	8-9: SILT; trace gravel/peastone; medium; sub-angular; gray; compact; wet.
10	12	SS	5-8-11-12	0.6	--	10-10.6: SAND, very fine/little silt; little gravel, fine to coarse; sub-angular/sub-rounded; gray/brown; semi-compact; wet.
						Well installed at 13 ft bg.

GEOLOGIC LOG LEGGETTE, BRASHEARS & GRAHAM, INC. SHELTON, CONNECTICUT	OWNER: Beta Group WELL NO: MW-12 PAGE 1 OF 1 PAGES
SITE LOCATION: 990 Main Street South Southbury, CT	**SCREEN SIZE & TYPE:** 2” PVC **SLOT NO.:** 0.010 **SETTING:** 18-23 ft bg
DATE COMPLETED: February 3, 2016 **DRILLING COMPANY:** ADT	**SAND PACK SIZE & TYPE:** Filpro #1 **SETTING:** 16-23 ft bg
DRILLING METHOD: Hollow stem auger	**CASING SIZE & TYPE:** 2” PVC **SETTING:** 0.5 - 18 ft bg
SAMPLING METHOD: Split spoon **OBSERVER:** Pamela Lind	**SEAL TYPE:** Bentonite chips **SETTING:** 14 - 16 ft bg
REFERENCE POINT (RP):	**BACKFILL TYPE:** Native
ELEVATION OF RP: --	**STATIC WATER LEVEL:** ~
STICK-UP: --	**DEVELOPMENT METHOD:**
SURFACE COMPLETION: flush/curb box	**DURATION:** **YIELD:**
REMARKS: (0-1) (2-3) (4-5) (10-11) (20-21)	
ABBREVIATIONS: SS = split spoon W = wash C = cuttings G = grab ST = shelby tube REC = recovery PPM = parts per million	

DEPTH (FEET)		SAMPLE TYPE	BLOW COUNT	REC. (FEET)	PID READING (PPM)	DESCRIPTION
FROM	TO					
0	2	SS	8-4-6-6	1.5	--	0-1: SAND, organics; dark brown; semi-compact; moist. 1-1.5: SAND, medium to fine; gray; loose; dry.
2	4	SS	13-18-11-10	1.1	--	2-3.1: SAND, fine; little gray, fine to medium, sub-angular/sub-rounded gravel; brown/gray; semi-compact; dry.
4	6	SS	5-9-9-8	1	--	4-5: SAND, fine; trace gravel, fine to medium, sub-angular/sub-rounded; brown; loose; dry.
6	8	SS	11-4-6-50 x 5	0	--	6-8: No recovery.
10	12	SS	4-4-4-3	1	--	10-11: SILT, organics; black; semi, dry.
15	17	SS	3-3-4-5	0	--	15-17: NO RECOVERY; rack in shoe.
20	22	SS	10-12-13-28	0.9		20-20.9: SAND, very fine; trace gravel, fine, sub-rounded; gray; compact; wet.
						Well installed at 23 ft bg.

GEOLOGIC LOG LEGGETTE, BRASHEARS & GRAHAM, INC. SHELTON, CONNECTICUT	**OWNER:** Beta Group **WELL NO:** MW-13 **PAGE** 1 **OF** 1 **PAGES**
SITE LOCATION: 990 Main Street South Southbury, CT	**SCREEN SIZE & TYPE:** 2" PVC **SLOT NO.:** 0.010 **SETTING:** 18-23 ft bg
DATE COMPLETED: February 3, 2016	**SAND PACK SIZE & TYPE:** Filpro #1 **SETTING:** 16-23 ft bg
DRILLING COMPANY: ADT	**CASING SIZE & TYPE:** 2" PVC **SETTING:** 0.5 - 18 ft bg
DRILLING METHOD: Hollow stem auger	
SAMPLING METHOD: Split spoon	**SEAL TYPE:** Bentonite chips
OBSERVER: Pamela Lind	**SETTING:** 16 - 18 ft bg
REFERENCE POINT (RP):	**BACKFILL TYPE:** Native
ELEVATION OF RP: --	**STATIC WATER LEVEL:** ~13
STICK-UP: --	**DEVELOPMENT METHOD:**
SURFACE COMPLETION: flush/curb box	**DURATION:** **YIELD:**

REMARKS: (0-1) (2-3) (4-5) (6-7) (8-9) (10-11) (15-16) (20-21)

ABBREVIATIONS: SS = split spoon W = wash C = cuttings G = grab ST = shelby tube REC = recovery PPM = parts per million

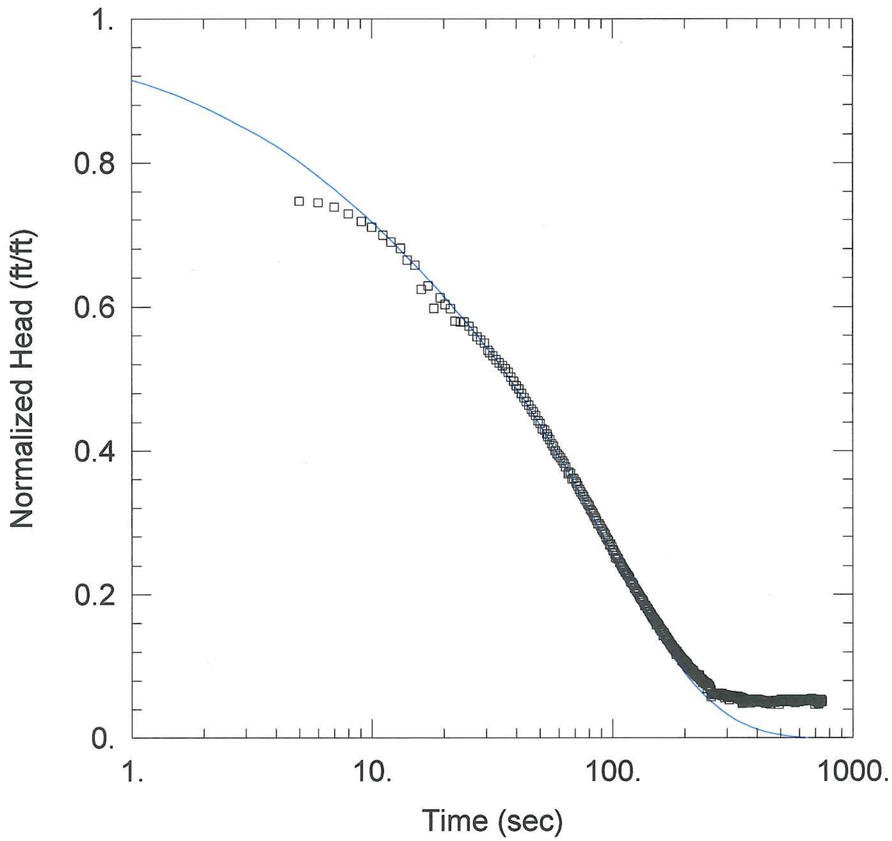
DEPTH (FEET)		SAMPLE TYPE	BLOW COUNT	REC. (FEET)	PID READING (PPM)	DESCRIPTION
FROM	TO					
0	2	SS	1-3-3-4	0.6	--	0-0.6: SAND, fine; organics; dark brown; loose; dry.
2	4	SS	11-28-20-26	0.6	--	2-2.6: SAND, medium to fine; trace gravel, fine to medium, sub-rounded; light brown; loose; dry.
4	6	SS	11-15-16-19	1.3	--	4-5.3: SAND, medium to fine; trace gravel, fine to medium, sub-rounded; light brown; loose; dry.
6	8	SS	31-31-21-19	1	--	6-7: SAND, medium to fine; trace gravel, fine to medium, sub-rounded; light brown; loose; dry.
8	10	SS	21-31-27-19	1.2	--	8-9.2: SAND, medium to fine; some gravel, fine to coarse, sub-angular/sub-rounded; crushed white-red rock; brown; semi-compact; dry.
10	12	SS	14-19-22-29	1.6	--	10-12.6: SAND, medium to fine; some gravel, fine to coarse, sub-angular/sub-rounded; crushed white-red rock; brown; semi-compact; moist.
15	17	SS	12-15-221-27	1.6		15-16.6: SAND, medium to fine; some gravel, fine to coarse, sub-angular/sub-rounded; crushed white-red rock; brown; semi-compact; wet.

20	22	SS	13-20-19-26	1.4		20-21.4: SAND, very fine; trace gravel, fine, sub-rounded; gray; compact; wet.
						Well installed at 23 ft bg.

APPENDIX II

HISTORICAL HYDRAULIC CONDUCTIVITY DATA

SLUG TEST



WELL TEST ANALYSIS

Data Set: K:\...\MW-1 Test 1-KT.aqt
Date: 03/23/16 Time: 10:23:08

PROJECT INFORMATION

Company: LBG
Test Well: MW-1
Test Date: 7/1/2015

SOLUTION

Aquifer Model: Unconfined
Solution Method: KGS Model w/skin

Kr = 6.803 ft/day
Ss = 1.667E-11 ft^{-1}
Kz/Kr = 0.5821
Kr' = 1.798 ft/day
Ss' = 0.02145 ft^{-1}
Kz/Kr' = 1.

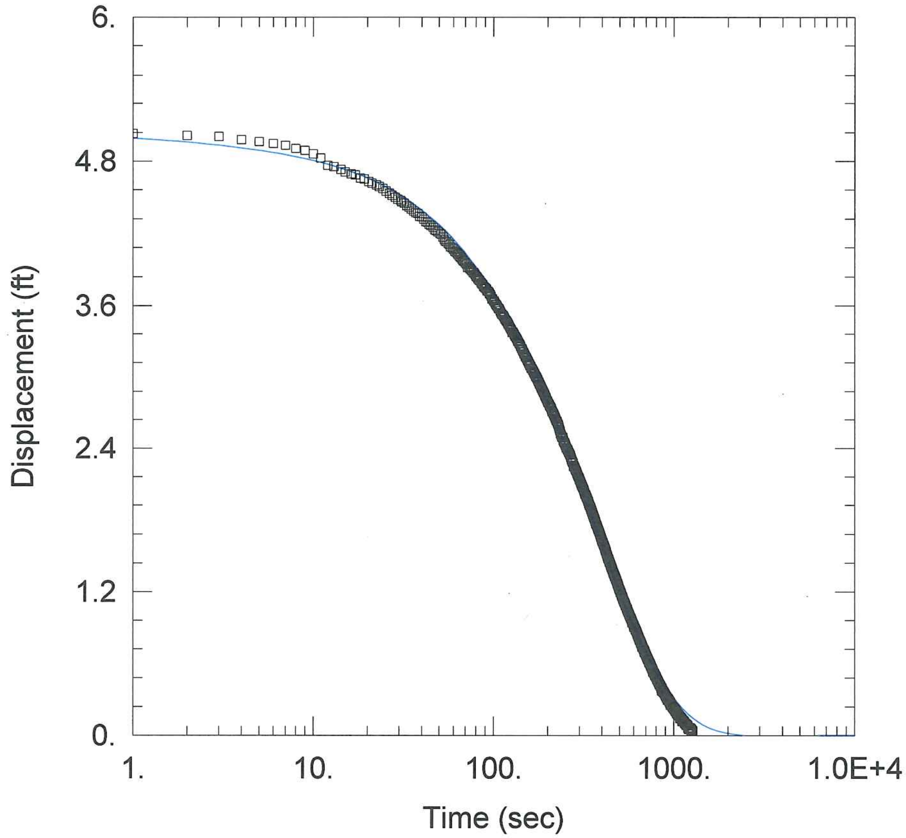
AQUIFER DATA

Saturated Thickness: 6. ft

WELL DATA (MW-1)

Initial Displacement: 3.08 ft
Total Well Penetration Depth: 6.401 ft
Casing Radius: 0.08333 ft
Well Skin Radius: 0.25 ft

Static Water Column Height: 6.401 ft
Screen Length: 5. ft
Well Radius: 0.08333 ft



WELL TEST ANALYSIS

Data Set: K:\...\MW-2 Test 2.aqt
Date: 03/23/16 Time: 10:22:26

PROJECT INFORMATION

Company: LBG
Test Well: MW-2
Test Date: 7/1/2015

SOLUTION

Aquifer Model: Unconfined
Solution Method: KGS Model w/skin

Kr = 1.318 ft/day
Ss = 2.425E-6 ft^{-1}
Kz/Kr = 0.1
Kr' = 0.4054 ft/day
Ss' = 0.001 ft^{-1}
Kz/Kr' = 1.

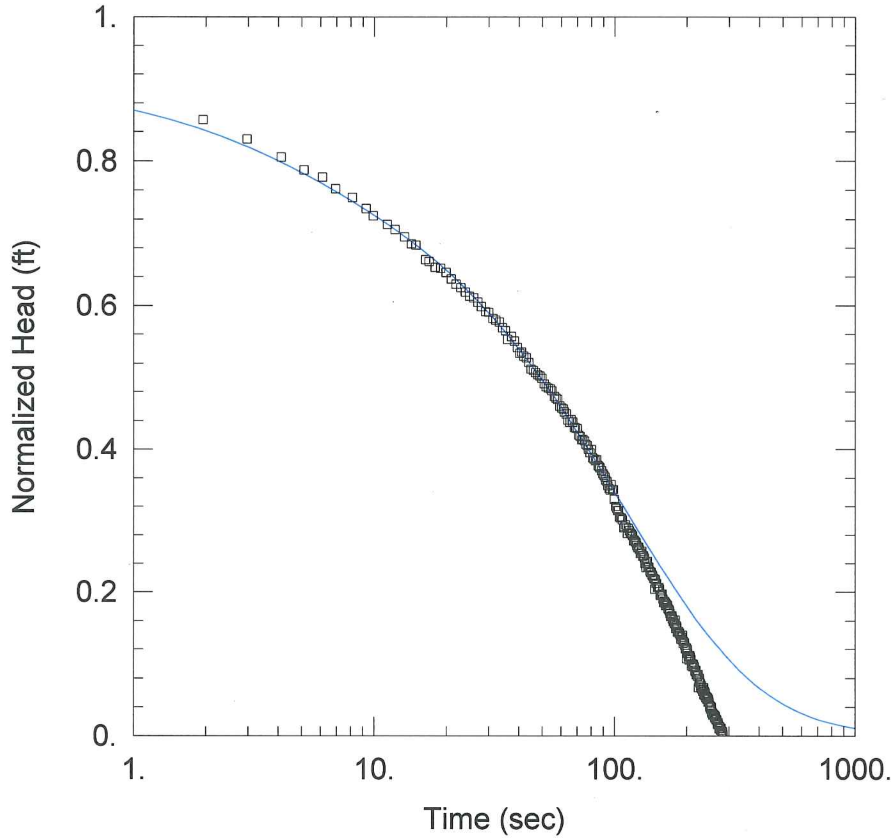
AQUIFER DATA

Saturated Thickness: 10. ft

WELL DATA (MW-2)

Initial Displacement: 5.053 ft
Total Well Penetration Depth: 9.885 ft
Casing Radius: 0.08333 ft
Well Skin Radius: 0.25 ft

Static Water Column Height: 9.885 ft
Screen Length: 5. ft
Well Radius: 0.08333 ft



WELL TEST ANALYSIS

Data Set: K:\...\MW-3 Test 3.aqt
Date: 03/23/16 Time: 10:21:56

PROJECT INFORMATION

Company: LBG
Test Well: MW-3
Test Date: 7/1/2015

SOLUTION

Aquifer Model: Unconfined
Solution Method: KGS Model w/skin

Kr = 2.191 ft/day
Ss = 0.0002723 ft^{-1}
Kz/Kr = 0.1
Kr' = 2.027 ft/day
Ss' = 0.005741 ft^{-1}
Kz/Kr' = 1.

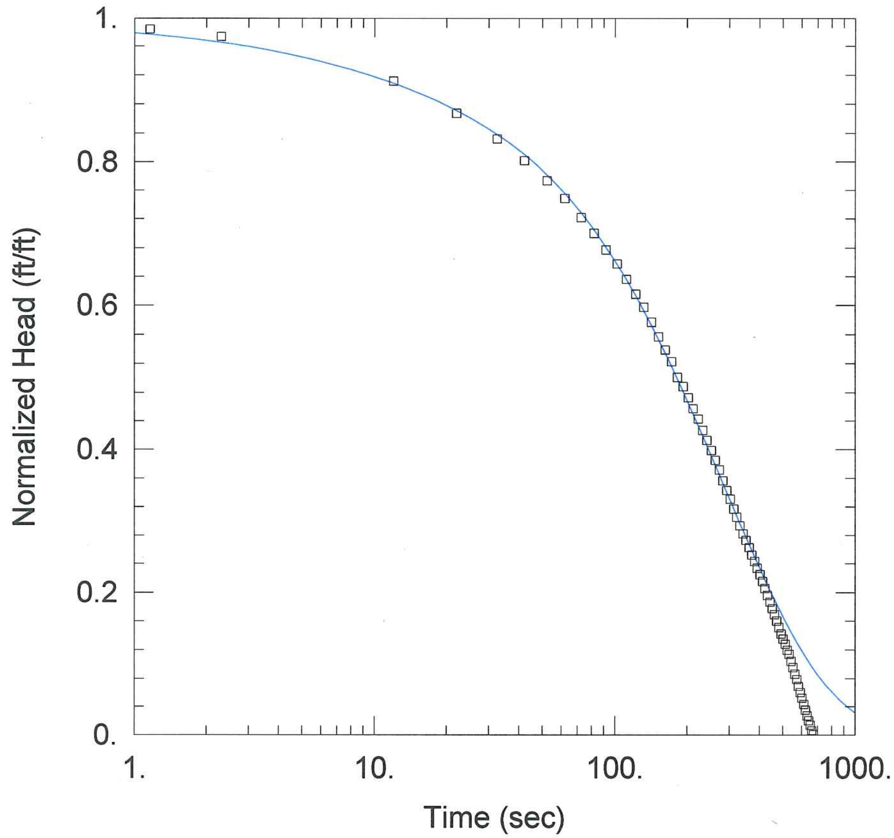
AQUIFER DATA

Saturated Thickness: 6. ft

WELL DATA (MW-3)

Initial Displacement: 0.928 ft
Total Well Penetration Depth: 5.875 ft
Casing Radius: 0.08333 ft
Well Skin Radius: 0.25 ft

Static Water Column Height: 5.875 ft
Screen Length: 5. ft
Well Radius: 0.08333 ft



WELL TEST ANALYSIS

Data Set: K:\...\MW-4 Test 3.aqt
Date: 03/23/16 Time: 10:21:43

PROJECT INFORMATION

Company: LBG
Test Well: MW-4
Test Date: 7/1/2015

SOLUTION

Aquifer Model: Unconfined
Solution Method: KGS Model w/skin

Kr = 2.052 ft/day
Ss = 5.882E-12 ft^{-1}
Kz/Kr = 0.1
Kr' = 0.4023 ft/day
Ss' = 0.00406 ft^{-1}
Kz/Kr' = 1.

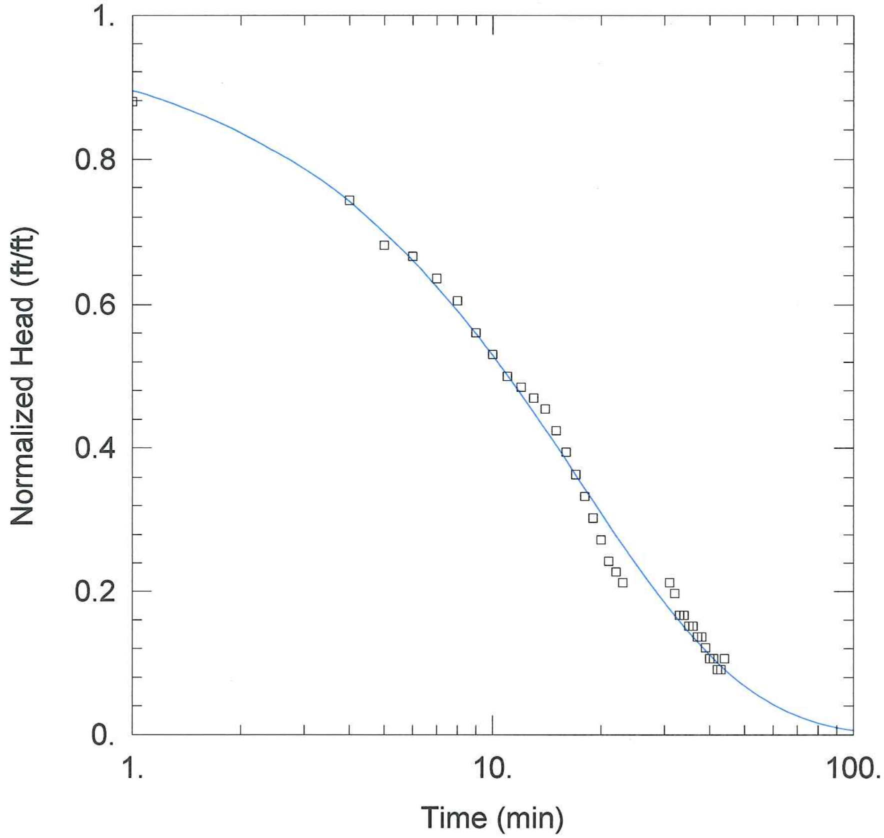
AQUIFER DATA

Saturated Thickness: 17. ft

WELL DATA (MW-4)

Initial Displacement: 4.022 ft
Total Well Penetration Depth: 11.93 ft
Casing Radius: 0.08333 ft
Well Skin Radius: 0.25 ft

Static Water Column Height: 11.93 ft
Screen Length: 5. ft
Well Radius: 0.08333 ft



WELL TEST ANALYSIS

Data Set: K:\...\MW-5.aqt
Date: 03/23/16 Time: 10:21:06

PROJECT INFORMATION

Company: LBG
Test Well: MW-5
Test Date: 7/2/2015

SOLUTION

Aquifer Model: Unconfined
Solution Method: KGS Model w/skin

Kr = 1.684 ft/day
Ss = 0.006667 ft^{-1}
Kz/Kr = 0.1
Kr' = 0.3761 ft/day
Ss' = 0.02776 ft^{-1}
Kz/Kr' = 1.

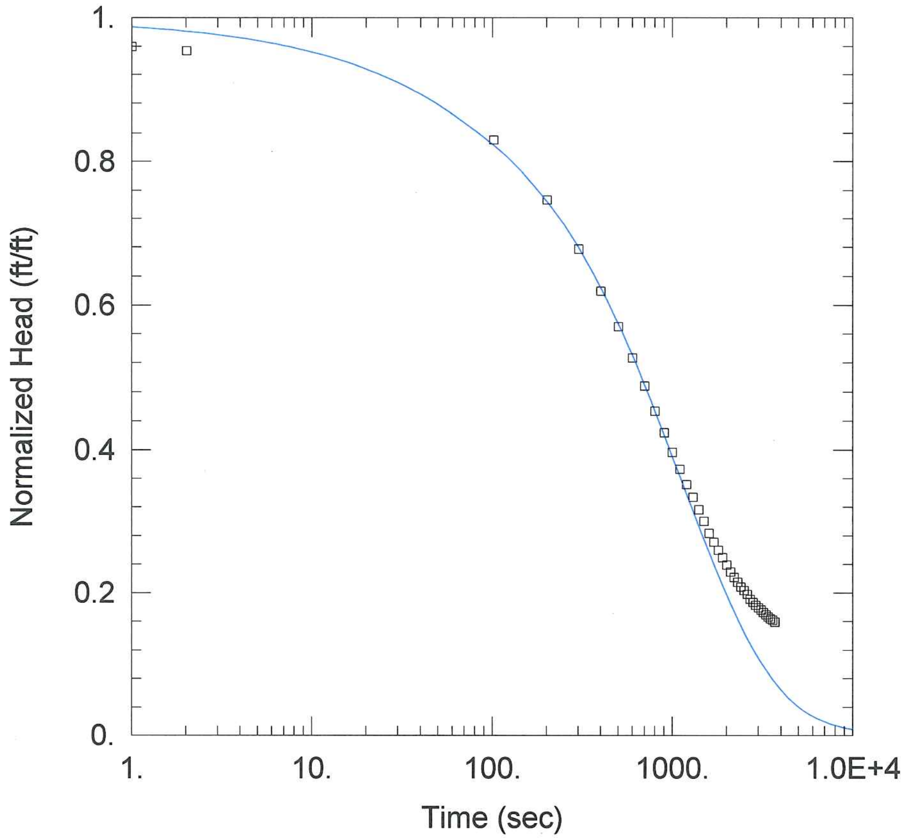
AQUIFER DATA

Saturated Thickness: 15. ft

WELL DATA (MW-5)

Initial Displacement: 0.66 ft
Total Well Penetration Depth: 1. ft
Casing Radius: 0.08333 ft
Well Skin Radius: 0.25 ft

Static Water Column Height: 2.21 ft
Screen Length: 1. ft
Well Radius: 0.08333 ft
Gravel Pack Porosity: 0.3



WELL TEST ANALYSIS

Data Set: K:\...\MW-6 Test 4a.aqt
Date: 03/23/16 Time: 10:20:52

PROJECT INFORMATION

Company: LBG
Test Well: MW-6
Test Date: 7/1/2015

SOLUTION

Aquifer Model: Unconfined
Solution Method: KGS Model w/skin

Kr = 0.2556 ft/day
Ss = 0.0001231 ft^{-1}
Kz/Kr = 0.1
Kr' = 0.1549 ft/day
Ss' = 0.004281 ft^{-1}
Kz/Kr' = 1.

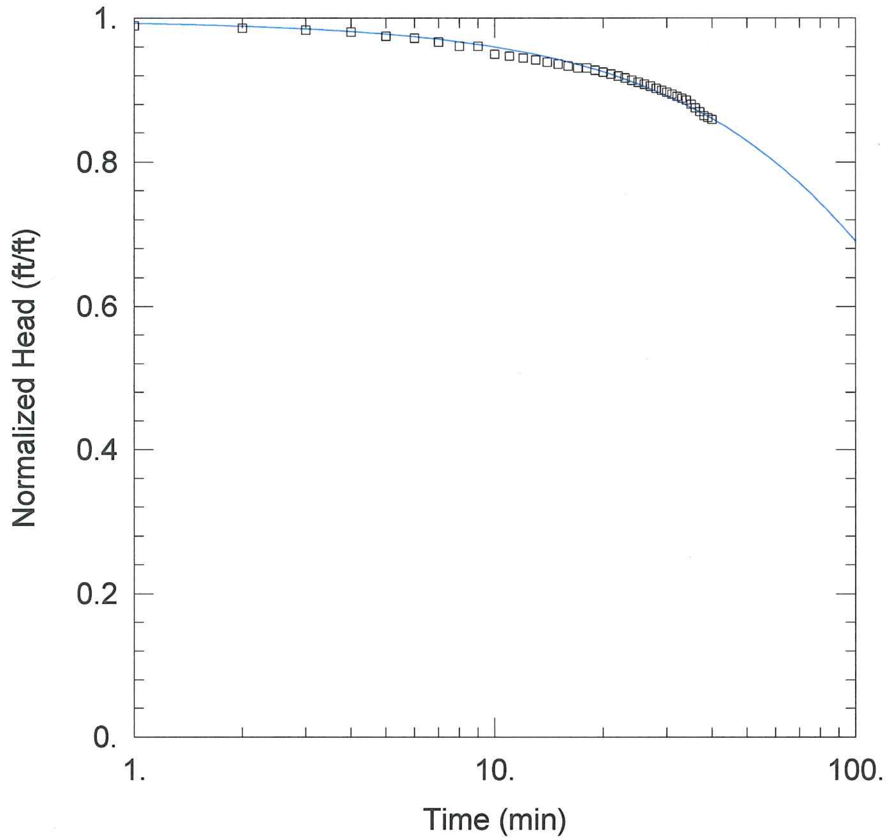
AQUIFER DATA

Saturated Thickness: 15. ft

WELL DATA (MW-6)

Initial Displacement: 6.863 ft
Total Well Penetration Depth: 13.81 ft
Casing Radius: 0.08333 ft
Well Skin Radius: 0.25 ft

Static Water Column Height: 14.81 ft
Screen Length: 5. ft
Well Radius: 0.08333 ft



WELL TEST ANALYSIS

Data Set: K:\...\MW-7.aqt
Date: 03/23/16   Time: 10:20:16

PROJECT INFORMATION

Company: LBG
Test Well: MW-7
Test Date: 7/2/2015

SOLUTION

Aquifer Model: Unconfined
Solution Method: KGS Model w/skin

Kr = 0.4884 ft/day
Ss = 1.155E-10 ft^{-1}
Kz/Kr = 0.1
Kr' = 0.008358 ft/day
Ss' = 0.00115 ft^{-1}
Kz/Kr' = 0.1

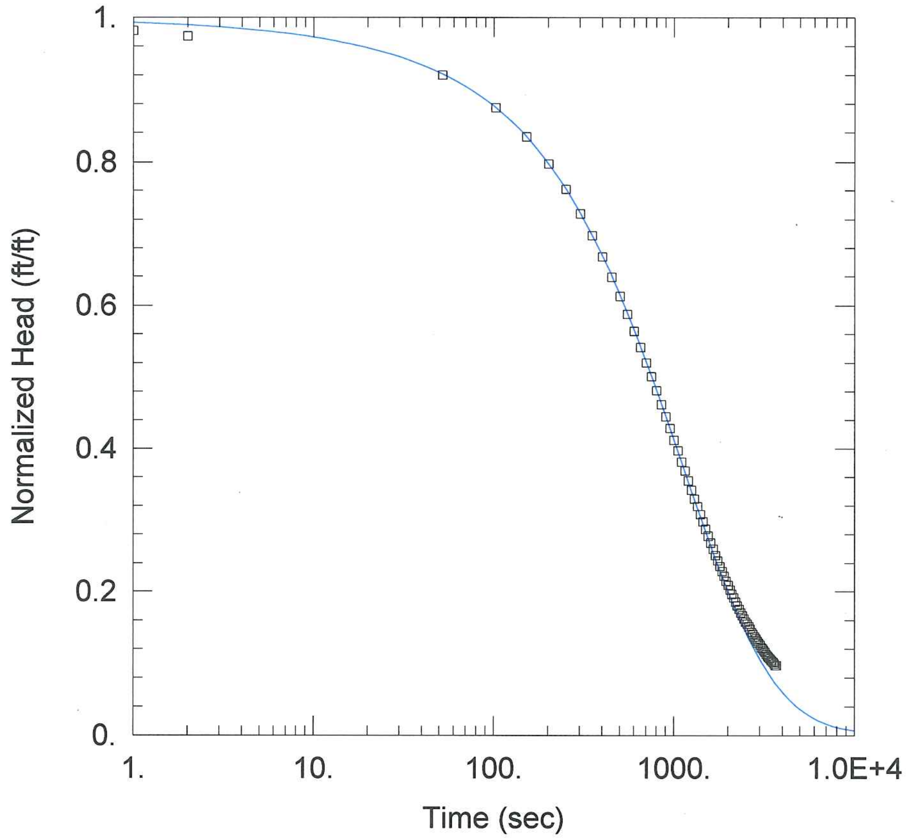
AQUIFER DATA

Saturated Thickness: 2.5 ft

WELL DATA (MW-7)

Initial Displacement: 3.61 ft
Total Well Penetration Depth: 2.51 ft
Casing Radius: 0.08333 ft
Well Skin Radius: 0.25 ft

Static Water Column Height: 21.5 ft
Screen Length: 2.51 ft
Well Radius: 0.08333 ft
Gravel Pack Porosity: 0.3



WELL TEST ANALYSIS

Data Set: K:\...\MW-8 Test 4a.aqt
Date: 03/23/16 Time: 10:20:01

PROJECT INFORMATION

Company: LBG
Test Well: MW-8
Test Date: 7/2/2015

SOLUTION

Aquifer Model: Unconfined
Solution Method: KGS Model w/skin

Kr = 0.3702 ft/day
Ss = 0.0001973 ft^{-1}
Kz/Kr = 0.1
Kr' = 0.1 ft/day
Ss' = 0.002007 ft^{-1}
Kz/Kr' = 0.3761

AQUIFER DATA

Saturated Thickness: 15. ft

WELL DATA (MW-8)

Initial Displacement: 7.205 ft
Total Well Penetration Depth: 14.99 ft
Casing Radius: 0.08333 ft
Well Skin Radius: 0.25 ft

Static Water Column Height: 14.99 ft
Screen Length: 5. ft
Well Radius: 0.08333 ft

SIEVE ANALYSIS

SIZE PERM

Test Pit ID	Sample Depth (feet below grade)	Uniformity	50 % Grain Size (inch)	Effective size (inch)	Material	Method									Average of Applicale Methods
						Hazen	Slichter	Terzaghi	Beyer	Sauerbrei	Kruger	Kozeny	Zunker	USBR	
						Hydraulic Conductivity (feet per day)									
MW-1	8-10	4.100	0.006	0.002	fine sand	7	2	4	7	4	1	31	13	2	10
MW-1	20.0	4.813	0.009	0.002	fine sand	10	3	5	11	7	2	50	22	5	16
MW-2	4-6	10.029	0.016	0.003	medium sand	9	2	3	11	**5**	3	40	22	9	12
MW-2	17	4.966	0.010	0.003	medium sand	13	4	6	14	**9**	3	63	28	7	19
MW-3	6-8	5.990	0.010	0.002	medium sand	9	2	4	10	**5**	2	44	20	5	14
MW-3	20	10.290	0.013	0.002	medium sand	7	2	2	9	**3**	2	28	15	5	9
MW-4	4-6	39.196	0.111	0.005	very fine gravel	20	4	6	24	**16**	8	85	52	81	19
MW-4	25-27	3.566	0.006	0.002	fine sand	9	3	5	8	**6**	2	39	16	3	13
MW-5	6-8	3.942	0.007	0.002	fine sand	10	3	5	10	7	2	45	19	3	14
MW-5	12-14	8.065	0.011	0.000	medium sand	8	2	3	10	4	2	36	18	5	14
MW-5	30	6.008	0.009	0.002	fine sand	10	3	5	11	**6**	2	43	20	5	13
MW-6	10-12	3.401	0.006	0.002	fine sand	11	4	6	11	**9**	2	48	20	4	16
MW-6	40	3.346	0.007	0.003	fine sand	14	5	8	13	**10**	2	59	24	4	18
MW-7	4-6	4.780	0.011	0.000	medium sand	21	6	10	21	**12**	4	88	39	9	36
MW-7	11	5.527	0.011	0.003	medium sand	15	4	7	15	**9**	3	63	29	7	19
MW-8	15-17	3.698	0.007	0.002	fine sand	10	3	5	9	7	2	45	16	3	15

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Sample ID: MW-3
Sample Date: 6/24/2015
Interval: 6-8

HYDRAULIC CONDUCTIVITY CALCULATED FROM SIEVE ANALYSIS

SIEVE ANALYSIS

Percent	Diameter
0	0.038
15.1	0.075
31.8	0.15
44.8	0.212
55.5	0.3
64.5	0.425
71	0.6
76	0.85
79.6	1.18
81.3	1.4
83.9	2
85.3	2.36
87.4	3.35
89.8	4.75
100	4.76

SIZE DISTRIBUTION

Percent	Size
0	+3"
10	Gravel
90	Sand
0	Silt
0	Clay

SAUERBREI METHOD

$$K = \frac{g}{v} \cdot C \cdot \varphi(n) \cdot d_e^2 \quad where: \quad g = 9.81\ \mathrm{m/s^2}$$

$K =$ **1.88E-03 cm/sec**

$$v = 1.14\ \mathrm{mm^2/s}$$

$$C = 0.375$$

$$\varphi(n) = \frac{n^3}{(1-n)^2}$$

$$n = 0.255 \cdot (1 + 0.83^\eta)$$

$$\eta = d_{60} / d_{10}$$

$$d_e = d_{17}$$

VARIABLES

K	- Hydraulic conductivity	$(\mathrm{cm/s})$
g	- Acceleration due to gravity	$(\mathrm{m/s^2})$
v	- Viscosity	$(\mathrm{mm^2/s})$
C	- Coefficient	–
$\varphi(n)$	- Function of porosity	–
n	- Porosity *	–
η	- Uniformity	–
d_e	- Effective grain diameter	(mm)
d_{10}	- Diameter at 10%	(mm)
d_{17}	- Diameter at 17%	(mm)
d_{60}	- Diameter at 60%	(mm)

* May substitute measured porosity.

LBG 7/13/2015

Sample ID: MW-1
Sample Date: 6/23/15
Interval: 8-10

HYDRAULIC CONDUCTIVITY CALCULATED FROM SIEVE ANALYSIS

SIEVE ANALYSIS

Percent	Diameter
0	0.038
28.1	0.074
49.2	0.15
62.6	0.211
71.7	0.297
78.6	0.419
83.3	0.594
87	0.841
89.5	1.191
90.4	1.41
92.1	1.999
92.7	2.38
93.8	3.353
95.4	4.75
100	4.76

SIZE DISTRIBUTION

Percent	Size
0	+3"
5	Gravel
95	Sand
0	Silt
0	Clay

SAUERBREI METHOD

$$K = \frac{g}{v} \cdot C \cdot \varphi(n) \cdot d_e^2 \quad where: \quad g = 9.81 \text{ m/s}^2$$

K = **1.39E-03 cm/sec**

$$v = 1.14 \text{ mm}^2/\text{s}$$

$$C = 0.375$$

$$\varphi(n) = \frac{n^3}{(1-n)^2}$$

$$n = 0.255 \cdot \left(1 + 0.83^{\eta}\right)$$

$$\eta = d_{60} / d_{10}$$

$$d_e = d_{17}$$

VARIABLES

K	- Hydraulic conductivity	(cm/s)
g	- Acceleration due to gravity	(m/s^2)
v	- Viscosity	(mm^2/s)
C	- Coefficient	–
$\varphi(n)$	- Function of porosity	–
n	- Porosity *	–
η	- Uniformity	–
d_e	- Effective grain diameter	(mm)
d_{10}	- Diameter at 10%	(mm)
d_{17}	- Diameter at 17%	(mm)
d_{60}	- Diameter at 60%	(mm)

* May substitute measured porosity.

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Sample ID: MW-1
Sample Date: 6/23/2015
Interval: 20

HYDRAULIC CONDUCTIVITY CALCULATED FROM SIEVE ANALYSIS

SIEVE ANALYSIS

Percent	Diameter
0	0.038
15	0.075
31.6	0.15
47.5	0.212
61.7	0.3
74.4	0.425
81.8	0.6
85.9	0.85
88.4	1.18
89.5	1.4
91.3	2
92	2.36
93.7	3.35
94.9	4.75
100	4.76

SIZE DISTRIBUTION

Percent	Size
0	+3"
5	Gravel
95	Sand
0	Silt
0	Clay

SAUERBREI METHOD

$$K = \frac{g}{v} \cdot C \cdot \varphi(n) \cdot d_e^2 \quad where: \quad g = 9.81 \text{ m/s}^2$$

$$v = 1.14 \text{ mm}^2/\text{s}$$

$$C = 0.375$$

$$\varphi(n) = \frac{n^3}{(1-n)^2}$$

$$n = 0.255 \cdot \left(1 + 0.83^{\eta}\right)$$

$$\eta = d_{60}/d_{10}$$

$$d_e = d_{17}$$

K = **2.42E-03 cm/sec**

VARIABLES

K	- Hydraulic conductivity	(cm/s)
g	- Acceleration due to gravity	(m/s^2)
v	- Viscosity	(mm^2/s)
C	- Coefficient	–
$\varphi(n)$	- Function of porosity	–
n	- Porosity *	–
η	- Uniformity	–
d_e	- Effective grain diameter	(mm)
d_{10}	- Diameter at 10%	(mm)
d_{17}	- Diameter at 17%	(mm)
d_{60}	- Diameter at 60%	(mm)

* May substitute measured porosity.

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Sample ID: MW-2
Sample Date: 6/23/2015
Interval: 4-6

HYDRAULIC CONDUCTIVITY CALCULATED FROM SIEVE ANALYSIS

SIEVE ANALYSIS

Percent	Diameter
0	0.038
11.7	0.075
23.7	0.15
33.4	0.212
42.3	0.3
51.2	0.425
58.1	0.6
63.3	0.85
66.8	1.18
68.3	1.4
70.8	2
72	2.36
74.5	3.35
77.5	4.75
100	4.76

SIZE DISTRIBUTION

Percent	Size
0	+3"
23	Gravel
77	Sand
0	Silt
0	Clay

SAUERBREI METHOD

$$K = \frac{g}{v} \cdot C \cdot \varphi(n) \cdot d_e^2 \quad where: \quad g = 9.81\ \mathrm{m/s^2}$$

$$v = 1.14\ \mathrm{mm^2/s}$$

$K = \mathbf{1.71E\text{-}03\ cm/sec}$

$$C = 0.375$$

$$\varphi(n) = \frac{n^3}{(1-n)^2}$$

$$n = 0.255 \cdot \left(1 + 0.83^{\eta}\right)$$

$$\eta = d_{60} / d_{10}$$

$$d_e = d_{17}$$

VARIABLES

K	- Hydraulic conductivity	$(\mathrm{cm/s})$
g	- Acceleration due to gravity	$(\mathrm{m/s^2})$
v	- Viscosity	$(\mathrm{mm^2/s})$
C	- Coefficient	–
$\varphi(n)$	- Function of porosity	–
n	- Porosity *	–
η	- Uniformity	–
d_e	- Effective grain diameter	(mm)
d_{10}	- Diameter at 10%	(mm)
d_{17}	- Diameter at 17%	(mm)
d_{60}	- Diameter at 60%	(mm)

* May substitute measured porosity.

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Sample ID: MW-2
Sample Date: 6/23/2015
Interval: 17

HYDRAULIC CONDUCTIVITY CALCULATED FROM SIEVE ANALYSIS

SIEVE ANALYSIS

Percent	Diameter
0	0.038
11.7	0.075
28.4	0.15
44.4	0.212
57.2	0.3
65.5	0.425
70.7	0.6
74.4	0.85
77.6	1.18
79.3	1.4
82.2	2
83.6	2.36
86.8	3.35
89.5	4.75
100	4.76

SIZE DISTRIBUTION

Percent	Size
0	+3"
11	Gravel
89	Sand
0	Silt
0	Clay

SAUERBREI METHOD

$$K = \frac{g}{v} \cdot C \cdot \varphi(n) \cdot d_e^2 \quad where: \quad g = 9.81 \text{ m/s}^2$$

$$v = 1.14 \text{ mm}^2/\text{s}$$

$K =$ **3.07E-03 cm/sec**

$$C = 0.375$$

$$\varphi(n) = \frac{n^3}{(1-n)^2}$$

$$n = 0.255 \cdot (1 + 0.83^{\eta})$$

$$\eta = d_{60}/d_{10}$$

$$d_e = d_{17}$$

VARIABLES

K	- Hydraulic conductivity	(cm/s)
g	- Acceleration due to gravity	(m/s^2)
v	- Viscosity	(mm^2/s)
C	- Coefficient	–
$\varphi(n)$	- Function of porosity	–
n	- Porosity *	–
η	- Uniformity	–
d_e	- Effective grain diameter	(mm)
d_{10}	- Diameter at 10%	(mm)
d_{17}	- Diameter at 17%	(mm)
d_{60}	- Diameter at 60%	(mm)

* May substitute measured porosity.

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Sample ID: MW-3
Sample Date: 6/24/2015
Interval: 20

HYDRAULIC CONDUCTIVITY CALCULATED FROM SIEVE ANALYSIS

SIEVE ANALYSIS

Percent	Diameter
0	0.038
15.3	0.075
31.4	0.15
41.1	0.212
48.7	0.3
55.1	0.425
59.8	0.6
64.1	0.85
67.8	1.18
69.6	1.4
72.9	2
74.7	2.36
78.8	3.35
82.7	4.75
100	4.76

SIZE DISTRIBUTION

Percent	Size
0	+3"
17	Gravel
83	Sand
0	Silt
0	Clay

SAUERBREI METHOD

$$K = \frac{g}{v} \cdot C \cdot \varphi(n) \cdot d_e^2 \quad where: \quad g = 9.81 \text{ m/s}^2$$

$K =$ **1.05E-03 cm/sec**

$$v = 1.14 \text{ mm}^2/\text{s}$$

$$C = 0.375$$

$$\varphi(n) = \frac{n^3}{(1-n)^2}$$

$$n = 0.255 \cdot (1 + 0.83^{\eta})$$

$$\eta = d_{60} / d_{10}$$

$$d_e = d_{17}$$

VARIABLES

K	- Hydraulic conductivity	(cm/s)
g	- Acceleration due to gravity	(m/s^2)
v	- Viscosity	(mm^2/s)
C	- Coefficient	–
$\varphi(n)$	- Function of porosity	–
n	- Porosity *	–
η	- Uniformity	–
d_e	- Effective grain diameter	(mm)
d_{10}	- Diameter at 10%	(mm)
d_{17}	- Diameter at 17%	(mm)
d_{60}	- Diameter at 60%	(mm)

* May substitute measured porosity.

LBG 7/13/2015

Sample ID: MW-4
Sample Date: 6/24/2015
Interval: 25-27

HYDRAULIC CONDUCTIVITY CALCULATED FROM SIEVE ANALYSIS

SIEVE ANALYSIS

Percent	Diameter
0	0.038
21.8	0.075
50.4	0.15
66.2	0.212
77	0.3
85	0.425
89.9	0.6
94.1	0.85
96.5	1.18
97.1	1.4
97.8	2
98	2.36
98.5	3.35
99.1	4.75
100	4.76

SIZE DISTRIBUTION

Percent	Size
0	+3"
1	Gravel
99	Sand
0	Silt
0	Clay

SAUERBREI METHOD

$$K = \frac{g}{v} \cdot C \cdot \varphi(n) \cdot d_e^2 \quad where: \quad g = 9.81\ \mathrm{m/s^2}$$

$K =$ **2.06E-03 cm/sec**

$$v = 1.14\ \mathrm{mm^2/s}$$
$$C = 0.375$$
$$\varphi(n) = \frac{n^3}{(1-n)^2}$$
$$n = 0.255 \cdot \left(1 + 0.83^{\eta}\right)$$
$$\eta = d_{60} / d_{10}$$
$$d_e = d_{17}$$

VARIABLES

K	- Hydraulic conductivity	$(\mathrm{cm/s})$
g	- Acceleration due to gravity	$(\mathrm{m/s^2})$
v	- Viscosity	$(\mathrm{mm^2/s})$
C	- Coefficient	–
$\varphi(n)$	- Function of porosity	–
n	- Porosity *	–
η	- Uniformity	–
d_e	- Effective grain diameter	(mm)
d_{10}	- Diameter at 10%	(mm)
d_{17}	- Diameter at 17%	(mm)
d_{60}	- Diameter at 60%	(mm)

* May substitute measured porosity.

LBG 7/13/2015

Sample ID: MW-5
Sample Date: 6/24/2015
Interval: 6-8

HYDRAULIC CONDUCTIVITY CALCULATED FROM SIEVE ANALYSIS

SIEVE ANALYSIS

Percent	Diameter
0	0.038
17.8	0.075
46	0.15
59.1	0.212
68.1	0.3
75.2	0.425
80.7	0.6
85.6	0.85
89.2	1.18
90.8	1.4
93.3	2
94	2.36
95.7	3.35
96.6	4.75
100	4.76

SIZE DISTRIBUTION

Percent	Size
0	+3"
3	Gravel
97	Sand
0	Silt
0	Clay

SAUERBREI METHOD

$$K = \frac{g}{v} \cdot C \cdot \varphi(n) \cdot d_e^2 \quad where: \quad g = 9.81 \ \mathrm{m/s^2}$$

$K =$ **2.37E-03 cm/sec**

$v = 1.14 \ \mathrm{mm^2/s}$

$C = 0.375$

$$\varphi(n) = \frac{n^3}{(1-n)^2}$$

$n = 0.255 \cdot (1 + 0.83^{\eta})$

$\eta = d_{60} / d_{10}$

$d_e = d_{17}$

VARIABLES

K	- Hydraulic conductivity	(cm/s)
g	- Acceleration due to gravity	$(\mathrm{m/s^2})$
v	- Viscosity	$(\mathrm{mm^2/s})$
C	- Coefficient	–
$\varphi(n)$	- Function of porosity	–
n	- Porosity *	–
η	- Uniformity	–
d_e	- Effective grain diameter	(mm)
d_{10}	- Diameter at 10%	(mm)
d_{17}	- Diameter at 17%	(mm)
d_{60}	- Diameter at 60%	(mm)

* May substitute measured porosity.

LBG 7/13/2015

Sample ID: MW-5
Sample Date: 6/24/2015
Interval: 30

HYDRAULIC CONDUCTIVITY CALCULATED FROM SIEVE ANALYSIS

SIEVE ANALYSIS

Percent	Diameter
0	0.038
13.5	0.075
36.6	0.15
47.5	0.212
55.5	0.3
62.3	0.425
68.1	0.6
74.4	0.85
81.3	1.18
84.5	1.4
90	2
91.6	2.36
94.8	3.35
96.6	4.75
100	4.76

SIZE DISTRIBUTION

Percent	Size
0	+3"
3	Gravel
97	Sand
0	Silt
0	Clay

SAUERBREI METHOD

$$K = \frac{g}{v} \cdot C \cdot \varphi(n) \cdot d_e^2 \quad where: \quad g = 9.81 \text{ m/s}^2$$

K = **1.98E-03 cm/sec**

$v = 1.14 \text{ mm}^2/\text{s}$

$C = 0.375$

$$\varphi(n) = \frac{n^3}{(1-n)^2}$$

$n = 0.255 \cdot (1 + 0.83^{\eta})$

$\eta = d_{60}/d_{10}$

$d_e = d_{17}$

VARIABLES

K	- Hydraulic conductivity	(cm/s)
g	- Acceleration due to gravity	(m/s^2)
v	- Viscosity	(mm^2/s)
C	- Coefficient	–
$\varphi(n)$	- Function of porosity	–
n	- Porosity *	–
η	- Uniformity	–
d_e	- Effective grain diameter	(mm)
d_{10}	- Diameter at 10%	(mm)
d_{17}	- Diameter at 17%	(mm)
d_{60}	- Diameter at 60%	(mm)

* May substitute measured porosity.

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Sample ID: MW-6
Sample Date: 6/25/2015
Interval: 10-12

HYDRAULIC CONDUCTIVITY CALCULATED FROM SIEVE ANALYSIS

SIEVE ANALYSIS

Percent	Diameter
0	0.038
16.1	0.075
47.2	0.15
63.4	0.212
75.8	0.3
85.3	0.425
89.9	0.6
92.9	0.85
95	1.18
95.9	1.4
97.2	2
97.7	2.36
98.6	3.35
99.2	4.75
100	4.76

SIZE DISTRIBUTION

Percent	Size
0	+3"
1	Gravel
99	Sand
0	Silt
0	Clay

SAUERBREI METHOD

$$K = \frac{g}{\nu} \cdot C \cdot \varphi(n) \cdot d_e^2 \quad where: \quad g = 9.81 \ \mathrm{m/s^2}$$

$K =$ **3.02E-03 cm/sec**

$\nu = 1.14 \ \mathrm{mm^2/s}$

$C = 0.375$

$$\varphi(n) = \frac{n^3}{(1-n)^2}$$

$n = 0.255 \cdot (1 + 0.83^{\eta})$

$\eta = d_{60} / d_{10}$

$d_e = d_{17}$

VARIABLES

K	- Hydraulic conductivity	(cm/s)
g	- Acceleration due to gravity	$(\mathrm{m/s^2})$
ν	- Viscosity	$(\mathrm{mm^2/s})$
C	- Coefficient	–
$\varphi(n)$	- Function of porosity	–
n	- Porosity *	–
η	- Uniformity	–
d_e	- Effective grain diameter	(mm)
d_{10}	- Diameter at 10%	(mm)
d_{17}	- Diameter at 17%	(mm)
d_{60}	- Diameter at 60%	(mm)

* May substitute measured porosity.

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7/13/2015

Sample ID: MW-6
Sample Date: 6/25/2015
Interval: 40

HYDRAULIC CONDUCTIVITY CALCULATED FROM SIEVE ANALYSIS

SIEVE ANALYSIS

Percent	Diameter
0	0.038
13.1	0.075
43.6	0.15
59.7	0.212
72.9	0.3
80.4	0.425
83.5	0.6
86.5	0.85
89.4	1.18
90.6	1.4
92.5	2
93.2	2.36
94.8	3.35
96.3	4.75
100	4.76

SIZE DISTRIBUTION

Percent	Size
0	+3"
4	Gravel
96	Sand
0	Silt
0	Clay

SAUERBREI METHOD

$$K = \frac{g}{v} \cdot C \cdot \varphi(n) \cdot d_e^2 \quad where: \quad g = 9.81 \text{ m/s}^2$$

$K =$ **3.52E-03 cm/sec**

$$v = 1.14 \text{ mm}^2/\text{s}$$

$$C = 0.375$$

$$\varphi(n) = \frac{n^3}{(1-n)^2}$$

$$n = 0.255 \cdot \left(1 + 0.83^{\eta}\right)$$

$$\eta = d_{60} / d_{10}$$

$$d_e = d_{17}$$

VARIABLES

K	- Hydraulic conductivity	(cm/s)
g	- Acceleration due to gravity	(m/s^2)
v	- Viscosity	(mm^2/s)
C	- Coefficient	–
$\varphi(n)$	- Function of porosity	–
n	- Porosity *	–
η	- Uniformity	–
d_e	- Effective grain diameter	(mm)
d_{10}	- Diameter at 10%	(mm)
d_{17}	- Diameter at 17%	(mm)
d_{60}	- Diameter at 60%	(mm)

* May substitute measured porosity.

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Sample ID: MW-7
Sample Date: 6/25/2015
Interval: 4-6

HYDRAULIC CONDUCTIVITY CALCULATED FROM SIEVE ANALYSIS

SIEVE ANALYSIS

Percent	Diameter
0	0.038
6.5	0.075
26.4	0.15
40.3	0.212
51.9	0.3
61.3	0.425
67.7	0.6
72	0.85
75	1.18
76.5	1.4
79	2
80.1	2.36
82.8	3.35
86.2	4.75
100	4.76

SIZE DISTRIBUTION

Percent	Size
0	+3"
14	Gravel
86	Sand
0	Silt
0	Clay

SAUERBREI METHOD

$$K = \frac{g}{v} \cdot C \cdot \varphi(n) \cdot d_e^2 \quad where: \quad g = 9.81 \text{ m/s}^2$$

K = **4.28E-03 cm/sec**

$$v = 1.14 \text{ mm}^2/\text{s}$$

$$C = 0.375$$

$$\varphi(n) = \frac{n^3}{(1-n)^2}$$

$$n = 0.255 \cdot (1 + 0.83^{\eta})$$

$$\eta = d_{60}/d_{10}$$

$$d_e = d_{17}$$

VARIABLES

K	- Hydraulic conductivity	(cm/s)
g	- Acceleration due to gravity	(m/s^2)
v	- Viscosity	(mm^2/s)
C	- Coefficient	–
$\varphi(n)$	- Function of porosity	–
n	- Porosity *	–
η	- Uniformity	–
d_e	- Effective grain diameter	(mm)
d_{10}	- Diameter at 10%	(mm)
d_{17}	- Diameter at 17%	(mm)
d_{60}	- Diameter at 60%	(mm)

* May substitute measured porosity.

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Sample ID: MW-7
Sample Date: 6/25/2015
Interval: 11

HYDRAULIC CONDUCTIVITY CALCULATED FROM SIEVE ANALYSIS

SIEVE ANALYSIS

Percent	Diameter
0	0.038
10.3	0.075
27.7	0.15
40.2	0.212
51.2	0.3
61.3	0.425
68.8	0.6
74.2	0.85
77.9	1.18
79.8	1.4
83	2
84.6	2.36
87.9	3.35
91.5	4.75
100	4.76

SIZE DISTRIBUTION

Percent	Size
0	+3"
9	Gravel
91	Sand
0	Silt
0	Clay

SAUERBREI METHOD

$$K = \frac{g}{v} \cdot C \cdot \varphi(n) \cdot d_e^2 \quad where: \quad g = 9.81 \text{ m/s}^2$$

$K =$ **3.00E-03 cm/sec**

$v = 1.14 \text{ mm}^2/\text{s}$

$C = 0.375$

$\varphi(n) = \frac{n^3}{(1-n)^2}$

$n = 0.255 \cdot (1 + 0.83^{\eta})$

$\eta = d_{60} / d_{10}$

$d_e = d_{17}$

VARIABLES

K	- Hydraulic conductivity	(cm/s)
g	- Acceleration due to gravity	(m/s^2)
v	- Viscosity	(mm^2/s)
C	- Coefficient	–
$\varphi(n)$	- Function of porosity	–
n	- Porosity *	–
η	- Uniformity	–
d_e	- Effective grain diameter	(mm)
d_{10}	- Diameter at 10%	(mm)
d_{17}	- Diameter at 17%	(mm)
d_{60}	- Diameter at 60%	(mm)

* May substitute measured porosity.

LBG 7/13/2015

Sample ID: MW-8
Sample Date: 6/29/2015
Interval: 8-10

HYDRAULIC CONDUCTIVITY CALCULATED FROM SIEVE ANALYSIS

SIEVE ANALYSIS

Percent	Diameter
0	0.038
15.2	0.075
41.7	0.15
57.8	0.212
69.7	0.3
78	0.425
82.9	0.6
86.6	0.85
89.1	1.18
90.1	1.4
91.5	2
92	2.36
93	3.35
94.2	4.75
100	4.76

SIZE DISTRIBUTION

Percent	Size
0	+3"
6	Gravel
94	Sand
0	Silt
0	Clay

SAUERBREI METHOD

$$K = \frac{g}{v} \cdot C \cdot \varphi(n) \cdot d_e^2 \quad where: \quad g = 9.81 \text{ m/s}^2$$

$$v = 1.14 \text{ mm}^2\text{/s}$$

$$C = 0.375$$

$$\varphi(n) = \frac{n^3}{(1-n)^2}$$

$$n = 0.255 \cdot (1 + 0.83^\eta)$$

$$\eta = d_{60} / d_{10}$$

$$d_e = d_{17}$$

$K =$ **2.86E-03 cm/sec**

VARIABLES

K	- Hydraulic conductivity	(cm/s)
g	- Acceleration due to gravity	(m/s^2)
v	- Viscosity	(mm^2/s)
C	- Coefficient	–
$\varphi(n)$	- Function of porosity	–
n	- Porosity *	–
η	- Uniformity	–
d_e	- Effective grain diameter	(mm)
d_{10}	- Diameter at 10%	(mm)
d_{17}	- Diameter at 17%	(mm)
d_{60}	- Diameter at 60%	(mm)

* May substitute measured porosity.

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LBG 7/13/2015

Sample ID: MW-8
Sample Date: 6/29/2015
Interval: 15-17

HYDRAULIC CONDUCTIVITY CALCULATED FROM SIEVE ANALYSIS

SIEVE ANALYSIS

Percent	Diameter
0	0.038
18.3	0.075
45.3	0.15
61.9	0.212
73	0.3
80.3	0.425
84.5	0.6
88.4	0.85
91.4	1.18
92.7	1.4
95	2
95.9	2.36
97.5	3.35
98.6	4.75
100	4.76

SIZE DISTRIBUTION

Percent	Size
0	+3"
1	Gravel
99	Sand
0	Silt
0	Clay

SAUERBREI METHOD

$$K = \frac{g}{v} \cdot C \cdot \varphi(n) \cdot d_e^2 \quad where: \quad g = 9.81\ \text{m/s}^2$$

$$v = 1.14\ \text{mm}^2/\text{s}$$

$$C = 0.375$$

$$\varphi(n) = \frac{n^3}{(1-n)^2}$$

$$n = 0.255 \cdot \left(1 + 0.83^{\eta}\right)$$

$$\eta = d_{60}/d_{10}$$

$$d_e = d_{17}$$

$K = \mathbf{2.43E\text{-}03\ cm/sec}$

VARIABLES

K	- Hydraulic conductivity	(cm/s)
g	- Acceleration due to gravity	(m/s^2)
v	- Viscosity	(mm^2/s)
C	- Coefficient	–
$\varphi(n)$	- Function of porosity	–
n	- Porosity *	–
η	- Uniformity	–
d_e	- Effective grain diameter	(mm)
d_{10}	- Diameter at 10%	(mm)
d_{17}	- Diameter at 17%	(mm)
d_{60}	- Diameter at 60%	(mm)

* May substitute measured porosity.

SizePerm - Hydraulic Conductivity from Sieve Analysis

File Calculate Help

Sieve Analysis

% Finer	Grain Dia. (mm)
0	0.038
28.1	0.074
49.2	0.150
62.6	0.211
71.7	0.297
78.6	0.419
83.3	0.594
87.0	0.841
89.5	1.191
90.4	1.410
92.1	1.999
92.7	2.380
93.8	3.353
95.4	4.750
100	4.76

Company: LBG

Address:

Sample ID: MW-1

Sample Interval: 8-10

Sample Date: 6/23/15

Measured Porosity:

Compaction (Hazen):

Compaction (Uma):

If Known

Results

0% +3"	5% Gravel	95% Sand	0% Silt	0% Clay

Uniformity [n] = 4.100

PRINT	Method	Hydraulic Conductivity (cm/sec)	Effective Grain Diameter [de] (mm)	Method Applicability
☐	Hazen	2.56E-03	0.0482	0.1 < de < 3, and n < 5
☐	Slichter	7.86E-04	0.0482	0.01 < de < 5
☐	Terzaghi	1.36E-03	0.0482	large-grain sands
☐	Beyer	2.50E-03	0.0482	0.06 < de < 0.6, and 1 < n < 20
☐	Sauerbrei	1.39E-03	0.0569	sand and sandy clay, and dia. < 0.5
☐	Kruger	5.06E-04	0.1190	medium-grain sands, and n > 5
☐	Kozeny	1.11E-02	0.1079	large-grain sands
☐	Zunker	4.71E-03	0.1115	fine and medium-grain sands
☐	Uma	N/A	0.0482	sandy aquifers
☐	USBR	6.66E-04	0.0611	medium-grain sands, and n < 5
☑	EasySolve Logo			

SizePerm - Hydraulic Conductivity from Sieve Analysis

File Calculate Help

Sieve Analysis

% Finer	Grain Dia. (mm)
0	0.038
15.0	0.075
31.6	0.15
47.5	0.212
61.7	0.3
74.4	0.425
81.8	0.6
85.9	0.85
88.4	1.18
89.5	1.4
91.3	2
92.0	2.36
93.7	3.35
94.9	4.75
100	4.76

Company: LBG

Address:

Sample ID: MW-1

Sample Interval: 20

Sample Date: 6/23/2015

Measured Porosity:

Compaction (Hazen):

Compaction (Uma):

If Known

Results

0% +3"	5% Gravel	95% Sand	0% Silt	0% Clay

Uniformity [n] = 4.813

PRINT	Method	Hydraulic Conductivity (cm/sec)	Effective Grain Diameter [de] (mm)	Method Applicability
☐	Hazen	3.67E-03	0.0598	0.1 < de < 3, and n < 5
☐	Slichter	1.06E-03	0.0598	0.01 < de < 5
☐	Terzaghi	1.82E-03	0.0598	large-grain sands
☐	Beyer	3.72E-03	0.0598	0.06 < de < 0.6, and 1 < n < 20
☐	Sauerbrei	2.42E-03	0.0815	sand and sandy clay, and dia. < 0.5
☐	Kruger	8.56E-04	0.1618	medium-grain sands, and n > 5
☐	Kozeny	1.77E-02	0.1482	large-grain sands
☐	Zunker	7.76E-03	0.1526	fine and medium-grain sands
☐	Uma	N/A	0.0598	sandy aquifers
☐	USBR	1.73E-03	0.0924	medium-grain sands, and n < 5
☑	EasySolve Logo			

SizePerm - Hydraulic Conductivity from Sieve Analysis

File Calculate Help

Company: LBG
Address:
Sample ID: MW-2
Sample Interval: 4-6
Sample Date: 6/23/2015
Measured Porosity:
Compaction (Hazen):
Compaction (Uma):
(If Known)

Sieve Analysis

% Finer	Grain Dia. (mm)
0	0.038
11.7	0.075
23.7	0.15
33.4	0.212
42.3	0.3
51.2	0.425
58.1	0.6
63.3	0.85
66.8	1.18
68.3	1.4
70.8	2
72.0	2.36
74.5	3.35
77.5	4.75
100	4.76

Results

0% +3" | 23% Gravel | 77% Sand | 0% Silt | 0% Clay

Uniformity [n] = 10.029

PRINT	Method	Hydraulic Conductivity (cm/sec)	Effective Grain Diameter [de] (mm)	Method Applicability
☐	Hazen	3.20E-03	0.0679	0.1 < de < 3, and n < 5
☐	Slichter	7.13E-04	0.0679	0.01 < de < 5
☐	Terzaghi	1.14E-03	0.0679	large-grain sands
☐	Beyer	4.05E-03	0.0679	0.06 < de < 0.6, and 1 < n < 20
☐	Sauerbrei	1.71E-03	0.1019	sand and sandy clay, and dia. < 0.5
☐	Kruger	1.04E-03	0.2173	medium-grain sands, and n > 5
☐	Kozeny	1.45E-02	0.1989	large-grain sands
☐	Zunker	7.76E-03	0.2048	fine and medium-grain sands
☐	Uma	N/A	0.0679	sandy aquifers
☐	USBR	3.22E-03	0.1211	medium-grain sands, and n < 5

☑ EasySolve Logo

SizePerm - Hydraulic Conductivity from Sieve Analysis

File Calculate Help

Company: LBG
Address:
Sample ID: MW-2
Sample Interval: 17
Sample Date: 6/23/2015
Measured Porosity:
Compaction (Hazen):
Compaction (Uma):
(If Known)

Sieve Analysis

% Finer	Grain Dia. (mm)
0	0.038
11.7	0.075
28.4	0.15
44.4	0.212
57.2	0.3
65.5	0.425
70.7	0.6
74.4	0.85
77.6	1.18
79.3	1.4
82.2	2
83.6	2.36
86.8	3.35
89.5	4.75
100	4.76

Results

0% +3" | 11% Gravel | 89% Sand | 0% Silt | 0% Clay

Uniformity [n] = 4.966

PRINT	Method	Hydraulic Conductivity (cm/sec)	Effective Grain Diameter [de] (mm)	Method Applicability
☐	Hazen	4.67E-03	0.0679	0.1 < de < 3, and n < 5
☐	Slichter	1.33E-03	0.0679	0.01 < de < 5
☐	Terzaghi	2.29E-03	0.0679	large-grain sands
☐	Beyer	4.77E-03	0.0679	0.06 < de < 0.6, and 1 < n < 20
☐	Sauerbrei	3.07E-03	0.0935	sand and sandy clay, and dia. < 0.5
☐	Kruger	1.09E-03	0.1842	medium-grain sands, and n > 5
☐	Kozeny	2.22E-02	0.1690	large-grain sands
☐	Zunker	9.83E-03	0.1739	fine and medium-grain sands
☐	Uma	N/A	0.0679	sandy aquifers
☐	USBR	2.36E-03	0.1058	medium-grain sands, and n < 5

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SizePerm - Hydraulic Conductivity from Sieve Analysis

File Calculate Help

Company: LBG
Address:

Sample ID: MW-3
Sample Interval: 6-8
Sample Date: 6/24/2015

Measured Porosity:
Compaction (Hazen):
Compaction (Uma):
If Known

Sieve Analysis

% Finer	Grain Dia. (mm)
0	0.038
15.1	0.075
31.8	0.15
44.8	0.212
55.5	0.3
64.5	0.425
71.0	0.6
76.0	0.85
79.6	1.18
81.3	1.4
83.9	2
85.3	2.36
87.4	3.35
89.8	4.75
100	4.76

Results

0% +3" | 10% Gravel | 90% Sand | 0% Silt | 0% Clay

Uniformity [n] = 5.990

PRINT	Method	Hydraulic Conductivity (cm/sec)	Effective Grain Diameter [de] (mm)	Method Applicability
☐	Hazen	3.28E-03	0.0596	0.1 < de < 3, and n < 5
☐	Slichter	8.69E-04	0.0596	0.01 < de < 5
☐	Terzaghi	1.47E-03	0.0596	large-grain sands
☐	Beyer	3.53E-03	0.0596	0.06 < de < 0.6, and 1 < n < 20
☐	Sauerbrei	1.88E-03	0.0812	sand and sandy clay, and dia. < 0.5
☐	Kruger	8.48E-04	0.1712	medium-grain sands, and n > 5
☐	Kozeny	1.55E-02	0.1563	large-grain sands
☐	Zunker	7.22E-03	0.1611	fine and medium-grain sands
☐	Uma	N/A	0.0596	sandy aquifers
☐	USBR	1.71E-03	0.0919	medium-grain sands, and n < 5

☑ EasySolve Logo

SizePerm - Hydraulic Conductivity from Sieve Analysis

File Calculate Help

Company: LBG
Address:

Sample ID: MW-3
Sample Interval: 20
Sample Date: 6/24/2015

Measured Porosity:
Compaction (Hazen):
Compaction (Uma):
If Known

Sieve Analysis

% Finer	Grain Dia. (mm)
0	0.038
15.3	0.075
31.4	0.15
41.1	0.212
48.7	0.3
55.1	0.425
59.8	0.6
64.1	0.85
67.8	1.18
69.6	1.4
72.9	2
74.7	2.36
78.8	3.35
82.7	4.75
100	4.76

Results

0% +3" | 17% Gravel | 83% Sand | 0% Silt | 0% Clay

Uniformity [n] = 10.290

PRINT	Method	Hydraulic Conductivity (cm/sec)	Effective Grain Diameter [de] (mm)	Method Applicability
☐	Hazen	2.40E-03	0.0593	0.1 < de < 3, and n < 5
☐	Slichter	5.31E-04	0.0593	0.01 < de < 5
☐	Terzaghi	8.44E-04	0.0593	large-grain sands
☐	Beyer	3.06E-03	0.0593	0.06 < de < 0.6, and 1 < n < 20
☐	Sauerbrei	1.05E-03	0.0807	sand and sandy clay, and dia. < 0.5
☐	Kruger	7.40E-04	0.1839	medium-grain sands, and n > 5
☐	Kozeny	9.98E-03	0.1672	large-grain sands
☐	Zunker	5.41E-03	0.1726	fine and medium-grain sands
☐	Uma	N/A	0.0593	sandy aquifers
☐	USBR	1.70E-03	0.0918	medium-grain sands, and n < 5

☑ EasySolve Logo

SizePerm - Hydraulic Conductivity from Sieve Analysis

File | Calculate | Help

Sieve Analysis

% Finer	Grain Dia. (mm)
0	0.038
6.4	0.075
11.6	0.15
15.5	0.212
19.5	0.3
23.8	0.425
28.1	0.6
32.6	0.85
37.2	1.18
39.8	1.4
45.2	2
47.7	2.36
52.9	3.35
59.5	4.75
100	4.76

Company: LBG
Address:
Sample ID: MW-4
Sample Interval: 4-6
Sample Date: 6/24/2015

Measured Porosity:
Compaction (Hazen):
Compaction (Uma):
} If Known

Results

0% +3" | 41% Gravel | 59% Sand | 0% Silt | 0% Clay

Uniformity [n] = 39.196

PRINT	Method	Hydraulic Conductivity (cm/sec)	Effective Grain Diameter [de] (mm)	Method Applicability
☐	Hazen	7.22E-03	0.1212	0.1 < de < 3, and n < 5
☐	Slichter	1.42E-03	0.1212	0.01 < de < 5
☐	Terzaghi	2.02E-03	0.1212	large-grain sands
☐	Beyer	8.38E-03	0.1212	0.06 < de < 0.6, and 1 < n < 20
☐	Sauerbrei	5.64E-03	0.2415	sand and sandy clay, and dia. < 0.5
☐	Kruger	2.85E-03	0.4066	medium-grain sands, and n > 5
☐	Kozeny	2.99E-02	0.3736	large-grain sands
☐	Zunker	1.84E-02	0.3843	fine and medium-grain sands
☐	Uma	N/A	0.1212	sandy aquifers
☐	USBR	2.84E-02	0.3124	medium-grain sands, and n < 5
☑	EasySolve Logo			

SizePerm - Hydraulic Conductivity from Sieve Analysis

File | Calculate | Help

Sieve Analysis

% Finer	Grain Dia. (mm)
0	0.038
21.8	0.075
50.4	0.15
66.2	0.212
77.0	0.3
85.0	0.425
89.9	0.6
94.1	0.85
96.5	1.18
97.1	1.4
97.8	2
98.0	2.36
98.5	3.35
99.1	4.75
100	4.76

Company: LBG
Address:
Sample ID: MW-4
Sample Interval: 25-27
Sample Date: 6/24/2015

Measured Porosity:
Compaction (Hazen):
Compaction (Uma):
} If Known

Results

0% +3" | 1% Gravel | 99% Sand | 0% Silt | 0% Clay

Uniformity [n] = 3.566

PRINT	Method	Hydraulic Conductivity (cm/sec)	Effective Grain Diameter [de] (mm)	Method Applicability
☐	Hazen	3.15E-03	0.0519	0.1 < de < 3, and n < 5
☐	Slichter	1.02E-03	0.0519	0.01 < de < 5
☐	Terzaghi	1.77E-03	0.0519	large-grain sands
☐	Beyer	2.99E-03	0.0519	0.06 < de < 0.6, and 1 < n < 20
☐	Sauerbrei	2.06E-03	0.0646	sand and sandy clay, and dia. < 0.5
☐	Kruger	5.84E-04	0.1233	medium-grain sands, and n > 5
☐	Kozeny	1.37E-02	0.1118	large-grain sands
☐	Zunker	5.62E-03	0.1155	fine and medium-grain sands
☐	Uma	N/A	0.0519	sandy aquifers
☐	USBR	9.39E-04	0.0709	medium-grain sands, and n < 5
☑	EasySolve Logo			

SizePerm - Hydraulic Conductivity from Sieve Analysis

File Calculate Help

Sieve Analysis

% Finer	Grain Dia. (mm)
0	0.038
17.8	0.075
46.0	0.15
59.1	0.212
68.1	0.3
75.2	0.425
80.7	0.6
85.6	0.85
89.2	1.18
90.8	1.4
93.3	2
94.0	2.36
95.7	3.35
96.6	4.75
100	4.76

Company: LBG
Address:

Sample ID: MW-5
Sample Interval: 6-8
Sample Date: 6/24/2015

Measured Porosity:
Compaction (Hazen):
Compaction (Uma):
If Known

Results

0% +3"	3% Gravel	97% Sand	0% Silt	0% Clay

Uniformity [n] = 3.942

PRINT	Method	Hydraulic Conductivity (cm/sec)	Effective Grain Diameter [de] (mm)	Method Applicability
☐	Hazen	3.48E-03	0.0557	0.1 < de < 3, and n < 5
☐	Slichter	1.08E-03	0.0557	0.01 < de < 5
☐	Terzaghi	1.88E-03	0.0557	large-grain sands
☐	Beyer	3.37E-03	0.0557	0.06 < de < 0.6, and 1 < n < 20
☐	Sauerbrei	2.37E-03	0.0727	sand and sandy clay, and dia. < 0.5
☐	Kruger	7.06E-04	0.1392	medium-grain sands, and n > 5
☐	Kozeny	1.58E-02	0.1262	large-grain sands
☐	Zunker	6.64E-03	0.1304	fine and medium-grain sands
☐	Uma	N/A	0.0557	sandy aquifers
☐	USBR	1.21E-03	0.0792	medium-grain sands, and n < 5

☑ EasySolve Logo

SizePerm - Hydraulic Conductivity from Sieve Analysis

File Calculate Help

Sieve Analysis

% Finer	Grain Dia. (mm)
0	0.038
14.0	0.075
32.5	0.15
42.9	0.212
51.1	0.3
57.7	0.425
62.7	0.6
66.8	0.85
70.2	1.18
72.0	1.4
74.9	2
76.5	2.36
80.0	3.35
83.8	4.75
100	4.76

Company: LBG
Address:

Sample ID: MW-5
Sample Interval: 12-14
Sample Date: 6/24/2015

Measured Porosity:
Compaction (Hazen):
Compaction (Uma):
If Known

Results

0% +3"	16% Gravel	84% Sand	0% Silt	0% Clay

Uniformity [n] = 8.065

PRINT	Method	Hydraulic Conductivity (cm/sec)	Effective Grain Diameter [de] (mm)	Method Applicability
☐	Hazen	2.99E-03	0.0618	0.1 < de < 3, and n < 5
☐	Slichter	7.12E-04	0.0618	0.01 < de < 5
☐	Terzaghi	1.17E-03	0.0618	large-grain sands
☐	Beyer	3.53E-03	0.0618	0.06 < de < 0.6, and 1 < n < 20
☐	Sauerbrei	1.45E-03	0.0839	sand and sandy clay, and dia. < 0.5
☐	Kruger	8.20E-04	0.1824	medium-grain sands, and n > 5
☐	Kozeny	1.26E-02	0.1660	large-grain sands
☐	Zunker	6.40E-03	0.1713	fine and medium-grain sands
☐	Uma	N/A	0.0618	sandy aquifers
☐	USBR	1.79E-03	0.0939	medium-grain sands, and n < 5

☑ EasySolve Logo

SizePerm - Hydraulic Conductivity from Sieve Analysis

File | Calculate | Help

Company: LBG
Address:
Sample ID: MW-5
Sample Interval: 30
Sample Date: 6/24/2015

Measured Porosity:
Compaction (Hazen):
Compaction (Uma):
If Known

Sieve Analysis

% Finer	Grain Dia. (mm)
0	0.038
13.5	0.075
36.6	0.15
47.5	0.212
55.5	0.3
62.3	0.425
68.1	0.6
74.4	0.85
81.3	1.18
84.5	1.4
90.0	2
91.6	2.36
94.8	3.35
96.6	4.75
100	4.76

Results

0% +3" | 3% Gravel | 97% Sand | 0% Silt | 0% Clay

Uniformity [n] = 6.008

PRINT	Method	Hydraulic Conductivity (cm/sec)	Effective Grain Diameter [de] (mm)	Method Applicability
☐	Hazen	3.64E-03	0.0629	0.1 < de < 3, and n < 5
☐	Slichter	9.65E-04	0.0629	0.01 < de < 5
☐	Terzaghi	1.63E-03	0.0629	large-grain sands
☐	Beyer	3.92E-03	0.0629	0.06 < de < 0.6, and 1 < n < 20
☐	Sauerbrei	1.98E-03	0.0833	sand and sandy clay, and dia. < 0.5
☐	Kruger	8.31E-04	0.1695	medium-grain sands, and n > 5
☐	Kozeny	1.50E-02	0.1542	large-grain sands
☐	Zunker	7.03E-03	0.1591	fine and medium-grain sands
☐	Uma	N/A	0.0629	sandy aquifers
☐	USBR	1.67E-03	0.0912	medium-grain sands, and n < 5
☑	EasySolve Logo			

SizePerm - Hydraulic Conductivity from Sieve Analysis

File | Calculate | Help

Company: LBG
Address:
Sample ID: MW-6
Sample Interval: 10-12
Sample Date: 6/25/2015

Measured Porosity:
Compaction (Hazen):
Compaction (Uma):
If Known

Sieve Analysis

% Finer	Grain Dia. (mm)
0	0.038
16.1	0.075
47.2	0.15
63.4	0.212
75.8	0.3
85.3	0.425
89.9	0.6
92.9	0.85
95.0	1.18
95.9	1.4
97.2	2
97.7	2.36
98.6	3.35
99.2	4.75
100	4.76

Results

0% +3" | 1% Gravel | 99% Sand | 0% Silt | 0% Clay

Uniformity [n] = 3.401

PRINT	Method	Hydraulic Conductivity (cm/sec)	Effective Grain Diameter [de] (mm)	Method Applicability
☐	Hazen	4.00E-03	0.0580	0.1 < de < 3, and n < 5
☐	Slichter	1.31E-03	0.0580	0.01 < de < 5
☐	Terzaghi	2.29E-03	0.0580	large-grain sands
☐	Beyer	3.76E-03	0.0580	0.06 < de < 0.6, and 1 < n < 20
☐	Sauerbrei	3.02E-03	0.0765	sand and sandy clay, and dia. < 0.5
☐	Kruger	7.12E-04	0.1346	medium-grain sands, and n > 5
☐	Kozeny	1.71E-02	0.1224	large-grain sands
☐	Zunker	6.95E-03	0.1263	fine and medium-grain sands
☐	Uma	N/A	0.0580	sandy aquifers
☐	USBR	1.30E-03	0.0818	medium-grain sands, and n < 5
☑	EasySolve Logo			

SizePerm - Hydraulic Conductivity from Sieve Analysis

File | Calculate | Help

Company: LBG
Address:
Sample ID: MW-6
Sample Interval: 40
Sample Date: 6/25/2015
Measured Porosity:
Compaction (Hazen):
Compaction (Uma):
If Known

Sieve Analysis

% Finer	Grain Dia. (mm)
0	0.038
13.1	0.075
43.6	0.15
59.7	0.212
72.9	0.3
80.4	0.425
83.5	0.6
86.5	0.85
89.4	1.18
90.6	1.4
92.5	2
93.2	2.36
94.8	3.35
96.3	4.75
100	4.76

Results

0% +3" | 4% Gravel | 96% Sand | 0% Silt | 0% Clay

Uniformity [n] = 3.346

PRINT	Method	Hydraulic Conductivity (cm/sec)	Effective Grain Diameter [de] (mm)	Method Applicability
	Hazen	4.88E-03	0.0639	0.1 < de < 3, and n < 5
	Slichter	1.61E-03	0.0639	0.01 < de < 5
	Terzaghi	2.81E-03	0.0639	large-grain sands
	Beyer	4.58E-03	0.0639	0.06 < de < 0.6, and 1 < n < 20
	Sauerbrei	3.52E-03	0.0820	sand and sandy clay, and dia. < 0.5
	Kruger	8.54E-04	0.1468	medium-grain sands, and n > 5
	Kozeny	2.07E-02	0.1336	large-grain sands
	Zunker	8.37E-03	0.1379	fine and medium-grain sands
	Uma	N/A	0.0639	sandy aquifers
	USBR	1.53E-03	0.0877	medium-grain sands, and n < 5
☑	EasySolve Logo			

SizePerm - Hydraulic Conductivity from Sieve Analysis

File | Calculate | Help

Company: LBG
Address:
Sample ID: MW-7
Sample Interval: 4-6
Sample Date: 6/25/2015
Measured Porosity:
Compaction (Hazen):
Compaction (Uma):
If Known

Sieve Analysis

% Finer	Grain Dia. (mm)
0	0.038
6.5	0.075
26.4	0.15
40.3	0.212
51.9	0.3
61.3	0.425
67.7	0.6
72.0	0.85
75.0	1.18
76.5	1.4
79.0	2
80.1	2.36
82.8	3.35
86.2	4.75
100	4.76

Results

0% +3" | 14% Gravel | 86% Sand | 0% Silt | 0% Clay

Uniformity [n] = 4.780

PRINT	Method	Hydraulic Conductivity (cm/sec)	Effective Grain Diameter [de] (mm)	Method Applicability
	Hazen	7.40E-03	0.0847	0.1 < de < 3, and n < 5
	Slichter	2.14E-03	0.0847	0.01 < de < 5
	Terzaghi	3.68E-03	0.0847	large-grain sands
	Beyer	7.48E-03	0.0847	0.06 < de < 0.6, and 1 < n < 20
	Sauerbrei	4.28E-03	0.1081	sand and sandy clay, and dia. < 0.5
	Kruger	1.49E-03	0.2131	medium-grain sands, and n > 5
	Kozeny	3.11E-02	0.1959	large-grain sands
	Zunker	1.36E-02	0.2015	fine and medium-grain sands
	Uma	N/A	0.0847	sandy aquifers
	USBR	3.15E-03	0.1200	medium-grain sands, and n < 5
☑	EasySolve Logo			

SizePerm - Hydraulic Conductivity from Sieve Analysis

File | Calculate | Help

Company: LBG
Address:
Sample ID: MW-7
Sample Interval: 11
Sample Date: 6/25/2015

Measured Porosity:
Compaction (Hazen):
Compaction (Uma):
If Known

Sieve Analysis

% Finer	Grain Dia. (mm)
0	0.038
10.3	0.075
27.7	0.15
40.2	0.212
51.2	0.3
61.3	0.425
68.8	0.6
74.2	0.85
77.9	1.18
79.8	1.4
83.0	2
84.6	2.36
87.9	3.35
91.5	4.75
100	4.76

Results

0% +3" | 9% Gravel | 91% Sand | 0% Silt | 0% Clay

Uniformity [n] = 5.527

PRINT	Method	Hydraulic Conductivity (cm/sec)	Effective Grain Diameter [de] (mm)	Method Applicability
☐	Hazen	5.19E-03	0.0735	0.1 < de < 3, and n < 5
☐	Slichter	1.42E-03	0.0735	0.01 < de < 5
☐	Terzaghi	2.42E-03	0.0735	large-grain sands
☐	Beyer	5.46E-03	0.0735	0.06 < de < 0.6, and 1 < n < 20
☐	Sauerbrei	3.00E-03	0.0979	sand and sandy clay, and dia. < 0.5
☐	Kruger	1.16E-03	0.1959	medium-grain sands, and n > 5
☐	Kozeny	2.23E-02	0.1796	large-grain sands
☐	Zunker	1.02E-02	0.1848	fine and medium-grain sands
☐	Uma	N/A	0.0735	sandy aquifers
☐	USBR	2.60E-03	0.1104	medium-grain sands, and n < 5

☑ EasySolve Logo

SizePerm - Hydraulic Conductivity from Sieve Analysis

File | Calculate | Help

Company: LBG
Address:
Sample ID: MW-8
Sample Interval: 8-10
Sample Date: 6/29/2015

Measured Porosity:
Compaction (Hazen):
Compaction (Uma):
If Known

Sieve Analysis

% Finer	Grain Dia. (mm)
0	0.038
15.2	0.075
41.7	0.15
57.8	0.212
69.7	0.3
78.0	0.425
82.9	0.6
86.6	0.85
89.1	1.18
90.1	1.4
91.5	2
92.0	2.36
93.0	3.35
94.2	4.75
100	4.76

Results

0% +3" | 6% Gravel | 94% Sand | 0% Silt | 0% Clay

Uniformity [n] = 3.803

PRINT	Method	Hydraulic Conductivity (cm/sec)	Effective Grain Diameter [de] (mm)	Method Applicability
☐	Hazen	4.02E-03	0.0594	0.1 < de < 3, and n < 5
☐	Slichter	1.27E-03	0.0594	0.01 < de < 5
☐	Terzaghi	2.21E-03	0.0594	large-grain sands
☐	Beyer	3.86E-03	0.0594	0.06 < de < 0.6, and 1 < n < 20
☐	Sauerbrei	2.86E-03	0.0786	sand and sandy clay, and dia. < 0.5
☐	Kruger	7.94E-04	0.1463	medium-grain sands, and n > 5
☐	Kozeny	1.82E-02	0.1332	large-grain sands
☐	Zunker	7.57E-03	0.1374	fine and medium-grain sands
☐	Uma	N/A	0.0594	sandy aquifers
☐	USBR	1.43E-03	0.0850	medium-grain sands, and n < 5

☑ EasySolve Logo

SizePerm - Hydraulic Conductivity from Sieve Analysis

File Calculate Help

Company: LBG

Address:

Sample ID: MW-8

Sample Interval: 15-17

Sample Date: 6/29/2015

Measured Porosity:

Compaction (Hazen):

Compaction (Uma):

(If Known)

Sieve Analysis

% Finer	Grain Dia. (mm)
0	0.038
18.3	0.075
45.3	0.15
61.9	0.212
73.0	0.3
80.3	0.425
84.5	0.6
88.4	0.85
91.4	1.18
92.7	1.4
95.0	2
95.9	2.36
97.5	3.35
98.6	4.75
100	4.76

Results

0% +3" | 1% Gravel | 99% Sand | 0% Silt | 0% Clay

Uniformity [n] = 3.698

PRINT	Method	Hydraulic Conductivity (cm/sec)	Effective Grain Diameter [de] (mm)	Method Applicability
☐	Hazen	3.50E-03	0.0551	0.1 < de < 3, and n < 5
☐	Slichter	1.11E-03	0.0551	0.01 < de < 5
☐	Terzaghi	1.94E-03	0.0551	large-grain sands
☐	Beyer	3.34E-03	0.0551	0.06 < de < 0.6, and 1 < n < 20
☐	Sauerbrei	2.43E-03	0.0715	sand and sandy clay, and dia. < 0.5
☐	Kruger	6.89E-04	0.1352	medium-grain sands, and n > 5
☐	Kozeny	1.59E-02	0.1229	large-grain sands
☐	Zunker	6.59E-03	0.1269	fine and medium-grain sands
☐	Uma	N/A	0.0551	sandy aquifers
☐	USBR	1.18E-03	0.0783	medium-grain sands, and n < 5

☑ EasySolve Logo

BETA TUBE SAMPLES

DR. CLARENCE WELTI, P.E., P.C.

GEOTECHNICAL ENGINEERING

227 Williams Street · P.O. Box 397
Glastonbury, CT 06033-0397

(860) 633-4623 / FAX (860) 657-2514

June 3, 2015

Mr. Robert M. Baglini, P. E.
BETA Group, Inc.

Re: **Permeability Testing Soils from Test Pits at Waste Water Disposal Site at Lutheran Home of Southbury, CT**

Dear Mr. Baglini:

Herewith are the results of permeability tests on insitu soil samples taken at the subject site. Eight soil samples were taken during two days of test pit exploration. Two inch diameter tubes were driven into the soils at directed locations

If you have any questions please call me.

Very truly yours,

Clarence Welti, PhD, P.E.
Pres. Dr. Clarence Welti, P. E., P. C.

LUTHERAN HOME
SOUTHBURY, CT

Permeability Test Results

Location/Depth	Thickness	Max Head	Permeability
B-1 @ 7 feet	2.75"	7"	1.54 feet/day
B-2 @ 8 feet	3"	7"	0.26 feet/day
B-3 @ 5.5 feet	3"	7"	0.50 feet/day
B-2 @ 5.5 feet	3"	7"	0.81 feet/day
B-5 @ 4 feet	3.25"	7"	0.67 feet/day
B-5 @ 112"	3.5"	7"	1.53 feet/day
B-9 @ 3.5 feet	2.5"	7"	0.61 feet/day
B-9 @ 7.5 feet	2"	7"	0.65 feet/day

Notes: 1.Samples were obtained by driving a 2" diameter (1/16" wall) tube into the undisturbed soil surface. Samples were tested in the tubes with the falling head type permeability test.

2. All tubes were sealed immediately after extraction.

3. Laboratory testing done was within 3 days of sample extraction.

DR. CLARENCE WELTI, P.E., P.C.

GEOTECHNICAL ENGINEERING

227 Williams Street · P.O. Box 397
Glastonbury, CT 06033-0397

(860) 633-4623 / FAX (860) 657-2514

September 15, 2015

Mr. Robert M. Baglini, P. E.
BETA Group, Inc.

Re: **Permeability Test on Soil Sample from Lutheran Home of Southbury, CT**

Dear Mr. Baglini:

Pursuant to your request a falling head permeability test was performed on a tube sample you delivered to our office. The sample was identified as B-10. We could not read the depth marked on tube. The sample had a permeability of 2.8 feet/day.

If you have any questions please call me.

Very truly yours,

Max Welti

Max Welti, P.E.

ASHWOOD

PERMEABILITY TEST RESULTS

LUTHERAN HOME
Southbury, CT

PERMEABILITY TESTS

samples taken 6/28/9

DP#	depth	H1 (in)	H2 (in)	L (in)	T (min)	K (ft/day)	K (ft/min)	LTAR
DP 110	48"	7.19	2.19	0.63	50	1.600	0.00111	0.412
DP 111	72"	7.25	6.50	2.50	50	0.655	0.00045	0.361
DP 111	72"	7.56	6.38	1.94	50	0.792	0.00055	0.371

Legend

- Design Development Group Test Pits
- Ashwood Test Pi Locations
- Proposed Boring/Well Location
- Proposed_Piezometer_Location
- Proposed_SSDS
- Water
- Property_Line
- Wetland
- Wetland_Buffer
- Watershed Divide

N E S W

0 50 100 200 Feet

1:1,200

Luthern Home of Southbury
990 Main Street North,
Southbury, Connecticut

Proposed Monitoring Locations

DATE:	REVISED:	PREPARED BY:
		LEGGETTE, BRASHEARS & GRAHAM, INC.
		Professional Groundwater and Environmental Engineering Services
		4 Reasearch Drive, Suite 204, Shelton, CT 06484, (203) 929-8555

DRAWN: KDT	CHECKED: KT	DATE: 3/20/15	FIGURE: 1

APPENDIX III

HYDROGRAPHS AND REGIONAL WATER-LEVEL DATA

USGS-SB-42

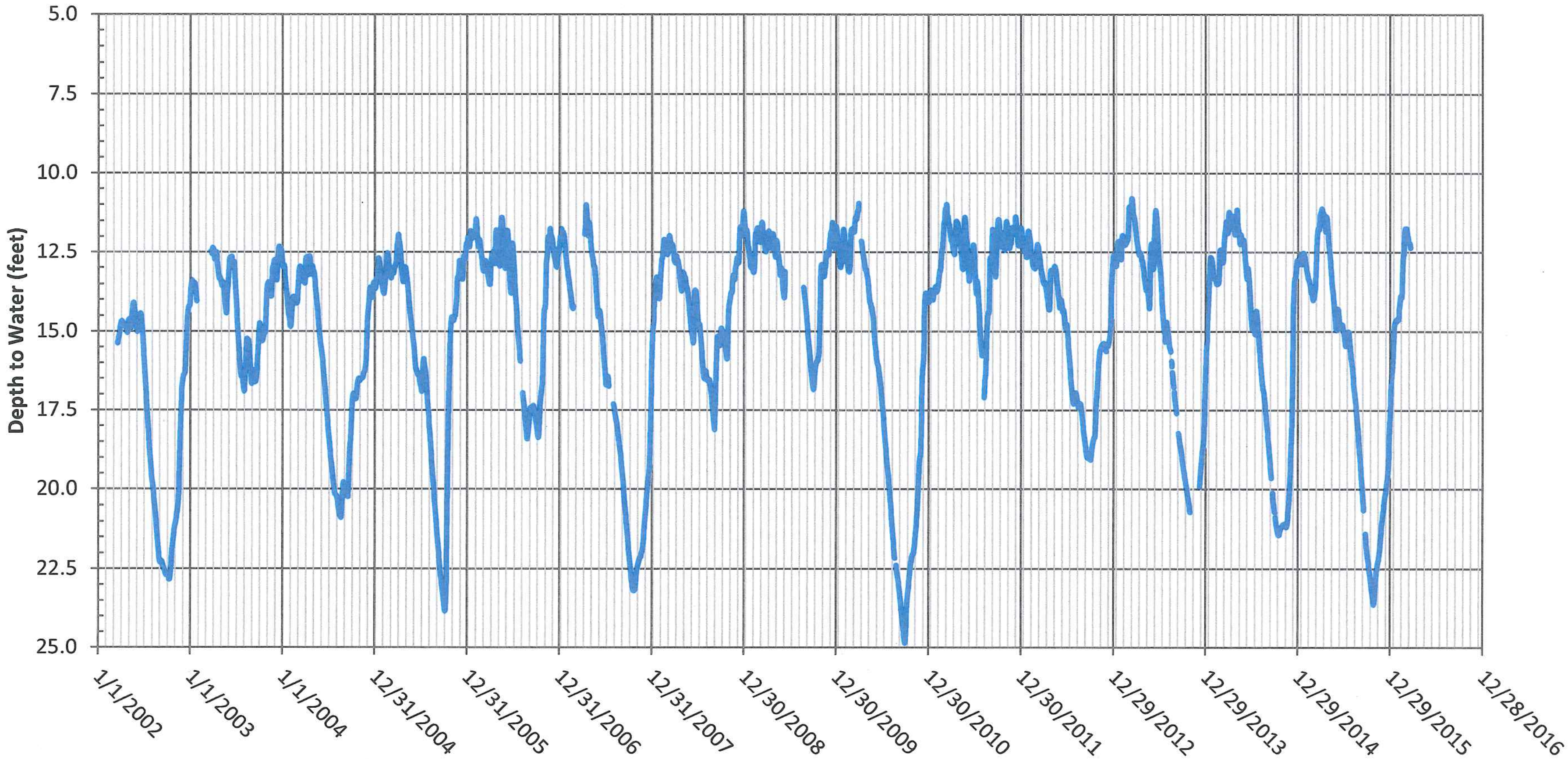
USGS 01204000 SB-42 AT SOUTHBURY, CT

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual	
	1	2	3	4	5	6	7	8	9	10	11	12		
Average DTW (feet below grade)	13.14	12.98	12.33	12.44	13.18	14.20	15.90	17.36	18.49	18.77	16.66	14.77	15.26	Average DTW (feet below grade)
Maximum DTW (feet below grade)	15.47	14.23	13.34	13.72	14.04	16.51	19.23	21.49	23.76	23.07	22.21	19.82	19.21	Maximum DTW (feet below grade)
Year	2016	2004	2004	2012	2010	2004	2004	2010	2010	2010	2007	2007	2002	Year
Minimum DTW (feet below grade)	12.07	12.06	11.28	11.46	11.88	12.13	14.12	13.83	12.53	12.00	11.96	11.87	12.75	Minimum DTW (feet below grade)
Year	2006	2006	2013	2015	2014	2013	2011	2009	2011	2011	2011	2011	2011	Year
2002										22.31	19.79	15.54	19.21	2002
2003	13.64		12.52	12.78	13.76	12.94	15.49	15.91	16.30	14.97	13.45	12.74	14.05	2003
2004	13.58	14.23	13.34	12.93	13.98	16.51	19.23	20.44	19.63	17.00	16.36	13.95	15.93	2004
2005	13.18	13.20	13.01	12.69	13.94	16.05	16.52	19.13	22.21	20.03	14.18	12.85	15.58	2005
2006	12.07	12.06	13.03	12.65	12.19	12.70	14.14	17.71	17.57	17.43	12.86	12.54	13.91	2006
2007	12.16	13.71		11.57	12.82	14.93	16.54	18.02	20.23	22.71	22.21	19.82	16.79	2007
2008	14.13	12.70	12.34	13.05	13.58	14.52	15.50	16.71	16.25	15.27	13.60	12.11	14.15	2008
2009	12.23	12.39	12.06	12.08	12.68	13.59		13.83	15.46	15.83	12.89	12.00	13.19	2009
2010	12.42	12.59	11.53	12.70	14.04	16.14	18.67	21.49	23.76	23.07	20.67	15.23	16.86	2010
2011	13.82	13.04	11.49	12.03	12.25	12.74	14.12	15.21	12.53	12.00	11.96	11.87	12.75	2011
2012	12.24	12.62	12.82	13.72	13.31	14.41	16.33	17.28	18.66	18.14	15.60	14.63	14.98	2012
2013	12.54	12.14	11.28	12.57	13.47	12.13	14.19	15.85	18.27	19.93		18.57	14.63	2013
2014	13.77	13.24	12.16	11.55	11.88	13.26	14.79	16.79	19.34	21.20	20.88	15.13	15.33	2014
2015	12.72	13.43	12.65	11.46	13.46	14.72	15.29	17.23	20.19	22.88	22.13	19.77	16.33	2015
2016	15.47	13.42	12.02											2016

USGS 01204000 SB-42 AT SOUTHBURY, CT

Usgs DTW 2002-2015 data(feet)	Percental		Date	DTW	Greater than or Equal (%)	Less than or Equal (%)
10.98	99.9%	0.001	6/29/2015	14.96	39.6%	60.4%
11.41	98.0%	0.02	7/1/2015	15.02	39.0%	61.0%
11.72	95.0%	0.05	7/16/2015	15.21	37.1%	62.9%
11.97	90.0%	0.1	7/28/2015	15.86	32.3%	67.7%
12.23	85.0%	0.15	8/11/2015	16.83	24.9%	75.1%
12.49	80.0%	0.2				
12.70	75.0%	0.25	Seasonal HI	12.48	80%	20.0%
12.92	70.0%	0.3	3/17/2016	12.21	85.4%	14.6%
13.11	65.0%	0.35				
13.36	60.0%	0.4	Correction	-0.27		
13.66	55.0%	0.45				
14.02	50.0%	0.5				
14.53	45.0%	0.55				
14.92	40.0%	0.6				
15.42	35.0%	0.65				
16.24	30.0%	0.7				
16.81	25.0%	0.75				
17.77	20.0%	0.8				
19.05	15.0%	0.85				
20.47	10.0%	0.9				
22.08	5.0%	0.95				
23.39	1.0%	0.99				

HYDROGRAPH
USGS 01204000 SB-42 AT SOUTHBURY, CT



K:\Jobs\Beta Group\Lutheran Home of Southbury\Seasonal High Water Level\SB-42.xlsx

LEGGETTE, BRASHEARS GRAHAM, INC.

ASHWOOD WATER-LEVEL DATA

Lutheran Home
Southbury, CT

Groundwater Monitoring

Date	Groundwater Elevation								
	DP A	DP B	DP 100	DP 101	DP 102	DP 104	DP 110	DP 111	DP 112
3/18/81	83.7	83.1							
3/18/81	83.4	83.0							
1994:									
4/21	83.4	82.8							
5/2	83.3	82.8	dry	81.0	78.8	82.3			
5/16	83.2	82.8	"	80.9	78.4	82.2			
6/2	83.0	82.5	"	dry	78.5	82.1			
6/28	82.7	82.3	"	"	78.0	81.8	81.0	80.1	dry
7/12	82.4	82.5	"	"	77.8	81.5	dry	dry	"
8/1	82.2	82.0	"	"	77.5	81.3	"	"	"

Legend

- Design Development Group Test Pits
- Watershed Divide
- Ashwood Test Pi Locations
- Proposed Boring/Well Location
- Proposed_Piezometer_Location
- Proposed_SSDS
- Water
- Property_Line
- Wetland
- Wetland_Buffer

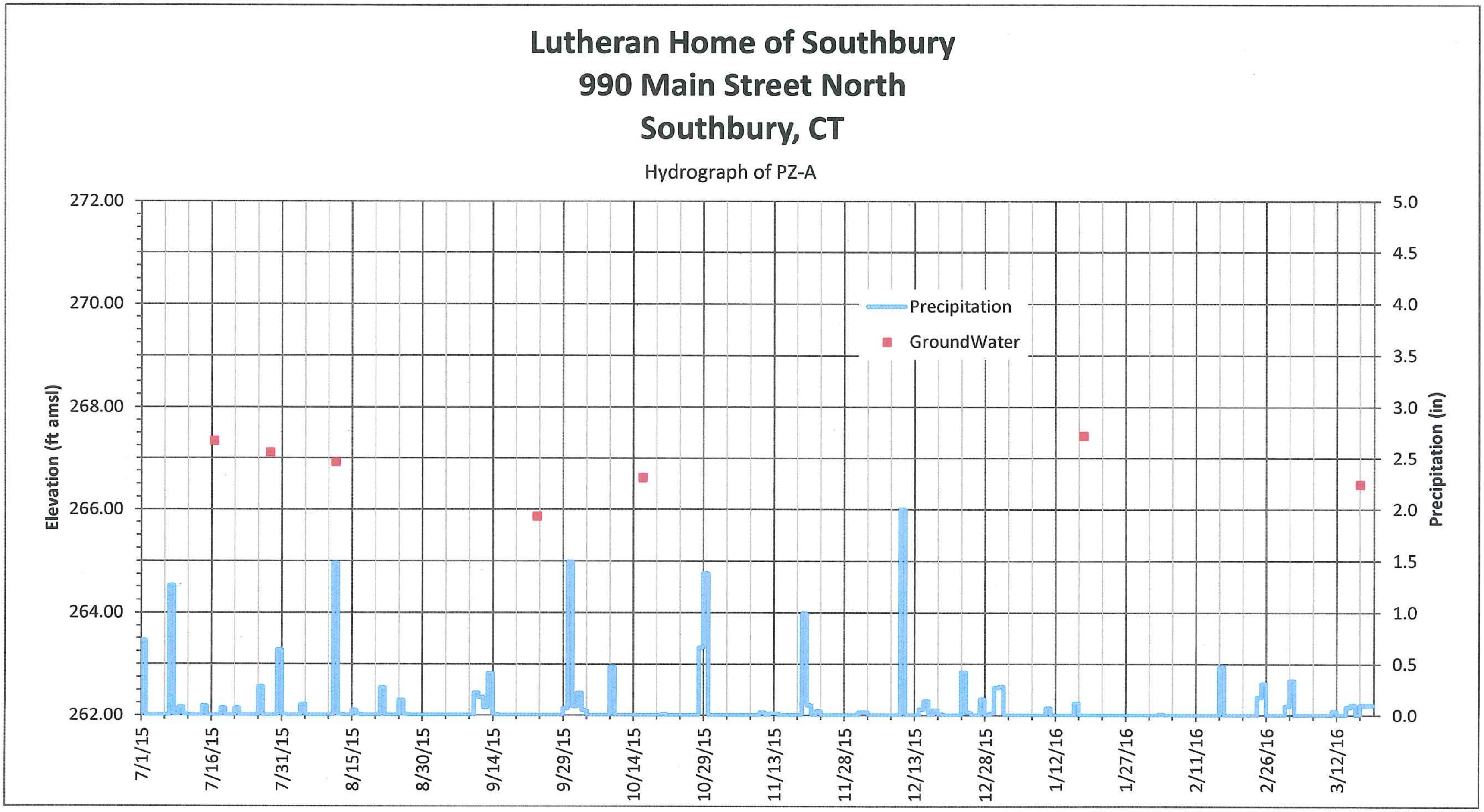
N E S W

0 50 100 200 Feet

1:1,200

Luthern Home of Southbury **990 Main Street North,** **Southbury, Connecticut**		
Proposed Monitoring Locations		
DATE:	*REVISED:*	*PREPARED BY:* **LEGGETTE, BRASHEARS & GRAHAM, INC.** Professional Groundwater and Environmental Engineering Services 4 Reasearch Drive Suite 204 Shelton, CT 06484 (203) 929-8555
DRAWN: KDT	*CHECKED:* KT	*DATE:* 3/20/15 *FIGURE:* 1

LBG PIEZOMETERS



Lutheran Home of Southbury
990 Main Street North
Southbury, CT
Hydrograph of PZ-A
Elevation (ft amsl)
Precipitation (in)
Precipitation
GroundWater
272.00
270.00
268.00
266.00
264.00
262.00
5.0
4.5
4.0
3.5
3.0
2.5
2.0
1.5
1.0
0.5
0.0
7/1/15
7/16/15
7/31/15
8/15/15
8/30/15
9/14/15
9/29/15
10/14/15
10/29/15
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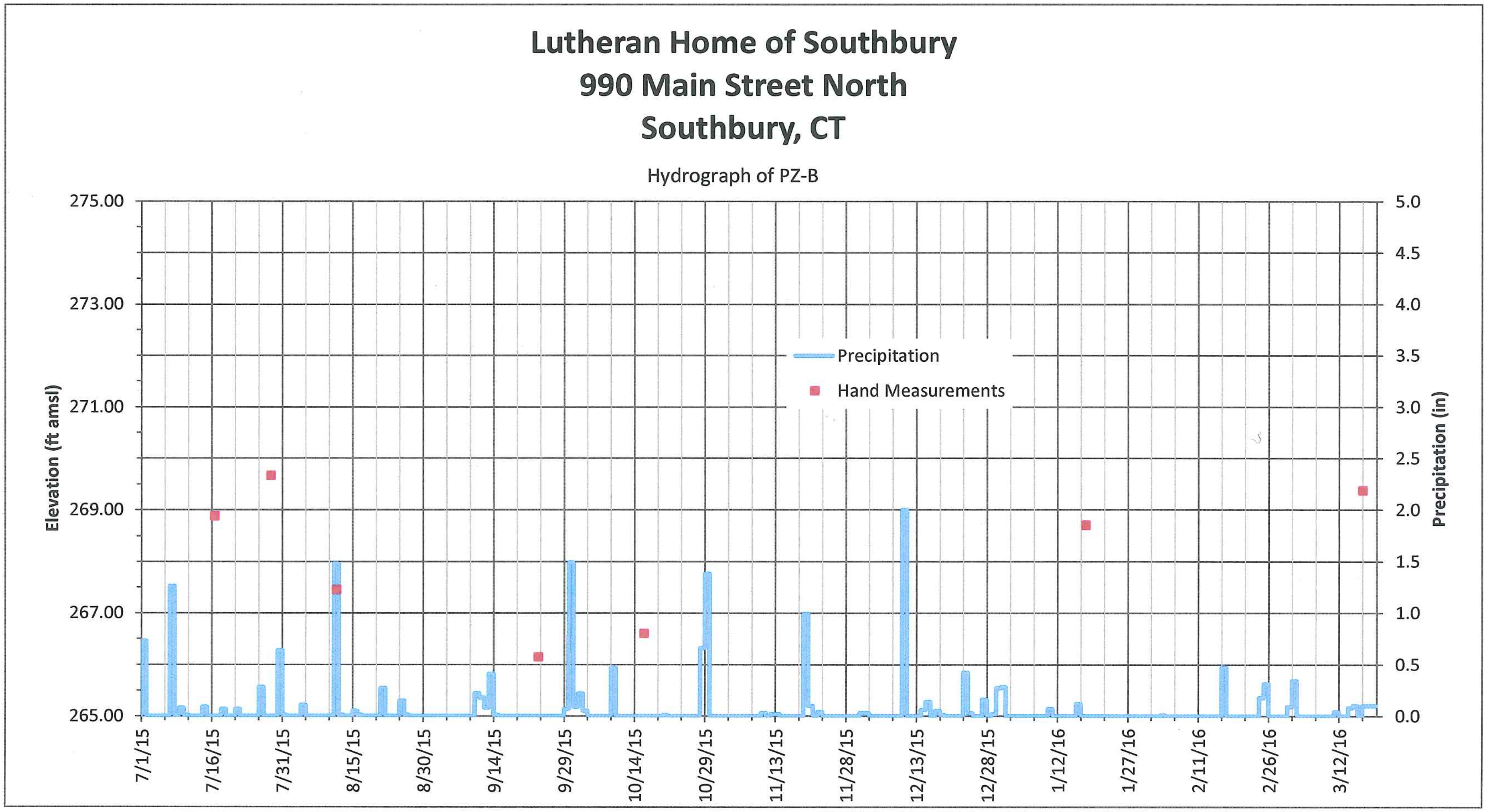
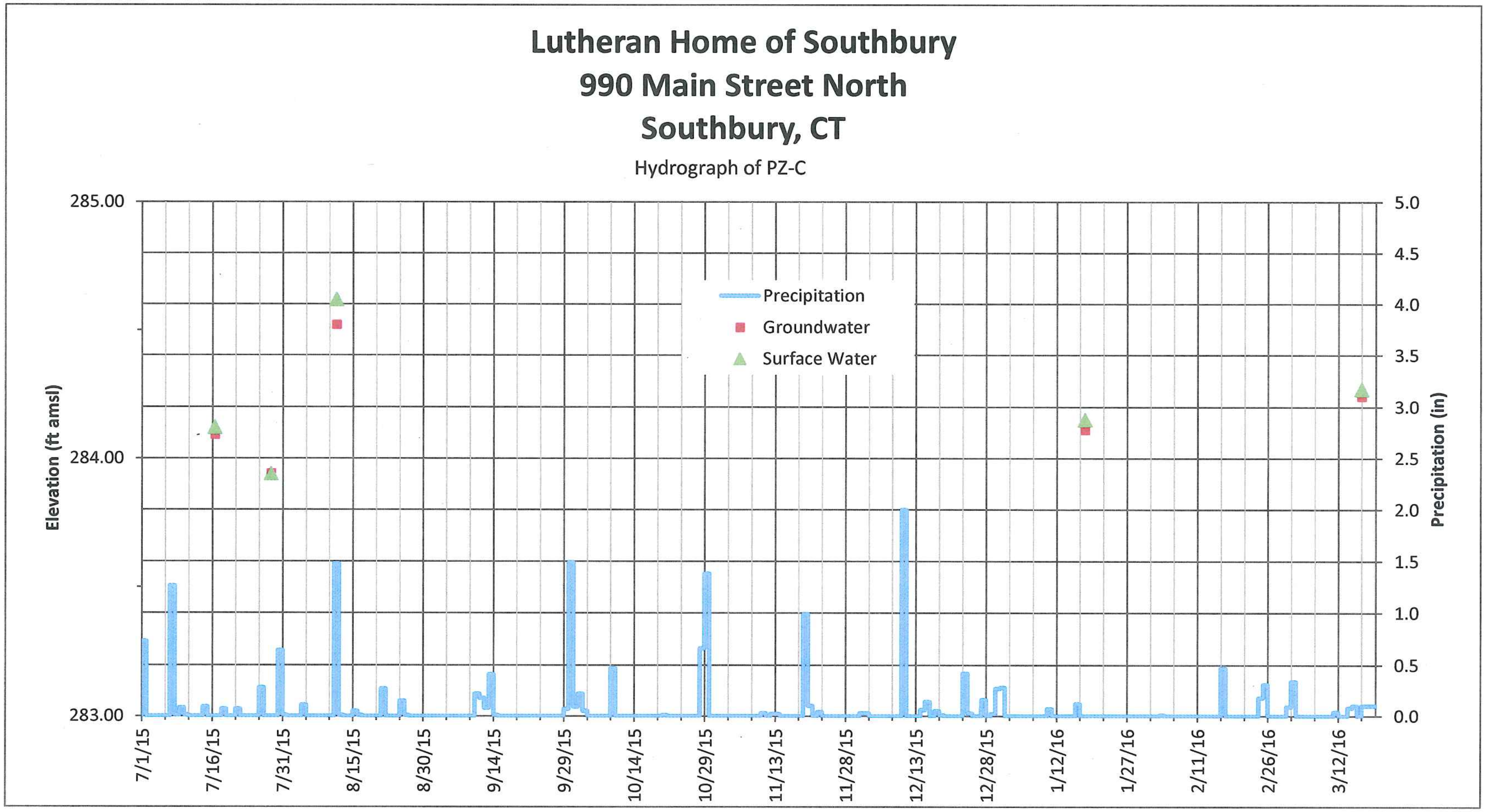
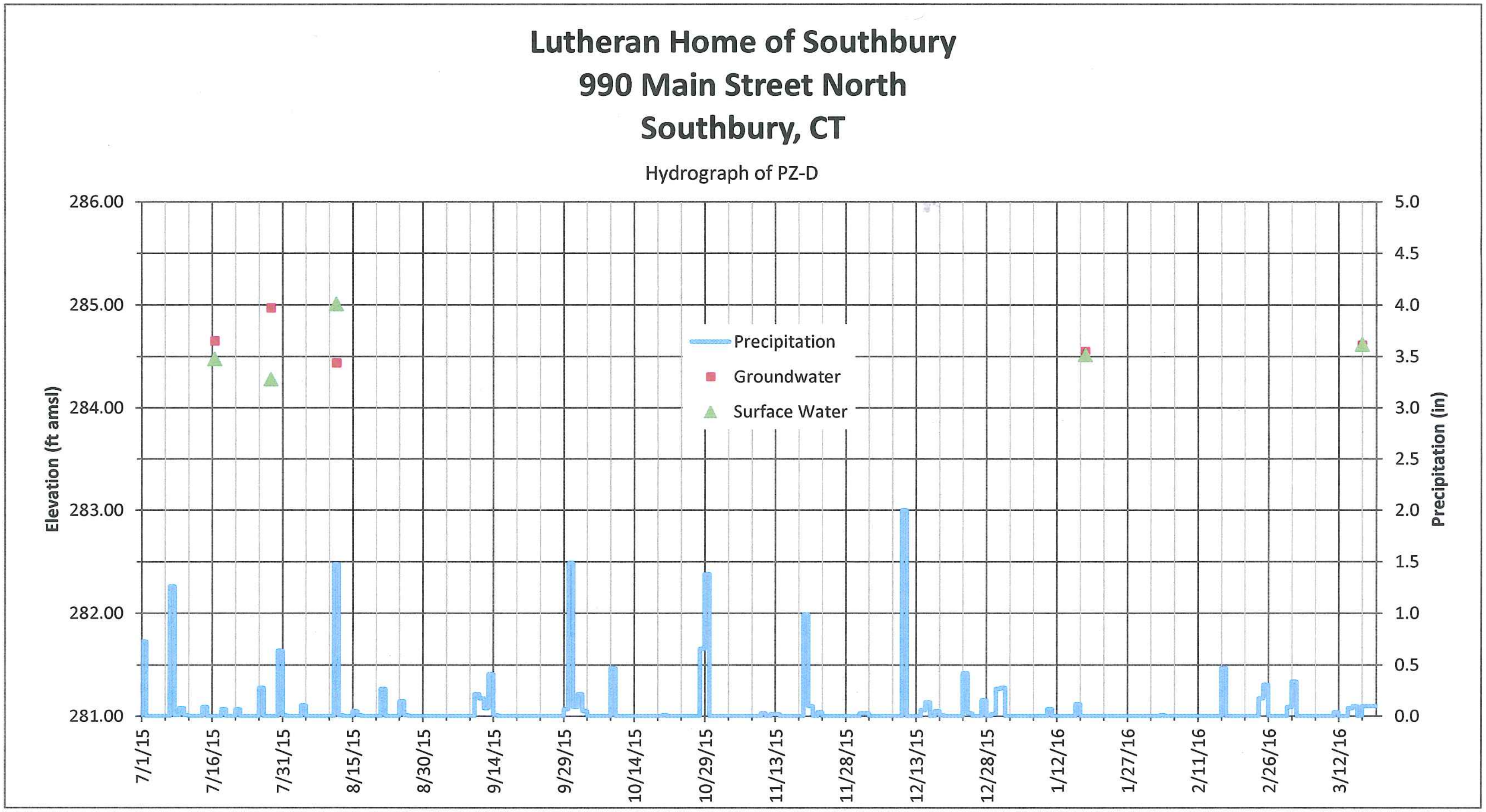
2/26/16
3/12/16


Lutheran Home of Southbury
990 Main Street North
Southbury, CT
Hydrograph of PZ-B
Elevation (ft amsl)
275.00
273.00
271.00
269.00
267.00
265.00
Precipitation (in)
5.0
4.5
4.0
3.5
3.0
2.5
2.0
1.5
1.0
0.5
0.0
Precipitation
Hand Measurements
7/1/15
7/16/15
7/31/15
8/15/15
8/30/15
9/14/15
9/29/15
10/14/15
10/29/15
11/13/15
11/28/15
12/13/15
12/28/15
1/12/16
1/27/16
2/11/16
2/26/16
3/12/16



Lutheran Home of Southbury
990 Main Street North
Southbury, CT
Hydrograph of PZ-C
Elevation (ft amsl)
Precipitation (in)
285.00
284.00
283.00
5.0
4.5
4.0
3.5
3.0
2.5
2.0
1.5
1.0
0.5
0.0
7/1/15
7/16/15
7/31/15
8/15/15
8/30/15
9/14/15
9/29/15
10/14/15
10/29/15
11/13/15
11/28/15
12/13/15
12/28/15
1/12/16
1/27/16
2/11/16
2/26/16
3/12/16
Precipitation
Groundwater
Surface Water



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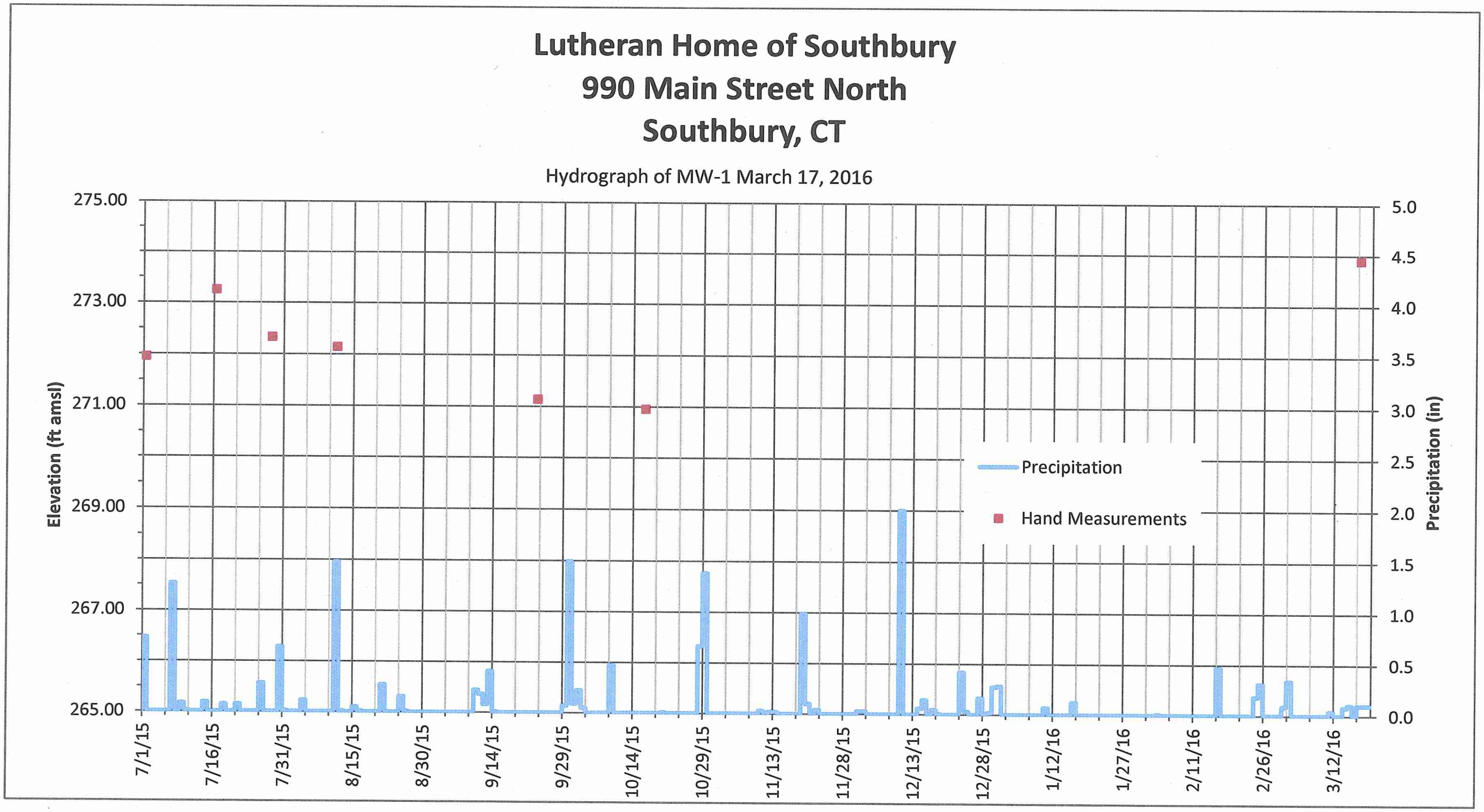
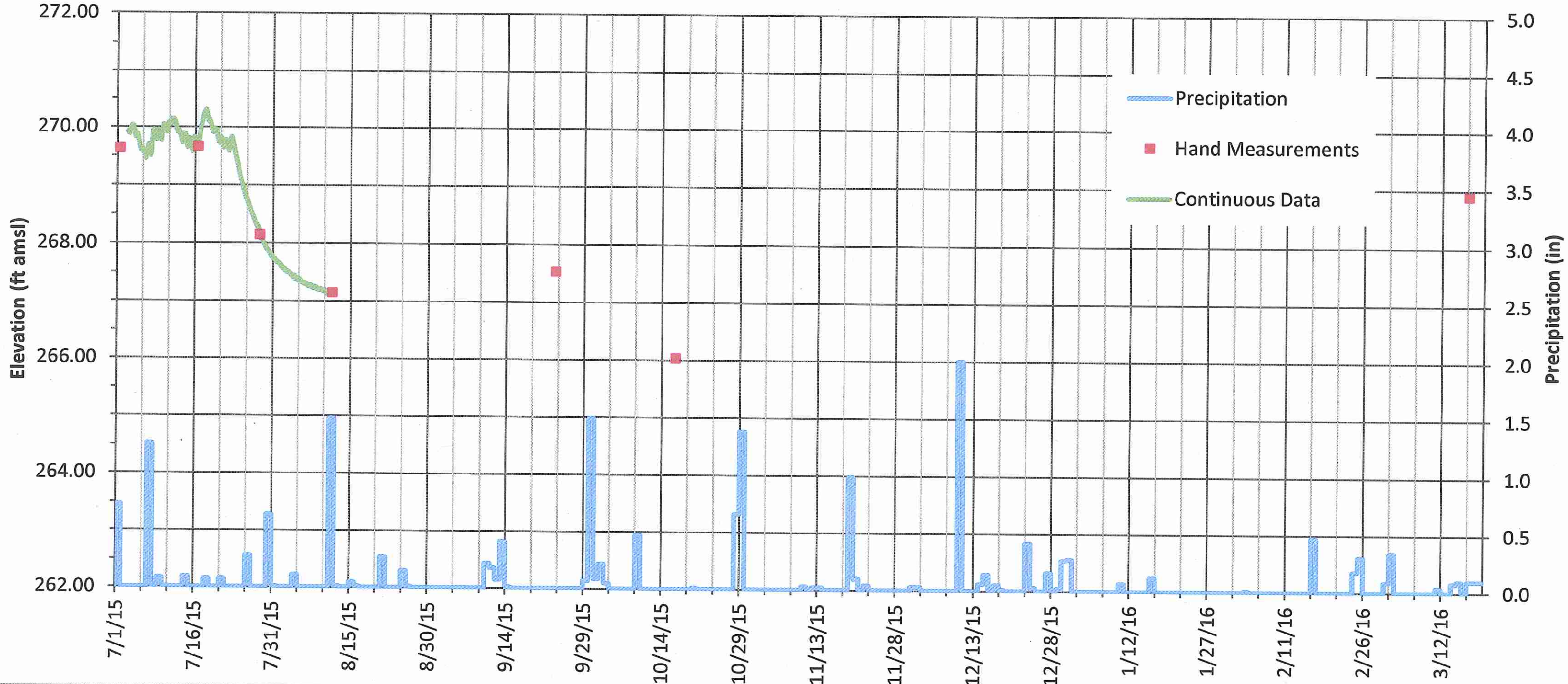
LEGGETTE, BRASHEARS GRAHAM, INC.

LBG MONITOR WELLS


Lutheran Home of Southbury
990 Main Street North
Southbury, CT
Hydrograph of MW-1 March 17, 2016
Elevation (ft amsl)
275.00
273.00
271.00
269.00
267.00
265.00
Precipitation (in)
5.0
4.5
4.0
3.5
3.0
2.5
2.0
1.5
1.0
0.5
0.0
7/1/15
7/16/15
7/31/15
8/15/15
8/30/15
9/14/15
9/29/15
10/14/15
10/29/15
11/13/15
11/28/15
12/13/15
12/28/15
1/12/16
1/27/16
2/11/16
2/26/16
3/12/16
Precipitation
Hand Measurements

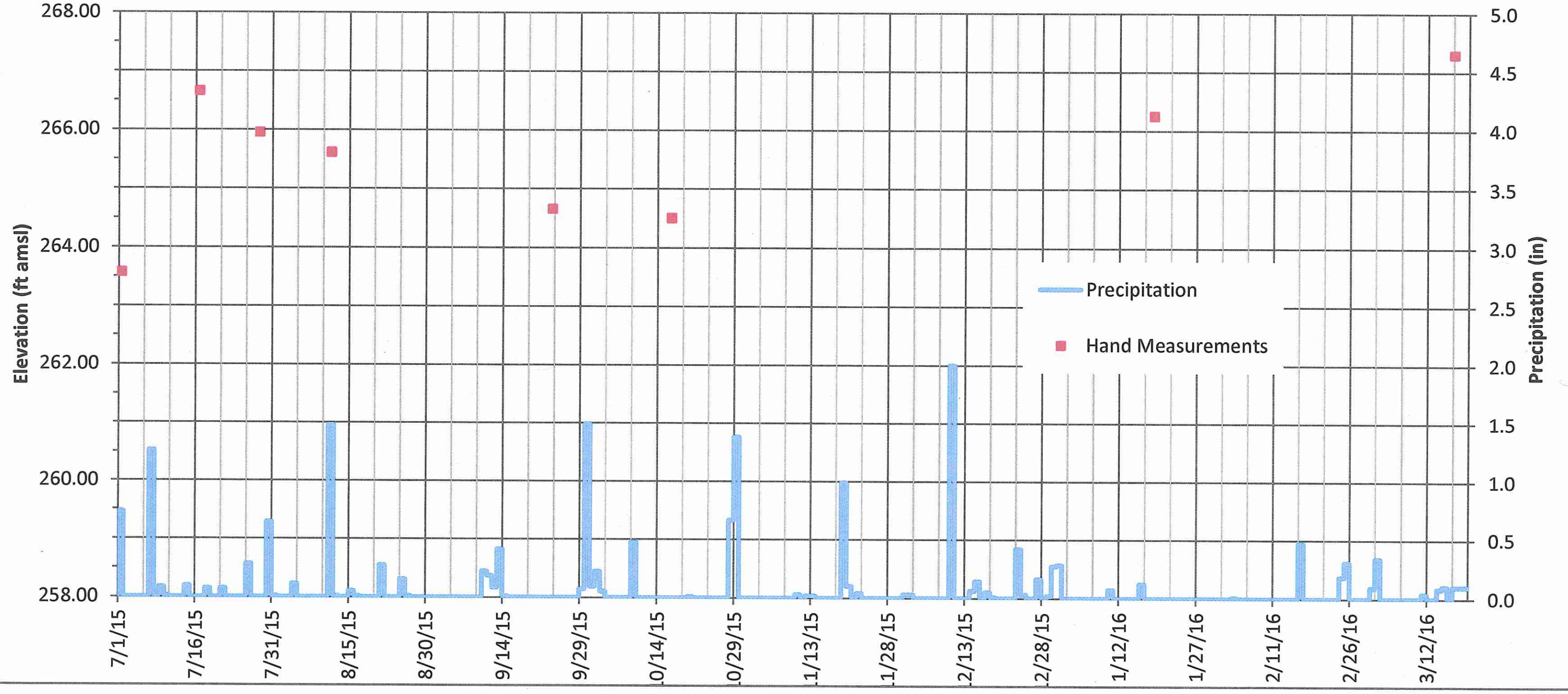
Lutheran Home of Southbury
990 Main Street North
Southbury, CT

Hydrograph of MW-2 March 17, 2016



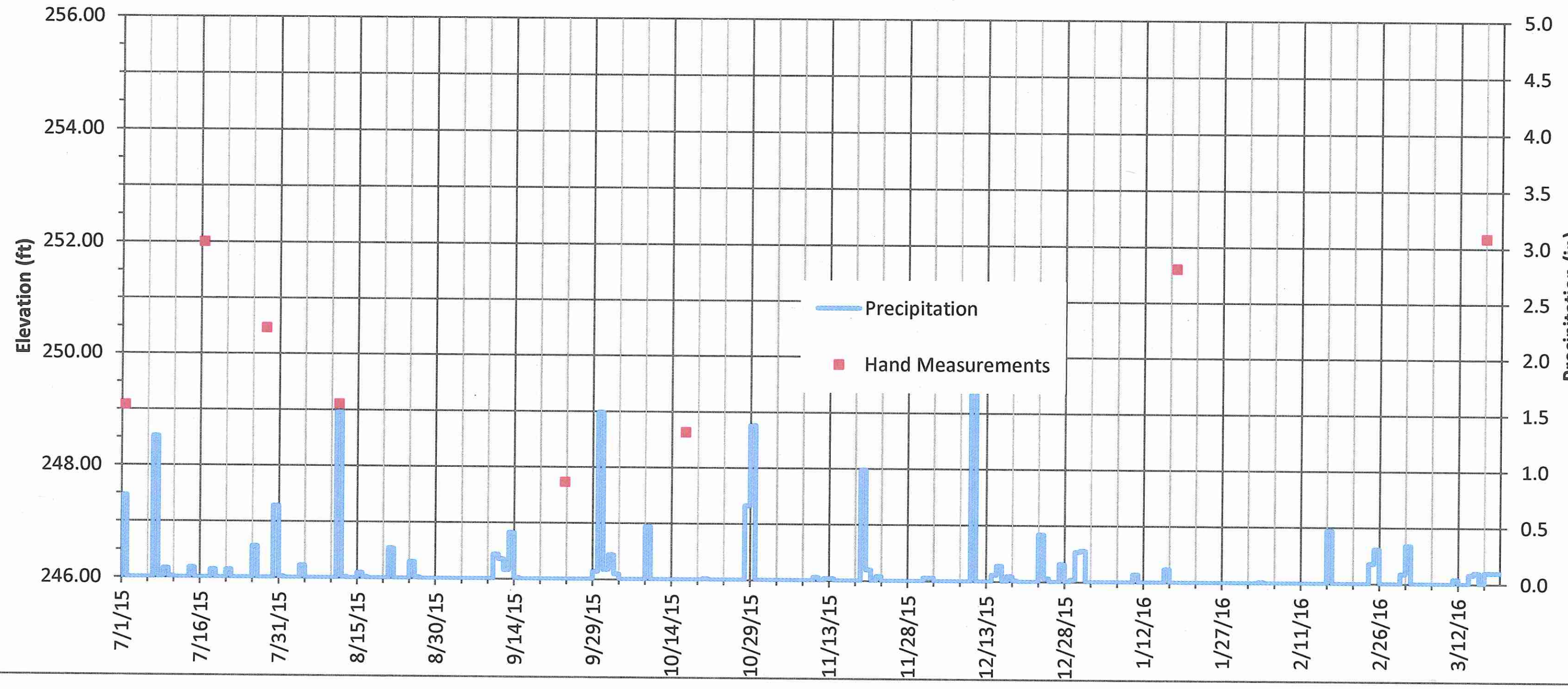
Lutheran Home of Southbury
990 Main Street North
Southbury, CT

Hydrograph of MW-3 March 17, 2016



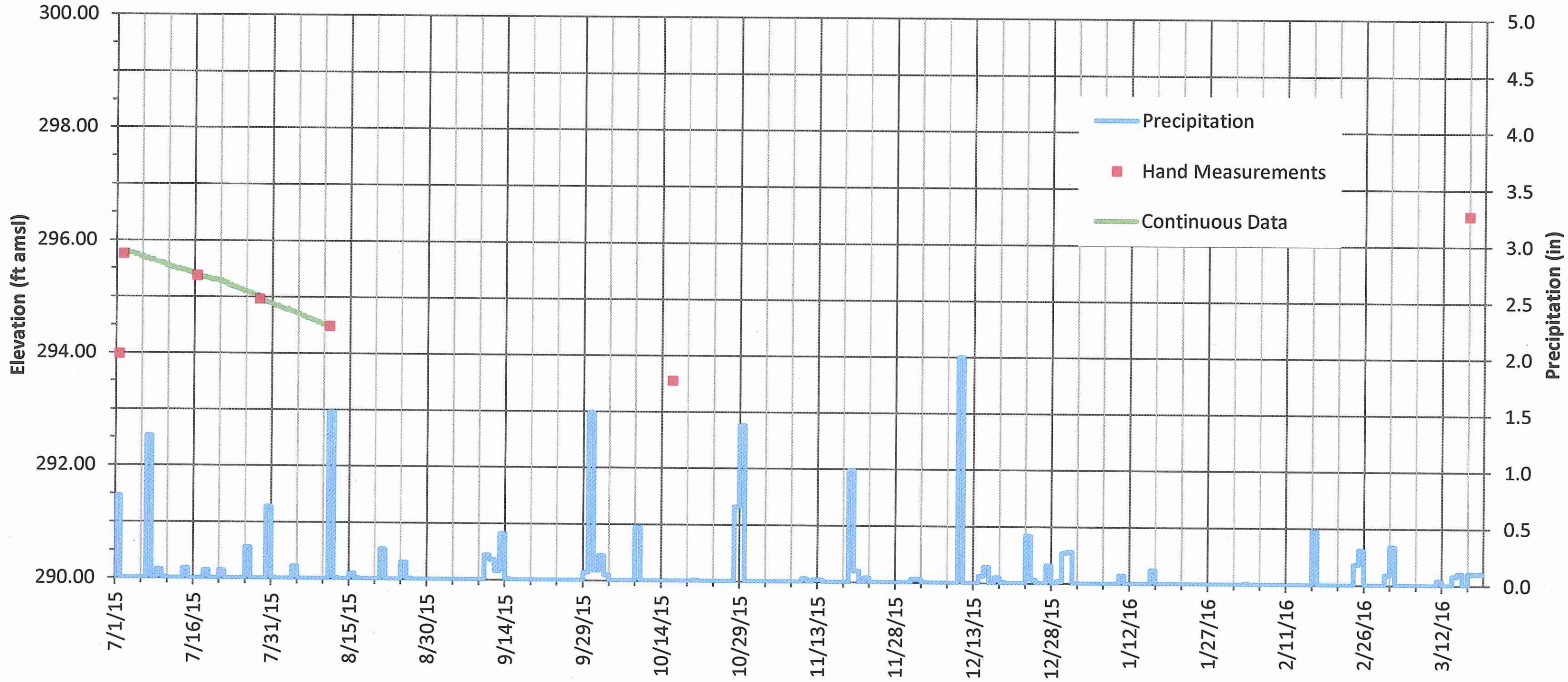
Lutheran Home of Southbury
990 Main Street North
Southbury, CT

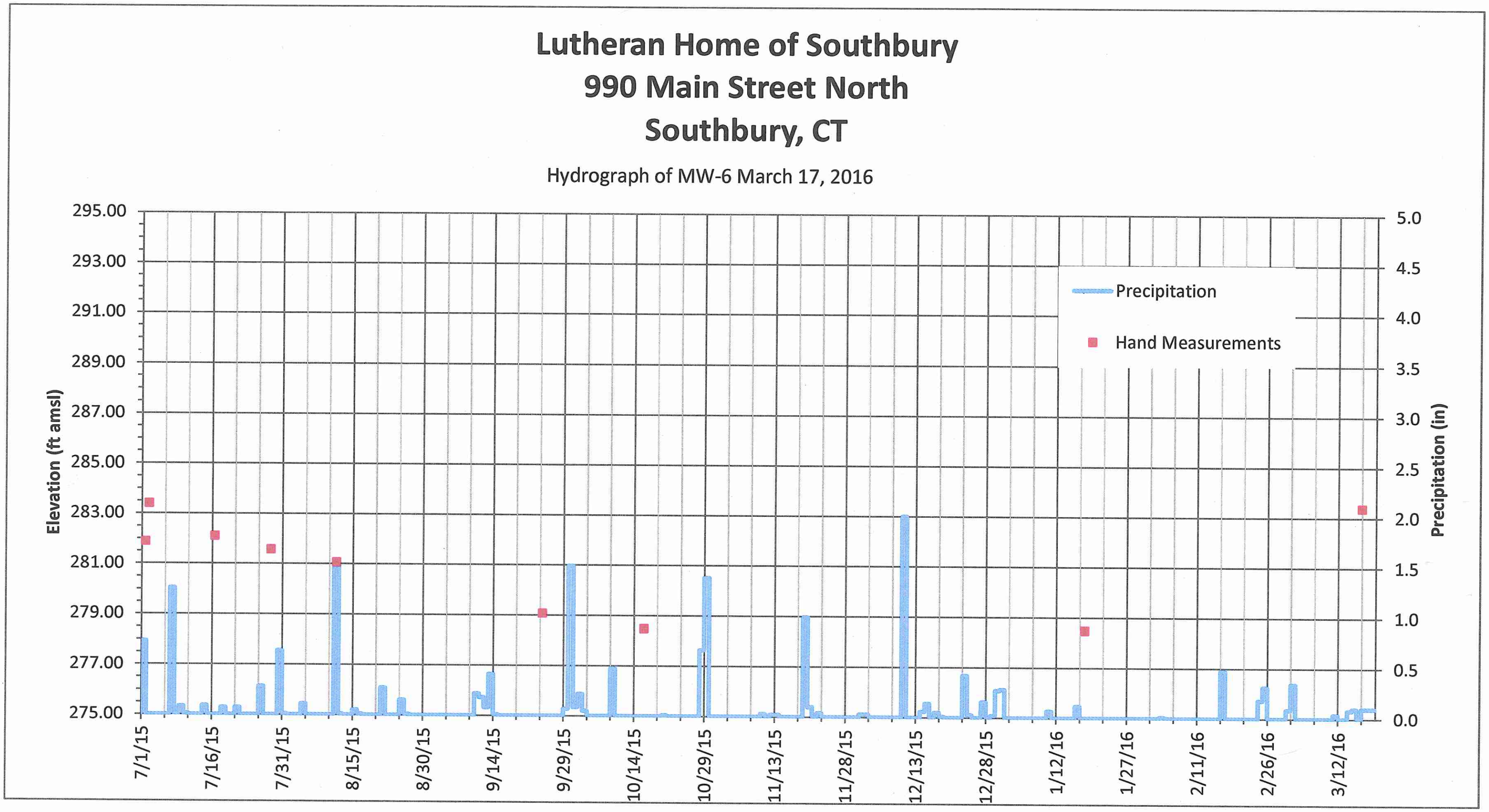
Hydrograph of MW-4 March 17, 2016



Lutheran Home of Southbury
990 Main Street North
Southbury, CT

Hydrograph of MW-5 March 17, 2016





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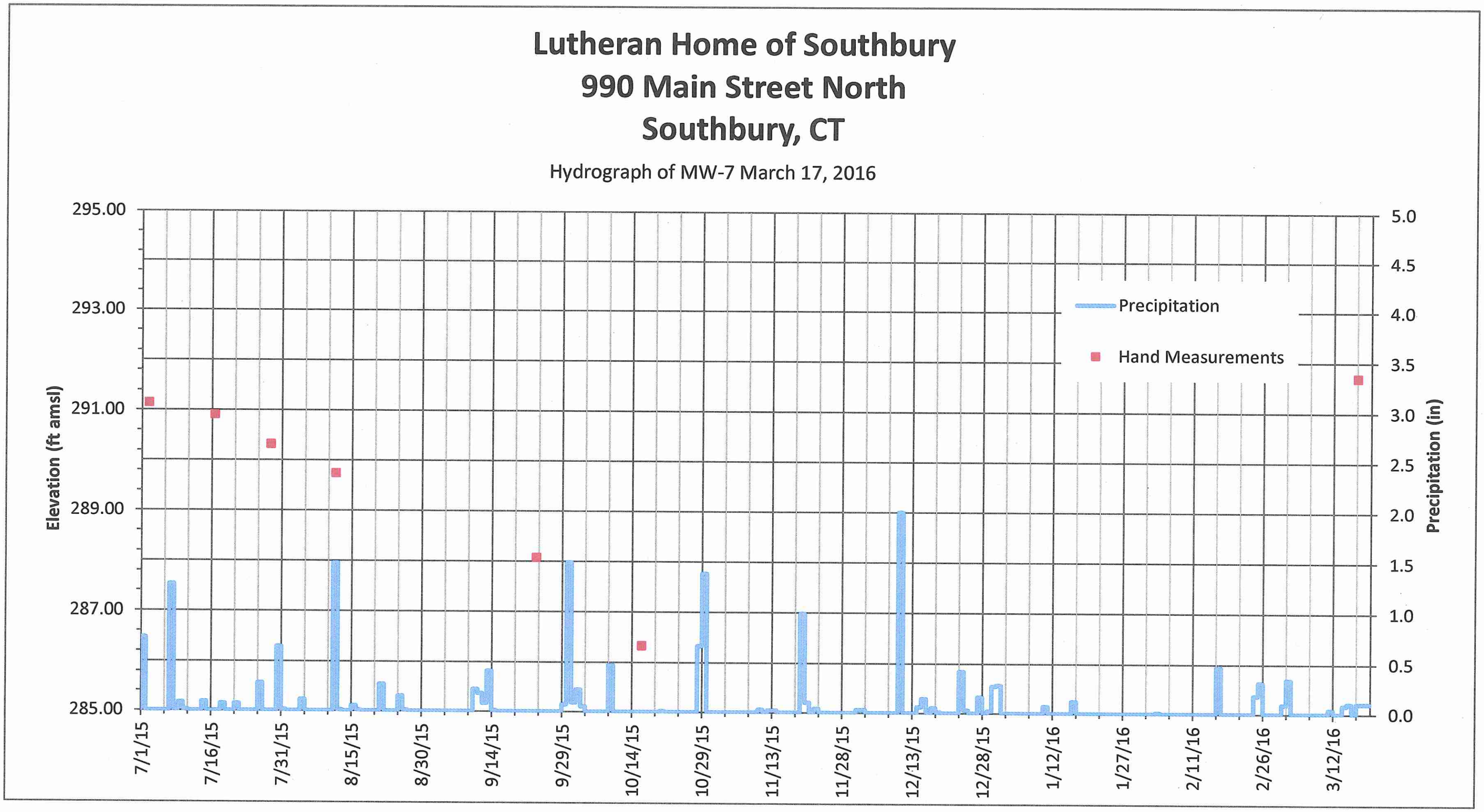
LEGGETTE, BRASHEARS GRAHAM, INC.



Lutheran Home of Southbury
990 Main Street North
Southbury, CT
Hydrograph of MW-7 March 17, 2016
Elevation (ft amsl)
295.00
293.00
291.00
289.00
287.00
285.00
Precipitation (in)
5.0
4.5
4.0
3.5
3.0
2.5
2.0
1.5
1.0
0.5
0.0
Precipitation
Hand Measurements
7/1/15
7/16/15
7/31/15
8/15/15
8/30/15
9/14/15
9/29/15
10/14/15
10/29/15
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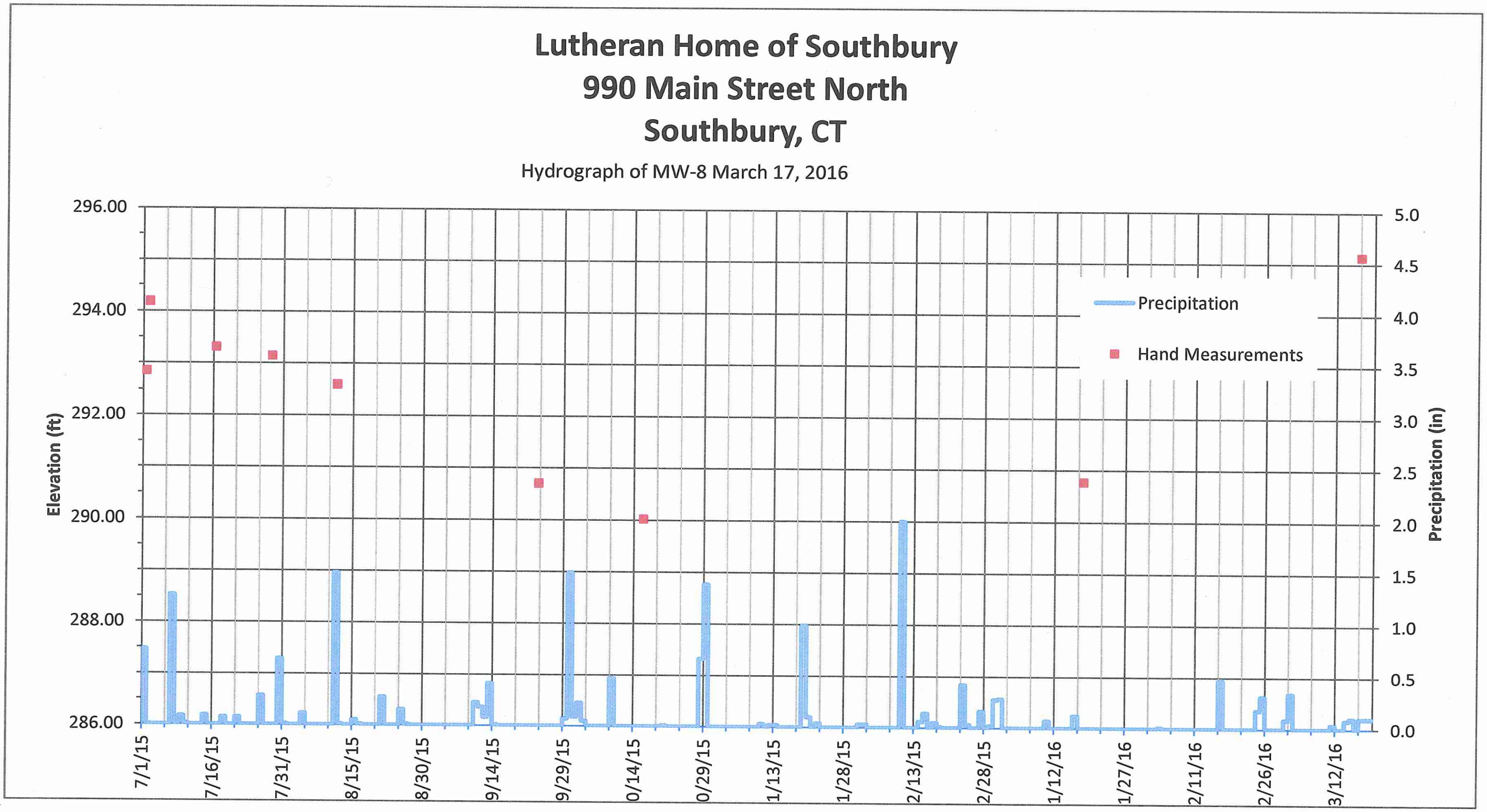
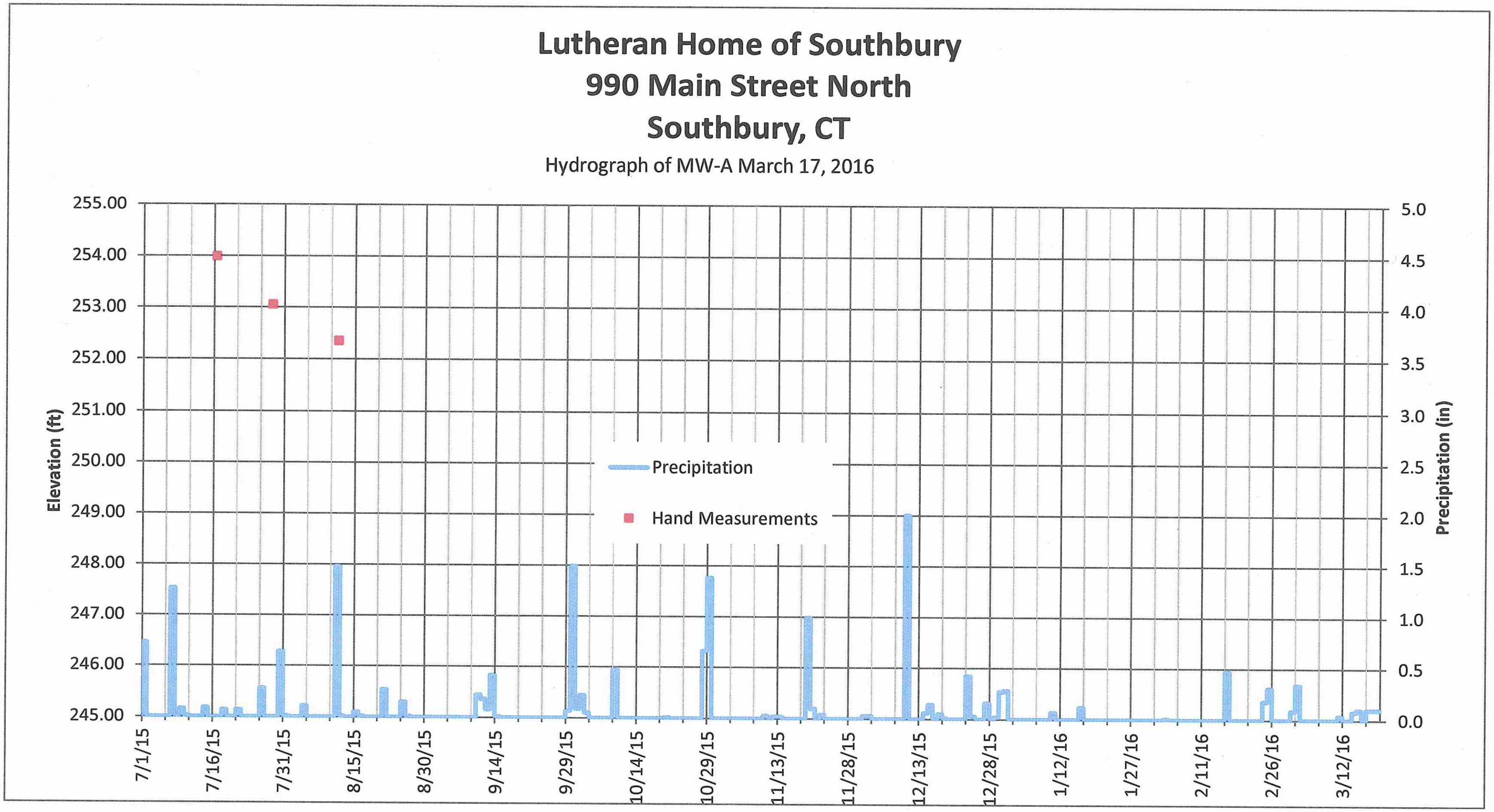
2/26/16
3/12/16

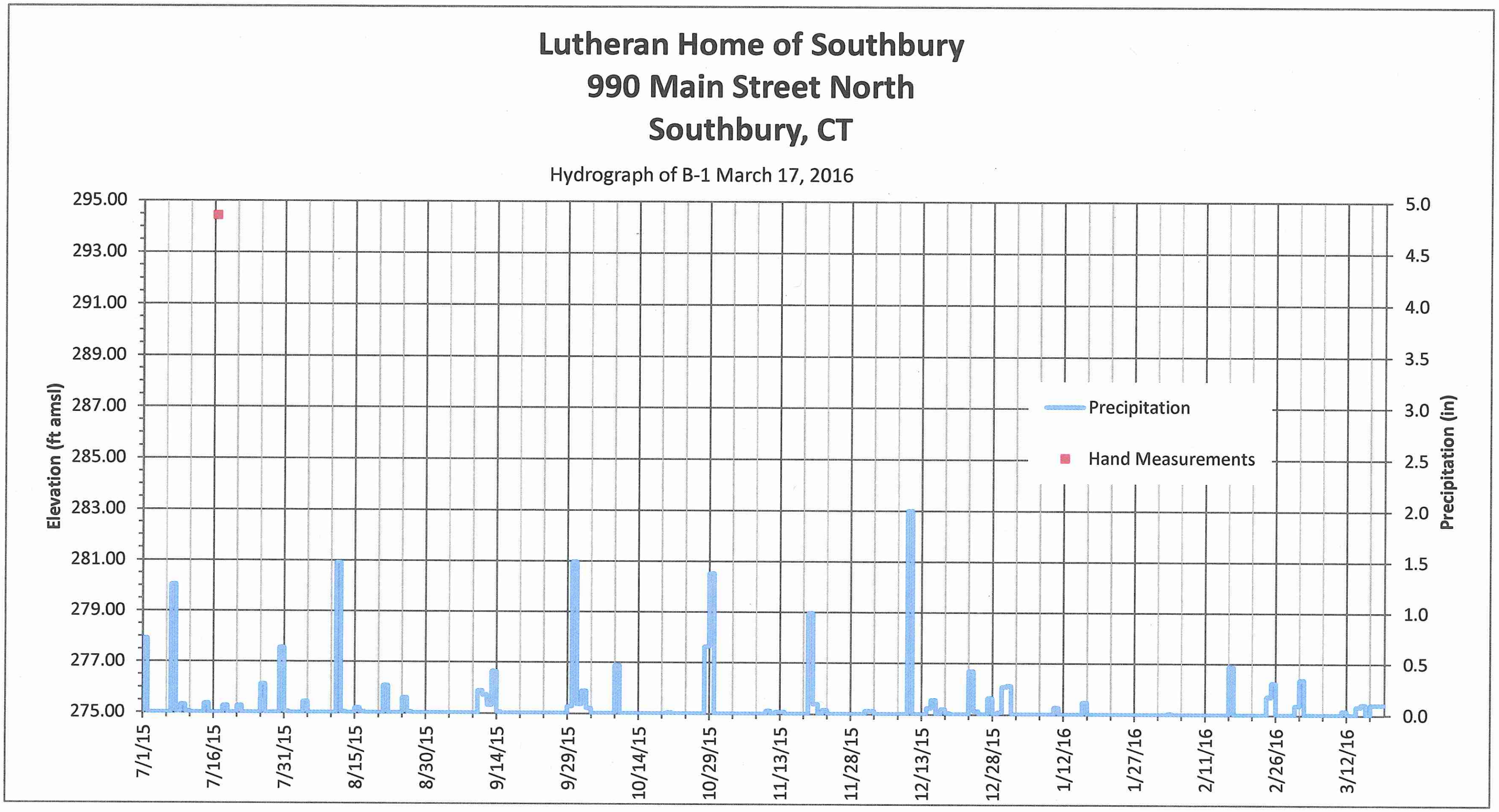


K:\Jobs\Beta Group\Lutheran Home of Southbury\Copy 2 of Monitoring Summary - B

LEGGETTE, BRASHEARS GRAHAM, INC.

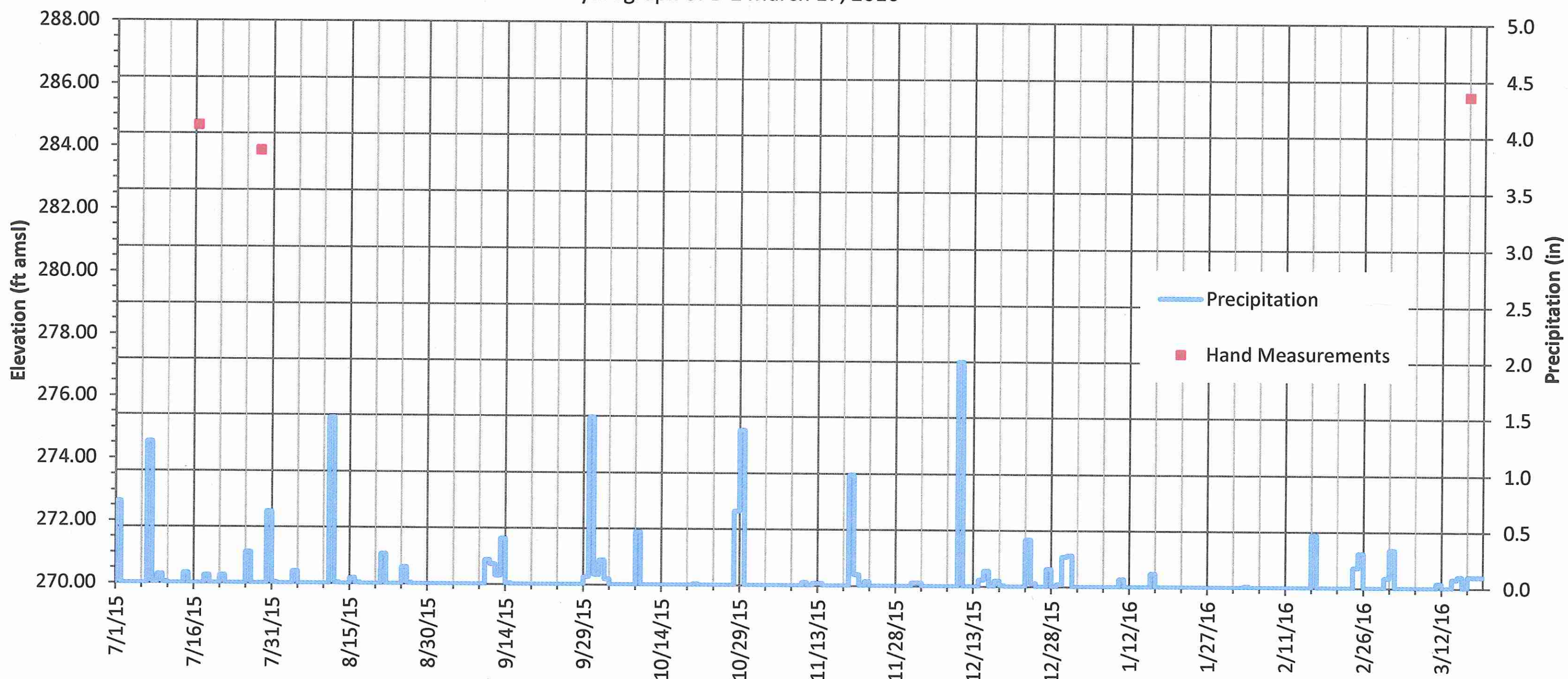

Lutheran Home of Southbury
990 Main Street North
Southbury, CT
Hydrograph of MW-A March 17, 2016
Elevation (ft)
255.00
254.00
253.00
252.00
251.00
250.00
249.00
248.00
247.00
246.00
245.00
Precipitation (in)
5.0
4.5
4.0
3.5
3.0
2.5
2.0
1.5
1.0
0.5
0.0
7/1/15
7/16/15
7/31/15
8/15/15
8/30/15
9/14/15
9/29/15
10/14/15
10/29/15
11/13/15
11/28/15
12/13/15
12/28/15
1/12/16
1/27/16
2/11/16
2/26/16
3/12/16
Precipitation
Hand Measurements

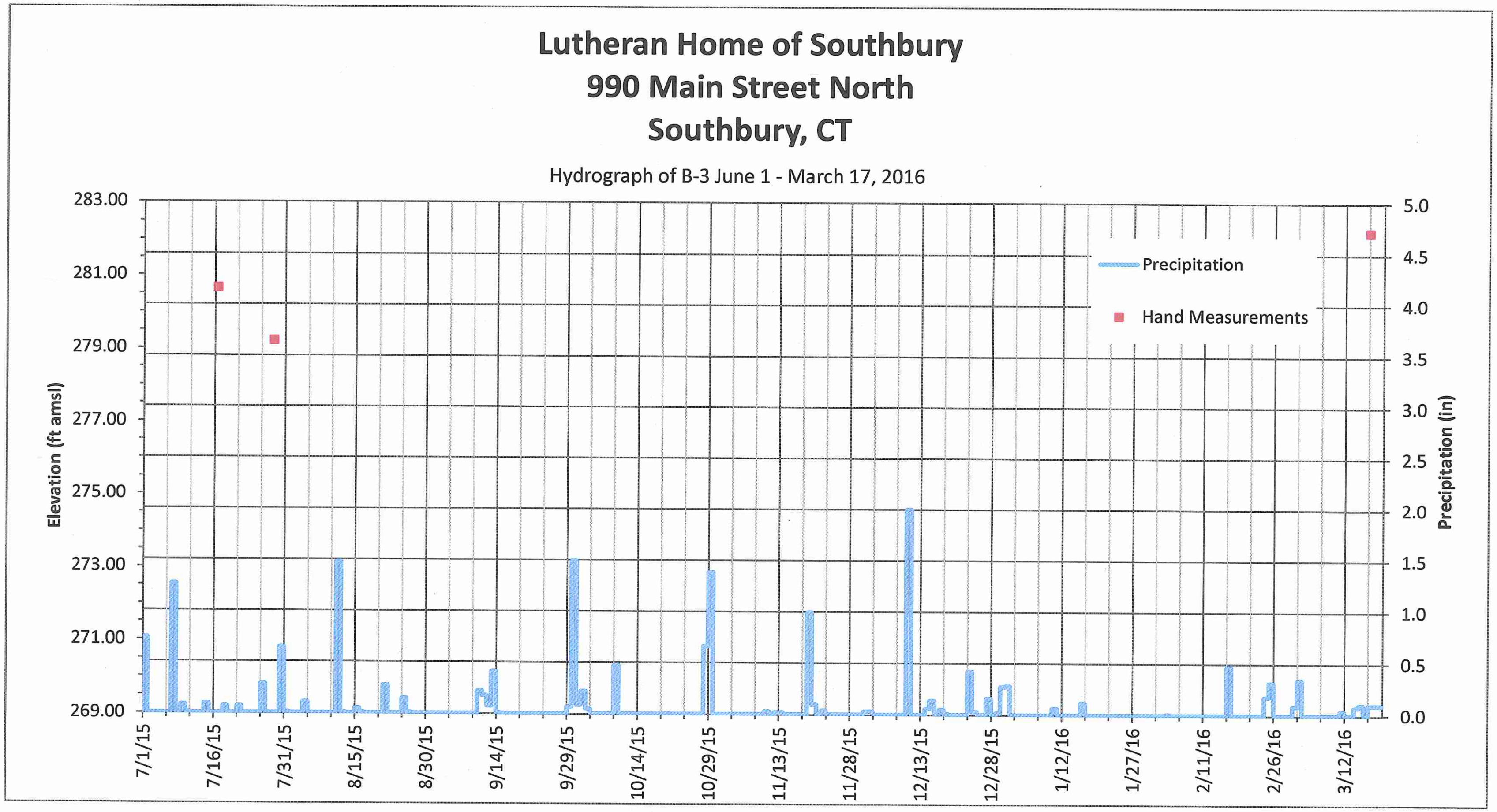
TEST PIT STAND PIPES


Lutheran Home of Southbury
990 Main Street North
Southbury, CT
Hydrograph of B-1 March 17, 2016
Elevation (ft amsl)
295.00
293.00
291.00
289.00
287.00
285.00
283.00
281.00
279.00
277.00
275.00
Precipitation (in)
5.0
4.5
4.0
3.5
3.0
2.5
2.0
1.5
1.0
0.5
0.0
7/1/15
7/16/15
7/31/15
8/15/15
8/30/15
9/14/15
9/29/15
10/14/15
10/29/15
11/13/15
11/28/15
12/13/15
12/28/15
1/12/16
1/27/16
2/11/16
2/26/16
3/12/16
Precipitation
Hand Measurements

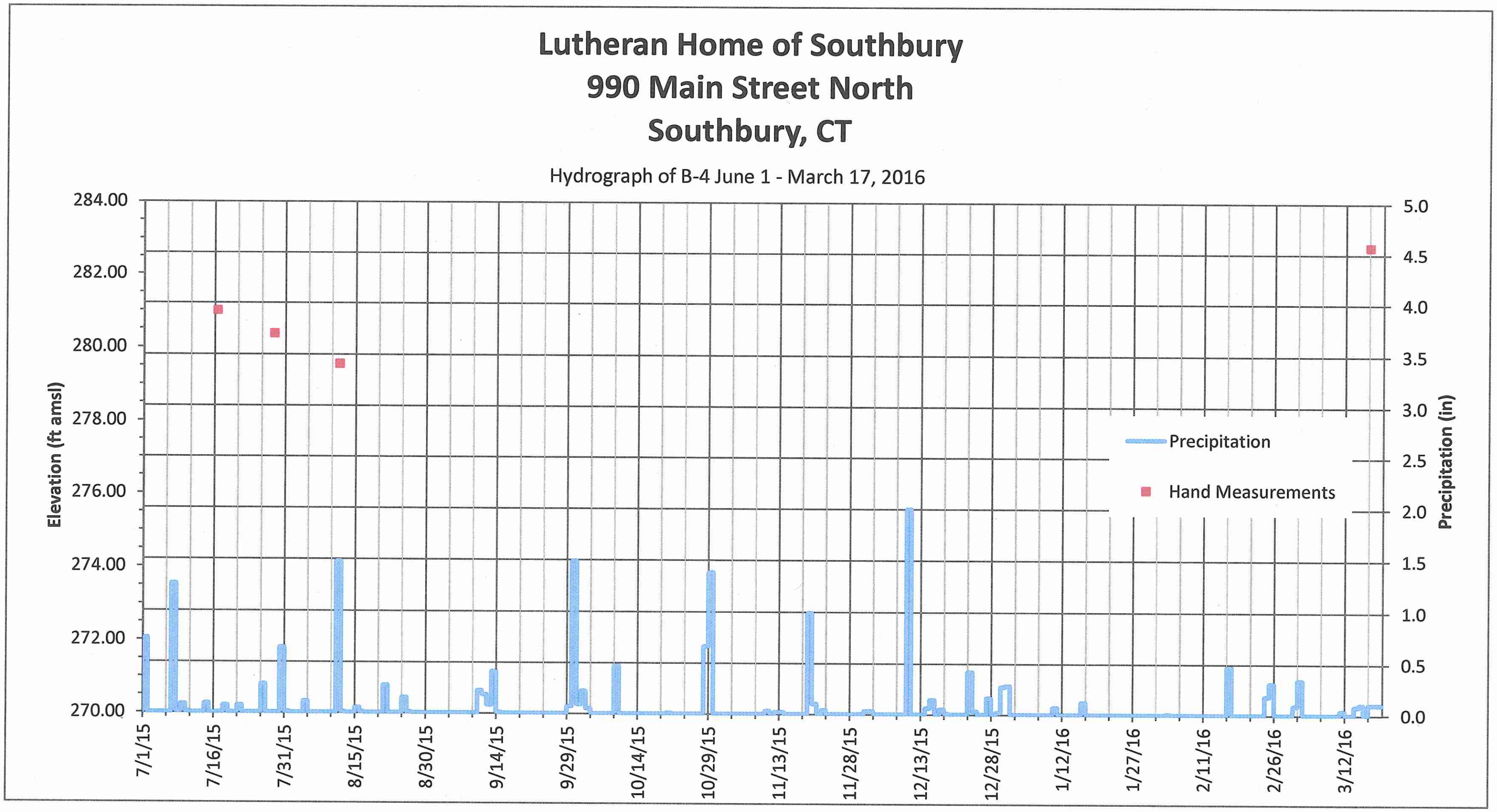
Lutheran Home of Southbury
990 Main Street North
Southbury, CT

Hydrograph of B-2 March 17, 2016

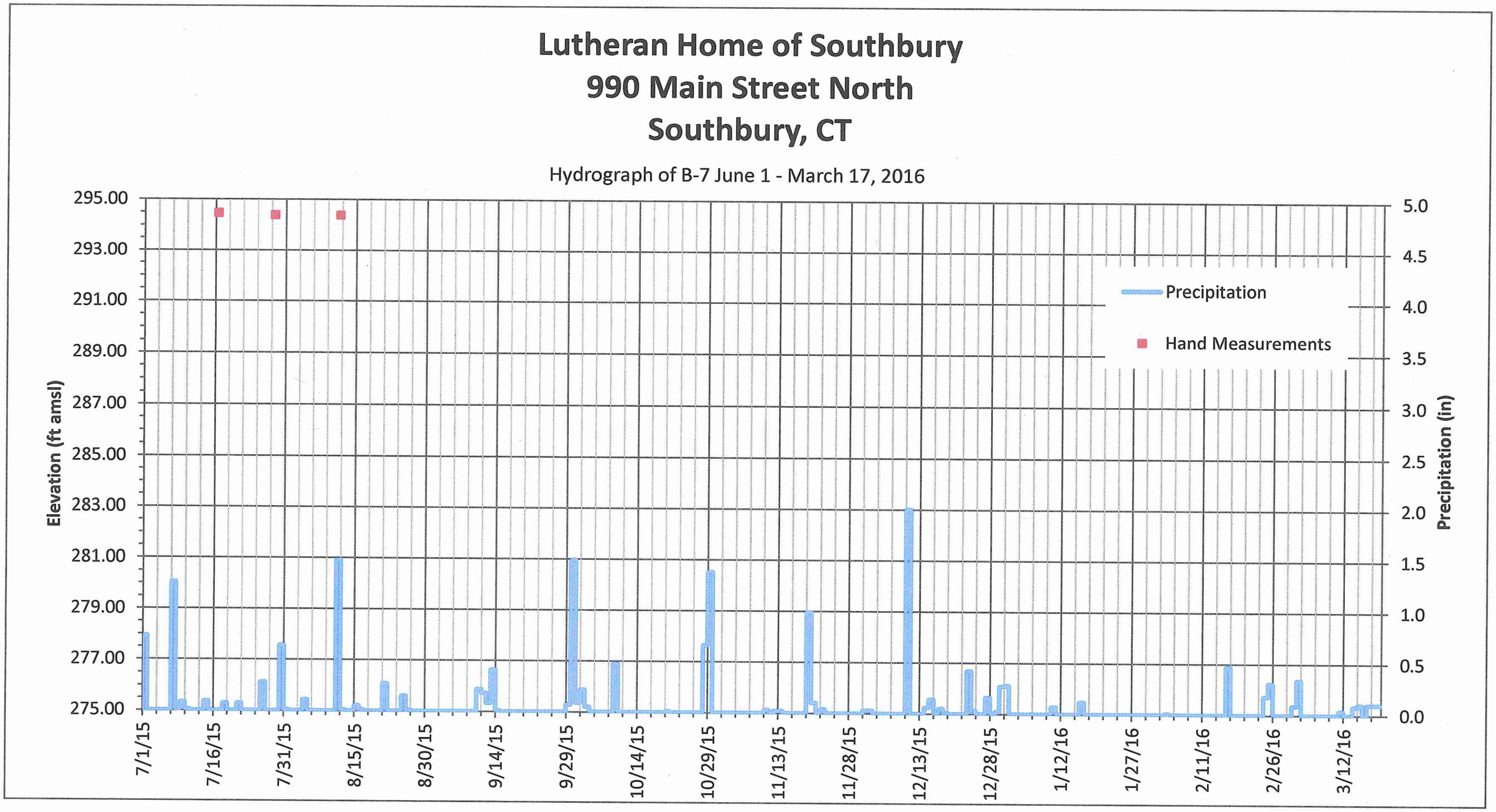




Lutheran Home of Southbury
990 Main Street North
Southbury, CT
Hydrograph of B-3 June 1 - March 17, 2016
Elevation (ft amsl)
283.00
281.00
279.00
277.00
275.00
273.00
271.00
269.00
Precipitation (in)
5.0
4.5
4.0
3.5
3.0
2.5
2.0
1.5
1.0
0.5
0.0
7/1/15
7/16/15
7/31/15
8/15/15
8/30/15
9/14/15
9/29/15
10/14/15
10/29/15
11/13/15
11/28/15
12/13/15
12/28/15
1/12/16
1/27/16
2/11/16
2/26/16
3/12/16
Precipitation
Hand Measurements



Lutheran Home of Southbury
990 Main Street North
Southbury, CT
Hydrograph of B-4 June 1 - March 17, 2016
Elevation (ft amsl)
284.00
282.00
280.00
278.00
276.00
274.00
272.00
270.00
Precipitation (in)
5.0
4.5
4.0
3.5
3.0
2.5
2.0
1.5
1.0
0.5
0.0
7/1/15
7/16/15
7/31/15
8/15/15
8/30/15
9/14/15
9/29/15
10/14/15
10/29/15
11/13/15
11/28/15
12/13/15
12/28/15
1/12/16
1/27/16
2/11/16
2/26/16
3/12/16
Precipitation
Hand Measurements



Lutheran Home of Southbury
990 Main Street North
Southbury, CT
Hydrograph of B-7 June 1 - March 17, 2016
Elevation (ft amsl)
295.00
293.00
291.00
289.00
287.00
285.00
283.00
281.00
279.00
277.00
275.00
Precipitation (in)
5.0
4.5
4.0
3.5
3.0
2.5
2.0
1.5
1.0
0.5
0.0
Precipitation
Hand Measurements
7/1/15
7/16/15
7/31/15
8/15/15
8/30/15
9/14/15
9/29/15
10/14/15
10/29/15
11/13/15
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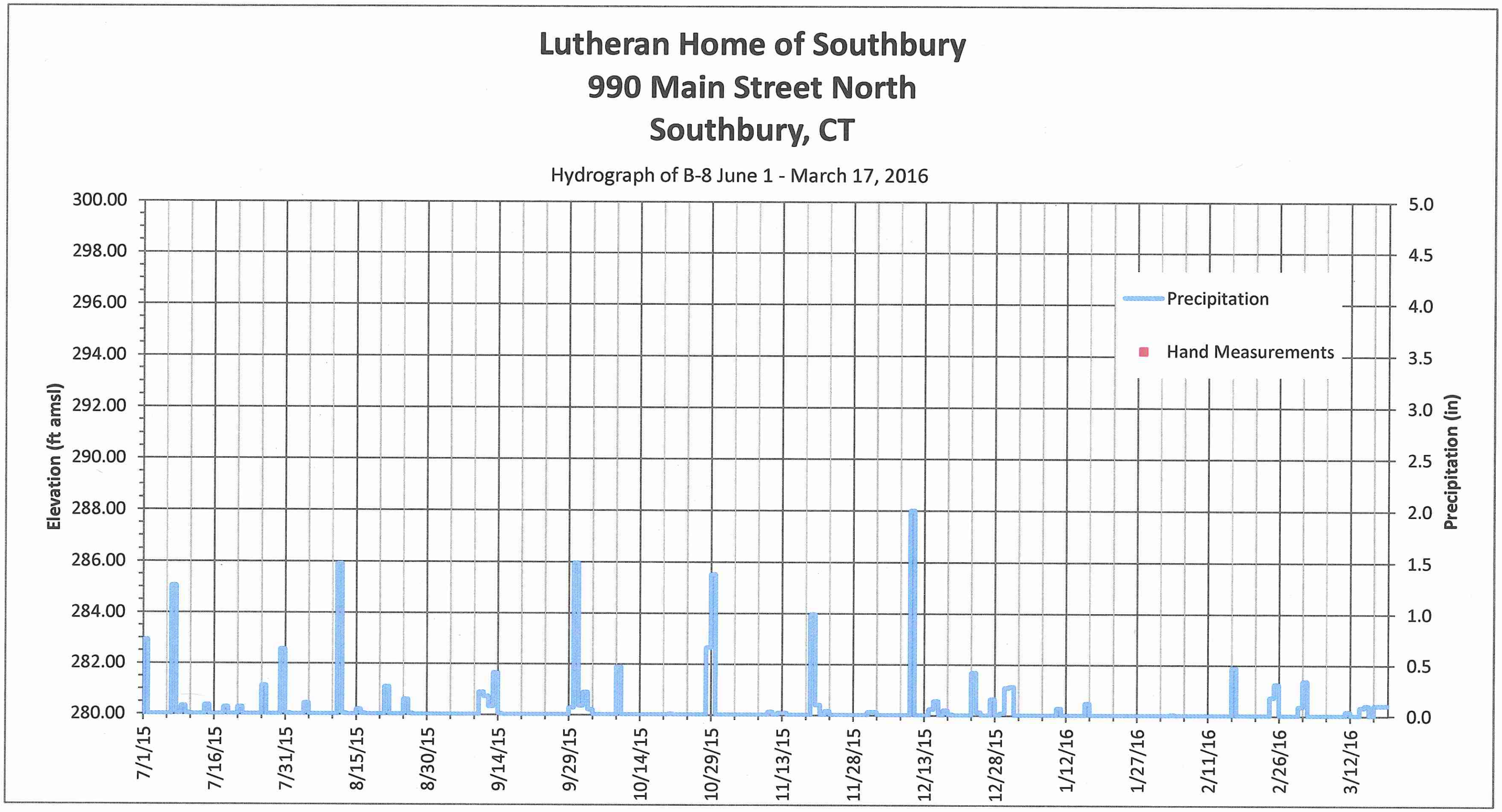
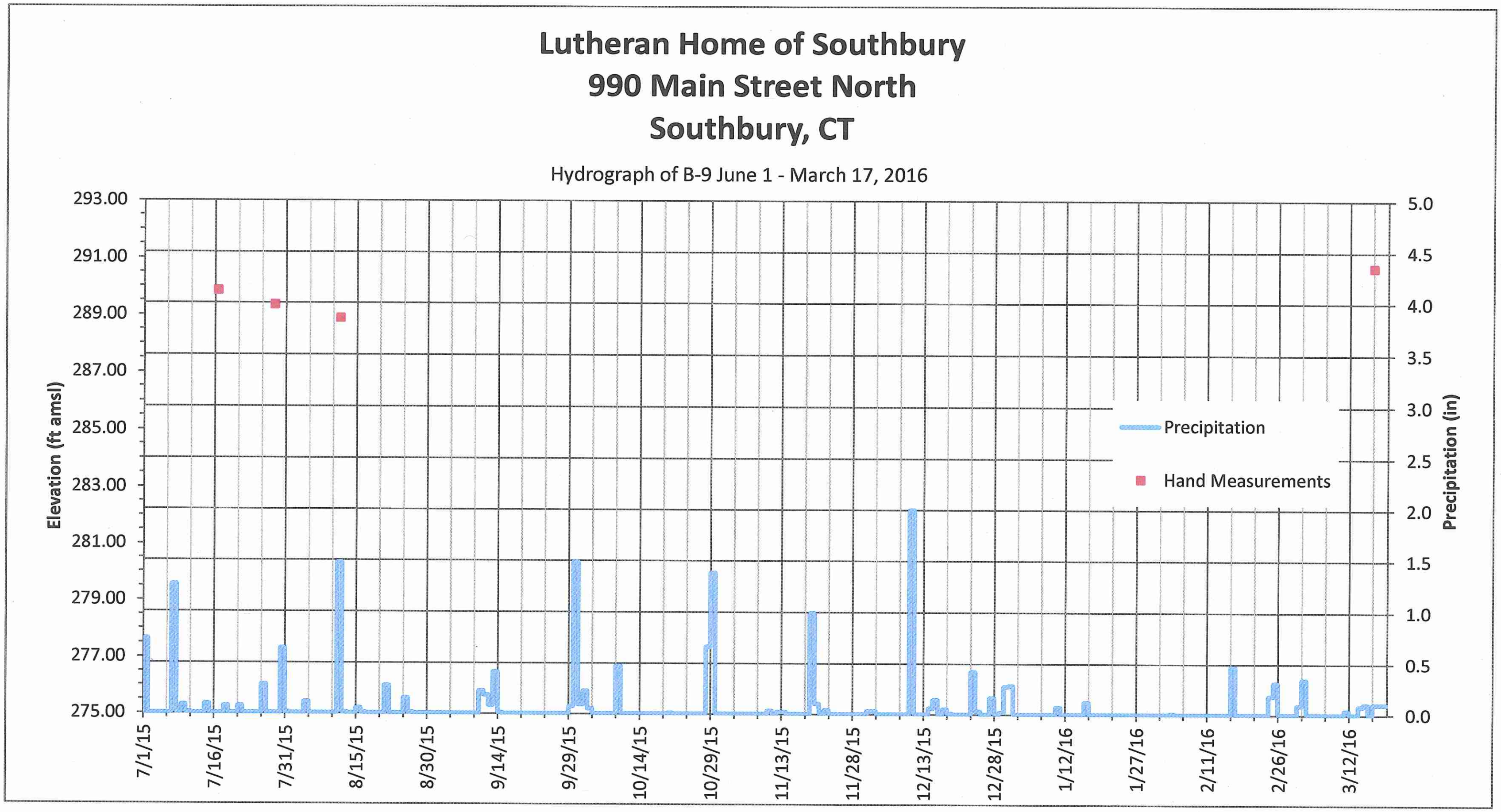
2/11/16
2/26/16
3/12/16


Lutheran Home of Southbury
990 Main Street North
Southbury, CT
Hydrograph of B-8 June 1 - March 17, 2016
Elevation (ft amsl)
Precipitation (in)
300.00
298.00
296.00
294.00
292.00
290.00
288.00
286.00
284.00
282.00
280.00
5.0
4.5
4.0
3.5
3.0
2.5
2.0
1.5
1.0
0.5
0.0
7/1/15
7/16/15
7/31/15
8/15/15
8/30/15
9/14/15
9/29/15
10/14/15
10/29/15
11/13/15
11/28/15
12/13/15
12/28/15
1/12/16
1/27/16
2/11/16
2/26/16
3/12/16
Precipitation
Hand Measurements



Lutheran Home of Southbury
990 Main Street North
Southbury, CT
Hydrograph of B-9 June 1 - March 17, 2016
Elevation (ft amsl)
293.00
291.00
289.00
287.00
285.00
283.00
281.00
279.00
277.00
275.00
Precipitation (in)
5.0
4.5
4.0
3.5
3.0
2.5
2.0
1.5
1.0
0.5
0.0
7/1/15
7/16/15
7/31/15
8/15/15
8/30/15
9/14/15
9/29/15
10/14/15
10/29/15
11/13/15
11/28/15
12/13/15
12/28/15
1/12/16
1/27/16
2/11/16
2/26/16
3/12/16
Precipitation
Hand Measurements

APPENDIX IV

WATER-QUALITY DATA

LABORATORY RESULTS

80 Lupes Drive
Stratford, CT 06615

COMPLETE ENVIRONMENTAL TESTING, INC.

Tel: (203) 377-9984
Fax: (203) 377-9952
e-mail: cet1@cetlabs.com

Client: Ms. Tunde Sandor
Leggette, Brashears & Graham
4 Research Dr. Suite 204
Shelton, CT 06484

Analytical Report

CET# 5090550

Report Date:October 01, 2015
Project: BETA, Southbury

Connecticut Laboratory Certificate: PH 0116
Massachussetts laboratory Certificate: M-CT903

New York Certification: 11982
Rhode Island Certification: 199

CET # : 5090550
Project: BETA, Southbury

SAMPLE SUMMARY

The sample(s) were received at 1.1°C.

This report contains analytical data associated with following samples only.

Sample ID	Laboratory ID	Matrix	Collection Date/Time	Receipt Date
MW-1	5090550-01	Water	9/23/2015 9:35	09/24/2015
MW-2	5090550-02	Water	9/23/2015 10:35	09/24/2015
MW-3	5090550-03	Water	9/23/2015 12:00	09/24/2015
MW-4	5090550-04	Water	9/23/2015 12:45	09/24/2015

CET # : 5090550
Project: BETA, Southbury

Analyte: Total Nitrogen [Calculated Analyte]

Analyst: Various

Matrix: Water

Laboratory ID	Client Sample ID	Result	RL	Units	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
5090550-01	MW-1	**19**	1.2	mg/L	1				
5090550-02	MW-2	**13**	1.2	mg/L	1				
5090550-03	MW-3	**5.1**	1.2	mg/L	1				
5090550-04	MW-4	**2.8**	1.2	mg/L	1				

Analyte: Nitrite as N [EPA 300.0]

Analyst: CC

Matrix: Water

Laboratory ID	Client Sample ID	Result	RL	Units	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
5090550-01	MW-1	ND	0.10	mg/L	1	B5I2428	09/24/2015	09/24/2015 17:02	
5090550-02	MW-2	ND	0.10	mg/L	1	B5I2428	09/24/2015	09/24/2015 17:18	
5090550-03	MW-3	ND	0.10	mg/L	1	B5I2428	09/24/2015	09/24/2015 17:35	
5090550-04	MW-4	ND	0.10	mg/L	1	B5I2428	09/24/2015	09/24/2015 17:51	

Analyte: Nitrate as N [EPA 300.0]

Analyst: CC

Matrix: Water

Laboratory ID	Client Sample ID	Result	RL	Units	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
5090550-01	MW-1	ND	0.10	mg/L	1	B5I2428	09/24/2015	09/24/2015 17:02	
5090550-02	MW-2	ND	0.10	mg/L	1	B5I2428	09/24/2015	09/24/2015 17:18	
5090550-03	MW-3	**0.16**	0.10	mg/L	1	B5I2428	09/24/2015	09/24/2015 17:35	
5090550-04	MW-4	**2.8**	0.10	mg/L	1	B5I2428	09/24/2015	09/24/2015 17:51	

CET # : 5090550
Project: BETA, Southbury

Analyte: Ammonia as N [EPA 350.1]

Analyst: CC

Matrix: Water

Laboratory ID	Client Sample ID	Result	RL	Units	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
5090550-01	MW-1	**22**	0.10	mg/L	1	B5I2821	09/28/2015	09/28/2015 15:34	
5090550-02	MW-2	**12**	0.10	mg/L	1	B5I2821	09/28/2015	09/28/2015 15:34	
5090550-03	MW-3	**4.1**	0.10	mg/L	1	B5I2821	09/28/2015	09/28/2015 15:34	
5090550-04	MW-4	ND	0.10	mg/L	1	B5I2821	09/28/2015	09/28/2015 15:34	

Analyte: Phosphorous, Total [EPA 365.4]

Analyst: CC

Matrix: Water

Laboratory ID	Client Sample ID	Result	RL	Units	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
5090550-01	MW-1	**2.6**	0.10	mg/L	1	B5I2907	09/30/2015	09/30/2015 13:34	
5090550-02	MW-2	**2.1**	0.10	mg/L	1	B5I2907	09/30/2015	09/30/2015 13:34	
5090550-03	MW-3	ND	0.10	mg/L	1	B5I2907	09/30/2015	09/30/2015 13:34	
5090550-04	MW-4	ND	0.10	mg/L	1	B5I2907	09/30/2015	09/30/2015 13:34	

Analyte: Orthophosphate as P [SM 4500-P E]

Analyst: CC

Matrix: Water

Laboratory ID	Client Sample ID	Result	RL	Units	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
5090550-01	MW-1	**1.9**	1.0	mg/L	10	B5I2430	09/24/2015	09/24/2015 16:48	
5090550-02	MW-2	**1.6**	1.0	mg/L	10	B5I2430	09/24/2015	09/24/2015 16:48	
5090550-03	MW-3	**0.12**	0.10	mg/L	1	B5I2430	09/24/2015	09/24/2015 16:48	
5090550-04	MW-4	ND	0.10	mg/L	1	B5I2430	09/24/2015	09/24/2015 16:48	

CET # : 5090550
Project: BETA, Southbury

Analyte: Total Kjeldahl Nitrogen (TKN) [EPA 351.2]

Analyst: CC
Matrix: Water

Laboratory ID	Client Sample ID	Result	RL	Units	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
5090550-01	MW-1	**19**	1.0	mg/L	1	B5I2908	09/30/2015	09/30/2015 16:19	
5090550-02	MW-2	**13**	1.0	mg/L	1	B5I2908	09/30/2015	09/30/2015 16:19	
5090550-03	MW-3	**4.9**	1.0	mg/L	1	B5I2908	09/30/2015	09/30/2015 16:19	
5090550-04	MW-4	ND	1.0	mg/L	1	B5I2908	09/30/2015	09/30/2015 16:19	

Analyte: Phosphorous, Total Dissolved [EPA 365.4]

Analyst: CC
Matrix: Water

Laboratory ID	Client Sample ID	Result	RL	Units	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
5090550-01	MW-1	**2.4**	0.10	mg/L	1	B5I2909	09/30/2015	09/30/2015 13:38	
5090550-02	MW-2	**1.9**	0.10	mg/L	1	B5I2909	09/30/2015	09/30/2015 13:38	
5090550-03	MW-3	ND	0.10	mg/L	1	B5I2909	09/30/2015	09/30/2015 13:38	
5090550-04	MW-4	ND	0.10	mg/L	1	B5I2909	09/30/2015	09/30/2015 13:38	

CET # : 5090550
Project: BETA, Southbury

QUALITY CONTROL SECTION

Batch B5I2428 - EPA 300.0

Analyte	Result (mg/L)	RL (mg/L)	Spike Level	Source Result	% Rec	% Rec Limits	RPD	RPD Limit	Notes
Blank (B5I2428-BLK1)					Prepared: 9/24/2015 Analyzed: 9/24/2015				
Nitrate as N	ND	0.10							
Nitrite as N	ND	0.10							
LCS (B5I2428-BS1)					Prepared: 9/24/2015 Analyzed: 9/24/2015				
Nitrate as N	5.2	0.10	5.000		105	80 - 120			
Nitrite as N	5.0	0.10	5.000		99.4	80 - 120			

CET # : 5090550

Project: BETA, Southbury

Batch B5I2430 - SM 4500-P E

Analyte	Result (mg/L)	RL (mg/L)	Spike Level	Source Result	% Rec	% Rec Limits	RPD	RPD Limit	Notes
Blank (B5I2430-BLK1)					Prepared: 9/24/2015 Analyzed: 9/24/2015				
Orthophosphate as P	ND	0.10							
LCS (B5I2430-BS1)					Prepared: 9/24/2015 Analyzed: 9/24/2015				
Orthophosphate as P	0.309	0.10	0.326		94.8	80 - 120			

CET # : 5090550
Project: BETA, Southbury

Batch B5I2821 - EPA 350.1

Analyte	Result (mg/L)	RL (mg/L)	Spike Level	Source Result	% Rec	% Rec Limits	RPD	RPD Limit	Notes
Blank (B5I2821-BLK1)					Prepared: 9/28/2015 Analyzed: 9/28/2015				
Ammonia as N	ND	0.10							
LCS (B5I2821-BS1)					Prepared: 9/28/2015 Analyzed: 9/28/2015				
Ammonia as N	5.1	0.10	5.000		102	80 - 120			

CET # : 5090550
Project: BETA, Southbury

Batch B5I2907 - EPA 365.4

Analyte	Result (mg/L)	RL (mg/L)	Spike Level	Source Result	% Rec	% Rec Limits	RPD	RPD Limit	Notes
Blank (B5I2907-BLK1)					Prepared: 9/30/2015 Analyzed: 9/30/2015				
Phosphorous, Total	ND	0.10							
LCS (B5I2907-BS1)					Prepared: 9/30/2015 Analyzed: 9/30/2015				
Phosphorous, Total	0.509	0.10	0.509		100	80 - 120			

CET # : 5090550
Project: BETA, Southbury

Batch B5I2908 - EPA 351.2

Analyte	Result (mg/L)	RL (mg/L)	Spike Level	Source Result	% Rec	% Rec Limits	RPD	RPD Limit	Notes
Blank (B5I2908-BLK1)					Prepared: 9/30/2015 Analyzed: 9/30/2015				
Total Kjeldahl Nitrogen (TKN)	ND	1.0							
LCS (B5I2908-BS1)					Prepared: 9/30/2015 Analyzed: 9/30/2015				
Total Kjeldahl Nitrogen (TKN)	5.75	1.0	5.000		115	80 - 120			

CET # : 5090550
Project: BETA, Southbury

Batch B5I2909 - EPA 365.4

Analyte	Result (mg/L)	RL (mg/L)	Spike Level	Source Result	% Rec	% Rec Limits	RPD	RPD Limit	Notes
Blank (B5I2909-BLK1)					Prepared: 9/30/2015 Analyzed: 9/30/2015				
Phosphorous, Total Dissolved	ND	0.10							
LCS (B5I2909-BS1)					Prepared: 9/30/2015 Analyzed: 9/30/2015				
Phosphorous, Total Dissolved	0.481	0.10				80 - 120			L
Duplicate (B5I2909-DUP1)		**Source: 5090550-01**			Prepared: 9/30/2015 Analyzed: 9/30/2015				
Phosphorous, Total Dissolved	2.37	0.10		2.40			1.26	20	

CET # : 5090550
Project: BETA, Southbury

Questions related to this report should be directed to David Ditta, Timothy Fusco, or Robert Blake at 203-377-9984.

Sincerely,

David Ditta
Laboratory Director

Report Comments:

Sample Result Flags:
E- The result is estimated, above the calibration range.
H- The surrogate recovery is above the control limits.
L- The surrogate recovery is below the control limits.
B- The compound was detected in the laboratory blank.
P- The Relative Percent Difference (RPD) of dual column analyses exceeds 40%.
D- The RPD between the sample and the sample duplicate is high. Sample Homogenity may be a problem.
+- The Surrogate was diluted out.
*C1- The Continuing Calibration did not meet method specifications and was biased low for this analyte. Increased uncertainty is associated with the reported value which is likely to be biased low.
*C2- The Continuing Calibration did not meet method specifications and was biased high for this analyte. Increased uncertainty is associated with the reported value which is likely to be biased high.
*F1- The Laboratory Control Sample recovery is outside of control limits. Reported value for this analyte is likely to be biased on the low side.
*F2- The Laboratory Control Sample recovery is outside of control limits. Reported value for this analyte is likely to be biased on the high side.
I- The Analyte exceeds %RSD limits for the Initial Calibration. This is a non-directional bias.

All results met standard operating procedures unless indicated by a data qualifier next to a sample result, or a narration in the QC report.

Complete Environmental Testing is only responsible for the certified testing and is not directly responsible for the integrity of the sample before laboratory receipt.

ND is None Detected at the specified detection limit
All analyses were performed in house unless a Reference Laboratory is listed.
Samples will be disposed of 30 days after the report date.

CET # : 5090550
Project: BETA, Southbury

80 Lupes Drive
Stratford, CT 06615

COMPLETE ENVIRONMENTAL TESTING, INC.

Tel: (203) 377-9984
Fax: (203) 377-9952
email: cet1@cetlabs.com

Quality Control Definitions and Abbreviations

Internal Standard (IS)	An Analyte added to each sample or sample extract. An internal standard is used to monitor retention time, calculate relative response, and quantify analytes of interest.
Surrogate Recovery	The % recovery for non-tarer organic compounds that are spiked into all samples. Used to determine method performance.
Continuing Calibration	An analytical standard analyzed with each set of samples to verify initial calibration of the system.
Batch	Samples that are analyzed together with the same method, sequence and lot of reagents within the same time period.
ND	Not detected
RL	Reporting Limit
Dilution	Multiplier added to detection levels (MDL) and/or sample results due to interferences and/or high concentration of target compounds.
Duplicate	Result from the duplicate analysis of a sample.
Result	Amount of analyte found in a sample.
Spike Level	Amount of analyte added to a sample
Matrix Spike Result	Amount of analyte found including amount that was spiked.
Matrix Spike Dup	Amount of analyte foun in duplicate spikes including amount that was spike.
Matrix Spike % Recovery	% Recovery of spiked amount in sample.
Matrix Spike Dup % Recovery	% Recovery of spiked duplicate amount in sample.
RPD	Relative percent difference between Matrix Spike and Matrix Spike Duplicate.
Blank	Method Blank that has been taken through all steps of the analysis.
LCS % Recovery	Laboratory Control Sample percent recovery. The amount of analyte recovered from a fortified sample.
Recovery Limits	A range within which specified measurements results must fall to be compliant.
CC	Calibration Verification

Flags:

H- Recovery is above the control limits
L- Recovery is below the control limits
B- Compound detected in the Blank
P- RPD of dual column results exceeds 40%
#- Sample result too high for accurate spike recovery.

Connecticut Laboratory Certification PH0116
Massachussets Laboratory Certification M-CT903

New York Certification 11982
Rhode Island Certification 199

REASONABLE CONFIDENCE PROTOCOL
LABORATORY ANALYSIS QA/QC CERTIFICATION FORM

Laboratory Name: Complete Environmental Testing, Inc.
Client: Leggette, Brashears & Graham

Project Location: BETA, Southbury
Project Number:

Laboratory Sample ID(s):
5090550-01 thru 5090550-04

Sample Date(s):
09/23/2015

List RCP Methods Used:

CET #: 5090550

1	For each analytical method referenced in this laboratory report package, were all specified QA/QC performance criteria followed, including the requirement to explain any criteria falling outside of acceptable guidelines, as specified in the CTDEP method-specific Reasonable Confidence Protocol documents?	☑ Yes ☐ No
1A	Were the method specified preservation and holding time requirements met?	☑ Yes ☐ No
1B	VPH and EPH Methods only: Was the VPH and EPH method conducted without significant modifications (see Section 11.3 of respective RCP methods)?	☐ Yes ☐ No ☑ N/A
2	Were all samples received by the laboratory in a condition consistent with that described on the associated chain-of-custody document(s)?	☑ Yes ☐ No
3	Were samples received at an appropriate temperature (< 6 degrees C.)?	☑ Yes ☐ No ☐ N/A
4	Were all QA/QC performance criteria specified in the CT DEP Reasonable Confidence Protocol documents achieved?	☑ Yes ☐ No
5a	a) Were reporting limits specified or referenced on the chain-of-custody?	☑ Yes ☐ No
5b	b) Were these reporting limits met?	☑ Yes ☐ No
6	For each analytical method referenced in this laboratory report package, were results reported for all consituents identified in the method-specific analyte lists presented in the Reasonable Confidence Protocol documents?	☑ Yes ☐ No
7	Are project specific matrix spikes and laboratory duplicates included with this data set?	☐ Yes ☑ No

Notes: For all questions to which the response was "No" (with the exception of question #7), additional information must be provided in an attached narrative. If the answer to question #1, #1A, or #1B is "No", the data package does not meet the requirements for "Reasonable Confidence."
This form may not be altered and all questions must be answered.

I, the undersigned, attest under the pains and penalties of perjury that, to the best of my knowledge and belief and based upon my personal inquiry of those responsible for providing the information contained in this analytical report, such information is accurate and complete.

Authorized Signature: [signature] **Position:** **Laboratory Director**

Printed Name: **David Ditta** **Date:** **10/01/2015**

Name of Laboratory: **Complete Environmental Testing, Inc.**

This certification form is to be used for RCP methods only.

RCP Case Narrative

7- Project specific QC was not requested by the client.

QC Batch/Sequence Report

Batch	Sequence	CET ID	Sample ID	Specific Method	Matrix	Collection Date
[CALC]		5090550-01	MW-1	Calculated Analyte	Water	09/23/2015
[CALC]		5090550-02	MW-2	Calculated Analyte	Water	09/23/2015
[CALC]		5090550-03	MW-3	Calculated Analyte	Water	09/23/2015
[CALC]		5090550-04	MW-4	Calculated Analyte	Water	09/23/2015
B5I2428		5090550-01	MW-1	EPA 300.0	Water	09/23/2015
B5I2428		5090550-02	MW-2	EPA 300.0	Water	09/23/2015
B5I2428		5090550-03	MW-3	EPA 300.0	Water	09/23/2015
B5I2428		5090550-04	MW-4	EPA 300.0	Water	09/23/2015
B5I2821		5090550-01	MW-1	EPA 350.1	Water	09/23/2015
B5I2821		5090550-02	MW-2	EPA 350.1	Water	09/23/2015
B5I2821		5090550-03	MW-3	EPA 350.1	Water	09/23/2015
B5I2821		5090550-04	MW-4	EPA 350.1	Water	09/23/2015
B5I2908		5090550-01	MW-1	EPA 351.2	Water	09/23/2015
B5I2908		5090550-02	MW-2	EPA 351.2	Water	09/23/2015
B5I2908		5090550-03	MW-3	EPA 351.2	Water	09/23/2015
B5I2908		5090550-04	MW-4	EPA 351.2	Water	09/23/2015
B5I2907		5090550-01	MW-1	EPA 365.4	Water	09/23/2015
B5I2907		5090550-02	MW-2	EPA 365.4	Water	09/23/2015
B5I2907		5090550-03	MW-3	EPA 365.4	Water	09/23/2015
B5I2907		5090550-04	MW-4	EPA 365.4	Water	09/23/2015
B5I2909		5090550-01	MW-1	EPA 365.4	Water	09/23/2015
B5I2909		5090550-02	MW-2	EPA 365.4	Water	09/23/2015
B5I2909		5090550-03	MW-3	EPA 365.4	Water	09/23/2015
B5I2909		5090550-04	MW-4	EPA 365.4	Water	09/23/2015
B5I2430		5090550-01	MW-1	SM 4500-P E	Water	09/23/2015
B5I2430		5090550-02	MW-2	SM 4500-P E	Water	09/23/2015
B5I2430		5090550-03	MW-3	SM 4500-P E	Water	09/23/2015
B5I2430		5090550-04	MW-4	SM 4500-P E	Water	09/23/2015

5090550

CET

COMPLETE ENVIRONMENTAL TESTING, INC.

CHAIN OF CUSTODY

Volatile Soils Only:

Date and Time in Freezer
Client:
CET:

80 Lupes Drive
Stratford, CT 06615
Tel: (203) 377-9984
Fax: (203) 377-9952
e-mail: cet1@cetlabs.com
Bottle Request e-mail: bottleorders@cetlabs.com

Matrix: A=Air, S=Soil, W=Water, DW=Drinking Water, C=Cassette, Solid, Wipe, Other (Specify)

Turnaround Time ** (check one)

Sample ID	Sample Depths (Units)	Collection Date/Time	Matrix	Same Day *	Next Day *	2-3 Days *	Std (5-7 Days)	8260 CT List	8260 Aromatics	8260 Halogens	624	CT ETPH	8270 CT List	8270 PNAs	PCBs	Pesticides	13 Priority Poll	8 RCRA	TOTAL	TCLP	SPLP	Field Filtered	Lab To Filter	Total TKN	Ammonia	Nitrate, Nitrite	Total N	Total Phosphorus	Dissolved Phosphorus	Phosphorus - Ortho	TOTAL # OF CONT.	NOTE #
MW-1		9/23/15@935	W				X																	X	X	X	X	X	X	X		
MW-2		1035					X																	X	X	X	X	X	X	X		
MW-3		1200					X																	X	X	X	X	X	X	X		
MW-4		1245					X																	X	X	X	X	X	X	X		

Organics: 8260 CT List through Pesticides. Metals (check all that apply): 13 Priority Poll through Lab To Filter. Additional Analysis: Total TKN through Phosphorus - Ortho.

PRESERVATIVE (Cl–HCl, N–HNO_3, S–H_2SO_4, Na–NaOH, C=Cool, O–Other)

CONTAINER TYPE (P–Plastic, G–Glass, V–Vial, O–Other)

Soil VOCs Only (M=MeOH B=Sodium Bisulfate W=Water F=Empty Vial E=Encore)

RELINQUISHED BY:	DATE/TIME	RECEIVED BY:
Mark M. Goldberg	9/24/15 1330	K.B[illegible]
K.B[illegible]	9/24/15 1350	[illegible]

NOTES:

Client / Reporting Information

Company Name: LBG Inc.

Address: 4 Research Dr. Suite 204 Shelton, CT 06484

City / State / Zip

Report To: Tunde Sandor

E-mail: tsandor@lbgct.com

Phone #: 203 929 8555

Fax #:

Project Information

Project Contact: Tunde Sandor PO #:

Project: BETA Project #:

Location: Southbury, CT Collector(s): P. Lind

QA/QC ☐ Std ☐ Site Specific (MS/MSD) * ☒ RCP Pkg * ☐ DQAW *

Data Report ☒ PDF ☐ EDD - Specify Format ☐ Other

RSR Reporting Limits (check one) ☒ GA ☐ GB ☐ SWP ☐ Other

Laboratory Certification Needed (check one) ☒ CT ☐ NY ☐ RI ☐ MA

Temp Upon Receipt (-1) °C Evidence of Cooling: Y N

SHEET ___ OF ___

* Additional charge may apply. ** TAT begins when the samples are received at the Lab and all issues are resolved. TAT for samples received after 3 p.m. will start on the next business day.

REV. 06/14

80 Lupes Drive
Stratford, CT 06615

COMPLETE ENVIRONMENTAL TESTING, INC.

Tel: (203) 377-9984
Fax: (203) 377-9952
e-mail: cet1@cetlabs.com

Client: Ms. Tunde Sandor
Leggette, Brashears & Graham
4 Research Dr. Suite 204
Shelton, CT 06484

Analytical Report

CET# 5090551

Report Date:October 01, 2015
Project: BETA, Southbury

Connecticut Laboratory Certificate: PH 0116
Massachussetts laboratory Certificate: M-CT903

New York Certification: 11982
Rhode Island Certification: 199

CET # : 5090551
Project: BETA, Southbury

SAMPLE SUMMARY

The sample(s) were received at 1.6°C.

This report contains analytical data associated with following samples only.

Sample ID	Laboratory ID	Matrix	Collection Date/Time	Receipt Date
MW-6	5090551-01	Water	9/24/2015 9:55	09/24/2015
MW-7	5090551-02	Water	9/24/2015 10:25	09/24/2015
MW-8	5090551-03	Water	9/24/2015 8:55	09/24/2015

CET # : 5090551
Project: BETA, Southbury

Analyte: Total Nitrogen [Calculated Analyte]

Analyst: Various
Matrix: Water

Laboratory ID	Client Sample ID	Result	RL	Units	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
5090551-01	MW-6	ND	1.2	mg/L	1				
5090551-02	MW-7	**2.2**	1.2	mg/L	1				
5090551-03	MW-8	**1.4**	1.2	mg/L	1				

Analyte: Nitrite as N [EPA 300.0]

Analyst: CC
Matrix: Water

Laboratory ID	Client Sample ID	Result	RL	Units	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
5090551-01	MW-6	ND	0.10	mg/L	1	B5I2428	09/24/2015	09/24/2015 18:08	
5090551-02	MW-7	ND	0.10	mg/L	1	B5I2428	09/24/2015	09/24/2015 18:23	
5090551-03	MW-8	ND	0.10	mg/L	1	B5I2428	09/24/2015	09/24/2015 18:40	

Analyte: Nitrate as N [EPA 300.0]

Analyst: CC
Matrix: Water

Laboratory ID	Client Sample ID	Result	RL	Units	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
5090551-01	MW-6	**0.37**	0.10	mg/L	1	B5I2428	09/24/2015	09/24/2015 18:08	
5090551-02	MW-7	ND	0.10	mg/L	1	B5I2428	09/24/2015	09/24/2015 18:23	
5090551-03	MW-8	ND	0.10	mg/L	1	B5I2428	09/24/2015	09/24/2015 18:40	

CET # : 5090551
Project: BETA, Southbury

Analyte: Ammonia as N [EPA 350.1]

Analyst: CC

Matrix: Water

Laboratory ID	Client Sample ID	Result	RL	Units	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
5090551-01	MW-6	ND	0.10	mg/L	1	B5I2821	09/28/2015	09/28/2015 15:34	
5090551-02	MW-7	**0.14**	0.10	mg/L	1	B5I2821	09/28/2015	09/28/2015 15:34	
5090551-03	MW-8	ND	0.10	mg/L	1	B5I2821	09/28/2015	09/28/2015 15:34	

Analyte: Phosphorous, Total [EPA 365.4]

Analyst: CC

Matrix: Water

Laboratory ID	Client Sample ID	Result	RL	Units	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
5090551-01	MW-6	ND	0.10	mg/L	1	B5I2907	09/30/2015	09/30/2015 13:34	
5090551-02	MW-7	**3.6**	1.0	mg/L	10	B5I2907	09/30/2015	09/30/2015 13:34	
5090551-03	MW-8	**0.11**	0.10	mg/L	1	B5I2907	09/30/2015	09/30/2015 13:34	

Analyte: Orthophosphate as P [SM 4500-P E]

Analyst: CC

Matrix: Water

Laboratory ID	Client Sample ID	Result	RL	Units	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
5090551-01	MW-6	ND	0.10	mg/L	1	B5I2430	09/24/2015	09/24/2015 16:48	
5090551-02	MW-7	ND	0.10	mg/L	1	B5I2430	09/24/2015	09/24/2015 16:48	
5090551-03	MW-8	ND	0.10	mg/L	1	B5I2430	09/24/2015	09/24/2015 16:48	

CET # : 5090551
Project: BETA, Southbury

Analyte: Total Kjeldahl Nitrogen (TKN) [EPA 351.2]

Analyst: CC

Matrix: Water

Laboratory ID	Client Sample ID	Result	RL	Units	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
5090551-01	MW-6	ND	1.0	mg/L	1	B5I2908	09/30/2015	09/30/2015 16:19	
5090551-02	MW-7	**2.2**	1.0	mg/L	1	B5I2908	09/30/2015	09/30/2015 16:19	
5090551-03	MW-8	**1.4**	1.0	mg/L	1	B5I2908	09/30/2015	09/30/2015 16:19	

Analyte: Phosphorous, Total Dissolved [EPA 365.4]

Analyst: CC

Matrix: Water

Laboratory ID	Client Sample ID	Result	RL	Units	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
5090551-01	MW-6	ND	0.10	mg/L	1	B5I2909	09/30/2015	09/30/2015 13:38	
5090551-02	MW-7	**1.6**	0.10	mg/L	1	B5I2909	09/30/2015	09/30/2015 13:38	
5090551-03	MW-8	**0.10**	0.10	mg/L	1	B5I2909	09/30/2015	09/30/2015 13:38	

CET # : 5090551
Project: BETA, Southbury

QUALITY CONTROL SECTION

Batch B5I2428 - EPA 300.0

Analyte	Result (mg/L)	RL (mg/L)	Spike Level	Source Result	% Rec	% Rec Limits	RPD	RPD Limit	Notes
Blank (B5I2428-BLK1)					Prepared: 9/24/2015 Analyzed: 9/24/2015				
Nitrate as N	ND	0.10							
Nitrite as N	ND	0.10							
LCS (B5I2428-BS1)					Prepared: 9/24/2015 Analyzed: 9/24/2015				
Nitrate as N	5.2	0.10	5.000		105	80 - 120			
Nitrite as N	5.0	0.10	5.000		99.4	80 - 120			

CET # : 5090551
Project: BETA, Southbury

Batch B5I2430 - SM 4500-P E

Analyte	Result (mg/L)	RL (mg/L)	Spike Level	Source Result	% Rec	% Rec Limits	RPD	RPD Limit	Notes
Blank (B5I2430-BLK1)					Prepared: 9/24/2015 Analyzed: 9/24/2015				
Orthophosphate as P	ND	0.10							
LCS (B5I2430-BS1)					Prepared: 9/24/2015 Analyzed: 9/24/2015				
Orthophosphate as P	0.309	0.10	0.326		94.8	80 - 120			
Duplicate (B5I2430-DUP1)		**Source: 5090551-01**			Prepared: 9/24/2015 Analyzed: 9/24/2015				
Orthophosphate as P	ND	0.10		ND				20	

CET # : 5090551
Project: BETA, Southbury

Batch B5I2821 - EPA 350.1

Analyte	Result (mg/L)	RL (mg/L)	Spike Level	Source Result	% Rec	% Rec Limits	RPD	RPD Limit	Notes
Blank (B5I2821-BLK1)					Prepared: 9/28/2015 Analyzed: 9/28/2015				
Ammonia as N	ND	0.10							
LCS (B5I2821-BS1)					Prepared: 9/28/2015 Analyzed: 9/28/2015				
Ammonia as N	5.1	0.10	5.000		102	80 - 120			

CET # : 5090551
Project: BETA, Southbury

Batch B5I2907 - EPA 365.4

Analyte	Result (mg/L)	RL (mg/L)	Spike Level	Source Result	% Rec	% Rec Limits	RPD	RPD Limit	Notes
Blank (B5I2907-BLK1)					Prepared: 9/30/2015 Analyzed: 9/30/2015				
Phosphorous, Total	ND	0.10							
LCS (B5I2907-BS1)					Prepared: 9/30/2015 Analyzed: 9/30/2015				
Phosphorous, Total	0.509	0.10	0.509		100	80 - 120			

CET # : 5090551

Project: BETA, Southbury

Batch B5I2908 - EPA 351.2

Analyte	Result (mg/L)	RL (mg/L)	Spike Level	Source Result	% Rec	% Rec Limits	RPD	RPD Limit	Notes
Blank (B5I2908-BLK1)					Prepared: 9/30/2015 Analyzed: 9/30/2015				
Total Kjeldahl Nitrogen (TKN)	ND	1.0							
LCS (B5I2908-BS1)					Prepared: 9/30/2015 Analyzed: 9/30/2015				
Total Kjeldahl Nitrogen (TKN)	5.75	1.0	5.000		115	80 - 120			

CET # : 5090551
Project: BETA, Southbury

Batch B5I2909 - EPA 365.4

Analyte	Result (mg/L)	RL (mg/L)	Spike Level	Source Result	% Rec	% Rec Limits	RPD	RPD Limit	Notes
Blank (B5I2909-BLK1)					Prepared: 9/30/2015 Analyzed: 9/30/2015				
Phosphorous, Total Dissolved	ND	0.10							
LCS (B5I2909-BS1)					Prepared: 9/30/2015 Analyzed: 9/30/2015				
Phosphorous, Total Dissolved	0.481	0.10				80 - 120			L

CET # : 5090551
Project: BETA, Southbury

Questions related to this report should be directed to David Ditta, Timothy Fusco, or Robert Blake at 203-377-9984.

Sincerely,

David Ditta
Laboratory Director

Report Comments:

Sample Result Flags:
E- The result is estimated, above the calibration range.
H- The surrogate recovery is above the control limits.
L- The surrogate recovery is below the control limits.
B- The compound was detected in the laboratory blank.
P- The Relative Percent Difference (RPD) of dual column analyses exceeds 40%.
D- The RPD between the sample and the sample duplicate is high. Sample Homogenity may be a problem.
+- The Surrogate was diluted out.
*C1- The Continuing Calibration did not meet method specifications and was biased low for this analyte. Increased uncertainty is associated with the reported value which is likely to be biased low.
*C2- The Continuing Calibration did not meet method specifications and was biased high for this analyte. Increased uncertainty is associated with the reported value which is likely to be biased high.
*F1- The Laboratory Control Sample recovery is outside of control limits. Reported value for this analyte is likely to be biased on the low side.
*F2- The Laboratory Control Sample recovery is outside of control limits. Reported value for this analyte is likely to be biased on the high side.
I- The Analyte exceeds %RSD limits for the Initial Calibration. This is a non-directional bias.

All results met standard operating procedures unless indicated by a data qualifier next to a sample result, or a narration in the QC report.

Complete Environmental Testing is only responsible for the certified testing and is not directly responsible for the integrity of the sample before laboratory receipt.

ND is None Detected at the specified detection limit
All analyses were performed in house unless a Reference Laboratory is listed.
Samples will be disposed of 30 days after the report date.

80 Lupes Drive
Stratford, CT 06615

COMPLETE ENVIRONMENTAL TESTING, INC.

Tel: (203) 377-9984
Fax: (203) 377-9952
email: cet1@cetlabs.com

Quality Control Definitions and Abbreviations

Internal Standard (IS)	An Analyte added to each sample or sample extract. An internal standard is used to monitor retention time, calculate relative response, and quantify analytes of interest.
Surrogate Recovery	The % recovery for non-tarer organic compounds that are spiked into all samples. Used to determine method performance.
Continuing Calibration	An analytical standard analyzed with each set of samples to verify initial calibration of the system.
Batch	Samples that are analyzed together with the same method, sequence and lot of reagents within the same time period.
ND	Not detected
RL	Reporting Limit
Dilution	Multiplier added to detection levels (MDL) and/or sample results due to interferences and/or high concentration of target compounds.
Duplicate	Result from the duplicate analysis of a sample.
Result	Amount of analyte found in a sample.
Spike Level	Amount of analyte added to a sample
Matrix Spike Result	Amount of analyte found including amount that was spiked.
Matrix Spike Dup	Amount of analyte foun in duplicate spikes including amount that was spike.
Matrix Spike % Recovery	% Recovery of spiked amount in sample.
Matrix Spike Dup % Recovery	% Recovery of spiked duplicate amount in sample.
RPD	Relative percent difference between Matrix Spike and Matrix Spike Duplicate.
Blank	Method Blank that has been taken through all steps of the analysis.
LCS % Recovery	Laboratory Control Sample percent recovery. The amount of analyte recovered from a fortified sample.
Recovery Limits	A range within which specified measurements results must fall to be compliant.
CC	Calibration Verification

Flags:

H- Recovery is above the control limits
L- Recovery is below the control limits
B- Compound detected in the Blank
P- RPD of dual column results exceeds 40%
#- Sample result too high for accurate spike recovery.

Connecticut Laboratory Certification PH0116
Massachussets Laboratory Certification M-CT903

New York Certification 11982
Rhode Island Certification 199

REASONABLE CONFIDENCE PROTOCOL
LABORATORY ANALYSIS QA/QC CERTIFICATION FORM

Laboratory Name: Complete Environmental Testing, Inc.

Client: Leggette, Brashears & Graham

Project Location: BETA, Southbury

Project Number:

Laboratory Sample ID(s):
5090551-01 thru 5090551-03

Sample Date(s):
09/24/2015

List RCP Methods Used:

CET #: 5090551

1	For each analytical method referenced in this laboratory report package, were all specified QA/QC performance criteria followed, including the requirement to explain any criteria falling outside of acceptable guidelines, as specified in the CTDEP method-specific Reasonable Confidence Protocol documents?	☑ Yes ☐ No
1A	Were the method specified preservation and holding time requirements met?	☑ Yes ☐ No
1B	VPH and EPH Methods only: Was the VPH and EPH method conducted without significant modifications (see Section 11.3 of respective RCP methods)?	☐ Yes ☐ No ☑ N/A
2	Were all samples received by the laboratory in a condition consistent with that described on the associated chain-of-custody document(s)?	☑ Yes ☐ No
3	Were samples received at an appropriate temperature (< 6 degrees C.)?	☑ Yes ☐ No ☐ N/A
4	Were all QA/QC performance criteria specified in the CT DEP Reasonable Confidence Protocol documents achieved?	☑ Yes ☐ No
5a	a) Were reporting limits specified or referenced on the chain-of-custody?	☑ Yes ☐ No
5b	b) Were these reporting limits met?	☑ Yes ☐ No
6	For each analytical method referenced in this laboratory report package, were results reported for all consituents identified in the method-specific analyte lists presented in the Reasonable Confidence Protocol documents?	☑ Yes ☐ No
7	Are project specific matrix spikes and laboratory duplicates included with this data set?	☐ Yes ☑ No

Notes: For all questions to which the response was "No" (with the exception of question #7), additional information must be provided in an attached narrative. If the answer to question #1, #1A, or #1B is "No", the data package does not meet the requirements for "Reasonable Confidence."
This form may not be altered and all questions must be answered.

I, the undersigned, attest under the pains and penalties of perjury that, to the best of my knowledge and belief and based upon my personal inquiry of those responsible for providing the information contained in this analytical report, such information is accurate and complete.

Authorized Signature:

Position: Laboratory Director

Printed Name: David Ditta

Date: 10/01/2015

Name of Laboratory: Complete Environmental Testing, Inc.

This certification form is to be used for RCP methods only.

RCP Case Narrative

7- Project specific QC was not requested by the client.

QC Batch/Sequence Report

Batch	Sequence	CET ID	Sample ID	Specific Method	Matrix	Collection Date
[CALC]		5090551-01	MW-6	Calculated Analyte	Water	09/24/2015
[CALC]		5090551-02	MW-7	Calculated Analyte	Water	09/24/2015
[CALC]		5090551-03	MW-8	Calculated Analyte	Water	09/24/2015
B5I2428		5090551-01	MW-6	EPA 300.0	Water	09/24/2015
B5I2428		5090551-02	MW-7	EPA 300.0	Water	09/24/2015
B5I2428		5090551-03	MW-8	EPA 300.0	Water	09/24/2015
B5I2821		5090551-01	MW-6	EPA 350.1	Water	09/24/2015
B5I2821		5090551-02	MW-7	EPA 350.1	Water	09/24/2015
B5I2821		5090551-03	MW-8	EPA 350.1	Water	09/24/2015
B5I2908		5090551-01	MW-6	EPA 351.2	Water	09/24/2015
B5I2908		5090551-02	MW-7	EPA 351.2	Water	09/24/2015
B5I2908		5090551-03	MW-8	EPA 351.2	Water	09/24/2015
B5I2907		5090551-01	MW-6	EPA 365.4	Water	09/24/2015
B5I2907		5090551-02	MW-7	EPA 365.4	Water	09/24/2015
B5I2907		5090551-03	MW-8	EPA 365.4	Water	09/24/2015
B5I2909		5090551-01	MW-6	EPA 365.4	Water	09/24/2015
B5I2909		5090551-02	MW-7	EPA 365.4	Water	09/24/2015
B5I2909		5090551-03	MW-8	EPA 365.4	Water	09/24/2015
B5I2430		5090551-01	MW-6	SM 4500-P E	Water	09/24/2015
B5I2430		5090551-02	MW-7	SM 4500-P E	Water	09/24/2015
B5I2430		5090551-03	MW-8	SM 4500-P E	Water	09/24/2015

5090551

CET
COMPLETE ENVIRONMENTAL TESTING, INC.

CHAIN OF COSTODY

Volatile Soils Only:

Date and Time in Freezer
Client:
CET:

80 Lupes Drive
Stratford, CT 06615
Tel: (203) 377-9984
Fax: (203) 377-9952
e-mail: cet1@cetlabs.com
Bottle Request e-mail: bottleorders@cetlabs.com

Matrix: A=Air, S=Soil, W=Water, DW=Drinking Water, C=Cassette, Solid, Wipe, Other (Specify)

Turnaround Time ** (check one)

Sample ID	Sample Depths (Units)	Collection Date/Time	Matrix	Same Day *	Next Day *	2-3 Days *	Std (5-7 Days)	8260 CT List	8260 Aromatics	8260 Halogens	624	CT ETPH	8270 CT List	8270 PNAs	PCBs	Pesticides	13 Priority Poll	8 RCRA	TOTAL	TCLP	SPLP	Field Filtered	Lab To Filter	Total TKN	Ammonia	Nitrate, Nitrite	Total N	total phosphorus	dissolved phosphorus	Phosphorus-Orthophos	TOTAL # OF CONT.	NOTE #
MW-6	—	9/24/15 @ 955	W				X																	X	X	X	X	X	X	X	4	
MW-7	—	↓ 1025	W				X																	X	X	X	X	X	X	X	2	
MW-8	—	↓ 855	W				X																	X	X	X	X	X	X	X	4	

Column groups: Organics (8260 CT List – Pesticides); Metals (check all that apply) (13 Priority Poll – Lab To Filter); Additional Analysis (Total TKN – Phosphorus-Orthophos).

PRESERVATIVE (Cl–HCl, N–HNO_3, S–H_2SO_4, Na–NaOH, C=Cool, O–Other)

CONTAINER TYPE (P–Plastic, G–Glass, V–Vial, O–Other)

Soil VOCs Only (M=MeOH B=Sodium Bisulfate W=Water F=Empty Vial E=Encore)

RELINQUISHED BY:	DATE/TIME	RECEIVED BY:
[signature]	9/24/15 1215	[signature]
[signature]	9/24/15 1355	[signature]

NOTES:

Client / Reporting Information

Company Name: LBG Inc.

Address: 4 Research Dr. Suite 204 Shelton, CT 06484

City / State / Zip

Report To: Tunde Sandor

E-mail: tsandor@lbgct.com

Phone #: 203 929 8555

Fax #

Project Information

Project Contact: Tunde Sandor

PO #:

Project: Beta

Project #:

Location: Southbury, CT

Collector(s): Pamela Lind

QA/QC: ☐ Std ☐ Site Specific (MS/MSD) * ☒ RCP Pkg * ☐ DQAW *

Data Report ☒ PDF ☐ EDD - Specify Format ☐ Other

RSR Reporting Limits (check one) ☒ GA ☐ GB ☐ SWP ☐ Other

Laboratory Certification Needed (check one) ☐ CT ☐ NY ☐ RI ☐ MA

Temp Upon Receipt 6 °C Evidence of Cooling: Y N

SHEET 1 OF 1

* Additional charge may apply. ** TAT begins when the samples are received at the Lab and all issues are resolved. TAT for samples received after 3 p.m. will start on the next business day.

REV. 06/14

80 Lupes Drive
Stratford, CT 06615

COMPLETE ENVIRONMENTAL TESTING, INC.

Tel: (203) 377-9984
Fax: (203) 377-9952
e-mail: cet1@cetlabs.com

Client: Ms. Tunde Sandor
Leggette, Brashears & Graham
4 Research Dr. Suite 204
Shelton, CT 06484

Analytical Report

CET# 5090552

Report Date:September 28, 2015
Project: BETA, Southbury

Connecticut Laboratory Certificate: PH 0116
Massachussetts laboratory Certificate: M-CT903

New York Certification: 11982
Rhode Island Certification: 199

CET # : 5090552
Project: BETA, Southbury

SAMPLE SUMMARY

The sample(s) were received at 1.6°C.

This report contains analytical data associated with following samples only.

Sample ID	Laboratory ID	Matrix	Collection Date/Time	Receipt Date
MW-5	5090552-01	Water	9/24/2015 10:55	09/24/2015
MW-6	5090552-02	Water	9/24/2015 9:55	09/24/2015
MW-7	5090552-03	Water	9/24/2015 10:25	09/24/2015
MW-8	5090552-04	Water	9/24/2015 8:55	09/24/2015

Testing Performed at: PH-0787

Analyte: Fecal Coliform, Membrane Filter [SM 9222 D]

Analyst: subcontract

Matrix: Water

Laboratory ID	Client Sample ID	Result	RL	Units	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
5090552-01	MW-5	**10**	0	CFU/100 ml	1		09/24/2015	09/24/2015 00:00	
5090552-02	MW-6	**<1**	0	CFU/100 ml	1		09/24/2015	09/24/2015 00:00	
5090552-03	MW-7	**>2419**	0	CFU/100 ml	1		09/24/2015	09/24/2015 00:00	
5090552-04	MW-8	**<1**	0	CFU/100 ml	1		09/24/2015	09/24/2015 00:00	

CET # : 5090552
Project: BETA, Southbury

Questions related to this report should be directed to David Ditta, Timothy Fusco, or Robert Blake at 203-377-9984.

Sincerely,

David Ditta
Laboratory Director

Report Comments:

Sample Result Flags:
E- The result is estimated, above the calibration range.
H- The surrogate recovery is above the control limits.
L- The surrogate recovery is below the control limits.
B- The compound was detected in the laboratory blank.
P- The Relative Percent Difference (RPD) of dual column analyses exceeds 40%.
D- The RPD between the sample and the sample duplicate is high. Sample Homogenity may be a problem.
+- The Surrogate was diluted out.
*C1- The Continuing Calibration did not meet method specifications and was biased low for this analyte. Increased uncertainty is associated with the reported value which is likely to be biased low.
*C2- The Continuing Calibration did not meet method specifications and was biased high for this analyte. Increased uncertainty is associated with the reported value which is likely to be biased high.
*F1- The Laboratory Control Sample recovery is outside of control limits. Reported value for this analyte is likely to be biased on the low side.
*F2- The Laboratory Control Sample recovery is outside of control limits. Reported value for this analyte is likely to be biased on the high side.
I- The Analyte exceeds %RSD limits for the Initial Calibration. This is a non-directional bias.

All results met standard operating procedures unless indicated by a data qualifier next to a sample result, or a narration in the QC report.

Complete Environmental Testing is only responsible for the certified testing and is not directly responsible for the integrity of the sample before laboratory receipt.

ND is None Detected at the specified detection limit
All analyses were performed in house unless a Reference Laboratory is listed.
Samples will be disposed of 30 days after the report date.

CET # : 5090552

Project: BETA, Southbury

CERTIFICATIONS

Certified Analyses included in this Report

Analyte	Certifications

No certified Analyses included in this Report

Complete Environmental Testing operates under the following certifications and accreditations:

Code	Description	Number	Expires

5090552

CET
COMPLETE ENVIRONMENTAL TESTING, INC.

CHAIN OF COUSTODY

Volatile Soils Only:

Date and Time in Freezer

Client:

CET:

80 Lupes Drive
Stratford, CT 06615
Tel: (203) 377-9984
Fax: (203) 377-9952
e-mail: cet1@cetlabs.com
Bottle Request e-mail: bottleorders@cetlabs.com

Matrix: A=Air, S=Soil, W=Water, DW=Drinking Water, C=Cassette, Solid, Wipe, Other (Specify)

Turnaround Time ** (check one)

Organics / Metals (check all that apply) / Additional Analysis

Sample ID	Sample Depths (Units)	Collection Date/Time	Matrix	Same Day *	Next Day *	2-3 Days *	Std (5-7 Days)	8260 CT List	8260 Aromatics	8260 Halogens	624	CT ETPH	8270 CT List	8270 PNAs	PCBs	Pesticides	13 Priority Poll	8 RCRA	TOTAL	TCLP	SPLP	Field Filtered	Lab To Filter	~~Total Coliform~~	fecal Coliform	TOTAL # OF CONT.	NOTE #
MW-5	–	9/24/15@1055	W				X																	~~X~~	X	1	
MW-6	–	955					X																	~~X~~	X	1	
MW-7	–	1025					X																	~~X~~	X	1	
MW-8	–	855					X																	~~X~~	X	1	

PRESERVATIVE (Cl–HCl, N–HNO_3, S–H_2SO_4, Na–NaOH, C=Cool, O–Other)

CONTAINER TYPE (P–Plastic, G–Glass, V–Vial, O–Other)

Soil VOCs Only (M=MeOH B=Sodium Bisulfate W=Water F=Empty Vial E=Encore)

RELINQUISHED BY:	DATE/TIME	RECEIVED BY:
Pamela Lind	9/24/15 1215	[illegible]
[illegible]	9/24/15 1335	[illegible]

NOTES:

Client / Reporting Information

Company Name: CET

Address: *above*

City: CET State Zip

Report To: *above* E-mail

Phone # Fax #

Project Information

Project Contact: Tunde Sandor PO #:

Project: Beta Project #:

Location: Southbury CT Collector(s): Pam Lind

QA/QC ☐ Std ☐ Site Specific (MS/MSD) * ☒ RCP Pkg * ☐ DQAW *

Data Report ☐ PDF ☐ EDD - Specify Format ☐ Other

RSR Reporting Limits (check one) ☒ GA ☐ GB ☐ SWP ☐ Other

Laboratory Certification Needed (check one) ☒ CT ☐ NY ☐ RI ☐ MA

Temp Upon Receipt 16 °C Evidence of Cooling: Y N

SHEET 1 OF 1

* Additional charge may apply. ** TAT begins when the samples are received at the Lab and all issues are resolved. TAT for samples received after 3 p.m. will start on the next business day.

REV. 06/14

80 Lupes Drive
Stratford, CT 06615

COMPLETE ENVIRONMENTAL TESTING, INC.

Tel: (203) 377-9984
Fax: (203) 377-9952
e-mail: cet1@cetlabs.com

Client: Ms. Tunde Sandor
Leggette, Brashears & Graham
4 Research Dr. Suite 204
Shelton, CT 06484

Analytical Report
CET# 5100114

Report Date:October 14, 2015
Project: BETA, Southbury

Connecticut Laboratory Certificate: PH 0116
Massachussetts laboratory Certificate: M-CT903

New York Certification: 11982
Rhode Island Certification: 199

CET # : 5100114
Project: BETA, Southbury

SAMPLE SUMMARY

The sample(s) were received at 2.5°C.

This report contains analytical data associated with following samples only.

Sample ID	Laboratory ID	Matrix	Collection Date/Time	Receipt Date
PZ-B	5100114-01	Water	10/01/2015 10:45	10/06/2015

Analyte: Total Kjeldahl Nitrogen (TKN) [EPA 351.2]

Analyst: CC

Matrix: Water

Laboratory ID	Client Sample ID	Result	RL	Units	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
5100114-01	PZ-B	**9.0**	1.0	mg/L	1	B5J1309	10/14/2015	10/14/2015 13:05	

CET # : 5100114
Project: BETA, Southbury

Questions related to this report should be directed to David Ditta, Timothy Fusco, or Robert Blake at 203-377-9984.

Sincerely,

David Ditta
Laboratory Director

Report Comments:

Sample Result Flags:
E- The result is estimated, above the calibration range.
H- The surrogate recovery is above the control limits.
L- The surrogate recovery is below the control limits.
B- The compound was detected in the laboratory blank.
P- The Relative Percent Difference (RPD) of dual column analyses exceeds 40%.
D- The RPD between the sample and the sample duplicate is high. Sample Homogenity may be a problem.
+- The Surrogate was diluted out.
*C1- The Continuing Calibration did not meet method specifications and was biased low for this analyte. Increased uncertainty is associated with the reported value which is likely to be biased low.
*C2- The Continuing Calibration did not meet method specifications and was biased high for this analyte. Increased uncertainty is associated with the reported value which is likely to be biased high.
*F1- The Laboratory Control Sample recovery is outside of control limits. Reported value for this analyte is likely to be biased on the low side.
*F2- The Laboratory Control Sample recovery is outside of control limits. Reported value for this analyte is likely to be biased on the high side.
I- The Analyte exceeds %RSD limits for the Initial Calibration. This is a non-directional bias.

All results met standard operating procedures unless indicated by a data qualifier next to a sample result, or a narration in the QC report.

Complete Environmental Testing is only responsible for the certified testing and is not directly responsible for the integrity of the sample before laboratory receipt.

ND is None Detected at the specified detection limit
All analyses were performed in house unless a Reference Laboratory is listed.
Samples will be disposed of 30 days after the report date.

CET # : 5100114

Project: BETA, Southbury

CERTIFICATIONS

Certified Analyses included in this Report

Analyte	Certifications
EPA 351.2 in Water	
Total Kjeldahl Nitrogen (TKN)	CT

Complete Environmental Testing operates under the following certifications and accreditations:

Code	Description	Number	Expires
CT	Connecticut Public Health	PH0116	09/30/2016

5100114

CET

COMPLETE ENVIRONMENTAL TESTING, INC.

CHAIN OF COUSTODY

Volatile Soils Only:

Date and Time in Freezer
Client:
CET:

80 Lupes Drive
Stratford, CT 06615
Tel: (203) 377-9984
Fax: (203) 377-9952
e-mail: cet1@cetlabs.com
Bottle Request e-mail: bottleorders@cetlabs.com

Sample ID	Sample Depths (Units)	Collection Date/Time	Matrix (A=Air, S=Soil, W=Water, DW=Drinking Water, C=Cassette, Solid, Wipe, Other (Specify))	Turnaround: Same Day *	Next Day *	2-3 Days *	Std (5-7 Days)	Organics: 8260 CT List	8260 Aromatics	8260 Halogens	624	CT ETPH	8270 CT List	8270 PNAs	PCBs	Pesticides	Metals: 13 Priority Poll	8 RCRA	TOTAL	TCLP	SPLP	Field Filtered	Lab To Filter	Additional Analysis: Total TKN	TOTAL # OF CONT.	NOTE #
PZ-B		10/1/15@1045	W				X																	X	1	

PRESERVATIVE (Cl–HCl, N–HNO_3, S–H_2SO_4, Na–NaOH, C=Cool, O–Other): 1

CONTAINER TYPE (P–Plastic, G–Glass, V–Vial, O–Other)

Soil VOCs Only (M=MeOH B=Sodium Bisulfate W=Water F=Empty Vial E=Encore)

RELINQUISHED BY:	DATE/TIME	RECEIVED BY:
Pamela Lind	10/6/15@1245	S. Russell

NOTES:

Client / Reporting Information

Company Name: LBG Inc.

Address: 4 Research Dr. Suite 204 Shelton, CT

City / State / Zip

Turde Sandor — E-mail: tsandor@lbgct.com

Report To:

Phone #: 203 929 8555 — Fax #

Project Information

Project Contact: Tunde Sandor — PO #:

Project: BETA — Project #:

Location: Southbury, CT — Collector(s): Pamela Lind

QA/QC: ☐ Std ☐ Site Specific (MS/MSD) * ☒ RCP Pkg * ☐ DQAW *

Data Report ☒ PDF ☒ EDD - Specify Format excel ☐ Other

RSR Reporting Limits (check one) ☒ GA ☐ GB ☐ SWP ☐ Other

Laboratory Certification Needed (check one) ☐ CT ☐ NY ☐ RI ☐ MA

Temp Upon Receipt 2.5 °C — Evidence of Cooling: Y N — SHEET 1 OF 1

* Additional charge may apply. ** TAT begins when the samples are received at the Lab and all issues are resolved. TAT for samples received after 3 p.m. will start on the next business day.

REV 06/14

80 Lupes Drive
Stratford, CT 06615

COMPLETE ENVIRONMENTAL TESTING, INC.

Tel: (203) 377-9984
Fax: (203) 377-9952
e-mail: cet1@cetlabs.com

Client: Ms. Tunde Sandor
Leggette, Brashears & Graham
4 Research Dr. Suite 204
Shelton, CT 06484

Analytical Report

CET# 5100416

Report Date:October 19, 2015
Project: BETA, Southbury

CET # : 5100416
Project: BETA, Southbury

SAMPLE SUMMARY

The sample(s) were received at 4.0°C.

This report contains analytical data associated with following samples only.

Sample ID	Laboratory ID	Matrix	Collection Date/Time	Receipt Date
MW-3	5100416-01	Water	10/01/2015 9:20	10/01/2015
MW-4	5100416-02	Water	10/01/2015 9:55	10/01/2015
PZ-A	5100416-03	Water	10/01/2015 10:25	10/01/2015
PZ-B	5100416-04	Water	10/01/2015 10:45	10/01/2015

Testing Performed at: PH0509

Analyte: Fecal Coliform, Membrane Filter [SM 9222 D]

Analyst: subcontract

Matrix: Water

Laboratory ID	Client Sample ID	Result	RL	Units	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
5100416-01	MW-3	**3**	1	CFU/100 ml	1		10/01/2015	10/01/2015 00:00	
5100416-02	MW-4	**2**	1	CFU/100 ml	1		10/01/2015	10/01/2015 00:00	
5100416-03	PZ-A	**0**	1	CFU/100 ml	1		10/01/2015	10/01/2015 00:00	
5100416-04	PZ-B	**0**	1	CFU/100 ml	1		10/01/2015	10/01/2015 00:00	

CET # : 5100416
Project: BETA, Southbury

Questions related to this report should be directed to David Ditta, Timothy Fusco, or Robert Blake at 203-377-9984.

Sincerely,

David Ditta
Laboratory Director

Report Comments:

Sample Result Flags:
E- The result is estimated, above the calibration range.
H- The surrogate recovery is above the control limits.
L- The surrogate recovery is below the control limits.
B- The compound was detected in the laboratory blank.
P- The Relative Percent Difference (RPD) of dual column analyses exceeds 40%.
D- The RPD between the sample and the sample duplicate is high. Sample Homogenity may be a problem.
+- The Surrogate was diluted out.
*C1- The Continuing Calibration did not meet method specifications and was biased low for this analyte. Increased uncertainty is associated with the reported value which is likely to be biased low.
*C2- The Continuing Calibration did not meet method specifications and was biased high for this analyte. Increased uncertainty is associated with the reported value which is likely to be biased high.
*F1- The Laboratory Control Sample recovery is outside of control limits. Reported value for this analyte is likely to be biased on the low side.
*F2- The Laboratory Control Sample recovery is outside of control limits. Reported value for this analyte is likely to be biased on the high side.
I- The Analyte exceeds %RSD limits for the Initial Calibration. This is a non-directional bias.

All results met standard operating procedures unless indicated by a data qualifier next to a sample result, or a narration in the QC report.

Complete Environmental Testing is only responsible for the certified testing and is not directly responsible for the integrity of the sample before laboratory receipt.

ND is None Detected at the specified detection limit
All analyses were performed in house unless a Reference Laboratory is listed.
Samples will be disposed of 30 days after the report date.

CET # : 5100416

Project: BETA, Southbury

CERTIFICATIONS

Certified Analyses included in this Report

Analyte	Certifications

No certified Analyses included in this Report

Complete Environmental Testing operates under the following certifications and accreditations:

Code	Description	Number	Expires

5100416

CET
COMPLETE ENVIRONMENTAL TESTING, INC.

CHAIN OF CUSTODY

Volatile Soils Only:

Date and Time in Freezer
Client:
CET:

80 Lupes Drive
Stratford, CT 06615
Tel: (203) 377-9984
Fax: (203) 377-9952
e-mail: cet1@cetlabs.com
Bottle Request e-mail: bottleorders@cetlabs.com

Matrix: A=Air, S=Soil, W=Water, DW=Drinking Water, C=Cassette, Solid, Wipe, Other (Specify)

Turnaround Time ** (check one)

Sample ID	Sample Depths (Units)	Collection Date/Time	Matrix	Same Day *	Next Day *	2-3 Days *	Std (5-7 Days)	8260 CT List	8260 Aromatics	8260 Halogens	624	CT ETPH	8270 CT List	8270 PNAs	PCBs	Pesticides	13 Priority Poll	8 RCRA	TOTAL	TCLP	SPLP	Field Filtered	Lab To Filter	Fecal Coliform	TOTAL # OF CONT.	NOTE #
MW-3		10/1/15@0920	W				X																	X	1	
MW-4		955					X																	X	1	
PZ-A		1025					X																	X	1	
PZ-B		1045					X																	X	1	

PRESERVATIVE (Cl–HCl, N–HNO_3, S–H_2SO_4, Na–NaOH, C=Cool, O–Other)

CONTAINER TYPE (P–Plastic, G–Glass, V–Vial, O–Other)

Soil VOCs Only (M=MeOH B=Sodium Bisulfate W=Water F=Empty Vial E=Encore)

RELINQUISHED BY:	DATE/TIME	RECEIVED BY:	DATE/TIME
Pamela Lind	10/1/15@1150	[illegible]	10/1/15 1150
RELINQUISHED BY:	DATE/TIME	RECEIVED BY:	
RELINQUISHED BY:	DATE/TIME	RECEIVED BY:	

NOTES:

Client / Reporting Information

Company Name: CET

Address: *above*

City: CET State Zip

Report To: *above* E-mail

Phone # Fax #

Project Information

Project Contact: ______ PO #: ______

Project: BETA Project #: ______

Location: Southbury, CT Collector(s): Pamela Lind

QA/QC ☐ Std ☐ Site Specific (MS/MSD) * ☒ RCP Pkg * ☐ DQAW *

Data Report ☐ PDF ☐ EDD - Specify Format ______ ☐ Other ______

RSR Reporting Limits (check one) ☐ GA ☐ GB ☐ SWP ☐ Other ______

Laboratory Certification Needed (check one) ☒ CT ☐ NY ☐ RI ☐ MA

Temp Upon Receipt ______ °C Evidence of Cooling: Y N SHEET 1 OF 1

* Additional charge may apply. ** TAT begins when the samples are received at the Lab and all issues are resolved. TAT for samples received after 3 p.m. will start on the next business day.

REV. 06/14

5100416

CET

COMPLETE ENVIRONMENTAL TESTING, INC.

CHAIN OF COUSTODY

Volatile Soils Only:

Date and Time in Freezer
Client:
CET:

80 Lupes Drive
Stratford, CT 06615
Tel: (203) 377-9984
Fax: (203) 377-9952
e-mail: cet1@cetlabs.com
Bottle Request e-mail: bottleorders@cetlabs.com

Matrix: A=Air, S=Soil, W=Water, DW=Drinking Water, C=Cassette, Solid, Wipe, Other (Specify)

Turnaround Time ** (check one)

Sample ID	Sample Depths (Units)	Collection Date/Time	Matrix	Same Day *	Next Day *	2-3 Days *	Std (5-7 Days)	8260 CT List	8260 Aromatics	8260 Halogens	624	CT ETPH	8270 CT List	8270 PNAs	PCBs	Pesticides	13 Priority Poll	8 RCRA	TOTAL	TCLP	SPLP	Field Filtered	Lab To Filter	Fecal Coliform	TOTAL # OF CONT.	NOTE #
MW-3		10/1/15@920	W				X																	X	1	
MW-4		955					X																	X	1	
PZ-A		1025					X																	X	1	
PZ-B		1045					X																	X	1	

Organics | Metals (check all that apply) | Additional Analysis

PRESERVATIVE (Cl-HCl, N-HNO_3, S-H_2SO_4, Na-NaOH, C=Cool, O-Other)

CONTAINER TYPE (P-Plastic, G-Glass, V-Vial, O-Other)

Soil VOCs Only (M=MeOH B=Sodium Bisulfate W=Water F=Empty Vial E=Encore)

RELINQUISHED BY:	DATE/TIME	RECEIVED BY:
Pamela Lind	10/1/15@1150	[signature] 10/1/15 1150
RELINQUISHED BY:	DATE/TIME	RECEIVED BY:
RELINQUISHED BY:	DATE/TIME	RECEIVED BY:

NOTES:

Client / Reporting Information

Company Name: CET

Address: *above*

City: CET State Zip

Report To: *above* E-mail

Phone # Fax #

Project Information

Project Contact: PO #:

Project: BETA Project #:

Location: Southbury, CT Collector(s): Pamela Lind

QA/QC ☐ Std ☐ Site Specific (MS/MSD) * ☒ RCP Pkg * ☐ DQAW *

Data Report ☐ PDF ☐ EDD - Specify Format ☐ Other

RSR Reporting Limits (check one) ☐ GA ☐ GB ☐ SWP ☐ Other

Laboratory Certification Needed (check one) ☒ CT ☐ NY ☐ RI ☐ MA

Temp Upon Receipt ____ °C Evidence of Cooling: Y N SHEET 1 OF 1

* Additional charge may apply. ** TAT begins when the samples are received at the Lab and all issues are resolved. TAT for samples received after 3 p.m. will start on the next business day.

REV. 08/14

80 Lupes Drive
Stratford, CT 06615

CET
COMPLETE ENVIRONMENTAL TESTING, INC.

Tel: (203) 377-9984
Fax: (203) 377-9952
e-mail: cet1@cetlabs.com

Client: Ms. Tunde Sandor
Leggette, Brashears & Graham
4 Research Dr. Suite 204
Shelton, CT 06484

Analytical Report

CET# 5100463

Report Date:October 21, 2015
Project: BETA, Southbury

Connecticut Laboratory Certificate: PH 0116
Massachussetts laboratory Certificate: M-CT903

NELAP ACCREDITED LABORATORY

New York Certification: 11982
Rhode Island Certification: 199

CET # : 5100463
Project: BETA, Southbury

SAMPLE SUMMARY

The sample(s) were received at 3.1°C.
This report contains analytical data associated with following samples only.

Sample ID	Laboratory ID	Matrix	Collection Date/Time	Receipt Date
MW-1	5100463-01	Water	9/23/2015 9:35	10/01/2015
MW-2	5100463-02	Water	9/23/2015 10:35	10/01/2015

Testing Performed at: PH-0509

Analyte: Fecal Coliform, Membrane Filter [SM 9222 D]

Analyst: subcontract

Matrix: Water

Laboratory ID	Client Sample ID	Result	RL	Units	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
5100463-01	MW-1	**0**	1	CFU/100 ml	1		09/23/2015	09/23/2015 00:00	
5100463-02	MW-2	**0**	1	CFU/100 ml	1		09/23/2015	09/23/2015 00:00	

CET # : 5100463
Project: BETA, Southbury

Questions related to this report should be directed to David Ditta, Timothy Fusco, or Robert Blake at 203-377-9984.

Sincerely,

David Ditta
Laboratory Director

Report Comments:

Sample Result Flags:
E- The result is estimated, above the calibration range.
H- The surrogate recovery is above the control limits.
L- The surrogate recovery is below the control limits.
B- The compound was detected in the laboratory blank.
P- The Relative Percent Difference (RPD) of dual column analyses exceeds 40%.
D- The RPD between the sample and the sample duplicate is high. Sample Homogenity may be a problem.
+- The Surrogate was diluted out.
*C1- The Continuing Calibration did not meet method specifications and was biased low for this analyte. Increased uncertainty is associated with the reported value which is likely to be biased low.
*C2- The Continuing Calibration did not meet method specifications and was biased high for this analyte. Increased uncertainty is associated with the reported value which is likely to be biased high.
*F1- The Laboratory Control Sample recovery is outside of control limits. Reported value for this analyte is likely to be biased on the low side.
*F2- The Laboratory Control Sample recovery is outside of control limits. Reported value for this analyte is likely to be biased on the high side.
I- The Analyte exceeds %RSD limits for the Initial Calibration. This is a non-directional bias.

All results met standard operating procedures unless indicated by a data qualifier next to a sample result, or a narration in the QC report.

Complete Environmental Testing is only responsible for the certified testing and is not directly responsible for the integrity of the sample before laboratory receipt.

ND is None Detected at the specified detection limit
All analyses were performed in house unless a Reference Laboratory is listed.
Samples will be disposed of 30 days after the report date.

CET # : 5100463

Project: BETA, Southbury

CERTIFICATIONS

Certified Analyses included in this Report

Analyte	Certifications
No certified Analyses included in this Report	

Complete Environmental Testing operates under the following certifications and accreditations:

Code	Description	Number	Expires

5100463

CET
COMPLETE ENVIRONMENTAL TESTING, INC.

CHAIN OF CUSTODY

Volatile Soils Only:

Date and Time in Freezer
Client:
CET:

80 Lupes Drive
Stratford, CT 06615
Tel: (203) 377-9984
Fax: (203) 377-9952
e-mail: cet1@cetlabs.com
Bottle Request e-mail: bottleorders@cetlabs.com

Matrix: A=Air, S=Soil, W=Water, DW=Drinking Water, C=Cassette, Solid, Wipe, Other (Specify)

Turnaround Time ** (check one)

Organics | Metals (check all that apply) | Additional Analysis

Sample ID	Sample Depths (Units)	Collection Date/Time	Matrix	Same Day *	Next Day *	2-3 Days *	Std (5-7 Days)	8260 CT List	8260 Aromatics	8260 Halogens	624	CT ETPH	8270 CT List	8270 PNAs	PCBs	Pesticides	13 Priority Poll	8 RCRA	TOTAL	TCLP	SPLP	Field Filtered	Lab To Filter	Special [illegible]	TOTAL # OF CONT.	NOTE #
MW-1		9/23/15 0935	W				X																	X	1	
MW-2		9/23/15 1035	W				X																	X	1	

PRESERVATIVE (Cl–HCl, N–HNO₃, S–H₂SO₄, Na–NaOH, C=Cool, O–Other)

CONTAINER TYPE (P–Plastic, G–Glass, V–Vial, O–Other)

Soil VOCs Only (M=MeOH B=Sodium Bisulfate W=Water F=Empty Vial E=Encore)

RELINQUISHED BY:	DATE/TIME	RECEIVED BY:
[illegible]	11:27 / 9/23/15	[illegible]
RELINQUISHED BY:	DATE/TIME	RECEIVED BY: [illegible]
RELINQUISHED BY:	DATE/TIME	RECEIVED BY:

NOTES:

Client / Reporting Information

Company Name: CET
Address:
City: CET State Zip
Report To: E-mail
Phone # Fax #

Project Information

Project Contact: Ken Tarleton PO #:
Project: IDRETA Project #:
Location: Southbury, CT Collector(s): [illegible]

QA/QC ☐ Std ☐ Site Specific (MS/MSD) * ☒ RCP Pkg * ☐ DQAW *

Data Report ☐ PDF ☐ EDD - Specify Format ☐ Other

RSR Reporting Limits (check one) ☐ GA ☐ GB ☐ SWP ☐ Other

Laboratory Certification Needed (check one) ☒ CT ☐ NY ☐ RI ☐ MA

Temp Upon Receipt ____ °C Evidence of Cooling: Y N SHEET 1 OF 1

* Additional charge may apply. ** TAT begins when the samples are received at the Lab and all issues are resolved. TAT for samples received after 3 p.m. will start on the next business day.

REV 06/14

550

80 Lupes Drive
Stratford, CT 06615

COMPLETE ENVIRONMENTAL TESTING, INC.

Tel: (203) 377-9984
Fax: (203) 377-9952
e-mail: cet1@cetlabs.com

Client: Ms. Tunde Sandor
Leggette, Brashears & Graham
4 Research Dr. Suite 204
Shelton, CT 06484

Analytical Report

CET# 5110171

Report Date:November 19, 2015
Project: BETA, Southbury

Connecticut Laboratory Certificate: PH 0116
Massachussetts laboratory Certificate: M-CT903

New York Certification: 11982
Rhode Island Certification: 199

CET # : 5110171
Project: BETA, Southbury

SAMPLE SUMMARY

The sample(s) were received at 13.9°C.

This report contains analytical data associated with following samples only.

Sample ID	Laboratory ID	Matrix	Collection Date/Time	Receipt Date
MW-1	5110171-01	Water	11/06/2015 10:10	11/06/2015
MW-2	5110171-02	Water	11/06/2015 9:00	11/06/2015
MW-3	5110171-03	Water	11/06/2015 12:20	11/06/2015
PZ-A	5110171-04	Water	11/06/2015 11:05	11/06/2015
PZ-B	5110171-05	Water	11/06/2015 10:50	11/06/2015

CET # : 5110171
Project: BETA, Southbury

Analyte: Total Nitrogen [Calculated Analyte]

Analyst: Various

Matrix: Water

Laboratory ID	Client Sample ID	Result	RL	Units	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
5110171-01	MW-1	**21**	1.2	mg/L	1				
5110171-02	MW-2	**12**	1.2	mg/L	1				
5110171-03	MW-3	**4.8**	1.2	mg/L	1				
5110171-04	PZ-A	**3.4**	1.2	mg/L	1				
5110171-05	PZ-B	**18**	1.2	mg/L	1				

Analyte: Nitrite as N [EPA 300.0]

Analyst: CC

Matrix: Water

Laboratory ID	Client Sample ID	Result	RL	Units	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
5110171-01	MW-1	ND	0.10	mg/L	1	B5K0907	11/06/2015	11/06/2015 16:46	
5110171-02	MW-2	ND	0.10	mg/L	1	B5K0907	11/06/2015	11/06/2015 17:19	
5110171-03	MW-3	ND	0.10	mg/L	1	B5K0907	11/06/2015	11/06/2015 17:52	
5110171-04	PZ-A	ND	0.10	mg/L	1	B5K0907	11/06/2015	11/06/2015 18:25	
5110171-05	PZ-B	ND	0.10	mg/L	1	B5K0907	11/06/2015	11/06/2015 18:58	

Analyte: Nitrate as N [EPA 300.0]

Analyst: CC

Matrix: Water

Laboratory ID	Client Sample ID	Result	RL	Units	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
5110171-01	MW-1	ND	0.10	mg/L	1	B5K0907	11/06/2015	11/06/2015 16:46	
5110171-02	MW-2	ND	0.10	mg/L	1	B5K0907	11/06/2015	11/06/2015 17:19	
5110171-03	MW-3	ND	0.10	mg/L	1	B5K0907	11/06/2015	11/06/2015 17:52	
5110171-04	PZ-A	ND	0.10	mg/L	1	B5K0907	11/06/2015	11/06/2015 18:25	
5110171-05	PZ-B	ND	0.10	mg/L	1	B5K0907	11/06/2015	11/06/2015 18:58	

CET # : 5110171
Project: BETA, Southbury

Analyte: Ammonia as N [EPA 350.1]

Analyst: CC
Matrix: Water

Laboratory ID	Client Sample ID	Result	RL	Units	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
5110171-01	MW-1	**21**	0.10	mg/L	1	B5K1317	11/13/2015	11/13/2015 16:21	
5110171-02	MW-2	**12**	0.10	mg/L	1	B5K1317	11/13/2015	11/13/2015 16:21	
5110171-03	MW-3	**4.2**	0.10	mg/L	1	B5K1317	11/13/2015	11/13/2015 16:21	
5110171-04	PZ-A	**0.16**	0.10	mg/L	1	B5K1317	11/13/2015	11/13/2015 16:21	
5110171-05	PZ-B	**1.3**	0.10	mg/L	1	B5K1317	11/13/2015	11/13/2015 16:21	

Analyte: Phosphorous, Total [EPA 365.4]

Analyst: CC
Matrix: Water

Laboratory ID	Client Sample ID	Result	RL	Units	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
5110171-01	MW-1	**2.3**	0.10	mg/L	1	B5K1709	11/18/2015	11/18/2015 13:48	
5110171-02	MW-2	**2.3**	0.10	mg/L	1	B5K1709	11/18/2015	11/18/2015 13:48	
5110171-03	MW-3	ND	0.10	mg/L	1	B5K1709	11/18/2015	11/18/2015 13:48	
5110171-04	PZ-A	**0.44**	0.10	mg/L	1	B5K1709	11/18/2015	11/18/2015 13:48	
5110171-05	PZ-B	**8.1**	1.0	mg/L	10	B5K1709	11/18/2015	11/18/2015 13:48	

Analyte: Orthophosphate as P [SM 4500-P E]

Analyst: CC
Matrix: Water

Laboratory ID	Client Sample ID	Result	RL	Units	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
5110171-01	MW-1	**1.4**	1.0	mg/L	10	B5K0908	11/06/2015	11/06/2015 16:15	
5110171-02	MW-2	**2.3**	1.0	mg/L	10	B5K0908	11/06/2015	11/06/2015 16:15	
5110171-03	MW-3	ND	0.10	mg/L	1	B5K0908	11/06/2015	11/06/2015 16:15	
5110171-04	PZ-A	ND	0.10	mg/L	1	B5K0908	11/06/2015	11/06/2015 16:15	
5110171-05	PZ-B	ND	0.10	mg/L	1	B5K0908	11/06/2015	11/06/2015 16:15	

CET # : 5110171
Project: BETA, Southbury

Analyte: Total Kjeldahl Nitrogen (TKN) [EPA 351.2]

Analyst: CC
Matrix: Water

Laboratory ID	Client Sample ID	Result	RL	Units	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
5110171-01	MW-1	**21**	1.0	mg/L	1	B5K1710	11/18/2015	11/18/2015 16:54	
5110171-02	MW-2	**12**	1.0	mg/L	1	B5K1710	11/18/2015	11/18/2015 16:54	
5110171-03	MW-3	**4.8**	1.0	mg/L	1	B5K1710	11/18/2015	11/18/2015 16:54	
5110171-04	PZ-A	**3.4**	1.0	mg/L	1	B5K1710	11/18/2015	11/18/2015 16:54	
5110171-05	PZ-B	**18**	1.0	mg/L	1	B5K1710	11/18/2015	11/18/2015 16:54	

Analyte: Phosphorous, Total Dissolved [EPA 365.4]

Analyst: CC
Matrix: Water

Laboratory ID	Client Sample ID	Result	RL	Units	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
5110171-01	MW-1	**0.19**	0.10	mg/L	1	B5K1711	11/18/2015	11/18/2015 13:52	
5110171-02	MW-2	**0.73**	0.10	mg/L	1	B5K1711	11/18/2015	11/18/2015 13:52	
5110171-03	MW-3	**0.20**	0.10	mg/L	1	B5K1711	11/18/2015	11/18/2015 13:52	
5110171-04	PZ-A	**0.18**	0.10	mg/L	1	B5K1711	11/18/2015	11/18/2015 13:52	
5110171-05	PZ-B	ND	0.10	mg/L	1	B5K1711	11/18/2015	11/18/2015 13:52	

CET # : 5110171
Project: BETA, Southbury

QUALITY CONTROL SECTION

Batch B5K0907 - EPA 300.0

Analyte	Result (mg/L)	RL (mg/L)	Spike Level	Source Result	% Rec	% Rec Limits	RPD	RPD Limit	Notes
Blank (B5K0907-BLK1)					Prepared: 11/6/2015 Analyzed: 11/6/2015				
Nitrate as N	ND	0.10							
Nitrite as N	ND	0.10							
LCS (B5K0907-BS1)					Prepared: 11/6/2015 Analyzed: 11/6/2015				
Nitrate as N	5.1	0.10	5.000		102	80 - 120			
Nitrite as N	5.0	0.10	5.000		101	80 - 120			

CET # : 5110171
Project: BETA, Southbury

Batch B5K0908 - SM 4500-P E

Analyte	Result (mg/L)	RL (mg/L)	Spike Level	Source Result	% Rec	% Rec Limits	RPD	RPD Limit	Notes
Blank (B5K0908-BLK1)					Prepared: 11/6/2015 Analyzed: 11/6/2015				
Orthophosphate as P	ND	0.10							
LCS (B5K0908-BS1)					Prepared: 11/6/2015 Analyzed: 11/6/2015				
Orthophosphate as P	0.303	0.10	0.326		92.9	80 - 120			
Duplicate (B5K0908-DUP1)		**Source: 5110171-03**			Prepared: 11/6/2015 Analyzed: 11/6/2015				
Orthophosphate as P	ND	0.10		ND				20	

CET # : 5110171
Project: BETA, Southbury

Batch B5K1317 - EPA 350.1

Analyte	Result (mg/L)	RL (mg/L)	Spike Level	Source Result	% Rec	% Rec Limits	RPD	RPD Limit	Notes
Blank (B5K1317-BLK1)					Prepared: 11/13/2015 Analyzed: 11/13/2015				
Ammonia as N	ND	0.10							
LCS (B5K1317-BS1)					Prepared: 11/13/2015 Analyzed: 11/13/2015				
Ammonia as N	5.3	0.10	5.000		105	80 - 120			

CET # : 5110171
Project: BETA, Southbury

Batch B5K1709 - EPA 365.4

Analyte	Result (mg/L)	RL (mg/L)	Spike Level	Source Result	% Rec	% Rec Limits	RPD	RPD Limit	Notes
Blank (B5K1709-BLK1)					Prepared: 11/18/2015 Analyzed: 11/18/2015				
Phosphorous, Total	ND	0.10							
LCS (B5K1709-BS1)					Prepared: 11/18/2015 Analyzed: 11/18/2015				
Phosphorous, Total	0.459	0.10	0.509		90.3	80 - 120			
Duplicate (B5K1709-DUP1)		**Source: 5110171-02**			Prepared: 11/18/2015 Analyzed: 11/18/2015				
Phosphorous, Total	2.44	0.10		2.30			5.91	20	
Matrix Spike (B5K1709-MS1)		**Source: 5110171-02**			Prepared: 11/18/2015 Analyzed: 11/18/2015				
Phosphorous, Total	2.82	0.10	0.509	2.30	102	80 - 120			

CET # : 5110171
Project: BETA, Southbury

Batch B5K1710 - EPA 351.2

Analyte	Result (mg/L)	RL (mg/L)	Spike Level	Source Result	% Rec	% Rec Limits	RPD	RPD Limit	Notes
Blank (B5K1710-BLK1)					Prepared: 11/18/2015 Analyzed: 11/18/2015				
Total Kjeldahl Nitrogen (TKN)	ND	1.0							
LCS (B5K1710-BS1)					Prepared: 11/18/2015 Analyzed: 11/18/2015				
Total Kjeldahl Nitrogen (TKN)	5.35	1.0	5.000		107	80 - 120			
Duplicate (B5K1710-DUP1)		**Source: 5110171-02**			Prepared: 11/18/2015 Analyzed: 11/18/2015				
Total Kjeldahl Nitrogen (TKN)	12.8	1.0		12.0			6.45	20	

CET # : 5110171
Project: BETA, Southbury

Batch B5K1711 - EPA 365.4

Analyte	Result (mg/L)	RL (mg/L)	Spike Level	Source Result	% Rec	% Rec Limits	RPD	RPD Limit	Notes
Blank (B5K1711-BLK1)					Prepared: 11/18/2015 Analyzed: 11/18/2015				
Phosphorous, Total Dissolved	ND	0.10							
LCS (B5K1711-BS1)					Prepared: 11/18/2015 Analyzed: 11/18/2015				
Phosphorous, Total Dissolved	0.466	0.10				80 - 120			L
Duplicate (B5K1711-DUP1)		**Source: 5110171-02**			Prepared: 11/18/2015 Analyzed: 11/18/2015				
Phosphorous, Total Dissolved	0.623	0.10		0.730			15.8	20	

80 Lupes Drive
Stratford, CT 06615

COMPLETE ENVIRONMENTAL TESTING, INC.

Tel: (203) 377-9984
Fax: (203) 377-9952
email: cet1@cetlabs.com

Quality Control Definitions and Abbreviations

Internal Standard (IS)	An Analyte added to each sample or sample extract. An internal standard is used to monitor retention time, calculate relative response, and quantify analytes of interest.
Surrogate Recovery	The % recovery for non-tarer organic compounds that are spiked into all samples. Used to determine method performance.
Continuing Calibration	An analytical standard analyzed with each set of samples to verify initial calibration of the system.
Batch	Samples that are analyzed together with the same method, sequence and lot of reagents within the same time period.
ND	Not detected
RL	Reporting Limit
Dilution	Multiplier added to detection levels (MDL) and/or sample results due to interferences and/or high concentration of target compounds.
Duplicate	Result from the duplicate analysis of a sample.
Result	Amount of analyte found in a sample.
Spike Level	Amount of analyte added to a sample
Matrix Spike Result	Amount of analyte found including amount that was spiked.
Matrix Spike Dup	Amount of analyte foun in duplicate spikes including amount that was spike.
Matrix Spike % Recovery	% Recovery of spiked amount in sample.
Matrix Spike Dup % Recovery	% Recovery of spiked duplicate amount in sample.
RPD	Relative percent difference between Matrix Spike and Matrix Spike Duplicate.
Blank	Method Blank that has been taken through all steps of the analysis.
LCS % Recovery	Laboratory Control Sample percent recovery. The amount of analyte recovered from a fortified sample.
Recovery Limits	A range within which specified measurements results must fall to be compliant.
CC	Calibration Verification

Flags:

H- Recovery is above the control limits
L- Recovery is below the control limits
B- Compound detected in the Blank
P- RPD of dual column results exceeds 40%
#- Sample result too high for accurate spike recovery.

Connecticut Laboratory Certification PH0116
Massachussets Laboratory Certification M-CT903

New York Certification 11982
Rhode Island Certification 199

CET # : 5110171
Project: BETA, Southbury

Questions related to this report should be directed to David Ditta, Timothy Fusco, or Robert Blake at 203-377-9984.

Sincerely,

David Ditta
Laboratory Director

Report Comments:

Sample Result Flags:
E- The result is estimated, above the calibration range.
H- The surrogate recovery is above the control limits.
L- The surrogate recovery is below the control limits.
B- The compound was detected in the laboratory blank.
P- The Relative Percent Difference (RPD) of dual column analyses exceeds 40%.
D- The RPD between the sample and the sample duplicate is high. Sample Homogenity may be a problem.
+- The Surrogate was diluted out.
*C1- The Continuing Calibration did not meet method specifications and was biased low for this analyte. Increased uncertainty is associated with the reported value which is likely to be biased low.
*C2- The Continuing Calibration did not meet method specifications and was biased high for this analyte. Increased uncertainty is associated with the reported value which is likely to be biased high.
*F1- The Laboratory Control Sample recovery is outside of control limits. Reported value for this analyte is likely to be biased on the low side
*F2- The Laboratory Control Sample recovery is outside of control limits. Reported value for this analyte is likely to be biased on the high side.
I- The Analyte exceeds %RSD limits for the Initial Calibration. This is a non-directional bias.

All results met standard operating procedures unless indicated by a data qualifier next to a sample result, or a narration in the QC report.

Complete Environmental Testing is only responsible for the certified testing and is not directly responsible for the integrity of the sample before laboratory receipt.

ND is None Detected at the specified detection limit
All analyses were performed in house unless a Reference Laboratory is listed.
Samples will be disposed of 30 days after the report date.

CET # : 5110171
Project: BETA, Southbury

CERTIFICATIONS

Certified Analyses included in this Report

Analyte	Certifications
EPA 300.0 in Water	
Nitrate as N	CT
Nitrite as N	CT
EPA 350.1 in Water	
Ammonia as N	CT
EPA 351.2 in Water	
Total Kjeldahl Nitrogen (TKN)	CT
EPA 365.4 in Water	
Phosphorous, Total	CT
SM 4500-P E in Water	
Orthophosphate as P	CT

Complete Environmental Testing operates under the following certifications and accreditations:

Code	Description	Number	Expires
CT	Connecticut Public Health	PH0116	09/30/2016

5110171

COMPLETE ENVIRONMENTAL TESTING, INC.

CHAIN OF CUSTODY

Volatile Soils Only:

Date and Time in Freezer
Client:
CET:

80 Lupes Drive
Stratford, CT 06615
Tel: (203) 377-9984
Fax: (203) 377-9952
e-mail: cet1@cetlabs.com
Bottle Request e-mail: bottleorders@cetlabs.com

Matrix: A=Air, S=Soil, W=Water, DW=Drinking Water, C=Cassette, Solid, Wipe, Other (Specify)

Turnaround Time ** (check one)

Sample ID	Sample Depths (Units)	Collection Date/Time	Matrix	Same Day *	Next Day *	2-3 Days *	Std (5-7 Days)	8260 CT List	8260 Aromatics	8260 Halogens	624	CT ETPH	8270 CT List	8270 PNAs	PCBs	Pesticides	13 Priority Poll	8 RCRA	TOTAL	TCLP	SPLP	Field Filtered	Lab To Filter	Tot TKN	Ammonia	Nitrate	Nitrite	total N	tot Phosphorous	diss Phosphorous	Phos-Orthoph	TOTAL # OF CONT.	NOTE #
MW-1	NA	11-6-15 / 1010	W				X																	X	X	X	X	X	X	X	X	2	
MW-2		900																															
MW-3		1220																															
PZ-A		1105																															
PZ-B		1050																															

Organics: 8260 CT List – Pesticides. Metals (check all that apply): 13 Priority Poll – Lab To Filter. Additional Analysis: Tot TKN – Phos-Orthoph.

PRESERVATIVE (Cl–HCl, N–HNO$_3$, S–H$_2$SO$_4$, Na–NaOH, C–Cool, O–Other) 10

CONTAINER TYPE (P–Plastic, G–Glass, V–Vial, O–Other)

Soil VOCs Only (M=MeOH B=Sodium Bisulfate W=Water F=Empty Vial E=Encore)

RELINQUISHED BY:	DATE/TIME	RECEIVED BY:
[signature]	11-6-2015 / 12:18	[signature]
RELINQUISHED BY:	DATE/TIME	RECEIVED BY:
RELINQUISHED BY:	DATE/TIME	RECEIVED BY:

NOTES:

Client / Reporting Information

Company Name: LBG

Address: 4 Research Drive Suite 204

City: Shelton State: CT Zip: 06484

Report To: TSandor E-mail: TSandor@LBGCT.com

Phone #: 203. 929. 8555 Fax #

Project Information

Project Contact: T. Sandor PO #:

Project: BETALH Project #:

Location: Southbury CT Collector(s): T. Sandor

QA/QC ☒ Std ☐ Site Specific (MS/MSD) * ☐ RCP Pkg * ☐ DQAW *

Data Report ☒ PDF ☐ EDD - Specify Format ☐ Other

RSR Reporting Limits (check one) ☐ GA ☐ GB ☐ SWP ☐ Other

Laboratory Certification Needed (check one) ☐ CT ☐ NY ☐ RI ☐ MA

Temp Upon Receipt 13.9 °C Evidence of Cooling: Y N SHEET 1 OF 1

REV. 06/14

* Additional charge may apply. ** TAT begins when the samples are received at the Lab and all issues are resolved. TAT for samples received after 3 p.m. will start on the next business day.

80 Lupes Drive
Stratford, CT 06615

COMPLETE ENVIRONMENTAL TESTING, INC.

Tel: (203) 377-9984
Fax: (203) 377-9952
e-mail: cet1@cetlabs.com

Client: Ms. Tunde Sandor
Leggette, Brashears & Graham
4 Research Dr. Suite 204
Shelton, CT 06484

Analytical Report
CET# 6020202

Report Date:February 18, 2016
Project: BETA, Southbury

Connecticut Laboratory Certificate: PH 0116
Massachusetts laboratory Certificate: M-CT903

New York Certification: 11982
Rhode Island Certification: 199

CET # : 6020202
Project: BETA, Southbury

SAMPLE SUMMARY

The sample(s) were received at 3.0°C.

This report contains analytical data associated with following samples only.

Sample ID	Laboratory ID	Matrix	Collection Date/Time	Receipt Date
MW-2	6020202-01	Water	2/10/2016 10:17	02/11/2016
MW-3	6020202-02	Water	2/10/2016 9:32	02/11/2016
MW-4	6020202-03	Water	2/10/2016 15:50	02/11/2016
MW-6	6020202-04	Water	2/10/2016 11:33	02/11/2016
MW-8	6020202-05	Water	2/10/2016 11:15	02/11/2016
MW-9	6020202-06	Water	2/09/2016 15:45	02/11/2016
MW-10	6020202-07	Water	2/10/2016 10:12	02/11/2016
MW-11	6020202-08	Water	2/09/2016 15:56	02/11/2016
MW-12	6020202-09	Water	2/10/2016 12:00	02/11/2016
MW-13	6020202-10	Water	2/10/2016 12:00	02/11/2016
PZ-A	6020202-11	Water	2/10/2016 14:45	02/11/2016
PZ-B	6020202-12	Water	2/10/2016 10:20	02/11/2016

CET # : 6020202
Project: BETA, Southbury

Analyst: Various

Matrix: Water

Analyte: Total Nitrogen [Calculated Analyte]

Laboratory ID	Client Sample ID	Result	RL	Units	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
6020202-01	MW-2	**14**	1.2	mg/L	1				
6020202-02	MW-3	**5.5**	1.2	mg/L	1				
6020202-03	MW-4	**2.8**	1.2	mg/L	1				
6020202-04	MW-6	ND	1.2	mg/L	1				
6020202-05	MW-8	**4.8**	1.2	mg/L	1				
6020202-06	MW-9	**12**	1.2	mg/L	1				
6020202-07	MW-10	**6.1**	1.2	mg/L	1				
6020202-08	MW-11	ND	1.2	mg/L	1				
6020202-09	MW-12	**98**	10	mg/L	10				
6020202-10	MW-13	**2.7**	1.2	mg/L	1				
6020202-11	PZ-A	**3.3**	1.2	mg/L	1				
6020202-12	PZ-B	**1.8**	1.2	mg/L	1				

Analyst: CC

Matrix: Water

Analyte: Nitrite as N [EPA 300.0]

Laboratory ID	Client Sample ID	Result	RL	Units	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
6020202-01	MW-2	ND	0.10	mg/L	1	B6B1116	02/11/2016	02/11/2016 14:08	
6020202-02	MW-3	ND	0.10	mg/L	1	B6B1116	02/11/2016	02/11/2016 14:24	
6020202-03	MW-4	ND	0.10	mg/L	1	B6B1116	02/11/2016	02/11/2016 14:41	
6020202-04	MW-6	ND	0.10	mg/L	1	B6B1116	02/11/2016	02/11/2016 14:57	
6020202-05	MW-8	ND	0.10	mg/L	1	B6B1116	02/11/2016	02/11/2016 16:04	
6020202-06	MW-9	ND	0.10	mg/L	1	B6B1116	02/11/2016	02/11/2016 15:14	
6020202-07	MW-10	ND	0.10	mg/L	1	B6B1116	02/11/2016	02/11/2016 16:20	
6020202-08	MW-11	ND	0.10	mg/L	1	B6B1116	02/11/2016	02/11/2016 15:30	
6020202-09	MW-12	ND	0.10	mg/L	1	B6B1116	02/11/2016	02/11/2016 16:37	
6020202-10	MW-13	ND	0.10	mg/L	1	B6B1116	02/11/2016	02/11/2016 16:53	
6020202-11	PZ-A	ND	0.10	mg/L	1	B6B1116	02/11/2016	02/11/2016 17:10	
6020202-12	PZ-B	ND	0.10	mg/L	1	B6B1116	02/11/2016	02/11/2016 17:26	

CET # : 6020202
Project: BETA, Southbury

Analyte: Nitrate as N [EPA 300.0]

Analyst: CC

Matrix: Water

Laboratory ID	Client Sample ID	Result	RL	Units	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
6020202-01	MW-2	ND	0.10	mg/L	1	B6B1116	02/11/2016	02/11/2016 14:08	
6020202-02	MW-3	ND	0.10	mg/L	1	B6B1116	02/11/2016	02/11/2016 14:24	
6020202-03	MW-4	**2.8**	0.10	mg/L	1	B6B1116	02/11/2016	02/11/2016 14:41	
6020202-04	MW-6	**0.38**	0.10	mg/L	1	B6B1116	02/11/2016	02/11/2016 14:57	
6020202-05	MW-8	**0.10**	0.10	mg/L	1	B6B1116	02/11/2016	02/11/2016 16:04	
6020202-06	MW-9	ND	0.10	mg/L	1	B6B1116	02/11/2016	02/11/2016 15:14	
6020202-07	MW-10	**4.4**	0.10	mg/L	1	B6B1116	02/11/2016	02/11/2016 16:20	
6020202-08	MW-11	ND	0.10	mg/L	1	B6B1116	02/11/2016	02/11/2016 15:30	
6020202-09	MW-12	ND	0.10	mg/L	1	B6B1116	02/11/2016	02/11/2016 16:37	
6020202-10	MW-13	ND	0.10	mg/L	1	B6B1116	02/11/2016	02/11/2016 16:53	
6020202-11	PZ-A	ND	0.10	mg/L	1	B6B1116	02/11/2016	02/11/2016 17:10	
6020202-12	PZ-B	ND	0.10	mg/L	1	B6B1116	02/11/2016	02/11/2016 17:26	

Analyte: Ammonia as N [EPA 350.1]

Analyst: CC

Matrix: Water

Laboratory ID	Client Sample ID	Result	RL	Units	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
6020202-01	MW-2	**12**	0.10	mg/L	1	B6B1226	02/12/2016	02/12/2016 16:57	
6020202-02	MW-3	**4.5**	0.10	mg/L	1	B6B1226	02/12/2016	02/12/2016 16:57	
6020202-03	MW-4	ND	0.10	mg/L	1	B6B1226	02/12/2016	02/12/2016 16:57	
6020202-04	MW-6	**0.20**	0.10	mg/L	1	B6B1226	02/12/2016	02/12/2016 16:57	
6020202-05	MW-8	**0.24**	0.10	mg/L	1	B6B1226	02/12/2016	02/12/2016 16:57	
6020202-06	MW-9	**12**	0.10	mg/L	1	B6B1226	02/12/2016	02/12/2016 16:57	
6020202-07	MW-10	**0.13**	0.10	mg/L	1	B6B1226	02/12/2016	02/12/2016 16:57	
6020202-08	MW-11	ND	0.10	mg/L	1	B6B1226	02/12/2016	02/12/2016 16:57	
6020202-09	MW-12	ND	0.10	mg/L	1	B6B1226	02/12/2016	02/12/2016 16:57	
6020202-10	MW-13	**2.6**	0.10	mg/L	1	B6B1226	02/12/2016	02/12/2016 16:57	
6020202-11	PZ-A	**0.50**	0.10	mg/L	1	B6B1226	02/12/2016	02/12/2016 16:57	
6020202-12	PZ-B	**0.23**	0.10	mg/L	1	B6B1226	02/12/2016	02/12/2016 16:57	

CET # : 6020202
Project: BETA, Southbury

Analyte: Phosphorous, Total [EPA 365.4] **Analyst: CC**

Matrix: Water

Laboratory ID	Client Sample ID	Result	RL	Units	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
6020202-01	MW-2	**2.5**	0.10	mg/L	1	B6B1606	02/17/2016	02/17/2016 14:00	
6020202-02	MW-3	ND	0.10	mg/L	1	B6B1606	02/17/2016	02/17/2016 14:00	
6020202-03	MW-4	ND	0.10	mg/L	1	B6B1606	02/17/2016	02/17/2016 14:00	
6020202-04	MW-6	ND	0.10	mg/L	1	B6B1606	02/17/2016	02/17/2016 14:00	
6020202-05	MW-8	**29**	1.0	mg/L	10	B6B1606	02/17/2016	02/17/2016 14:00	
6020202-06	MW-9	**0.36**	0.10	mg/L	1	B6B1606	02/17/2016	02/17/2016 14:00	
6020202-07	MW-10	**0.87**	0.10	mg/L	1	B6B1606	02/17/2016	02/17/2016 14:00	
6020202-08	MW-11	ND	0.10	mg/L	1	B6B1606	02/17/2016	02/17/2016 14:00	
6020202-09	MW-12	**31**	1.0	mg/L	10	B6B1606	02/17/2016	02/17/2016 14:00	
6020202-10	MW-13	ND	0.10	mg/L	1	B6B1606	02/17/2016	02/17/2016 14:00	
6020202-11	PZ-A	**0.32**	0.10	mg/L	1	B6B1606	02/17/2016	02/17/2016 14:00	
6020202-12	PZ-B	ND	0.10	mg/L	1	B6B1606	02/17/2016	02/17/2016 14:00	

Analyte: Orthophosphate as P [SM 4500-P E] **Analyst: CC**

Matrix: Water

Laboratory ID	Client Sample ID	Result	RL	Units	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
6020202-01	MW-2	**0.74**	0.10	mg/L	1	B6B1131	02/11/2016	02/11/2016 15:11	
6020202-02	MW-3	**0.11**	0.10	mg/L	1	B6B1131	02/11/2016	02/11/2016 15:11	
6020202-03	MW-4	ND	0.10	mg/L	1	B6B1131	02/11/2016	02/11/2016 15:11	
6020202-04	MW-6	ND	0.10	mg/L	1	B6B1131	02/11/2016	02/11/2016 15:11	
6020202-05	MW-8	**0.85**	0.10	mg/L	1	B6B1131	02/11/2016	02/11/2016 15:11	
6020202-06	MW-9	**0.33**	0.10	mg/L	1	B6B1131	02/11/2016	02/11/2016 15:11	
6020202-07	MW-10	**0.13**	0.10	mg/L	1	B6B1131	02/11/2016	02/11/2016 15:11	
6020202-08	MW-11	**0.16**	0.10	mg/L	1	B6B1131	02/11/2016	02/11/2016 15:11	
6020202-09	MW-12	ND	0.10	mg/L	1	B6B1131	02/11/2016	02/11/2016 15:11	
6020202-10	MW-13	ND	0.10	mg/L	1	B6B1131	02/11/2016	02/11/2016 15:11	
6020202-11	PZ-A	**0.13**	0.10	mg/L	1	B6B1131	02/11/2016	02/11/2016 15:11	
6020202-12	PZ-B	ND	0.10	mg/L	1	B6B1131	02/11/2016	02/11/2016 15:11	

CET # : 6020202
Project: BETA, Southbury

Analyte: Total Kjeldahl Nitrogen (TKN) [EPA 351.2]

Analyst: CC
Matrix: Water

Laboratory ID	Client Sample ID	Result	RL	Units	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
6020202-01	MW-2	**14**	1.0	mg/L	1	B6B1607	02/17/2016	02/17/2016 17:21	
6020202-02	MW-3	**5.5**	1.0	mg/L	1	B6B1607	02/17/2016	02/17/2016 17:21	
6020202-03	MW-4	ND	1.0	mg/L	1	B6B1607	02/17/2016	02/17/2016 17:21	
6020202-04	MW-6	ND	1.0	mg/L	1	B6B1607	02/17/2016	02/17/2016 17:21	
6020202-05	MW-8	**4.7**	1.0	mg/L	1	B6B1607	02/17/2016	02/17/2016 17:21	
6020202-06	MW-9	**12**	1.0	mg/L	1	B6B1607	02/17/2016	02/17/2016 17:21	
6020202-07	MW-10	**1.7**	1.0	mg/L	1	B6B1607	02/17/2016	02/17/2016 17:21	
6020202-08	MW-11	ND	1.0	mg/L	1	B6B1607	02/17/2016	02/17/2016 17:21	
6020202-09	MW-12	**98**	10	mg/L	10	B6B1607	02/17/2016	02/17/2016 17:21	
6020202-10	MW-13	**2.7**	1.0	mg/L	1	B6B1607	02/17/2016	02/17/2016 17:21	
6020202-11	PZ-A	**3.3**	1.0	mg/L	1	B6B1607	02/17/2016	02/17/2016 17:21	
6020202-12	PZ-B	**1.8**	1.0	mg/L	1	B6B1607	02/17/2016	02/17/2016 17:21	

Analyte: pH [SM 4500-H B]

Analyst: KP
Matrix: Water

pH analyzed in lab

Laboratory ID	Client Sample ID	Result	RL	Units	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
6020202-01	MW-2	**6.59**	NA	pH Units	1	B6B1204	02/11/2016	02/11/2016 16:16	
6020202-02	MW-3	**6.62**	NA	pH Units	1	B6B1204	02/11/2016	02/11/2016 16:17	
6020202-03	MW-4	**6.91**	NA	pH Units	1	B6B1204	02/11/2016	02/11/2016 16:19	
6020202-04	MW-6	**8.02**	NA	pH Units	1	B6B1204	02/11/2016	02/11/2016 16:21	
6020202-05	MW-8	**7.97**	NA	pH Units	1	B6B1204	02/11/2016	02/11/2016 16:22	
6020202-06	MW-9	**6.77**	NA	pH Units	1	B6B1204	02/11/2016	02/11/2016 16:25	
6020202-07	MW-10	**6.59**	NA	pH Units	1	B6B1204	02/11/2016	02/11/2016 16:27	
6020202-08	MW-11	**6.81**	NA	pH Units	1	B6B1204	02/11/2016	02/11/2016 16:29	
6020202-09	MW-12	**6.43**	NA	pH Units	1	B6B1204	02/11/2016	02/11/2016 16:33	
6020202-10	MW-13	**6.98**	NA	pH Units	1	B6B1204	02/11/2016	02/11/2016 16:40	
6020202-11	PZ-A	**10.0**	NA	pH Units	1	B6B1204	02/11/2016	02/11/2016 16:46	
6020202-12	PZ-B	**10.3**	NA	pH Units	1	B6B1204	02/11/2016	02/11/2016 16:47	

CET # : 6020202
Project: BETA, Southbury

QUALITY CONTROL SECTION

Batch B6B1116 - EPA 300.0

Analyte	Result (mg/L)	RL (mg/L)	Spike Level	Source Result	% Rec	% Rec Limits	RPD	RPD Limit	Notes
Blank (B6B1116-BLK1)					Prepared: 2/11/2016 Analyzed: 2/11/2016				
Nitrate as N	ND	0.10							
Nitrite as N	ND	0.10							
LCS (B6B1116-BS1)					Prepared: 2/11/2016 Analyzed: 2/11/2016				
Nitrate as N	4.9	0.10	5.000		98.9	80 - 120			
Nitrite as N	5.1	0.10	5.000		103	80 - 120			

CET # : 6020202
Project: BETA, Southbury

Batch B6B1131 - SM 4500-P E

Analyte	Result (mg/L)	RL (mg/L)	Spike Level	Source Result	% Rec	% Rec Limits	RPD	RPD Limit	Notes
Blank (B6B1131-BLK1)					Prepared: 2/11/2016 Analyzed: 2/11/2016				
Orthophosphate as P	ND	0.10							
LCS (B6B1131-BS1)					Prepared: 2/11/2016 Analyzed: 2/11/2016				
Orthophosphate as P	0.355	0.10	0.326		109	80 - 120			
Duplicate (B6B1131-DUP1)		**Source: 6020202-10**			Prepared: 2/11/2016 Analyzed: 2/11/2016				
Orthophosphate as P	ND	0.10		ND				20	

CET # : 6020202

Project: BETA, Southbury

Batch B6B1204 - SM 4500-H B

Analyte	Result (pH Units)	RL (pH Units)	Spike Level	Source Result	% Rec	% Rec Limits	RPD	RPD Limit	Notes
Blank (B6B1204-BLK1)					Prepared: 2/11/2016 Analyzed: 2/11/2016				
pH	6.42								
Duplicate (B6B1204-DUP1)		**Source: 6020202-12**			Prepared: 2/11/2016 Analyzed: 2/11/2016				
pH	10.4			10.3			0.0967	5	

CET # : 6020202
Project: BETA, Southbury

Batch B6B1226 - EPA 350.1

Analyte	Result (mg/L)	RL (mg/L)	Spike Level	Source Result	% Rec	% Rec Limits	RPD	RPD Limit	Notes
Blank (B6B1226-BLK1)					Prepared: 2/12/2016 Analyzed: 2/12/2016				
Ammonia as N	ND	0.10							
LCS (B6B1226-BS1)					Prepared: 2/12/2016 Analyzed: 2/12/2016				
Ammonia as N	5.2	0.10	5.000		104	80 - 120			

CET # : 6020202
Project: BETA, Southbury

Batch B6B1606 - EPA 365.4

Analyte	Result (mg/L)	RL (mg/L)	Spike Level	Source Result	% Rec	% Rec Limits	RPD	RPD Limit	Notes
Blank (B6B1606-BLK1)					Prepared: 2/17/2016 Analyzed: 2/17/2016				
Phosphorous, Total	ND	0.10							
LCS (B6B1606-BS1)					Prepared: 2/17/2016 Analyzed: 2/17/2016				
Phosphorous, Total	0.530	0.10	0.509		104	80 - 120			
Duplicate (B6B1606-DUP1)		**Source: 6020202-01**			Prepared: 2/17/2016 Analyzed: 2/17/2016				
Phosphorous, Total	2.32	0.10		2.50			7.47	20	
Matrix Spike (B6B1606-MS1)		**Source: 6020202-01**			Prepared: 2/17/2016 Analyzed: 2/17/2016				
Phosphorous, Total	2.96	0.10	0.509	2.50	90.5	80 - 120			

CET # : 6020202
Project: BETA, Southbury

Batch B6B1607 - EPA 351.2

Analyte	Result (mg/L)	RL (mg/L)	Spike Level	Source Result	% Rec	% Rec Limits	RPD	RPD Limit	Notes
Blank (B6B1607-BLK1)					Prepared: 2/17/2016 Analyzed: 2/17/2016				
Total Kjeldahl Nitrogen (TKN)	ND	1.0							
LCS (B6B1607-BS1)					Prepared: 2/17/2016 Analyzed: 2/17/2016				
Total Kjeldahl Nitrogen (TKN)	5.43	1.0	5.000		109	80 - 120			
Duplicate (B6B1607-DUP1)		**Source: 6020202-01**			Prepared: 2/17/2016 Analyzed: 2/17/2016				
Total Kjeldahl Nitrogen (TKN)	14.8	1.0		14.0			5.56	20	
Matrix Spike (B6B1607-MS1)		**Source: 6020202-01**			Prepared: 2/17/2016 Analyzed: 2/17/2016				
Total Kjeldahl Nitrogen (TKN)	19.6	1.0	5.000	14.0	112	80 - 120			

CET # : 6020202
Project: BETA, Southbury

Questions related to this report should be directed to David Ditta, Timothy Fusco, or Robert Blake at 203-377-9984.

Sincerely,

David Ditta
Laboratory Director

Report Comments:

Sample Result Flags:
E- The result is estimated, above the calibration range.
H- The surrogate recovery is above the control limits.
L- The surrogate recovery is below the control limits.
B- The compound was detected in the laboratory blank.
P- The Relative Percent Difference (RPD) of dual column analyses exceeds 40%.
D- The RPD between the sample and the sample duplicate is high. Sample Homogenity may be a problem.
+- The Surrogate was diluted out.
*C1- The Continuing Calibration did not meet method specifications and was biased low for this analyte. Increased uncertainty is associated with the reported value which is likely to be biased low.
*C2- The Continuing Calibration did not meet method specifications and was biased high for this analyte. Increased uncertainty is associated with the reported value which is likely to be biased high.
*F1- The Laboratory Control Sample recovery is outside of control limits. Reported value for this analyte is likely to be biased on the low side.
*F2- The Laboratory Control Sample recovery is outside of control limits. Reported value for this analyte is likely to be biased on the high side.
I- The Analyte exceeds %RSD limits for the Initial Calibration. This is a non-directional bias.

All results met standard operating procedures unless indicated by a data qualifier next to a sample result, or a narration in the QC report.

Complete Environmental Testing is only responsible for the certified testing and is not directly responsible for the integrity of the sample before laboratory receipt.

ND is None Detected at the specified detection limit
All analyses were performed in house unless a Reference Laboratory is listed.
Samples will be disposed of 30 days after the report date.

CET # : 6020202
Project: BETA, Southbury

80 Lupes Drive
Stratford, CT 06615

COMPLETE ENVIRONMENTAL TESTING, INC.

Tel: (203) 377-9984
Fax: (203) 377-9952
email: cet1@cetlabs.com

Quality Control Definitions and Abbreviations

Internal Standard (IS)	An Analyte added to each sample or sample extract. An internal standard is used to monitor retention time, calculate relative response, and quantify analytes of interest.
Surrogate Recovery	The % recovery for non-tarer organic compounds that are spiked into all samples. Used to determine method performance.
Continuing Calibration	An analytical standard analyzed with each set of samples to verify initial calibration of the system.
Batch	Samples that are analyzed together with the same method, sequence and lot of reagents within the same time period.
ND	Not detected
RL	Reporting Limit
Dilution	Multiplier added to detection levels (MDL) and/or sample results due to interferences and/or high concentration of target compounds.
Duplicate	Result from the duplicate analysis of a sample.
Result	Amount of analyte found in a sample.
Spike Level	Amount of analyte added to a sample
Matrix Spike Result	Amount of analyte found including amount that was spiked.
Matrix Spike Dup	Amount of analyte foun in duplicate spikes including amount that was spike.
Matrix Spike % Recovery	% Recovery of spiked amount in sample.
Matrix Spike Dup % Recovery	% Recovery of spiked duplicate amount in sample.
RPD	Relative percent difference between Matrix Spike and Matrix Spike Duplicate.
Blank	Method Blank that has been taken through all steps of the analysis.
LCS % Recovery	Laboratory Control Sample percent recovery. The amount of analyte recovered from a fortified sample.
Recovery Limits	A range within which specified measurements results must fall to be compliant.
CC	Calibration Verification

Flags:

H- Recovery is above the control limits
L- Recovery is below the control limits
B- Compound detected in the Blank
P- RPD of dual column results exceeds 40%
#- Sample result too high for accurate spike recovery.

Connecticut Laboratory Certification PH0116
Massachussets Laboratory Certification M-CT903

New York Certification 11982
Rhode Island Certification 199

REASONABLE CONFIDENCE PROTOCOL
LABORATORY ANALYSIS QA/QC CERTIFICATION FORM

Laboratory Name: Complete Environmental Testing, Inc.

Client: Leggette, Brashears & Graham

Project Location: BETA, Southbury

Project Number:

Laboratory Sample ID(s):

6020202-01 thru 6020202-12

Sample Date(s):

02/09/2016, 02/10/2016

List RCP Methods Used:

CET #: 6020202

1	For each analytical method referenced in this laboratory report package, were all specified QA/QC performance criteria followed, including the requirement to explain any criteria falling outside of acceptable guidelines, as specified in the CTDEP method-specific Reasonable Confidence Protocol documents?	☑ Yes ☐ No
1A	Were the method specified preservation and holding time requirements met?	☑ Yes ☐ No
1B	VPH and EPH Methods only: Was the VPH and EPH method conducted without significant modifications (see Section 11.3 of respective RCP methods)?	☐ Yes ☐ No ☑ N/A
2	Were all samples received by the laboratory in a condition consistent with that described on the associated chain-of-custody document(s)?	☑ Yes ☐ No
3	Were samples received at an appropriate temperature (< 6 degrees C.)?	☑ Yes ☐ No ☐ N/A
4	Were all QA/QC performance criteria specified in the CT DEP Reasonable Confidence Protocol documents achieved?	☑ Yes ☐ No
5a	a) Were reporting limits specified or referenced on the chain-of-custody?	☑ Yes ☐ No
5b	b) Were these reporting limits met?	☑ Yes ☐ No
6	For each analytical method referenced in this laboratory report package, were results reported for all consituents identified in the method-specific analyte lists presented in the Reasonable Confidence Protocol documents?	☑ Yes ☐ No
7	Are project specific matrix spikes and laboratory duplicates included with this data set?	☑ Yes ☐ No

Notes: For all questions to which the response was "No" (with the exception of question #7), additional information must be provided in an attached narrative. If the answer to question #1, #1A, or #1B is "No", the data package does not meet the requirements for "Reasonable Confidence."
This form may not be altered and all questions must be answered.

I, the undersigned, attest under the pains and penalties of perjury that, to the best of my knowledge and belief and based upon my personal inquiry of those responsible for providing the information contained in this analytical report, such information is accurate and complete.

Authorized Signature: [signature] **Position:** **Laboratory Director**

Printed Name: David Ditta **Date: 02/18/2016**

Name of Laboratory: Complete Environmental Testing, Inc.

This certification form is to be used for RCP methods only.

QC Batch/Sequence Report

Batch	Sequence	CET ID	Sample ID	Specific Method	Matrix	Collection Date
[CALC]		6020202-01	MW-2	Calculated Analyte	Water	02/10/2016
[CALC]		6020202-02	MW-3	Calculated Analyte	Water	02/10/2016
[CALC]		6020202-03	MW-4	Calculated Analyte	Water	02/10/2016
[CALC]		6020202-04	MW-6	Calculated Analyte	Water	02/10/2016
[CALC]		6020202-05	MW-8	Calculated Analyte	Water	02/10/2016
[CALC]		6020202-06	MW-9	Calculated Analyte	Water	02/09/2016
[CALC]		6020202-07	MW-10	Calculated Analyte	Water	02/10/2016
[CALC]		6020202-08	MW-11	Calculated Analyte	Water	02/09/2016
[CALC]		6020202-09	MW-12	Calculated Analyte	Water	02/10/2016
[CALC]		6020202-10	MW-13	Calculated Analyte	Water	02/10/2016
[CALC]		6020202-11	PZ-A	Calculated Analyte	Water	02/10/2016
[CALC]		6020202-12	PZ-B	Calculated Analyte	Water	02/10/2016
B6B1116		6020202-01	MW-2	EPA 300.0	Water	02/10/2016
B6B1116		6020202-02	MW-3	EPA 300.0	Water	02/10/2016
B6B1116		6020202-03	MW-4	EPA 300.0	Water	02/10/2016
B6B1116		6020202-04	MW-6	EPA 300.0	Water	02/10/2016
B6B1116		6020202-05	MW-8	EPA 300.0	Water	02/10/2016
B6B1116		6020202-06	MW-9	EPA 300.0	Water	02/09/2016
B6B1116		6020202-07	MW-10	EPA 300.0	Water	02/10/2016
B6B1116		6020202-08	MW-11	EPA 300.0	Water	02/09/2016
B6B1116		6020202-09	MW-12	EPA 300.0	Water	02/10/2016
B6B1116		6020202-10	MW-13	EPA 300.0	Water	02/10/2016
B6B1116		6020202-11	PZ-A	EPA 300.0	Water	02/10/2016
B6B1116		6020202-12	PZ-B	EPA 300.0	Water	02/10/2016
B6B1226		6020202-01	MW-2	EPA 350.1	Water	02/10/2016
B6B1226		6020202-02	MW-3	EPA 350.1	Water	02/10/2016
B6B1226		6020202-03	MW-4	EPA 350.1	Water	02/10/2016
B6B1226		6020202-04	MW-6	EPA 350.1	Water	02/10/2016
B6B1226		6020202-05	MW-8	EPA 350.1	Water	02/10/2016
B6B1226		6020202-06	MW-9	EPA 350.1	Water	02/09/2016
B6B1226		6020202-07	MW-10	EPA 350.1	Water	02/10/2016
B6B1226		6020202-08	MW-11	EPA 350.1	Water	02/09/2016
B6B1226		6020202-09	MW-12	EPA 350.1	Water	02/10/2016
B6B1226		6020202-10	MW-13	EPA 350.1	Water	02/10/2016
B6B1226		6020202-11	PZ-A	EPA 350.1	Water	02/10/2016
B6B1226		6020202-12	PZ-B	EPA 350.1	Water	02/10/2016
B6B1607		6020202-01	MW-2	EPA 351.2	Water	02/10/2016
B6B1607		6020202-02	MW-3	EPA 351.2	Water	02/10/2016
B6B1607		6020202-03	MW-4	EPA 351.2	Water	02/10/2016
B6B1607		6020202-04	MW-6	EPA 351.2	Water	02/10/2016
B6B1607		6020202-05	MW-8	EPA 351.2	Water	02/10/2016
B6B1607		6020202-06	MW-9	EPA 351.2	Water	02/09/2016
B6B1607		6020202-07	MW-10	EPA 351.2	Water	02/10/2016
B6B1607		6020202-08	MW-11	EPA 351.2	Water	02/09/2016
B6B1607		6020202-09	MW-12	EPA 351.2	Water	02/10/2016
B6B1607		6020202-10	MW-13	EPA 351.2	Water	02/10/2016
B6B1607		6020202-11	PZ-A	EPA 351.2	Water	02/10/2016
B6B1607		6020202-12	PZ-B	EPA 351.2	Water	02/10/2016

B6B1606	6020202-01	MW-2	EPA 365.4	Water	02/10/2016
B6B1606	6020202-02	MW-3	EPA 365.4	Water	02/10/2016
B6B1606	6020202-03	MW-4	EPA 365.4	Water	02/10/2016
B6B1606	6020202-04	MW-6	EPA 365.4	Water	02/10/2016
B6B1606	6020202-05	MW-8	EPA 365.4	Water	02/10/2016
B6B1606	6020202-06	MW-9	EPA 365.4	Water	02/09/2016
B6B1606	6020202-07	MW-10	EPA 365.4	Water	02/10/2016
B6B1606	6020202-08	MW-11	EPA 365.4	Water	02/09/2016
B6B1606	6020202-09	MW-12	EPA 365.4	Water	02/10/2016
B6B1606	6020202-10	MW-13	EPA 365.4	Water	02/10/2016
B6B1606	6020202-11	PZ-A	EPA 365.4	Water	02/10/2016
B6B1606	6020202-12	PZ-B	EPA 365.4	Water	02/10/2016
B6B1204	6020202-01	MW-2	SM 4500-H B	Water	02/10/2016
B6B1204	6020202-02	MW-3	SM 4500-H B	Water	02/10/2016
B6B1204	6020202-03	MW-4	SM 4500-H B	Water	02/10/2016
B6B1204	6020202-04	MW-6	SM 4500-H B	Water	02/10/2016
B6B1204	6020202-05	MW-8	SM 4500-H B	Water	02/10/2016
B6B1204	6020202-06	MW-9	SM 4500-H B	Water	02/09/2016
B6B1204	6020202-07	MW-10	SM 4500-H B	Water	02/10/2016
B6B1204	6020202-08	MW-11	SM 4500-H B	Water	02/09/2016
B6B1204	6020202-09	MW-12	SM 4500-H B	Water	02/10/2016
B6B1204	6020202-10	MW-13	SM 4500-H B	Water	02/10/2016
B6B1204	6020202-11	PZ-A	SM 4500-H B	Water	02/10/2016
B6B1204	6020202-12	PZ-B	SM 4500-H B	Water	02/10/2016
B6B1131	6020202-01	MW-2	SM 4500-P E	Water	02/10/2016
B6B1131	6020202-02	MW-3	SM 4500-P E	Water	02/10/2016
B6B1131	6020202-03	MW-4	SM 4500-P E	Water	02/10/2016
B6B1131	6020202-04	MW-6	SM 4500-P E	Water	02/10/2016
B6B1131	6020202-05	MW-8	SM 4500-P E	Water	02/10/2016
B6B1131	6020202-06	MW-9	SM 4500-P E	Water	02/09/2016
B6B1131	6020202-07	MW-10	SM 4500-P E	Water	02/10/2016
B6B1131	6020202-08	MW-11	SM 4500-P E	Water	02/09/2016
B6B1131	6020202-09	MW-12	SM 4500-P E	Water	02/10/2016
B6B1131	6020202-10	MW-13	SM 4500-P E	Water	02/10/2016
B6B1131	6020202-11	PZ-A	SM 4500-P E	Water	02/10/2016
B6B1131	6020202-12	PZ-B	SM 4500-P E	Water	02/10/2016

6020202

CET COMPLETE ENVIRONMENTAL TESTING, INC.

CHAIN OF CUSTODY

Volatile Soils Only:

Date and Time in Freezer

Client:

CET

80 Lupes Drive
Stratford, CT 06615
Tel: (203) 377-9984
Fax: (203) 377-9952
e-mail: cet1@cetlabs.com
Bottle Request e-mail: bottleorders@cetlabs.com

Sample ID	Sample Depths (Units)	Collection Date/Time	Matrix (A=Air, S=Soil, W=Water, DW=Drinking Water, C=Cassette, Solid, Wipe, Other (Specify))	Same Day *	Next Day *	2-3 Days *	Std (6-7 Days)	8260 CT List	8260 Aromatics	8260 Halogens	624	CT ETPH	8270 CT List	8270 PNAs	PCBs	Pesticides	13 Priority Poll	8 RCRA	TOTAL	TCLP	SPLP	Field Filtered	Lab To Filter	Ammonia,	Nitrate,	Nitrite,	TKN,	Nitrogen, pH,	phosphate,	total phosphorus	TOTAL # OF CONT.	NOTE #
MW-2		2/10/16 @ 1017	W				X																	X	X	X	X	X	X	X	2	
MW-3		932					X																	X	X	X	X	X	X	X	2	
MW-4		1550					X																	X	X	X	X	X	X	X	2	
MW-6		1133					X																	X	X	X	X	X	X	X	2	
MW-8		1115					X																	X	X	X	X	X	X	X	2	
MW-9		2/9/16 @ 1545					X																	X	X	X	X	X	X	X	2	
MW-10		2/10/16 @ 1012					X																	X	X	X	X	X	X	X	2	
MW-11		2/9/16 @ 1556					X																	X	X	X	X	X	X	X	2	
MW-12		2/10/16 @ 1200					X																	X	X	X	X	X	X	X	2	
MW-13							X																	X	X	X	X	X	X	X	2	

PRESERVATIVE (Cl–HCl, N–HNO_3, S–H_2SO_4, Na–NaOH, C=Cool, O–Other)

CONTAINER TYPE (P–Plastic, G–Glass, V–Vial, O–Other)

Soil VOCs Only (M=MeOH B=Sodium Bisulfate W=Water F=Empty Vial E=Encore)

TOTAL: 20

RELINQUISHED BY:	DATE/TIME	RECEIVED BY:
[signature]	2/11/16 1036	[signature]
[signature]	2/11/16 1055	[signature]

NOTES:

Client / Reporting Information

Company Name: LBG Inc.

Address: 4 Research Dr. Suite 204

City: Shelton State: CT Zip: 06484

Report To: Tunde Sandor E-mail: tsandor@lbgct.com

Phone #: 2039298555 Fax #:

Project Information

Project Contact: Tunde Sandor PO #:

Project: BETA Project #:

Location: Southbury, CT Collector(s): PL/JP

QA/QC ☐ Std ☐ Site Specific (MS/MSD) * ☒ RCP Pkg * ☐ DQAW *

Data Report ☒ PDF ☐ EDD - Specify Format ☐ Other

RSR Reporting Limits (check one) ☒ GA ☐ GB ☐ SWP ☐ Other

Laboratory Certification Needed (check one) ☒ CT ☐ NY ☐ RI ☐ MA

Temp Upon Receipt: 3.0 °C Evidence of Cooling: (Y) N

SHEET 1 OF 2

* Additional charge may apply. ** TAT begins when the samples are received at the Lab and all issues are resolved. TAT for samples received after 3 p.m. will start on the next business day.

REV. 06/14

6020202

CET
COMPLETE ENVIRONMENTAL TESTING, INC.

CHAIN OF CUSTODY

Volatile Soils Only:

Date and Time in Freezer

Client:

80 Lupes Drive
Stratford, CT 06615
Tel: (203) 377-9984
Fax: (203) 377-9952
e-mail: cet1@cetlabs.com
Bottle Request e-mail: bottleorders@cetlabs.com

Sample ID	Sample Depths (Units)	Collection Date/Time	Matrix (A=Air, S=Soil, W=Water, DW=Drinking Water, C=Cassette, Solid, Wipe, Other (Specify))	Turnaround Time ** (check one): Same Day *	Next Day *	2-3 Days *	Std (5-7 Days)	Organics: 8260 CT List	8260 Aromatics	8260 Halogens	624	CT ETPH	8270 CT List	8270 PNAs	PCBs	Pesticides	Metals (check all that apply): 13 Priority Poll	8 RCRA	TOTAL	TCLP	SPLP	Field Filtered	Lab To Filter	Additional Analysis: Ammonia,	Nitrate,	Nitrite,	TKN,	Nitrogen	pH, phosphate,	total phosphorus	TOTAL # OF CONT.	NOTE #
PZ-A		2/10/16 @ 1445	W				X																	X	X	X	X	X	X	X	2	
PZ-B		↓ 1020	↓				X																	X	X	X	X	X	X	X	2	

PRESERVATIVE (Cl–HCl, N–HNO_3, S–H_2SO_4, Na–NaOH, C=Cool, O–Other) 4

CONTAINER TYPE (P–Plastic, G–Glass, V–Vial, O–Other)

Soil VOCs Only (M=MeOH B=Sodium Bisulfate W=Water F=Empty Vial E=Encore)

RELINQUISHED BY:	DATE/TIME	RECEIVED BY:
[signature]	2/11/16 1030	R. [signature]
K [signature]	2/11/16 1051	[signature]

NOTES:

Client / Reporting Information

Company Name: LBG Inc

Address: 4 Research Dr, Suite 204

City: Shelton State: CT Zip: 06484

Report To: Tunde Sandor E-mail: tsandor@lbgct.com

Phone #: 2039298555 Fax #:

Project Information

Project Contact: Tunde Sandor PO #:

Project: BETA Project #:

Location: Southbury, CT Collector(s): PL/JP

QA/QC ☐ Std ☐ Site Specific (MS/MSD) * ☒ RCP Pkg * ☐ DQAW *

Data Report ☒ PDF ☐ EDD - Specify Format ☐ Other

RSR Reporting Limits (check one) ☒ GA ☐ GB ☐ SWP ☐ Other

Laboratory Certification Needed (check one) ☒ CT ☐ NY ☐ RI ☐ MA

Temp upon Receipt °C Evidence of Cooling Y N

SHEET 2 OF 2

* Additional charge may apply. ** TAT begins when the samples are received at the Lab and all issues are resolved. TAT for samples received after 3 p.m. will start on the next business day.

REV. 06/14

LOW FLOW LOGS

LEGGETTE, BRASHEARS & GRAHAM, INC.

LOW-FLOW SAMPLING LOG

PAGE 1 OF 1

SAMPLE DATE: 9/23 24 /15

TOTAL # WELLS: 10

Client Name: BETA

Sample Pump: Geopump

Project Location: 990 Main St Southbury, CT

Tubing Type: LDPE - 30 Tygon - 1

Sampler(s): Pamela Lind

Monitoring Equipment:

Well I.D. MW-1

Screen Setting (ft btoc): ______ to ______

Well Diameter (inches): 2

Tubing Intake (ft btoc): 16

Total Depth (ft btoc): 18.3

Comments: Pump on at 858

Depth to Water (ft btoc): 14.40

Well Condition: good; odor from water

Time (hours)	Depth to Water (ft btoc)	Evacuation Rate (ml/min)	pH	Conductivity (µs/cm)	Turbidity (NTU)	Dissolved oxygen (mg/l)	Temperature (°C)	ORP (mv)
911	14.93	~100	9.69	1306	85.3	7.11	18.38	-109.4
914	↓	↓	9.34	1273	67.4	3.31	18.30	-113.0
917			9.03	1232	60.4	2.64	18.43	-116.5
920			8.73	1229	53.2	2.48	18.49	-115.8
923			8.29	1207	48.7	2.25	18.62	-114.9
926			7.79	1198	43.6	2.08	18.61	-114.2
929			7.77	1196	41.9	2.03	18.58	-113.3
932			7.73	1201	40.1	1.95	18.57	-112.8

Stabilization of Parameters (stabilization achieved for three consecutive measurements)

Time FROM	Time TO	Depth to Water (ft btoc)	Total Removed > Change in Storage (Y/N)?	pH	Conductivity (%)	Turbidity (%)	Dissolved oxygen (%)	Temperature (%)	ORP (mv)
926	929	0.53	Y	0.02	0.17	3.90	2.40	0.16	0.9
929	932	0.53	Y	0.04	0.42	4.30	3.94	0.05	0.5
926	932	0.53	Y	0.06	0.25	8.02	6.25	0.21	1.4
Recommended Stabilization		≤ 0.3 ft. total	NA	+/- 0.1 unit	+/- 3%	<5 NTU or +/- 10%	+/- 10% if >0.5 mg/L	+/- 3%	+/- 10 mv
Stabilization: (Yes/No)		✓	✓	✓	✓	✓	✓	✓	✓

Sample Time: 935

Reviewed by:

ft btoc	feet below top of casing	NTU	Nephelometric Turbidity Units	°C	degrees Celsius
ml/min	milliliters per minute	mg/l	milligrams per liter	mv	millivolts
µs/cm	microseimens per centimeter	ms/cm	milliseimens per centimeter		

LEGGETTE, BRASHEARS & GRAHAM, INC.

PAGE 1 OF 1

SAMPLE DATE: 9/ 23 24 /15

TOTAL # WELLS: 10

LOW-FLOW SAMPLING LOG

Client Name: BETA

Sample Pump: Geopump

Project Location: 990 Main St Southbury, CT

Tubing Type: LDPE - Tygon -

Sampler(s): Pamela Lind

Monitoring Equipment:

Well I.D. MW-2

Screen Setting (ft btoc): ______ to ______

Well Diameter (inches): 2

Tubing Intake (ft btoc): 16

Total Depth (ft btoc): 18.22

Comments: Pump on at 950

Depth to Water (ft btoc): 10.52

Well Condition: good

Time (hours)	Depth to Water (ft btoc)	Evacuation Rate (ml/min)	pH	Conductivity (µs/cm)	Turbidity (NTU)	Dissolved oxygen (mg/l)	Temperature (°C)	ORP (mv)
			Water Quality Monitoring Parameters					
1000	11.50	~100	11.34	1180	31.0	3.06	20.65	-121.2
1003	↓	↓	11.11	1170	21.2	2.84	20.51	-121.2
1006	↓	↓	10.95	1156	18.5	2.44	20.46	-121.0
1009	malfunctioning YSI → purged then sampled							

Stabilization of Parameters (stabilization achieved for three consecutive measurements)

Time FROM	Time TO	Depth to Water (ft btoc)	Total Removed > Change in Storage (Y/N)?	pH	Conductivity (%)	Turbidity (%)	Dissolved oxygen (%)	Temperature (%)	ORP (mv)
Recommended Stabilization		≤ 0.3 ft. total	NA	+/- 0.1 unit	+/- 3%	<5 NTU or +/- 10%	+/- 10% if >0.5 mg/L	+/- 3%	+/- 10 mv
Stabilization: (Yes/No)									

Sample Time: 1035

Reviewed by:

ft btoc	feet below top of casing	NTU	Nephelometric Turbidity Units	°C	degrees Celsius
ml/min	milliliters per minute	mg/l	milligrams per liter	mv	millivolts
µs/cm	microseimens per centimeter	ms/cm	milliseimens per centimeter		

LEGGETTE, BRASHEARS & GRAHAM, INC.

PAGE 1 OF 1

SAMPLE DATE: 9/ 23/ 24 /15

LOW-FLOW SAMPLING LOG

TOTAL # WELLS: 10

Client Name: BETA

Sample Pump: Geopump

Project Location: 990 Main St Southbury, CT

Tubing Type: LDPE - 27 Tygon - 1

Sampler(s): Pamela Lind

Monitoring Equipment:

Well I.D. MW-3

Screen Setting (ft btoc): ____ to ____

Well Diameter (inches): 2

Tubing Intake (ft btoc): 17

Total Depth (ft btoc): 19.45

Comments: Pump on at 1130

Depth to Water (ft btoc): 12.85

Well Condition: good

Time (hours)	Depth to Water (ft btoc)	Evacuation Rate (ml/min)	Water Quality Monitoring Parameters: pH	Conductivity (µs/cm)	Turbidity (NTU)	Dissolved oxygen (mg/l)	Temperature (°C)	ORP (mv)
[illegible]			7.45	564	5.3	3.34	16.81	201.4

Stabilization of Parameters (stabilization achieved for three consecutive measurements)

Time FROM	Time TO	Depth to Water (ft btoc)	Total Removed > Change in Storage (Y/N)?	pH	Conductivity (%)	Turbidity (%)	Dissolved oxygen (%)	Temperature (%)	ORP (mv)
Recommended Stabilization		≤ 0.3 ft. total	NA	+/- 0.1 unit	+/- 3%	<5 NTU or +/- 10%	+/- 10% if >0.5 mg/L	+/- 3%	+/- 10 mv
Stabilization: (Yes/No)									

Sample Time: 1200

Reviewed by:

ft btoc	feet below top of casing	NTU	Nephelometric Turbidity Units
ml/min	milliliters per minute	mg/l	milligrams per liter
µs/cm	microseimens per centimeter	ms/cm	millisiemens per centimeter
°C	degrees Celsius	mv	millivolts

LEGGETTE, BRASHEARS & GRAHAM, INC.

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SAMPLE DATE: 10/1/15

LOW-FLOW SAMPLING LOG

TOTAL # WELLS: 2

Client Name: BETA Group
Sample Pump: Geopump
Project Location: 990 Main St N Southbury, CT
Tubing Type: LDPE - 27 Tygon - 1
Sampler(s): Pamela Lind
Monitoring Equipment: YSI

Well I.D. MW-3
Screen Setting (ft btoc): ____ to ____
Well Diameter (inches): 2
Tubing Intake (ft btoc): 17
Total Depth (ft btoc): 19.45
Comments: Pump on at 8:58
Depth to Water (ft btoc): 12.5

Well Condition: good

Time (hours)	Depth to Water (ft btoc)	Evacuation Rate (ml/min)	Water Quality Monitoring Parameters: pH	Conductivity (µs/cm)	Turbidity (NTU)	Dissolved oxygen (mg/l)	Temperature (°C)	ORP (mv)
9:06	13.22	~100	8.30	569	8.8	1.36	14.91	-75.7
9:09	13.22	~100	7.56	557	8.8	0.58	14.87	-42.6
9:12	13.22	~100	7.26	555	8.5	0.48	14.91	115.8
9:15	13.22	~100	7.18	552	8.6	0.42	14.85	116.9
9:18	13.22	~100	7.20	549	8.7	0.37	14.83	117.6

Stabilization of Parameters (stabilization achieved for three consecutive measurements)

Time FROM	Time TO	Depth to Water (ft btoc)	Total Removed > Change in Storage (Y/N)?	pH	Conductivity (%)	Turbidity (%)	Dissolved oxygen (%)	Temperature (%)	ORP (mv)
9:06	9:09	0.72	Y	0.08	0.5	1.2	<0.5	0.4	1.1
9:09	9:12	0.72	Y	0.02	0.5	1.1	<0.5	0.1	0.7
9:12	9:15	0.72	Y	0.06	1.1	2.3	<0.5	0.5	1.8
Recommended Stabilization		≤ 0.3 ft. total	NA	+/- 0.1 unit	+/- 3%	<5 NTU or +/- 10%	+/- 10% if >0.5 mg/L	+/- 3%	+/- 10 mv
Stabilization: (Yes/No)		Y	Y	Y	Y	Y	Y	Y	Y

Sample Time: 9:20
Reviewed by: ____

ft btoc	feet below top of casing	NTU	Nephelometric Turbidity Units	°C	degrees Celsius
ml/min	milliliters per minute	mg/l	milligrams per liter	mv	millivolts
µs/cm	microseimens per centimeter	ms/cm	milliseimens per centimeter		

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SAMPLE DATE: 9/23/24 /15

LOW-FLOW SAMPLING LOG

TOTAL # WELLS: 10

Client Name: BETA

Sample Pump: Geopump

Project Location: 990 Main St Southbury, CT

Tubing Type: LDPE -30 Tygon - 1

Sampler(s): Pamela Lind

Monitoring Equipment:

Well I.D. MW-4

Screen Setting (ft btoc): ____ to ____

Well Diameter (inches): 2

Tubing Intake (ft btoc): 18

Total Depth (ft btoc): 20.70

Comments: Pump on at 1215

Depth to Water (ft btoc): 10.08

Well Condition: good

Time (hours)	Depth to Water (ft btoc)	Evacuation Rate (ml/min)	pH	Conductivity (µs/cm)	Turbidity (NTU)	Dissolved oxygen (mg/l)	Temperature (°C)	ORP (mv)
			7.11	981	9.0	2.70	19.16	189.7

Stabilization of Parameters (stabilization achieved for three consecutive measurements)

Time FROM	Time TO	Depth to Water (ft btoc)	Total Removed > Change in Storage (Y/N)?	pH	Conductivity (%)	Turbidity (%)	Dissolved oxygen (%)	Temperature (%)	ORP (mv)
Recommended Stabilization		≤ 0.3 ft. total	NA	+/- 0.1 unit	+/- 3%	<5 NTU or +/- 10%	+/- 10% if >0.5 mg/L	+/- 3%	+/- 10 mv
Stabilization: (Yes/No)									

Sample Time: 1245

Reviewed by:

ft btoc	feet below top of casing	NTU	Nephelometric Turbidity Units	°C	degrees Celsius
ml/min	milliliters per minute	mg/l	milligrams per liter	mv	millivolts
µs/cm	microseimens per centimeter	ms/cm	milliseimens per centimeter		

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SAMPLE DATE: 10/1/15

LOW-FLOW SAMPLING LOG

TOTAL # WELLS: 2

Client Name: BETA Group
Sample Pump: Geopump
Project Location: 990 Main St N Southbury, CT
Tubing Type: LDPE - 30 Tygon - 1
Sampler(s): Pamela Lind
Monitoring Equipment: YSI

Well I.D. MW-4
Screen Setting (ft btoc): ______ to ______
Well Diameter (inches): 2
Tubing Intake (ft btoc): 18
Total Depth (ft btoc): 20.7
Comments: Pump on at 9:30
Depth to Water (ft btoc): 8.78

Well Condition: good

Time (hours)	Depth to Water (ft btoc)	Evacuation Rate (ml/min)	pH	Conductivity (µs/cm)	Turbidity (NTU)	Dissolved oxygen (mg/l)	Temperature (°C)	ORP (mv)
			Water Quality Monitoring Parameters					
9:37	8.80	~100	7.28	826	25.0	1.12	16.30	108.4
9:40	8.80	~100	7.23	827	10.2	1.02	16.40	110.8
9:43	8.80	~100	7.20	834	9.5	1.00	16.49	113.1
9:46	8.80	~100	7.18	838	9.6	0.92	16.62	115.1
9:49	8.80	~100	7.16	838	9.7	0.95	16.65	116.5

Stabilization of Parameters (stabilization achieved for three consecutive measurements)

Time FROM	Time TO	Depth to Water (ft btoc)	Total Removed > Change in Storage (Y/N)?	pH	Conductivity (%)	Turbidity (%)	Dissolved oxygen (%)	Temperature (%)	ORP (mv)
9:06	9:09	0.02	Y	0.02	0.5	1.0	8.0	0.8	2.0
9:09	9:12	0.02	Y	0.02	0.0	1.0	3.2	0.2	1.4
9:12	9:15	0.02	Y	0.04	0.5	2.1	5.0	1.0	3.4
Recommended Stabilization		≤ 0.3 ft. total	NA	+/- 0.1 unit	+/- 3%	<5 NTU or +/- 10%	+/- 10% if >0.5 mg/L	+/- 3%	+/- 10 mv
Stabilization: (Yes/No)		Y	Y	Y	Y	Y	Y	Y	Y

Sample Time: 9:20
Reviewed by: ______

ft btoc feet below top of casing
ml/min milliliters per minute
µs/cm microseimens per centimeter
NTU Nephelometric Turbidity Units
mg/l milligrams per liter
ms/cm milliseimens per centimeter
°C degrees Celsius
mv millivolts

LEGGETTE, BRASHEARS & GRAHAM, INC.

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SAMPLE DATE: 9/ 23 24 /15

TOTAL # WELLS: 10

LOW-FLOW SAMPLING LOG

Client Name: BETA

Sample Pump: Geopump

Project Location: 990 Main St Southbury, CT

Tubing Type: LDPE - 30 Tygon - 1

Sampler(s): Pamela Lind

Monitoring Equipment:

Well I.D. MW - 5

Screen Setting (ft btoc): ______ to ______

Well Diameter (inches): 2

Tubing Intake (ft btoc): 18

Total Depth (ft btoc): 18.00

Comments: ~~Pump on at~~ Grab sample

Depth to Water (ft btoc): 17.59

Well Condition: good

Time (hours)	Depth to Water (ft btoc)	Evacuation Rate (ml/min)	pH	Conductivity µs/cm	Turbidity (NTU)	Dissolved oxygen (mg/l)	Temperature (°C)	ORP (mv)

Stabilization of Parameters (stabilization achieved for three consecutive measurements)

Time FROM	Time TO	Depth to Water (ft btoc)	Total Removed > Change in Storage (Y/N)?	pH	Conductivity (%)	Turbidity (%)	Dissolved oxygen (%)	Temperature (%)	ORP (mv)
Recommended Stabilization		≤ 0.3 ft. total	NA	+/- 0.1 unit	+/- 3%	<5 NTU or +/- 10%	+/- 10% if >0.5 mg/L	+/- 3%	+/- 10 mv
Stabilization: (Yes/No)									

Sample Time: 1055

Reviewed by:

ft btoc	feet below top of casing	NTU	Nephelometric Turbidity Units
ml/min	milliliters per minute	mg/l	milligrams per liter
µs/cm	microseimens per centimeter	ms/cm	milliseimens per centimeter
°C	degrees Celsius	mv	millivolts

LEGGETTE, BRASHEARS & GRAHAM, INC.

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SAMPLE DATE: 9/ 23 24 /15

TOTAL # WELLS: 10

LOW-FLOW SAMPLING LOG

Client Name: BETA

Sample Pump: Geopump

Project Location: 990 Main St Southbury, CT

Tubing Type: LDPE - 47 Tygon - 1

Sampler(s): Pamela Lind

Monitoring Equipment:

Well I.D. MW-6

Screen Setting (ft btoc): ____ to ____

Well Diameter (inches): 2

Tubing Intake (ft btoc): 37

Total Depth (ft btoc): 40.45

Comments: Pump on at 925

Depth to Water (ft btoc): 28.52

Well Condition: good

Time (hours)	Depth to Water (ft btoc)	Evacuation Rate (ml/min)	pH	Conductivity (µs/cm)	Turbidity (NTU)	Dissolved oxygen (mg/l)	Temperature (°C)	ORP (mv)
937	29.40	~100	8.26	132	45.5	9.15	12.40	136.7
940	29.61	↓	8.33	132	37.9	8.14	12.21	140.6
943	29.70	↓	8.34	132	20.2	8.01	12.91	143.7
946	29.70	↓	8.36	132	21.3	7.92	12.89	145.4
949	29.70	↓	8.37	133	22.0	7.76	13.02	148.7

Stabilization of Parameters (stabilization achieved for three consecutive measurements)

Time FROM	Time TO	Depth to Water (ft btoc)	Total Removed > Change in Storage (Y/N)?	pH	Conductivity (%)	Turbidity (%)	Dissolved oxygen (%)	Temperature (%)	ORP (mv)
943	946	0	Y	0.02	0	5.45	1.12	0.15	1.7
946	949	0	Y	0.01	0.75	3.18	2.02	0.99	3.3
943	949	0	Y	0.03	0.75	8.18	3.12	0.84	4.0
Recommended Stabilization		≤ 0.3 ft. total	NA	+/- 0.1 unit	+/- 3%	<5 NTU or +/- 10%	+/- 10% if >0.5 mg/L	+/- 3%	+/- 10 mv
Stabilization: (Yes/No)									

Sample Time: 955

Reviewed by:

ft btoc	feet below top of casing	NTU	Nephelometric Turbidity Units
ml/min	milliliters per minute	mg/l	milligrams per liter
µs/cm	microseimens per centimeter	ms/cm	milliseimens per centimeter
°C	degrees Celsius	mv	millivolts

LEGGETTE, BRASHEARS & GRAHAM, INC.

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SAMPLE DATE: 9/ 23 (24) /15

LOW-FLOW SAMPLING LOG

TOTAL # WELLS: 10

Client Name: BETA

Sample Pump: Geopump

Project Location: 990 Main St Southbury, CT

Tubing Type: LDPE - 23 Tygon - 1

Sampler(s): Pamela Lind

Monitoring Equipment:

Well I.D. MW-7

Screen Setting (ft btoc): ____ to ____

Well Diameter (inches): 2

Tubing Intake (ft btoc): 12.65

Total Depth (ft btoc): 12.65

Comments: ~~Pump on at~~ Grab sample

Depth to Water (ft btoc): 11.63

Well Condition: good

Time (hours)	Depth to Water (ft btoc)	Evacuation Rate (ml/min)	pH	Conductivity µs/cm	Turbidity (NTU)	Dissolved oxygen (mg/l)	Temperature (°C)	ORP (mv)

Stabilization of Parameters (stabilization achieved for three consecutive measurements)

Time FROM	Time TO	Depth to Water (ft btoc)	Total Removed > Change in Storage (Y/N)?	pH	Conductivity (%)	Turbidity (%)	Dissolved oxygen (%)	Temperature (%)	ORP (mv)
Recommended Stabilization		≤ 0.3 ft. total	NA	+/- 0.1 unit	+/- 3%	<5 NTU or +/- 10%	+/- 10% if >0.5 mg/L	+/- 3%	+/- 10 mv
Stabilization: (Yes/No)									

Sample Time: 1025

Reviewed by:

ft btoc	feet below top of casing	NTU	Nephelometric Turbidity Units
ml/min	milliliters per minute	mg/l	milligrams per liter
µs/cm	microseimens per centimeter	ms/cm	millseimens per centimeter
°C	degrees Celsius	mv	millivolts

LEGGETTE, BRASHEARS & GRAHAM, INC.

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SAMPLE DATE: 9/ 23 24 /15

LOW-FLOW SAMPLING LOG

TOTAL # WELLS: 10

Client Name: BETA
Project Location: 990 Main St Southbury, CT
Sampler(s): Pamela Lind

Sample Pump: Geopump
Tubing Type: LDPE - 45 Tygon - 1
Monitoring Equipment: YSI

Well I.D. MW-8
Well Diameter (inches): 2
Total Depth (ft btoc): 41.8
Depth to Water (ft btoc): 29.45

Screen Setting (ft btoc): ______ to ______
Tubing Intake (ft btoc): 35
Comments: Pump on at 827

Well Condition: good

Time (hours)	Depth to Water (ft btoc)	Evacuation Rate (ml/min)	pH	Conductivity (µs/cm)	Turbidity (NTU)	Dissolved oxygen (mg/l)	Temperature (°C)	ORP (mv)
840	30.60	~100	8.14	112	61.9	7.04	11.93	83.9
843	30.79		8.18	105	55.7	6.69	11.69	103.6
846	30.86		8.18	103	53.3	6.00	11.49	113.4
849	30.93		8.19	103	51.7	5.82	11.49	119.7
852	31.00		8.22	103	49.7	5.74	11.48	122.9

Stabilization of Parameters (stabilization achieved for three consecutive measurements)

Time FROM	Time TO	Depth to Water (ft btoc)	Total Removed > Change in Storage (Y/N)?	pH	Conductivity (%)	Turbidity (%)	Dissolved oxygen (%)	Temperature (%)	ORP (mv)
846	849	0.07	Y	0.01	0	3.00	3.00	0	6.3
849	852	0.07	Y	0.03	0	3.87	1.37	0.09	3.2
846	852	0.07	Y	0.04	0	6.75	4.33	0.09	9.5
Recommended Stabilization		≤ 0.3 ft. total	NA	+/- 0.1 unit	+/- 3%	<5 NTU or +/- 10%	+/- 10% If >0.5 mg/L	+/- 3%	+/- 10 mv
Stabilization: (Yes/No)		✓	✓	✓	✓	✓	✓	✓	✓

Sample Time: 855

Reviewed by: ______

ft btoc feet below top of casing
ml/min milliliters per minute
µs/cm microseimens per centimeter
NTU Nephelometric Turbidity Units
mg/l milligrams per liter
ms/cm milliseimens per centimeter
°C degrees Celsius
mv millivolts

LEGGETTE, BRASHEARS & GRAHAM, INC.

LOW-FLOW SAMPLING LOG

PAGE 1 OF 1
SAMPLE DATE: 2/10/16
TOTAL # WELLS: 15

Client Name: Beta Group
Project Location: 990 Main St North, Southbury, CT
Sampler(s): PL JP
Sample Pump: Geopump
Tubing Type: LDPE - 40 Tygon - 1
Monitoring Equipment: Horiba

Well I.D. MW-2
Well Diameter (inches): 2
Total Depth (ft btoc): 18.20
Depth to Water (ft btoc): 8.12
Screen Setting (ft btoc): ______ to ______
Tubing Intake (ft btoc): 16
Comments: Pump on at 952

Well Condition: good

Time (hours)	Depth to Water (ft btoc)	Evacuation Rate (ml/min)	pH	Conductivity (µs/cm)	Turbidity (NTU)	Dissolved oxygen (mg/l)	Temperature (°C)	ORP (mv)
956	8.50	~160	6.62	0.833	39.2	2.46	8.17	86
959			6.47	0.844	30.1	1.74	7.89	18
1002			6.41	0.861	12.7	1.49	7.60	-1
1005			6.46	0.878	9.3	1.38	7.34	-11
1008			6.45	0.890	8.0	1.28	7.10	-19
1011			6.46	0.896	7.7	1.24	6.98	-22
1014			6.49	0.900	7.3	1.22	6.91	-26

Stabilization of Parameters (stabilization achieved for three consecutive measurements)

Time FROM	Time TO	Depth to Water (ft btoc)	Total Removed > Change in Storage (Y/N)?	pH	Conductivity (%)	Turbidity (%)	Dissolved oxygen (%)	Temperature (%)	ORP (mv)
1008	1011	0	Y	0.01	0.67	3.75	3.13	5.92	3
1011	1014	0	Y	0.03	0.44	5.19	1.61	1.00	4
1008	1014	0	Y	0.04	1.11	8.75	4.69	2.68	7
Recommended Stabilization		≤ 0.3 ft. total	NA	+/- 0.1 unit	+/- 3%	<5 NTU or +/- 10%	+/- 10% if >0.5 mg/L	+/- 3%	+/- 10 mv
Stabilization: (Yes/No)		✓	✓	✓	✓	✓	✓	✓	✓

Sample Time: 1017
Reviewed by: ______

ft btoc	feet below top of casing	NTU	Nephelometric Turbidity Units	°C	degrees Celsius
ml/min	milliliters per minute	mg/l	milligrams per liter	mv	millivolts
µs/cm	microseimens per centimeter	ms/cm	milliseimens per centimeter		

LEGGETTE, BRASHEARS & GRAHAM, INC. PAGE 1 OF 1

SAMPLE DATE: 2/10/16

LOW-FLOW SAMPLING LOG

TOTAL # WELLS: 15

Client Name: Beta Group
Sample Pump: Geopump
Project Location: 990 Main St North. Southbury, CT
Tubing Type: LDPE - 30 Tygon - 1
Sampler(s): PL JP
Monitoring Equipment: Horiba
Well I.D. MW-3
Screen Setting (ft btoc): ____ to ____
Well Diameter (inches): 2
Tubing Intake (ft btoc): 17
Total Depth (ft btoc): 19.40
Comments: Pump on at 900
Depth to Water (ft btoc): 10.75
Well Condition: good

Time (hours)	Depth to Water (ft btoc)	Evacuation Rate (ml/min)	pH	Conductivity (ms/cm)	Turbidity (NTU)	Dissolved oxygen (mg/l)	Temperature (°C)	ORP (mv)
908	11.40	~160	6.61	0.629	0	1.90	14.55	214
911	↓	↓	6.59	0.635	0	1.64	13.99	217
914			6.53	0.641	0	1.47	13.34	222
917			6.45	0.650	0	1.38	12.81	227
920			6.36	0.657	0	1.28	12.32	232
923			6.33	0.664	0	1.24	11.48	234
926			6.31	0.671	0	1.19	11.40	234
929	↓	↓	6.34	0.678	0	1.16	11.35	233

Stabilization of Parameters (stabilization achieved for three consecutive measurements)

Time FROM	Time TO	Depth to Water (ft btoc)	Total Removed > Change in Storage (Y/N)?	pH	Conductivity (%)	Turbidity (%)	Dissolved oxygen (%)	Temperature (%)	ORP (mv)
923	926	0	Y	0.02	1.04	0	4.03	0.69	0
926	929	0	Y	0.03	1.03	0	2.52	0.44	1
923	929	0	Y	0.05	2.06	0	6.45	1.13	1
Recommended Stabilization		≤ 0.3 ft. total	NA	+/- 0.1 unit	+/- 3%	<5 NTU or +/- 10%	+/- 10% if >0.5 mg/L	+/- 3%	+/- 10 mv
Stabilization: (Yes/No)		✓	✓	✓	✓	✓	✓	✓	✓

Sample Time: 932
Reviewed by: ____

ft btoc feet below top of casing
ml/min milliliters per minute
µs/cm microseimens per centimeter
NTU Nephelometric Turbidity Units
mg/l milligrams per liter
ms/cm milliseimens per centimeter
°C degrees Celsius
mv millivolts

LEGGETTE, BRASHEARS & GRAHAM, INC.

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SAMPLE DATE: 2-10-16

TOTAL # WELLS: 15

LOW-FLOW SAMPLING LOG

Client Name: Beta Group
Sample Pump: Geopump
Project Location: 990 Main St North, Southbury, CT
Tubing Type: LDPE - Tygon -
Sampler(s): PL JP
Monitoring Equipment: YSI

Well I.D. MW-4
Screen Setting (ft btoc): ____ to ____
Well Diameter (inches): 2"
Tubing Intake (ft btoc): 2?'
Total Depth (ft btoc): 20.8?
Comments: Pump on at 1517
Depth to Water (ft btoc): 7.12
Connect to YSI @ 1529

Well Condition: Clear

Time (hours)	Depth to Water (ft btoc)	Evacuation Rate (ml/min)	pH	Conductivity (µs/cm)	Turbidity (NTU)	Dissolved oxygen (mg/l)	Temperature (°C)	ORP (mv)
1534	8.47	100	5.98	492	108.1	4.85	9.66	95.7
1539	8.47	100	6.03	496	59.5	4.76	9.70	93
1542	8.47	100	6.09	491	58.2	4.74	9.72	91
1545	8.47	100	6.12	487	59.1	4.75	9.69	90

Stabilization of Parameters (stabilization achieved for three consecutive measurements)

Time FROM	Time TO	Depth to Water (ft btoc)	Total Removed > Change in Storage (Y/N)?	pH	Conductivity (%)	Turbidity (%)	Dissolved oxygen (%)	Temperature (%)	ORP (mv)
1539	1542	0		0.06	1.01	2.13	0.42	0.21	2
1542	1545	↓		0.03	0.81	1.52	0.21	0.31	1
1539	1545	↓		0.09	1.81	0.67	0.21	0.10	3
Recommended Stabilization		≤ 0.3 ft. total	NA	+/- 0.1 unit	+/- 3%	<5 NTU or +/- 10%	+/- 10% If >0.5 mg/L	+/- 3%	+/- 10 mv
Stabilization: (Yes/No)		Yes		Yes	Yes	Yes	Yes	Yes	Yes

Sample Time: 1550

Reviewed by: ____________

ft btoc	feet below top of casing	NTU	Nephelometric Turbidity Units	°C	degrees Celsius
ml/min	milliliters per minute	mg/l	milligrams per liter	mv	millivolts
µs/cm	microseimens per centimeter	ms/cm	milliseimens per centimeter		

LEGGETTE, BRASHEARS & GRAHAM, INC.

PAGE 1 OF 1

SAMPLE DATE: 2/9/16

TOTAL # WELLS: 15

LOW-FLOW SAMPLING LOG

Client Name: Beta Group
Project Location: 990 Main St North, Southbury, CT
Sampler(s): PL JP
Sample Pump: Geopump
Tubing Type: LDPE - 50 Tygon - 1
Monitoring Equipment: Horiba

Well I.D. MW-9
Well Diameter (inches): 2
Total Depth (ft btoc): 20.80
Depth to Water (ft btoc): 11.21
Screen Setting (ft btoc): 16 to 21
Tubing Intake (ft btoc): 18
Comments: Pump on at 1451

Well Condition: new; purged for ~15 mins before attaching to Horiba

Time (hours)	Depth to Water (ft btoc)	Evacuation Rate (ml/min)	pH	Conductivity (ms/cm)	Turbidity (NTU)	Dissolved oxygen (mg/l)	Temperature (°C)	ORP (mv)
1509	12.30	~180	6.07	0.531	0	2.67	13.70	150
1512	↓	↓	5.75	0.388	0	1.77	13.08	98
1515			5.85	0.405	0	1.59	12.61	92
1518			5.84	0.509	0	2.00	12.00	83
1521			6.35	0.472	0	1.76	11.39	66
1524			6.44	0.547	51.3	1.70	10.93	55
1527			6.61	0.615	49.4	1.55	10.31	50
1530			6.50	0.426	43.7	1.52	10.05	48
1533			6.53	0.429	38.0	1.28	9.61	39
1536			6.60	0.433	36.4	1.25	9.54	37
1539	↓	↓	6.62	0.435	35.1	1.24	9.50	30

Stabilization of Parameters (stabilization achieved for three consecutive measurements)

Time FROM	Time TO	Depth to Water (ft btoc)	Total Removed > Change In Storage (Y/N)?	pH	Conductivity (%)	Turbidity (%)	Dissolved oxygen (%)	Temperature (%)	ORP (mv)
1533	1536	0	Y	0.07	0.92	4.21	2.34	0.73	2
1536	1539	0	Y	0.02	0.46	3.57	0.80	0.42	7
1533	1539	0	Y	0.09	1.38	7.63	3.13	1.14	9
Recommended Stabilization		≤ 0.3 ft. total	NA	+/- 0.1 unit	+/- 3%	<5 NTU or +/- 10%	+/- 10% if >0.5 mg/L	+/- 3%	+/- 10 mv
Stabilization: (Yes/No)		✓	✓	✓	✓	✓	✓	✓	✓

Sample Time: 1545

Reviewed by:

ft btoc	feet below top of casing	NTU	Nephelometric Turbidity Units
ml/min	milliliters per minute	mg/l	milligrams per liter
µs/cm	microseimens per centimeter	ms/cm	milliseimens per centimeter
°C	degrees Celsius	mv	millivolts

LEGGETTE, BRASHEARS & GRAHAM, INC.

PAGE 1 OF 1

SAMPLE DATE: 2/10/16

LOW-FLOW SAMPLING LOG

TOTAL # WELLS: 15

Client Name: Beta Group
Sample Pump: Geopump
Project Location: 990 Main St North, Southbury, CT
Tubing Type: LDPE - Tygon -
Sampler(s): PL JP
Monitoring Equipment: YSI
Well I.D. MW-10
Screen Setting (ft btoc): ______ to ______
Well Diameter (inches): 2"
Tubing Intake (ft btoc): ~12'
Total Depth (ft btoc): 14.77
Comments: Pump on at ~~927~~ 900
Depth to Water (ft btoc): 4.02
connect to YSI @ 930

Well Condition: OK, water really turbid purging

Time (hours)	Depth to Water (ft btoc)	Evacuation Rate (ml/min)	pH	Conductivity (us/cm)	Turbidity (NTU)	Dissolved oxygen (mg/l)	Temperature (°C)	ORP (mv)
937	6.37	200	4.90	374	4200	3.94	5.13	91
940	6.36	200	4.99	374	2800.6	1.32	5.17	87
Dump YSI refill			cont	on refill				
951	6.32	~~200~~ 150	4.85	378	2800	1.74	6.01	93
954	6.31	150	4.92	373	2430	0.87	5.65	92
957	6.30	"	5.01	367	1897	0.73	5.72	87
1000	6.30	"	5.04	374	2797	0.71	6.17	86
1003	6.30		5.12	376	2749	0.69	6.23	86
1006	6.30		5.17	375	2690	0.69	6.30	84
1009	6.31	↓	5.20	374	2562	0.68	6.37	86
1012								

Stabilization of Parameters (stabilization achieved for three consecutive measurements)

Time FROM	Time TO	Depth to Water (ft btoc)	Total Removed > Change in Storage (Y/N)?	pH	Conductivity (%)	Turbidity (%)	Dissolved oxygen (%)	Temperature (%)	ORP (mv)
1006	1009	0		0.03	0.27	2.17	0	1.11	2
1003	1012	0.01		0.03	0.27	4.76	1.45	1.10	2
1006	1012	0.01		0.08	0.53	6.80	1.45	2.26	0
Recommended Stabilization		≤ 0.3 ft. total	NA	+/- 0.1 unit	+/- 3%	<5 NTU or +/- 10%	+/- 10% if >0.5 mg/L	+/- 3%	+/- 10 mv
Stabilization: (Yes/No)		Yes		Yes	Yes	Yes	Yes	Yes	Yes

Sample Time: 1012
Reviewed by: ______

ft btoc feet below top of casing
ml/min milliliters per minute
µs/cm microseimens per centimeter
NTU Nephelometric Turbidity Units
mg/l milligrams per liter
ms/cm milliseimens per centimeter
°C degrees Celsius
mv millivolts

LEGGETTE, BRASHEARS & GRAHAM, INC. PAGE 1 OF 1

SAMPLE DATE: 2/9/16

LOW-FLOW SAMPLING LOG

TOTAL # WELLS: 15

Client Name:	Beta Group	Sample Pump:	Geopump
Project Location:	990 Main St North, Southbury, CT	Tubing Type:	LDPE - Tygon -
Sampler(s):	PL JP	Monitoring Equipment:	
Well I.D.	MW-11	Screen Setting (ft btoc):	to
Well Diameter (inches):	2"	Tubing Intake (ft btoc):	~12'
Total Depth (ft btoc):	14.67	Comments:	Pump on at 1500
Depth to Water (ft btoc):	4.04		[illegible] @ 1504 - full @ 1510
Well Condition:			

Time (hours)	Depth to Water (ft btoc)	Evacuation Rate (ml/min)	pH	Conductivity (µs/cm)	Turbidity (NTU)	Dissolved oxygen (mg/l)	Temperature (°C)	ORP (mv)
			Water Quality Monitoring Parameters					
1511	4.95	150	4.12	416	1004.0	39.34	1.91	37.5
DO	Recallibration		still	Purging				
1535	4.91	150	3.64	[illegible]	3929.5	14.47	-0.01	136.7
1532	4.97	150	3.84	20	3929.5	14.47	-0.01	136.7
1541	4.98	150	3.91	[illegible]	232.1	3.59	1.33	127
1544	4.98		3.93	347	160.4	2.27	1.16	126
1547	4.99		3.94	344	204	2.55	1.21	125
1550	5.00		3.95	356	205.9	2.47	1.20	125
1553	5.00		3.96	336	194.5	2.29	1.21	125

Stabilization of Parameters (stabilization achieved for three consecutive measurements)

Time FROM	Time TO	Depth to Water (ft btoc)	Total Removed > Change in Storage (Y/N)?	pH	Conductivity (%)	Turbidity (%)	Dissolved oxygen (%)	Temperature (%)	ORP (mv)
1547	1550	0.01		0.01	1.74	1.19%	3.1	0.8	0
1550	1553	0		0.01	0.59	5.53	7.2	0.8	0
1547	1553	0.01		0.02	2.32	6.66	10.1	0	0
Recommended Stabilization		≤ 0.3 ft. total	NA	+/- 0.1 unit	+/- 3%	<5 NTU or +/- 10%	+/- 10% if >0.5 mg/L	+/- 3%	+/- 10 mv
Stabilization: (Yes/No)		Yes		Yes	Yes	Yes	Yes	Yes	Yes

Sample Time: 1556 Reviewed by:

ft btoc	feet below top of casing	NTU	Nephelometric Turbidity Units	°C	degrees Celsius
ml/min	milliliters per minute	mg/l	milligrams per liter	mv	millivolts
µs/cm	microseimens per centimeter	ms/cm	milliseimens per centimeter		

LEGGETTE, BRASHEARS & GRAHAM, INC.

LOW-FLOW SAMPLING LOG

PAGE 1 OF 1
SAMPLE DATE: 2/10/16
TOTAL # WELLS: 15

Client Name: Beta Group
Project Location: 990 Main St North, Southbury, CT
Sampler(s): PL JP

Sample Pump: Geopump
Tubing Type: LDPE - Tygon -
Monitoring Equipment: YSI

Well I.D. MW-12
Well Diameter (inches): 2"
Total Depth (ft btoc): 21.44
Depth to Water (ft btoc): 8.00

Screen Setting (ft btoc): ______ to ______
Tubing Intake (ft btoc): ~ 18
Comments: Pump on at 1123

Well Condition: clear after 5 min, attached to YSI @ 1128. Purge for 5 min

Drw4 15.065

	Time (hours)	Depth to Water (ft btoc)	Evacuation Rate (ml/min)	pH	Conductivity (µs/cm)	Turbidity (NTU)	Dissolved oxygen (mg/l)	Temperature (°C)	ORP (mv)
1	1135	12.99	150	4.75	502	1010	1.12	10.44	50
2	1138	13.58	150	4.86	506	592	1.00	10.39	59
3	1141	14.16	150	5.04	493	686	0.91	10.04	59
4	1144	14.69	150	5.23	476	548	0.87	9.96	63
5	1147	[illegible]	150	5.32	473	2789	0.83	9.84	65
6	1150	15.42		5.43	464	4366	0.76	9.31	65
7	1153	15.75		5.47	452	4382	0.75	9.29	65
8	1156	15.91		5.44	446	43734	0.73	9.16	66
			went Dry during sampling						

Stabilization of Parameters (stabilization achieved for three consecutive measurements)

Time FROM	Time TO	Depth to Water (ft btoc)	Total Removed > Change in Storage (Y/N)?	pH	Conductivity (%)	Turbidity (%)	Dissolved oxygen (%)	Temperature (%)	ORP (mv)
1150	1153	0.33		0.04	2.80	0.09	1.32	0.21	0
1153	1156	0.16		0.02	1.33	0.15	2.67	1.40	1
1150	1156	0.49		0.06	4.09	0.24	3.96	1.61	1
Recommended Stabilization		≤ 0.3 ft. total	NA	+/- 0.1 unit	+/- 3%	<5 NTU or +/- 10%	+/- 10% if >0.5 mg/L	+/- 3%	+/- 10 mv
Stabilization: (Yes/No)		No		Yes	No	Yes	Yes	Yes	Yes

Sample Time: 1200

Reviewed by: ______

ft btoc	feet below top of casing	NTU	Nephelometric Turbidity Units
ml/min	milliliters per minute	mg/l	milligrams per liter
µs/cm	microseimens per centimeter	ms/cm	milliseimens per centimeter
°C	degrees Celsius	mv	millivolts

LEGGETTE, BRASHEARS & GRAHAM, INC.

LOW-FLOW SAMPLING LOG

PAGE 1 OF 1
SAMPLE DATE: 2-10-16
TOTAL # WELLS: 15

Client Name: Beta Group
Project Location: 990 Main St North, Southbury, CT
Sampler(s): PL JP
Sample Pump: Geopump
Tubing Type: LDPE - Tygon -
Monitoring Equipment: YSI

Well I.D. MW13
Well Diameter (inches): 2"
Total Depth (ft btoc): 22.46
Depth to Water (ft btoc): 9.79
Screen Setting (ft btoc): ______ to ______
Tubing Intake (ft btoc): 18.5~
Comments: Pump on at 1306
attach to YSI @ 1326 full @ 1333

Well Condition: [illegible]

Time (hours)	Depth to Water (ft btoc)	Evacuation Rate (ml/min)	pH	Conductivity us/cm	Turbidity (NTU)	Dissolved oxygen (mg/l)	Temperature (°C)	ORP (mv)
			Water Quality Monitoring Parameters					
1333	12.90	~~[illegible]~~ 150	6.75	367	56.3	2.06	9.32	96
1336	12.94		6.89	383	117.9	1.06	9.66	87
1339	12.98		7.01	394	103	0.87	9.92	83
1342	13.02		7.16	400	65.0	0.78	9.93	77
1345	13.07		7.06	403	70.6	0.79	9.95	73
1348	13.12		7.00	411	50.7	0.74	9.97	76
1351	13.15		7.15	415	49.6	0.73	10.0	74
1354	13.18		7.27	415	44.1	0.71	10.30	71
1357	13.21		7.32	416	46.7	0.70	10.50	76

Stabilization of Parameters (stabilization achieved for three consecutive measurements)

Time FROM	Time TO	Depth to Water (ft btoc)	Total Removed > Change in Storage (Y/N)?	pH	Conductivity (%)	Turbidity (%)	Dissolved oxygen (%)	Temperature (%)	ORP (mv)
1351	1354	0.03		0.12	0	11.45 ~~2.74~~	2.74	2.91	3
1354	1357	0.03		0.11	0.24	5.57 ~~7.41~~	1.41	1.90	1
1351	1357	0.06		0.23	0.24	8.22 ~~2.41~~	4.11	4.76	4
Recommended Stabilization		≤ 0.3 ft. total	NA	+/- 0.1 unit	+/- 3%	<5 NTU or +/- 10%	+/- 10% if >0.5 mg/L	+/- 3%	+/- 10 mv
Stabilization: (Yes/No)		Yes		No	Yes	No ~~Yes~~	Yes	No	Yes

Sample Time: 1400
Reviewed by: ______

ft btoc	feet below top of casing	NTU	Nephelometric Turbidity Units	°C	degrees Celsius
ml/min	milliliters per minute	mg/l	milligrams per liter	mv	millivolts
µs/cm	microseimens per centimeter	ms/cm	milliseimens per centimeter		

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SAMPLE DATE: 2-10-14

TOTAL # WELLS: 15

LOW-FLOW SAMPLING LOG

Client Name: Beta Group
Sample Pump: Geopump
Project Location: 990 Main St North, Southbury, CT
Tubing Type: LDPE - Tygon -
Sampler(s): PL JP
Monitoring Equipment:
Well I.D. 17-A
Screen Setting (ft btoc): to
Well Diameter (inches): 0.1
Tubing Intake (ft btoc):
Total Depth (ft btoc): 5.93
Comments: Pump on at
Depth to Water (ft btoc): 1.29
Well Condition:

Time (hours)	Depth to Water (ft btoc)	Evacuation Rate (ml/min)	pH	Conductivity µs/cm	Turbidity (NTU)	Dissolved oxygen (mg/l)	Temperature (°C)	ORP (mv)
	GRAB SAMPLE							

Stabilization of Parameters (stabilization achieved for three consecutive measurements)

Time FROM	Time TO	Depth to Water (ft btoc)	Total Removed > Change in Storage (Y/N)?	pH	Conductivity (%)	Turbidity (%)	Dissolved oxygen (%)	Temperature (%)	ORP (mv)
Recommended Stabilization		≤ 0.3 ft. total	NA	+/- 0.1 unit	+/- 3%	<5 NTU or +/- 10%	+/- 10% if >0.5 mg/L	+/- 3%	+/- 10 mv
Stabilization: (Yes/No)									

Sample Time: 1445
Reviewed by:

ft btoc	feet below top of casing	NTU	Nephelometric Turbidity Units
ml/min	milliliters per minute	mg/l	milligrams per liter
µs/cm	microseimens per centimeter	ms/cm	milliseimens per centimeter
°C	degrees Celsius	mv	millivolts

LEGGETTE, BRASHEARS & GRAHAM, INC. PAGE 1 OF 1

SAMPLE DATE:

LOW-FLOW SAMPLING LOG TOTAL # WELLS: 15

Client Name: Beta Group | Sample Pump: Geopump

Project Location: 990 Main St North, Southbury, CT | Tubing Type: LDPE - Tygon -

Sampler(s): PL JP | Monitoring Equipment:

Well I.D. PZB | Screen Setting (ft btoc): to

Well Diameter (inches): | Tubing Intake (ft btoc):

Total Depth (ft btoc): 6.11 | Comments: Pump on at

Depth to Water (ft btoc): 3.37

Well Condition:

Time (hours)	Depth to Water (ft btoc)	Evacuation Rate (ml/min)	pH	Conductivity (µs/cm)	Turbidity (NTU)	Dissolved oxygen (mg/l)	Temperature (°C)	ORP (mv)
GRAB SAMPLE								

Stabilization of Parameters (stabilization achieved for three consecutive measurements)

Time FROM	Time TO	Depth to Water (ft btoc)	Total Removed > Change in Storage (Y/N)?	pH	Conductivity (%)	Turbidity (%)	Dissolved oxygen (%)	Temperature (%)	ORP (mv)
Recommended Stabilization		≤ 0.3 ft. total	NA	+/- 0.1 unit	+/- 3%	<5 NTU or +/- 10%	+/- 10% if >0.5 mg/L	+/- 3%	+/- 10 mv
Stabilization: (Yes/No)									

Sample Time: 1020 | Reviewed by:

ft btoc	feet below top of casing	NTU	Nephelometric Turbidity Units	°C	degrees Celsius
ml/min	milliliters per minute	mg/l	milligrams per liter	mv	millivolts
µs/cm	microseimens per centimeter	ms/cm	milliseimens per centimeter		

LEGGETTE, BRASHEARS & GRAHAM, INC.

LOW-FLOW SAMPLING LOG

PAGE ______ OF ______
SAMPLE DATE: 3/17/2016
TOTAL # WELLS: 2

Client Name: Beta Group
Project Location: 990 Main St North Southbury, CT
Sampler(s): P. Staub
Sample Pump: Geopump
Tubing Type: LDPE - 17' Tygon - 1'
Monitoring Equipment: Horiba

Well I.D. MW-1
Well Diameter (inches): 2-inch
Total Depth (ft btoc): 18.3
Depth to Water (ft btoc): 11.65
Screen Setting (ft btoc): ______ to ______
Tubing Intake (ft btoc): ~16 ft
Comments: Pump on at ~~[illegible]~~ 11:15
Horiba full at 11:16

Well Condition: Good - under Birch [illegible]

Time (hours)	Depth to Water (ft btoc)	Evacuation Rate (ml/min)	pH	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved oxygen (mg/l)	Temperature (°C)	ORP (mv)
11:16	12.35	200	5.69	0.884	51.3	10.27	17.20	116
11:19	12.4	200	4.42	0.911	40.8	7.53	16.48	50
11:21	12.4	200	4.00	0.915	36.9	6.28	16.28	64
11:24	12.4	200	3.69	0.915	37.5	5.35	16.21	76
11:27	12.4	200	3.62	0.914	40.3	4.68	16.21	85
11:30	12.4	200	3.56	0.910	43.3	4.27	16.23	91
11:33	12.4	200	3.34	0.908	45.6	4.01	16.26	95
11:36	12.4	200	3.11	0.903	48.8	3.75	16.30	100
11:39	12.5	200	2.96	0.900	51.3	3.43	16.31	103
11:42	12.5	200	3.05	0.897	51.5	3.30	16.38	107
11:45	12.5	200	3.08	0.898	49.8	3.40	16.39	110

Stabilization of Parameters (stabilization achieved for three consecutive measurements)

Time FROM	Time TO	Depth to Water (ft btoc)	Evacuation Rate (ml/min)	pH	Conductivity ( )	Turbidity (NTU)	Dissolved oxygen (mg/l)	Temperature (°C)	ORP (mv)
1139	1142	12.5	200	+0.09	-0.3%	+0.4%	-3.8%	+0.4%	+4
1142	1145	↓	↓	+0.03	+0.1%	-3.3%	+3.0%	+0.1%	+3
1139	1145	↓	↓	+0.12	-0.2%	-2.9%	-0.9%	+0.5%	+7
Recommended Stabilization		+/- 0.3	100-500	+/- 0.1	+/- 3%	+/- 10%	+/- 10%	+/- 3%	+/- 10
Stabilization: (Yes/No)		Y	Y	Y	Y	Y	Y	Y	Y

Sample Time: 11:46

Reviewed by: ______

ft btoc	feet below top of casing	NTU	Nephelometric Turbidity Units	°C	degrees Celsius
ml/min	milliliters per minute	mg/l	milligrams per liter	mv	millivolts
µs/cm	microseimons per centimeter				

LEGGETTE, BRASHEARS & GRAHAM, INC.

PAGE ______ OF ______

SAMPLE DATE: 3/17/2016

LOW-FLOW SAMPLING LOG

TOTAL # WELLS: 2

Client Name: Beta Group

Sample Pump: Geopump

Project Location: 990 Main St North Southbury, CT

Tubing Type: LDPE - Tygon -

Sampler(s): P. Staub

Monitoring Equipment: Horiba

Well I.D. MW-12

Screen Setting (ft btoc): ______ to ______

Well Diameter (inches): 2-inch

Tubing Intake (ft btoc): ~19.5

Total Depth (ft btoc): 21.4

Comments: Pump on at 12:28

Depth to Water (ft btoc): 7.85

Horiba full at 1230

Well Condition: Good

Time (hours)	Depth to Water (ft btoc)	Evacuation Rate (ml/min)	pH	Conductivity	Turbidity (NTU)	Dissolved oxygen (mg/l)	Temperature (°C)	ORP (mv)
12:30	9.55	200	4.70	1.03	220	6.40	13.87	132
12:33	9.4	200	3.78	1.05	160	4.84	13.27	121
12:36	10.7	150	2.82	1.04	150	3.60	13.03	126
1239	11.7	100	2.36	1.04	115	3.22	12.92	120
12 42	12.1	100	2.32	1.04	124	3.17	12.91	118
12 45	12.5	100	2.25	1.04	96.6	3.06	12.84	114
1249	13.2	100	2.15	1.04	89.9	2.91	12.91	109
1251	13.9	100	2.04	1.04	88.9	2.79	12.93	106
1254	14.3	<100	1.98	1.04	82.7	2.73	12.96	104
1257	14.8	<100	1.99	1.04	79.8	2.70	12.98	100
1300	15.3	<100	2.03	1.04	84.3	2.78	12.78	93
1303	15.7	<100	2.07	1.04	86.3	2.85	13.02	90

Stabilization of Parameters (stabilization achieved for three consecutive measurements)

Time FROM	Time TO	Depth to Water (ft btoc)	Evacuation Rate (ml/min)	pH	Conductivity ( )	Turbidity (NTU)	Dissolved oxygen (mg/l)	Temperature (°C)	ORP (mv)
1257	1300	+0.5	<100	+0.04	+0	+5.6%	+3%	+0%	-7
1300	1303	+0.4	↓	+0.06	↓	+2.4%	+2.5%	+1.3%	-3
1257	1303	+0.9	↓	+0.1	↓	+8.1%	+5.6%	+1.3%	-10
Recommended Stabilization		+/- 0.3	100-500	+/- 0.1	+/- 3%	+/- 10%	+/- 10%	+/- 3%	+/- 10
Stabilization: (Yes/No)		N	Y	Y	Y	Y	Y	Y	Y

Sample Time: 1304

Reviewed by: ____________

ft btoc feet below top of casing
ml/min milliliters per minute
µs/cm microseimons per centimeter
NTU Nephelometric Turbidity Units
mg/l milligrams per liter
°C degrees Celsius
mv millivolts

LEGGETTE, BRASHEARS & GRAHAM, INC.

PAGE 1 OF 1

SAMPLE DATE: 11-6-2015

TOTAL # WELLS: 3 + 2PZ

LOW-FLOW SAMPLING LOG

Client Name: BETA - Lutheran Home of Sothbury
Sample Pump: geopump (peristaltic)
Project Location: 990 Main St. N. Southbury, CT
Tubing Type: PE & Silicone.
Sampler(s): T. Sandor
Monitoring Equipment: YSI

Well I.D. MW-1
Screen Setting (ft btoc): ______ to ______
Well Diameter (inches): 2"
Tubing Intake (ft btoc): ~17.5
Total Depth (ft btoc): 18.45 (silty on bottom)
Comments: Pump on @ : 936
Depth to Water (ft btoc): 13.18
Well condition: Good (protected in excavation area)

Time (hours)	Depth to Water (ft btoc)	Evacuation Rate (ml/min)	pH	Conductivity (µs/cm)	Turbidity (NTU)	Dissolved oxygen (mg/l)	Temperature (°C)	ORP (mv)
945	13.46	~250	6.46	778	180.0	1.71	19.05	-64.1
948	—	↓	6.41	779	132.8	1.24	19.09	-66.3
951	13.45		6.41	779	116.2	1.09	19.19	-66.8
954	—		6.41	780	97.9	1.04	19.38	-64.1
957	13.44		6.41	782	85.6	0.96	19.42	-61.6
1000	—		6.42	786	82.0	0.92	19.50	-59.4
1003	13.44		6.42	790	69.8	0.90	19.55	-58.7
1006	—		6.42	793	68.1	0.90	19.57	-58.5

Stabilization of Parameters (stabilization achieved for three consecutive measurements)

Time FROM	Time TO	Depth to Water (ft btoc)	Evacuation Rate (ml/min)	pH	Conductivity (µs/cm)	Turbidity (NTU)	Dissolved oxygen (mg/l)	Temperature (°C)	ORP (mv)
945	948	—	—	0.05 ✓	1 ✓	47.2 x	0.47 x	0.04 ✓	2.2 ✓
948	951	0.01	—	— ✓	— ✓	16.6 x	0.15 x	0.10 ✓	0.5 ✓
951	954	0	—	— ✓	1 ✓	18.3 x	0.05 ✓	0.19 ✓	2.7 ✓
954	957	0.01	—	— ✓	2 ✓	12.3 x	0.08 ✓	0.04 ✓	2.5 ✓
957	1000	—	—	0.01 ✓	4 ✓	3.6 ✓	0.04 ✓	0.08 ✓	2.2 ✓
1000	1003	—	—	— ✓	4 ✓	12.2 x	0.02 ✓	0.05 ✓	0.7 ✓
1003	1006	—	—	— ✓	3 ✓	1.7 ✓	— ✓	0.02 ✓	0.2 ✓
Recommended Stabilization		+/- 0.3	100-500	+/- 0.1	+/- 3%	+/- 10%	+/- 10%	+/- 3%	+/- 10
Stabilization: (Yes/No)		Y	Y	Y	Y	N	Y	Y	Y

Sample Time: 1010

Reviewed by: ______

ft btoc	feet below top of casing	NTU	Nephelometric Turbidity Units	°C	degrees Celsius
ml/min	milliliters per minute	mg/l	milligrams per liter	mv	millivolts
µs/cm	microseimons per centimeter				

LEGGETTE, BRASHEARS & GRAHAM, INC. PAGE 1 OF 1

SAMPLE DATE: 11-6-2015

LOW-FLOW SAMPLING LOG

TOTAL # WELLS: 30 2P2

Client Name:	BETA - Lutheran Home of Sothbury	Sample Pump:	geopump (peristaltic)
Project Location:	990 Main St. N, Southbury, CT	Tubing Type:	PE & Silicone.
Sampler(s):	T. Sandor	Monitoring Equipment:	YSI
Well I.D.	MW-2	Screen Setting (ft btoc):	to
Well Diameter (inches):	2"	Tubing Intake (ft btoc):	~17.5
Total Depth (ft btoc):	18.24 (silty on bottom)	Comments:	Pump on @ 826
Depth to Water (ft btoc):	12.10 @ 811	Well condition:	Good

Time (hours)	Depth to Water (ft btoc)	Evacuation Rate (ml/min)	pH	Conductivity (µs/cm)	Turbidity (NTU)	Dissolved oxygen (mg/l)	Temperature (°C)	ORP (mv)
836	12.52	300	6.35	725	162.2	1.28	19.58	-22.6
839	12.53		6.35	725	100.8	1.21	19.66	-29.1
842	12.53		6.35	724	77.0	1.13	19.73	-32.3
845	12.53		6.35	721	41.8	1.04	19.78	-34.8
848	12.53		6.35	720	29.5	0.97	19.81	-37.0
851	12.53		6.35	719	19.9	0.95	19.83	-38.1
854	12.53		6.35	717	14.8	0.94	19.86	-39.0
857	12.53		6.35	716	9.1	0.93	19.87	-39.7

Stabilization of Parameters (stabilization achieved for three consecutive measurements)

Time FROM	Time TO	Depth to Water (ft btoc)	Evacuation Rate (ml/min)	pH	Conductivity (µs/cm)	Turbidity (NTU)	Dissolved oxygen (mg/l)	Temperature (°C)	ORP (mv)
836	839	0.01 ✓	—	—	—	61.4 x	0.07 ✓	0.08 ✓	6.5 ✓
839	842	—	—	—	1 ✓	23.8 x	0.08 ✓	0.07 ✓	3.2 ✓
842	845	—	—	—	3 ✓	35.2 x	0.09 ✓	0.05 ✓	2.5 ✓
845	848	—	—	—	1 ✓	12.3 x	0.07 ✓	0.03 ✓	2.2 ✓
848	851	—	—	—	1 ✓	9.6 x	0.02 ✓	0.02 ✓	1.1 ✓
851	854	—	—	—	2 ✓	5.1 x	0.01 ✓	0.03 ✓	0.9 ✓
854	857	—	—	—	1 ✓	5.7 x	0.01 ✓	0.01 ✓	0.7 ✓
Recommended Stabilization		+/- 0.3	100-500	+/- 0.1	+/- 3%	+/- 10%	+/- 10%	+/- 3%	+/- 10
Stabilization: (Yes/No)		Y	Y	Y	Y	N	Y	Y	Y

Sample Time: 900 Reviewed by:

ft btoc feet below top of casing; ml/min milliliters per minute; µs/cm microseimons per centimeter; NTU Nephelometric Turbidity Units; mg/l milligrams per liter; °C degrees Celsius; mv millivolts

LEGGETTE, BRASHEARS & GRAHAM, INC.

SAMPLE DATE: 11-6-2Ø15

TOTAL # WELLS: 3 of 2P2

LOW-FLOW SAMPLING LOG

Client Name:	BETA - Lutheran Home of Sothbury	Sample Pump:	geopump (peristaltic)
Project Location:	990 Main St. N. Southbury, CT	Tubing Type:	PE & Silicone.
Sampler(s):	T. Sandor	Monitoring Equipment:	YSI
Well I.D.	MW-3	Screen Setting (ft btoc):	____ to ____
Well Diameter (inches):	2"	Tubing Intake (ft btoc):	18.5
Total Depth (ft btoc):	19.6	Comments:	Pump on @ 1149
Depth to Water (ft btoc):	12.38 @ 1139	Well condition:	Good.

Time	Depth to Water	Evacuation Rate	Water Quality Monitoring Parameters					
			pH	Conductivity	Turbidity	Dissolved oxygen	Temperature	ORP
(hours)	(ft btoc)	(ml/min)		(µs/cm)	(NTU)	(mg/l)	(°C)	(mv)
1158	12.55	3ØØ	6.4Ø	583	171.Ø	1.27	17.58	2Ø4.Ø
12Ø1	—	↓	6.37	578	1Ø5.2	Ø.88	17.43	189.5
12Ø4	12.54	↓	6.36	578	1Ø9.5	Ø.79	17.52	183.3
12Ø7	—	↓	6.36	577	2ØØ.Ø	Ø.7Ø	17.51	185.7
121Ø	12.53	↓	6.37	578	22Ø.9	Ø.67	17.65	186.Ø
1213	—	↓	6.37	578	128.8	Ø.66	17.54	185.8
1216	1253	↓	6.37	579	1Ø9.7	Ø.65	17.57	185.7
1219	—	↓	6.37	58Ø	48.5	Ø.65	17.59	183.4

Stabilization of Parameters (stabilization achieved for three consecutive measurements)

Time FROM	Time TO	Depth to Water (ft btoc)	Evacuation Rate (ml/min)	pH	Conductivity (µs/cm)	Turbidity (NTU)	Dissolved oxygen (mg/l)	Temperature (°C)	ORP (mv)
1158	12Ø1	—	—	Ø.Ø3 ✓	5 ✓	65.8 x	Ø.39 x	Ø.15 ✓	14.5 x
12Ø1	12Ø4	Ø.Ø1	↓	Ø.Ø1 ✓	— ✓	4.3 ✓	Ø.Ø9 x	Ø.Ø9 ✓	7.2 ✓
12Ø4	12Ø7	—	↓	— ✓	1 ✓	9Ø.5 x	Ø.Ø9 x	Ø.Ø1 ✓	2.4 ✓
12Ø7	121Ø	Ø.Ø1	↓	Ø.Ø1 ✓	1 ✓	2Ø.9 x	Ø.Ø3 ✓	Ø.Ø6 ✓	Ø.5 ✓
121Ø	1213	—	↓	— ✓	— ✓	92.1 x	Ø.Ø1 ✓	Ø.11 ✓	Ø.2 ✓
1213	1216	—	↓	— ✓	1 ✓	36.7 x	Ø.Ø1 ✓	Ø.Ø3 ✓	Ø.1 ✓
1216	1219	—		— ✓	1 ✓	61.2 ~~48.5~~ x	— ✓	Ø.Ø2 ✓	2.3 ✓
Recommended Stabilization		+/- 0.3	100-500	+/- 0.1	+/- 3%	+/- 10%	+/- 10%	+/- 3%	+/- 10
Stabilization: (Yes/No)		Y	Y	Y	Y	N	Y	Y	Y

Sample Time: 122Ø

Reviewed by: ____________________

ft btoc	feet below top of casing	NTU	Nephelometric Turbidity Units
ml/min	milliliters per minute	mg/l	milligrams per liter
µs/cm	microseimons per centimeter		
°C	degrees Celsius	mv	millivolts

APPENDIX V

RECHARGE ESTIMATION

Stress Period #	Date	Recharge (ft/day)			Month	Day	
							189775
							1.00E-04
1	7/1/2015	5.77E-03	1.00E+00	2.14E-03	7	1	0.005774
2	7/3/2015	2.63E-03	4.56E-01		7	3	0.002634
3	7/6/2015	1.42E-03	2.46E-01		7	6	0.00142
4	7/12/2015	3.04E-03	5.26E-01		7	12	0.003037
5	7/16/2015	1.92E-03	3.33E-01		7	16	0.001921
6	7/18/2015	1.44E-03	2.49E-01		7	18	0.001441
7	7/23/2015	1.12E-03	1.94E-01		7	23	0.001122
8	7/28/2015	8.23E-04	1.43E-01		7	28	0.000823
9	8/4/2015	9.95E-04	1.72E-01		8	4	0.000995
10	8/11/2015	4.80E-04	8.32E-02		8	11	0.00048
11	8/15/2015	1.02E-03	1.76E-01		8	15	0.001015
12	8/30/2015	3.72E-04	6.45E-02		8	30	0.000372
13	9/15/2015	2.16E-04	3.75E-02		9	15	0.000216
14	9/29/2015	1.77E-04	3.07E-02		9	29	0.000177

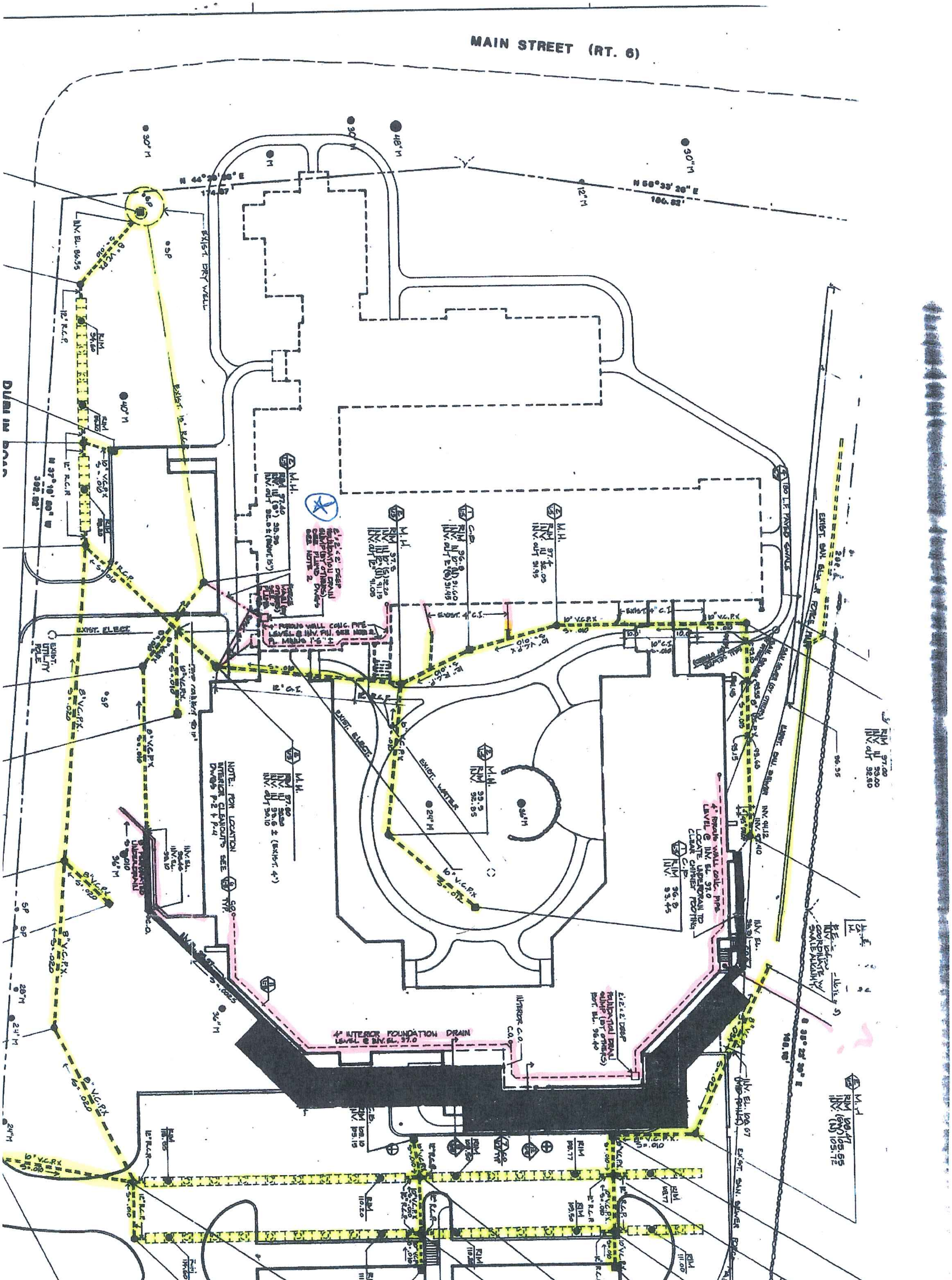
Basin Area sqmi		75.3												
Basin Area sqft		2.1E+09			Flow					Baseflow				
Day		Flow (cfs	Direct Run	Base Flow	Recharge (ft/s)	Recharge ft/d)	Recharge (in/yr)	ft/d	in/yr	Recharge (	Recharge (	Recharge (i	ft/d	in/yr
	4/1/2015	307	307	0	1.46E-07	1.26E-02	5.53E+01	4.68E-03	20.50	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00
	4/2/2015	328	303.7	24.3	1.56E-07	1.35E-02	5.91E+01	5.00E-03	21.90	1.16E-08	1.00E-03	4.38E+00	3.70E-04	1.62
	4/3/2015	441	386.29	54.71	2.10E-07	1.82E-02	7.95E+01	6.72E-03	29.44	2.61E-08	2.25E-03	9.86E+00	8.34E-04	3.65
	4/4/2015	674	574.43	99.57	3.21E-07	2.77E-02	1.22E+02	1.03E-02	45.00	4.74E-08	4.10E-03	1.79E+01	1.52E-03	6.65
	4/5/2015	428	305.94	122.06	2.04E-07	1.76E-02	7.72E+01	6.52E-03	28.58	5.81E-08	5.02E-03	2.20E+01	1.86E-03	8.15
	4/6/2015	348	211.47	136.53	1.66E-07	1.43E-02	6.27E+01	5.30E-03	23.23	6.50E-08	5.62E-03	2.46E+01	2.08E-03	9.12
	4/7/2015	319	171.48	147.52	1.52E-07	1.31E-02	5.75E+01	4.86E-03	21.30	7.03E-08	6.07E-03	2.66E+01	2.25E-03	9.85
	4/8/2015	306	149.47	156.53	1.46E-07	1.26E-02	5.52E+01	4.66E-03	20.43	7.46E-08	6.44E-03	2.82E+01	2.39E-03	10.45
	4/9/2015	298	133.89	164.11	1.42E-07	1.23E-02	5.37E+01	4.54E-03	19.90	7.82E-08	6.75E-03	2.96E+01	2.50E-03	10.96
	4/10/2015	372	195.53	176.47	1.77E-07	1.53E-02	6.71E+01	5.67E-03	24.84	8.41E-08	7.26E-03	3.18E+01	2.69E-03	11.78
	4/11/2015	305	122.28	182.72	1.45E-07	1.26E-02	5.50E+01	4.65E-03	20.36	8.70E-08	7.52E-03	3.29E+01	2.79E-03	12.20
	4/12/2015	244	60.12	183.88	1.16E-07	1.00E-02	4.40E+01	3.72E-03	16.29	8.76E-08	7.57E-03	3.31E+01	2.80E-03	12.28
	4/13/2015	214	31.3	182.7	1.02E-07	8.81E-03	3.86E+01	3.26E-03	14.29	8.70E-08	7.52E-03	3.29E+01	2.79E-03	12.20
	4/14/2015	198	17.55	180.45	9.43E-08	8.15E-03	3.57E+01	3.02E-03	13.22	8.60E-08	7.43E-03	3.25E+01	2.75E-03	12.05
	4/15/2015	181	3.85	177.15	8.62E-08	7.45E-03	3.26E+01	2.76E-03	12.08	8.44E-08	7.29E-03	3.19E+01	2.70E-03	11.83
	4/16/2015	166	0	166	7.91E-08	6.83E-03	2.99E+01	2.53E-03	11.08	7.91E-08	6.83E-03	2.99E+01	2.53E-03	11.08
	4/17/2015	173	9.56	163.44	8.24E-08	7.12E-03	3.12E+01	2.64E-03	11.55	7.79E-08	6.73E-03	2.95E+01	2.49E-03	10.91
	4/18/2015	165	4.47	160.53	7.86E-08	6.79E-03	2.97E+01	2.52E-03	11.02	7.65E-08	6.61E-03	2.89E+01	2.45E-03	10.72
	4/19/2015	151	0	151	7.19E-08	6.21E-03	2.72E+01	2.30E-03	10.08	7.19E-08	6.21E-03	2.72E+01	2.30E-03	10.08
	4/20/2015	380	214.83	165.17	1.81E-07	1.56E-02	6.85E+01	5.79E-03	25.37	7.87E-08	6.80E-03	2.98E+01	2.52E-03	11.03
	4/21/2015	684	483.46	200.54	3.26E-07	2.82E-02	1.23E+02	1.04E-02	45.67	9.55E-08	8.25E-03	3.62E+01	3.06E-03	13.39
	4/22/2015	358	149.51	208.49	1.71E-07	1.47E-02	6.45E+01	5.46E-03	23.90	9.93E-08	8.58E-03	3.76E+01	3.18E-03	13.92
	4/23/2015	279	69.15	209.85	1.33E-07	1.15E-02	5.03E+01	4.25E-03	18.63	1.00E-07	8.64E-03	3.78E+01	3.20E-03	14.01
	4/24/2015	228	20.69	207.31	1.09E-07	9.38E-03	4.11E+01	3.48E-03	15.22	9.88E-08	8.53E-03	3.74E+01	3.16E-03	13.84
	4/25/2015	204	0.77	203.23	9.72E-08	8.40E-03	3.68E+01	3.11E-03	13.62	9.68E-08	8.36E-03	3.66E+01	3.10E-03	13.57
	4/26/2015	185	0	185	8.81E-08	7.61E-03	3.34E+01	2.82E-03	12.35	8.81E-08	7.61E-03	3.34E+01	2.82E-03	12.35
	4/27/2015	175	0	175	8.34E-08	7.20E-03	3.15E+01	2.67E-03	11.68	8.34E-08	7.20E-03	3.15E+01	2.67E-03	11.68
	4/28/2015	164	0	164	7.81E-08	6.75E-03	2.96E+01	2.50E-03	10.95	7.81E-08	6.75E-03	2.96E+01	2.50E-03	10.95
	4/29/2015	150	0	150	7.15E-08	6.17E-03	2.70E+01	2.29E-03	10.02	7.15E-08	6.17E-03	2.70E+01	2.29E-03	10.02
	4/30/2015	140	0	140	6.67E-08	5.76E-03	2.52E+01	2.13E-03	9.35	6.67E-08	5.76E-03	2.52E+01	2.13E-03	9.35
	5/1/2015	130	0	130	6.19E-08	5.35E-03	2.34E+01	1.98E-03	8.68	6.19E-08	5.35E-03	2.34E+01	1.98E-03	8.68
	5/2/2015	124	0	124	5.91E-08	5.10E-03	2.24E+01	1.89E-03	8.28	5.91E-08	5.10E-03	2.24E+01	1.89E-03	8.28
	5/3/2015	114	0	114	5.43E-08	4.69E-03	2.06E+01	1.74E-03	7.61	5.43E-08	4.69E-03	2.06E+01	1.74E-03	7.61
	5/4/2015	105	0	105	5.00E-08	4.32E-03	1.89E+01	1.60E-03	7.01	5.00E-08	4.32E-03	1.89E+01	1.60E-03	7.01
	5/5/2015	100	0	100	4.76E-08	4.12E-03	1.80E+01	1.52E-03	6.68	4.76E-08	4.12E-03	1.80E+01	1.52E-03	6.68
	5/6/2015	95	0	95	4.53E-08	3.91E-03	1.71E+01	1.45E-03	6.34	4.53E-08	3.91E-03	1.71E+01	1.45E-03	6.34
	5/7/2015	90	0	90	4.29E-08	3.70E-03	1.62E+01	1.37E-03	6.01	4.29E-08	3.70E-03	1.62E+01	1.37E-03	6.01
	5/8/2015	84	0	84	4.00E-08	3.46E-03	1.51E+01	1.28E-03	5.61	4.00E-08	3.46E-03	1.51E+01	1.28E-03	5.61
	5/9/2015	81	0	81	3.86E-08	3.33E-03	1.46E+01	1.23E-03	5.41	3.86E-08	3.33E-03	1.46E+01	1.23E-03	5.41
	5/10/2015	79	0	79	3.76E-08	3.25E-03	1.42E+01	1.20E-03	5.27	3.76E-08	3.25E-03	1.42E+01	1.20E-03	5.27
	5/11/2015	72	0	72	3.43E-08	2.96E-03	1.30E+01	1.10E-03	4.81	3.43E-08	2.96E-03	1.30E+01	1.10E-03	4.81
	5/12/2015	67	0	67	3.19E-08	2.76E-03	1.21E+01	1.02E-03	4.47	3.19E-08	2.76E-03	1.21E+01	1.02E-03	4.47
	5/13/2015	59	0	59	2.81E-08	2.43E-03	1.06E+01	8.99E-04	3.94	2.81E-08	2.43E-03	1.06E+01	8.99E-04	3.94
	5/14/2015	56	0	56	2.67E-08	2.30E-03	1.01E+01	8.54E-04	3.74	2.67E-08	2.30E-03	1.01E+01	8.54E-04	3.74
	5/15/2015	58	2.89	55.11	2.76E-08	2.39E-03	1.05E+01	8.84E-04	3.87	2.63E-08	2.27E-03	9.93E+00	8.40E-04	3.68
	5/16/2015	63	8.33	54.67	3.00E-08	2.59E-03	1.14E+01	9.60E-04	4.21	2.60E-08	2.25E-03	9.86E+00	8.33E-04	3.65
	5/17/2015	64	9.65	54.35	3.05E-08	2.63E-03	1.15E+01	9.76E-04	4.27	2.59E-08	2.24E-03	9.80E+00	8.28E-04	3.63
	5/18/2015	55	1.61	53.39	2.62E-08	2.26E-03	9.91E+00	8.38E-04	3.67	2.54E-08	2.20E-03	9.62E+00	8.14E-04	3.56
	5/19/2015	55	2.48	52.52	2.62E-08	2.26E-03	9.91E+00	8.38E-04	3.67	2.50E-08	2.16E-03	9.47E+00	8.01E-04	3.51
	5/20/2015	80	26.41	53.59	3.81E-08	3.29E-03	1.44E+01	1.22E-03	5.34	2.55E-08	2.21E-03	9.66E+00	8.17E-04	3.58
	5/21/2015	58	5.08	52.92	2.76E-08	2.39E-03	1.05E+01	8.84E-04	3.87	2.52E-08	2.18E-03	9.54E+00	8.07E-04	3.53
	5/22/2015	49	0	49	2.33E-08	2.02E-03	8.83E+00	7.47E-04	3.27	2.33E-08	2.02E-03	8.83E+00	7.47E-04	3.27
	5/23/2015	44	0	44	2.10E-08	1.81E-03	7.93E+00	6.71E-04	2.94	2.10E-08	1.81E-03	7.93E+00	6.71E-04	2.94
	5/24/2015	40	0	40	1.91E-08	1.65E-03	7.21E+00	6.10E-04	2.67	1.91E-08	1.65E-03	7.21E+00	6.10E-04	2.67
	5/25/2015	39	0	39	1.86E-08	1.61E-03	7.03E+00	5.94E-04	2.60	1.86E-08	1.61E-03	7.03E+00	5.94E-04	2.60
	5/26/2015	35	0	35	1.67E-08	1.44E-03	6.31E+00	5.34E-04	2.34	1.67E-08	1.44E-03	6.31E+00	5.34E-04	2.34
	5/27/2015	35	0.65	34.35	1.67E-08	1.44E-03	6.31E+00	5.34E-04	2.34	1.64E-08	1.41E-03	6.19E+00	5.24E-04	2.29
	5/28/2015	46	11.42	34.58	2.19E-08	1.89E-03	8.29E+00	7.01E-04	3.07	1.65E-08	1.42E-03	6.23E+00	5.27E-04	2.31
	5/29/2015	39	4.73	34.27	1.86E-08	1.61E-03	7.03E+00	5.94E-04	2.60	1.63E-08	1.41E-03	6.18E+00	5.22E-04	2.29
	5/30/2015	32	0	32	1.52E-08	1.32E-03	5.77E+00	4.88E-04	2.14	1.52E-08	1.32E-03	5.77E+00	4.88E-04	2.14
	5/31/2015	44	11.7	32.3	2.10E-08	1.81E-03	7.93E+00	6.71E-04	2.94	1.54E-08	1.33E-03	5.82E+00	4.92E-04	2.16
	6/1/2015	176	133.66	42.34	8.38E-08	7.24E-03	3.17E+01	2.68E-03	11.75	2.02E-08	1.74E-03	7.63E+00	6.45E-04	2.83
	6/2/2015	360	294.91	65.09	1.71E-07	1.48E-02	6.49E+01	5.49E-03	24.04	3.10E-08	2.68E-03	1.17E+01	9.92E-04	4.35
	6/3/2015	152	81.68	70.32	7.24E-08	6.26E-03	2.74E+01	2.32E-03	10.15	3.35E-08	2.89E-03	1.27E+01	1.07E-03	4.70
	6/4/2015	95	24.15	70.85	4.53E-08	3.91E-03	1.71E+01	1.45E-03	6.34	3.38E-08	2.92E-03	1.28E+01	1.08E-03	4.73
	6/5/2015	73	3.31	69.69	3.48E-08	3.00E-03	1.32E+01	1.11E-03	4.87	3.32E-08	2.87E-03	1.26E+01	1.06E-03	4.65
	6/6/2015	62	0	62	2.95E-08	2.55E-03	1.12E+01	9.45E-04	4.14	2.95E-08	2.55E-03	1.12E+01	9.45E-04	4.14
	6/7/2015	52	0	52	2.48E-08	2.14E-03	9.37E+00	7.93E-04	3.47	2.48E-08	2.14E-03	9.37E+00	7.93E-04	3.47
	6/8/2015	48	0	48	2.29E-08	1.98E-03	8.65E+00	7.32E-04	3.20	2.29E-08	1.98E-03	8.65E+00	7.32E-04	3.20
	6/9/2015	51	3.67	47.33	2.43E-08	2.10E-03	9.19E+00	7.77E-04	3.41	2.25E-08	1.95E-03	8.53E+00	7.21E-04	3.16
	6/10/2015	49	2.42	46.58	2.33E-08	2.02E-03	8.83E+00	7.47E-04	3.27	2.22E-08	1.92E-03	8.40E+00	7.10E-04	3.11
	6/11/2015	40	0	40	1.91E-08	1.65E-03	7.21E+00	6.10E-04	2.67	1.91E-08	1.65E-03	7.21E+00	6.10E-04	2.67
	6/12/2015	37	0	37	1.76E-08	1.52E-03	6.67E+00	5.64E-04	2.47	1.76E-08	1.52E-03	6.67E+00	5.64E-04	2.47
	6/13/2015	34	0	34	1.62E-08	1.40E-03	6.13E+00	5.18E-04	2.27	1.62E-08	1.40E-03	6.13E+00	5.18E-04	2.27
	6/14/2015	30	0	30	1.43E-08	1.23E-03	5.41E+00	4.57E-04	2.00	1.43E-08	1.23E-03	5.41E+00	4.57E-04	2.00
	6/15/2015	135	97.78	37.22	6.43E-08	5.56E-03	2.43E+01	2.06E-03	9.01	1.77E-08	1.53E-03	6.71E+00	5.67E-04	2.49
	6/16/2015	100	58.82	41.18	4.76E-08	4.12E-03	1.80E+01	1.52E-03	6.68	1.96E-08	1.69E-03	7.42E+00	6.28E-04	2.75
	6/17/2015	76	33	43	3.62E-08	3.13E-03	1.37E+01	1.16E-03	5.07	2.05E-08	1.77E-03	7.75E+00	6.55E-04	2.87
	6/18/2015	53	10.06	42.94	2.52E-08	2.18E-03	9.55E+00	8.08E-04	3.54	2.05E-08	1.77E-03	7.74E+00	6.55E-04	2.87
	6/19/2015	45	2.7	42.3	2.14E-08	1.85E-03	8.11E+00	6.86E-04	3.00	2.02E-08	1.74E-03	7.63E+00	6.45E-04	2.82
	6/20/2015	40	0	40	1.91E-08	1.65E-03	7.21E+00	6.10E-04	2.67	1.91E-08	1.65E-03	7.21E+00	6.10E-04	2.67
	6/21/2015	71	29.44	41.56	3.38E-08	2.92E-03	1.28E+01	1.08E-03	4.74	1.98E-08	1.71E-03	7.49E+00	6.34E-04	2.77
	6/22/2015	86	41.92	44.08	4.10E-08	3.54E-03	1.55E+01	1.31E-03	5.74	2.10E-08	1.81E-03	7.95E+00	6.72E-04	2.94
	6/23/2015	60	15.56	44.44	2.86E-08	2.47E-03	1.08E+01	9.15E-04	4.01	2.12E-08	1.83E-03	8.01E+00	6.77E-04	2.97
	6/24/2015	56	11.53	44.47	2.67E-08	2.30E-03	1.01E+01	8.54E-04	3.74	2.12E-08	1.83E-03	8.02E+00	6.78E-04	2.97
	6/25/2015	40	0	40	1.91E-08	1.65E-03	7.21E+00	6.10E-04	2.67	1.91E-08	1.65E-03	7.21E+00	6.10E-04	2.67
	6/26/2015	35	0	35	1.67E-08	1.44E-03	6.31E+00	5.34E-04	2.34	1.67E-08	1.44E-03	6.31E+00	5.34E-04	2.34
	6/27/2015	32	0	32	1.52E-08	1.32E-03	5.77E+00	4.88E-04	2.14	1.52E-08	1.32E-03	5.77E+00	4.88E-04	2.14
	6/28/2015	74	39.48	34.52	3.53E-08	3.05E-03	1.33E+01	1.13E-03	4.94	1.64E-08	1.42E-03	6.22E+00	5.26E-04	2.30
	6/29/2015	65	28.86	36.14	3.10E-08	2.68E-03	1.17E+01	9.91E-04	4.34	1.72E-08	1.49E-03	6.51E+00	5.51E-04	2.41
	6/30/2015	49	12.58	36.42	2.33E-08	2.02E-03	8.83E+00	7.47E-04	3.27	1.73E-08	1.50E-03	6.57E+00	5.55E-04	2.43
	7/1/2015	87	47.51	39.49	4.14E-08	3.58E-03	1.57E+01	1.33E-03	5.81	1.88E-08	1.63E-03	7.12E+00	6.02E-04	2.64
	7/2/2015	64	23.42	40.58	3.05E-08	2.63E-03	1.15E+01	9.76E-04	4.27	1.93E-08	1.67E-03	7.32E+00	6.19E-04	2.71
	7/3/2015	45	4.85	40.15	2.14E-08	1.85E-03	8.11E+00	6.86E-04	3.00	1.91E-08	1.65E-03	7.24E+00	6.12E-04	2.68
	7/4/2015	36	0	36	1.71E-08	1.48E-03	6.49E+00	5.49E-04	2.40	1.71E-08	1.48E-03	6.49E+00	5.49E-04	2.40
	7/5/2015	33	0	33	1.57E-08	1.36E-03	5.95E+00	5.03E-04	2.20	1.57E-08	1.36E-03	5.95E+00	5.03E-04	2.20
	7/6/2015	30	0	30	1.43E-08	1.23E-03	5.41E+00	4.57E-04	2.00	1.43E-08	1.23E-03	5.41E+00	4.57E-04	2.00
	7/7/2015	78	45	33	3.72E-08	3.21E-03	1.41E+01	1.19E-03	5.21	1.57E-08	1.36E-03	5.95E+00	5.03E-04	2.20
	7/8/2015	135	95.06	39.94	6.43E-08	5.56E-03	2.43E+01	2.06E-03	9.01	1.90E-08	1.64E-03	7.20E+00	6.09E-04	2.67
	7/9/2015	64	23.01	40.99	3.05E-08	2.63E-03	1.15E+01	9.76E-04	4.27	1.95E-08	1.69E-03	7.39E+00	6.25E-04	2.74
	7/10/2015	52	10.96	41.04	2.48E-08	2.14E-03	9.37E+00	7.93E-04	3.47	1.95E-08	1.69E-03	7.40E+00	6.26E-04	2.74
	7/11/2015	40	0	40	1.91E-08	1.65E-03	7.21E+00	6.10E-04	2.67	1.91E-08	1.65E-03	7.21E+00	6.10E-04	2.67
	7/12/2015	35	0	35	1.67E-08	1.44E-03	6.31E+00	5.34E-04	2.34	1.67E-08	1.44E-03	6.31E+00	5.34E-04	2.34
	7/13/2015	29	0	29	1.38E-08	1.19E-03	5.23E+00	4.42E-04	1.94	1.38E-08	1.19E-03	5.23E+00	4.42E-04	1.94
	7/14/2015	28	0	28	1.33E-08	1.15E-03	5.05E+00	4.27E-04	1.87	1.33E-08	1.15E-03	5.05E+00	4.27E-04	1.87

Basin Area sqmi		75.3												
Basin Area sqft		2.1E+09			Flow					Baseflow				
Day		Flow (cfs	Direct Runo	Base Flow	Recharge (ft/s)	Recharge ft/d	Recharge (in/yr)	ft/d	in/yr	Recharge (f	Recharge (f	Recharge (i	ft/d	in/yr
	7/15/2015	83	51.44	31.56	3.95E-08	3.42E-03	1.50E+01	1.27E-03	5.54	1.50E-08	1.30E-03	5.69E+00	4.81E-04	2.11
	7/16/2015	62	28.77	33.23	2.95E-08	2.55E-03	1.12E+01	9.45E-04	4.14	1.58E-08	1.37E-03	5.99E+00	5.07E-04	2.22
	7/17/2015	35	2.26	32.74	1.67E-08	1.44E-03	6.31E+00	5.34E-04	2.34	1.56E-08	1.35E-03	5.90E+00	4.99E-04	2.19
	7/18/2015	32	0	32	1.52E-08	1.32E-03	5.77E+00	4.88E-04	2.14	1.52E-08	1.32E-03	5.77E+00	4.88E-04	2.14
	7/19/2015	30	0	30	1.43E-08	1.23E-03	5.41E+00	4.57E-04	2.00	1.43E-08	1.23E-03	5.41E+00	4.57E-04	2.00
	7/20/2015	27	0	27	1.29E-08	1.11E-03	4.87E+00	4.12E-04	1.80	1.29E-08	1.11E-03	4.87E+00	4.12E-04	1.80
	7/21/2015	27	0.5	26.5	1.29E-08	1.11E-03	4.87E+00	4.12E-04	1.80	1.26E-08	1.09E-03	4.78E+00	4.04E-04	1.77
	7/22/2015	25	0	25	1.19E-08	1.03E-03	4.51E+00	3.81E-04	1.67	1.19E-08	1.03E-03	4.51E+00	3.81E-04	1.67
	7/23/2015	21	0	21	1.00E-08	8.64E-04	3.79E+00	3.20E-04	1.40	1.00E-08	8.64E-04	3.79E+00	3.20E-04	1.40
	7/24/2015	20	0	20	9.53E-09	8.23E-04	3.61E+00	3.05E-04	1.34	9.53E-09	8.23E-04	3.61E+00	3.05E-04	1.34
	7/25/2015	17	0	17	8.10E-09	7.00E-04	3.06E+00	2.59E-04	1.14	8.10E-09	7.00E-04	3.06E+00	2.59E-04	1.14
	7/26/2015	22	4.94	17.06	1.05E-08	9.05E-04	3.97E+00	3.35E-04	1.47	8.13E-09	7.02E-04	3.08E+00	2.60E-04	1.14
	7/27/2015	21	3.97	17.03	1.00E-08	8.64E-04	3.79E+00	3.20E-04	1.40	8.11E-09	7.01E-04	3.07E+00	2.60E-04	1.14
	7/28/2015	18	1.21	16.79	8.57E-09	7.41E-04	3.24E+00	2.74E-04	1.20	8.00E-09	6.91E-04	3.03E+00	2.56E-04	1.12
	7/29/2015	16	0	16	7.62E-09	6.59E-04	2.88E+00	2.44E-04	1.07	7.62E-09	6.59E-04	2.88E+00	2.44E-04	1.07
	7/30/2015	29	12.33	16.67	1.38E-08	1.19E-03	5.23E+00	4.42E-04	1.94	7.94E-09	6.86E-04	3.01E+00	2.54E-04	1.11
	7/31/2015	42	23.77	18.23	2.00E-08	1.73E-03	7.57E+00	6.40E-04	2.80	8.68E-09	7.50E-04	3.29E+00	2.78E-04	1.22
	8/1/2015	24	5.68	18.32	1.14E-08	9.88E-04	4.33E+00	3.66E-04	1.60	8.73E-09	7.54E-04	3.30E+00	2.79E-04	1.22
	8/2/2015	18	0.04	17.96	8.57E-09	7.41E-04	3.24E+00	2.74E-04	1.20	8.56E-09	7.39E-04	3.24E+00	2.74E-04	1.20
	8/3/2015	16	0	16	7.62E-09	6.59E-04	2.88E+00	2.44E-04	1.07	7.62E-09	6.59E-04	2.88E+00	2.44E-04	1.07
	8/4/2015	16	0.3	15.7	7.62E-09	6.59E-04	2.88E+00	2.44E-04	1.07	7.48E-09	6.46E-04	2.83E+00	2.39E-04	1.05
	8/5/2015	14	0	14	6.67E-09	5.76E-04	2.52E+00	2.13E-04	0.93	6.67E-09	5.76E-04	2.52E+00	2.13E-04	0.93
	8/6/2015	13	0	13	6.19E-09	5.35E-04	2.34E+00	1.98E-04	0.87	6.19E-09	5.35E-04	2.34E+00	1.98E-04	0.87
	8/7/2015	12	0	12	5.72E-09	4.94E-04	2.16E+00	1.83E-04	0.80	5.72E-09	4.94E-04	2.16E+00	1.83E-04	0.80
	8/8/2015	11	0	11	5.24E-09	4.53E-04	1.98E+00	1.68E-04	0.73	5.24E-09	4.53E-04	1.98E+00	1.68E-04	0.73
	8/9/2015	10	0	10	4.76E-09	4.12E-04	1.80E+00	1.52E-04	0.67	4.76E-09	4.12E-04	1.80E+00	1.52E-04	0.67
	8/10/2015	10	0.19	9.81	4.76E-09	4.12E-04	1.80E+00	1.52E-04	0.67	4.67E-09	4.04E-04	1.77E+00	1.50E-04	0.65
	8/11/2015	40	28.13	11.87	1.91E-08	1.65E-03	7.21E+00	6.10E-04	2.67	5.65E-09	4.89E-04	2.14E+00	1.81E-04	0.79
	8/12/2015	37	23.49	13.51	1.76E-08	1.52E-03	6.67E+00	5.64E-04	2.47	6.44E-09	5.56E-04	2.44E+00	2.06E-04	0.90
	8/13/2015	21	7.18	13.82	1.00E-08	8.64E-04	3.79E+00	3.20E-04	1.40	6.58E-09	5.69E-04	2.49E+00	2.11E-04	0.92
	8/14/2015	16	2.28	13.72	7.62E-09	6.59E-04	2.88E+00	2.44E-04	1.07	6.54E-09	5.65E-04	2.47E+00	2.09E-04	0.92
	8/15/2015	13	0	13	6.19E-09	5.35E-04	2.34E+00	1.98E-04	0.87	6.19E-09	5.35E-04	2.34E+00	1.98E-04	0.87
	8/16/2015	12	0	12	5.72E-09	4.94E-04	2.16E+00	1.83E-04	0.80	5.72E-09	4.94E-04	2.16E+00	1.83E-04	0.80
	8/17/2015	11	0	11	5.24E-09	4.53E-04	1.98E+00	1.68E-04	0.73	5.24E-09	4.53E-04	1.98E+00	1.68E-04	0.73
	8/18/2015	10	0	10	4.76E-09	4.12E-04	1.80E+00	1.52E-04	0.67	4.76E-09	4.12E-04	1.80E+00	1.52E-04	0.67
	8/19/2015	9.4	0	9.4	4.48E-09	3.87E-04	1.69E+00	1.43E-04	0.63	4.48E-09	3.87E-04	1.69E+00	1.43E-04	0.63
	8/20/2015	8.9	0	8.9	4.24E-09	3.66E-04	1.60E+00	1.36E-04	0.59	4.24E-09	3.66E-04	1.60E+00	1.36E-04	0.59
	8/21/2015	10	1.18	8.82	4.76E-09	4.12E-04	1.80E+00	1.52E-04	0.67	4.20E-09	3.63E-04	1.59E+00	1.34E-04	0.59
	8/22/2015	9.7	0.98	8.72	4.62E-09	3.99E-04	1.75E+00	1.48E-04	0.65	4.15E-09	3.59E-04	1.57E+00	1.33E-04	0.58
	8/23/2015	8.9	0.33	8.57	4.24E-09	3.66E-04	1.60E+00	1.36E-04	0.59	4.08E-09	3.53E-04	1.54E+00	1.31E-04	0.57
	8/24/2015	8.1	0	8.1	3.86E-09	3.33E-04	1.46E+00	1.23E-04	0.54	3.86E-09	3.33E-04	1.46E+00	1.23E-04	0.54
	8/25/2015	7.9	0	7.9	3.76E-09	3.25E-04	1.42E+00	1.20E-04	0.53	3.76E-09	3.25E-04	1.42E+00	1.20E-04	0.53
	8/26/2015	7.9	0.15	7.75	3.76E-09	3.25E-04	1.42E+00	1.20E-04	0.53	3.69E-09	3.19E-04	1.40E+00	1.18E-04	0.52
	8/27/2015	8.9	1.2	7.7	4.24E-09	3.66E-04	1.60E+00	1.36E-04	0.59	3.67E-09	3.17E-04	1.39E+00	1.17E-04	0.51
	8/28/2015	7.4	0	7.4	3.53E-09	3.05E-04	1.33E+00	1.13E-04	0.49	3.53E-09	3.05E-04	1.33E+00	1.13E-04	0.49
	8/29/2015	6.6	0	6.6	3.14E-09	2.72E-04	1.19E+00	1.01E-04	0.44	3.14E-09	2.72E-04	1.19E+00	1.01E-04	0.44
	8/30/2015	6.2	0	6.2	2.95E-09	2.55E-04	1.12E+00	9.45E-05	0.41	2.95E-09	2.55E-04	1.12E+00	9.45E-05	0.41
	8/31/2015	6	0	6	2.86E-09	2.47E-04	1.08E+00	9.15E-05	0.40	2.86E-09	2.47E-04	1.08E+00	9.15E-05	0.40
	9/1/2015	5.6	0	5.6	2.67E-09	2.30E-04	1.01E+00	8.54E-05	0.37	2.67E-09	2.30E-04	1.01E+00	8.54E-05	0.37
	9/2/2015	5.3	0	5.3	2.52E-09	2.18E-04	9.55E-01	8.08E-05	0.35	2.52E-09	2.18E-04	9.55E-01	8.08E-05	0.35
	9/3/2015	5.1	0	5.1	2.43E-09	2.10E-04	9.19E-01	7.77E-05	0.34	2.43E-09	2.10E-04	9.19E-01	7.77E-05	0.34
	9/4/2015	4.6	0	4.6	2.19E-09	1.89E-04	8.29E-01	7.01E-05	0.31	2.19E-09	1.89E-04	8.29E-01	7.01E-05	0.31
	9/5/2015	4.6	0.09	4.51	2.19E-09	1.89E-04	8.29E-01	7.01E-05	0.31	2.15E-09	1.86E-04	8.13E-01	6.87E-05	0.30
	9/6/2015	4	0	4	1.91E-09	1.65E-04	7.21E-01	6.10E-05	0.27	1.91E-09	1.65E-04	7.21E-01	6.10E-05	0.27
	9/7/2015	3.9	0	3.9	1.86E-09	1.61E-04	7.03E-01	5.94E-05	0.26	1.86E-09	1.61E-04	7.03E-01	5.94E-05	0.26
	9/8/2015	3.8	0	3.8	1.81E-09	1.56E-04	6.85E-01	5.79E-05	0.25	1.81E-09	1.56E-04	6.85E-01	5.79E-05	0.25
	9/9/2015	3.7	0	3.7	1.76E-09	1.52E-04	6.67E-01	5.64E-05	0.25	1.76E-09	1.52E-04	6.67E-01	5.64E-05	0.25
	9/10/2015	5.5	1.74	3.76	2.62E-09	2.26E-04	9.91E-01	8.38E-05	0.37	1.79E-09	1.55E-04	6.78E-01	5.73E-05	0.25
	9/11/2015	6.6	2.69	3.91	3.14E-09	2.72E-04	1.19E+00	1.01E-04	0.44	1.86E-09	1.61E-04	7.05E-01	5.96E-05	0.26
	9/12/2015	6.4	2.38	4.02	3.05E-09	2.63E-04	1.15E+00	9.76E-05	0.43	1.91E-09	1.65E-04	7.25E-01	6.13E-05	0.27
	9/13/2015	6.8	2.65	4.15	3.24E-09	2.80E-04	1.23E+00	1.04E-04	0.45	1.98E-09	1.71E-04	7.48E-01	6.33E-05	0.28
	9/14/2015	7	2.72	4.28	3.33E-09	2.88E-04	1.26E+00	1.07E-04	0.47	2.04E-09	1.76E-04	7.72E-01	6.52E-05	0.29
	9/15/2015	6.4	2.04	4.36	3.05E-09	2.63E-04	1.15E+00	9.76E-05	0.43	2.08E-09	1.79E-04	7.86E-01	6.65E-05	0.29
	9/16/2015	5.4	1.04	4.36	2.57E-09	2.22E-04	9.73E-01	8.23E-05	0.36	2.08E-09	1.79E-04	7.86E-01	6.65E-05	0.29
	9/17/2015	4.8	0.49	4.31	2.29E-09	1.98E-04	8.65E-01	7.32E-05	0.32	2.05E-09	1.77E-04	7.77E-01	6.57E-05	0.29
	9/18/2015	4.5	0.26	4.24	2.14E-09	1.85E-04	8.11E-01	6.86E-05	0.30	2.02E-09	1.75E-04	7.64E-01	6.46E-05	0.28
	9/19/2015	4.4	0.22	4.18	2.10E-09	1.81E-04	7.93E-01	6.71E-05	0.29	1.99E-09	1.72E-04	7.54E-01	6.37E-05	0.28
	9/20/2015	4.4	0.28	4.12	2.10E-09	1.81E-04	7.93E-01	6.71E-05	0.29	1.96E-09	1.70E-04	7.43E-01	6.28E-05	0.28
	9/21/2015	3.8	0	3.8	1.81E-09	1.56E-04	6.85E-01	5.79E-05	0.25	1.81E-09	1.56E-04	6.85E-01	5.79E-05	0.25
	9/22/2015	4.1	0.35	3.75	1.95E-09	1.69E-04	7.39E-01	6.25E-05	0.27	1.79E-09	1.54E-04	6.76E-01	5.72E-05	0.25
	9/23/2015	3.8	0.11	3.69	1.81E-09	1.56E-04	6.85E-01	5.79E-05	0.25	1.76E-09	1.52E-04	6.65E-01	5.62E-05	0.25
	9/24/2015	3.9	0.27	3.63	1.86E-09	1.61E-04	7.03E-01	5.94E-05	0.26	1.73E-09	1.49E-04	6.54E-01	5.53E-05	0.24
	9/25/2015	4.2	0.59	3.61	2.00E-09	1.73E-04	7.57E-01	6.40E-05	0.28	1.72E-09	1.49E-04	6.51E-01	5.50E-05	0.24
	9/26/2015	4.3	0.71	3.59	2.05E-09	1.77E-04	7.75E-01	6.55E-05	0.29	1.71E-09	1.48E-04	6.47E-01	5.47E-05	0.24
	9/27/2015	4	0.44	3.56	1.91E-09	1.65E-04	7.21E-01	6.10E-05	0.27	1.70E-09	1.47E-04	6.42E-01	5.43E-05	0.24
	9/28/2015	4.3	0.75	3.55	2.05E-09	1.77E-04	7.75E-01	6.55E-05	0.29	1.69E-09	1.46E-04	6.40E-01	5.41E-05	0.24
	9/29/2015	4.8	1.23	3.57	2.29E-09	1.98E-04	8.65E-01	7.32E-05	0.32	1.70E-09	1.47E-04	6.44E-01	5.44E-05	0.24
	9/30/2015	29	23.61	5.39	1.38E-08	1.19E-03	5.23E+00	4.42E-04	1.94	2.57E-09	2.22E-04	9.72E-01	8.22E-05	0.36

APPENDIX VI

STORMWATER RECHARGE ESTIMATE

SYSTEM LAYOUT



MAIN STREET (RT. 6)
EXIST. DRY WELL
EXIST. ELECT.
EXIST. UTILITY POLE
EXIST. WATER
NOTE: FOR LOCATION INTERIOR CLEANOUTS SEE DWGS P-2 & P-4
4" INTERIOR FOUNDATION DRAIN LEVEL @ INV. EL. 97.0
INTERIOR C.O.

SYSTEM ELEVATIONS

Lutheran Home of Southbury
Stormwater System Elevations
Oct. 14, 2015
R Baglini - BETA

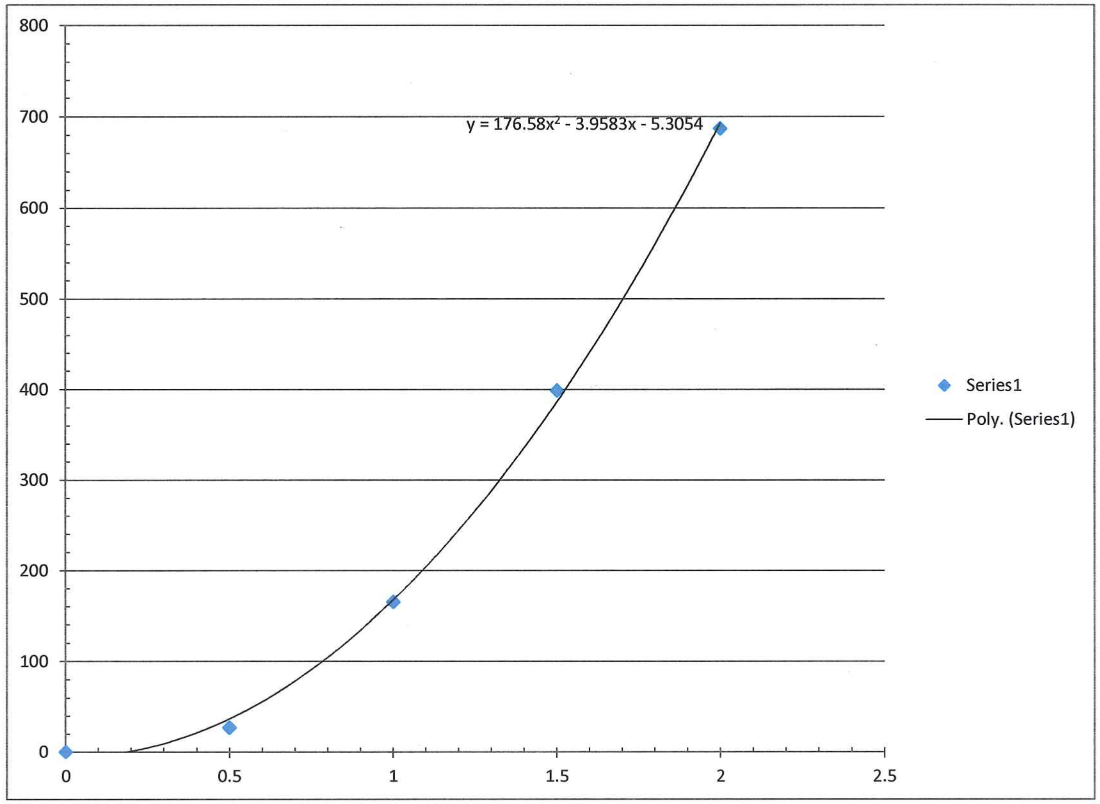
Structure ID	Stuart/Somers Elevations	Plan L-3 (PMA Plans) Elevations														Delta	Differential	BETA Adjusted Elevations												
	Rim	Rim	NE	In/Out	NW	In/Out	SE	In/Out	SW	In/Out	#1 In	#2 In	#3 In	#1 Out	Comments			Rim	NE	In/Out	NW	In/Out	SE	In/Out	SW	In/Out	#1 In	#2 In	#3 In	Out
DMH-1	256.54	94.40	-	-	-	-	-	-	-	-	87.00	-	-	86.90	-	162.14	-0.13	256.54									249.27			249.17
DMH-2	259.38	97.10	-	-	-	-	-	-	-	-	88.67	-	-	88.67	In=Out	162.28	0.01	259.38									250.94			250.94
DMH-3	260.90	98.90	-	-	-	-	95.40	In	-	-	89.40	-	-	88.67	In=East	162.00	-0.27	260.90					257.67				251.67			250.94
DMH-4	-	104.10	-	-	-	-	100.60	In	-	-	100.60	-	-	98.05	In=East	-	#VALUE!	266.37	#VALUE!	#VALUE!	#VALUE!	#VALUE!	262.87	#VALUE!	#VALUE!	#VALUE!	262.87	#VALUE!	#VALUE!	260.32
DMH-5	-	108.75	-	-	-	-	-	-	-	-	104.56	-	-	101.95	-	#VALUE!	#VALUE!	271.02	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	266.83	#VALUE!	#VALUE!	264.22
DMH-6	275.78	113.50	105.00	?	106.00	Out	106.80	?	106.80	?	-	-	-	-	Many pipes	162.28	0.01	275.78	267.27		268.27		269.07		269.07					
DMH-7	276.70	114.40	106.00	?	107.00	?	-	-	-	-	-	-	-	-		162.30	0.03	276.70	268.27		269.27									
DMH-8	272.18	109.80	105.00	?	105.00	?	106.80	?	105.00	?	-	-	-	-	Many pipes	162.38	0.11	272.18	267.27		267.27		269.07		267.27					
DMH-9	272.83	110.60	106.00	?	107.00	?	106.00	?	106.00	?	-	-	-	-	Many pipes	162.23	-0.04	272.83	268.27		269.27		268.27		268.27					
DMH-10	270.81	108.55	105.00	?	105.00	?	106.80	?	105.00	?	-	-	-	-	Many pipes	162.26	-0.01	270.81	267.27		267.27		269.07		267.27					
DMH-11	271.66	109.30	106.00	?	107.00	?	106.00	?	106.00	?	-	-	-	-	Many pipes	162.36	0.09	271.66	268.27		269.27		268.27		268.27					
DMH-12	270.60	108.47	-	-	-	-	-	-	105.55	-	-	-	-	105.72	Out=North	162.13	-0.14	270.60							267.82					267.99
DMH-13	259.65	97.40	-	-	-	-	-	-	-	-	93.95	-	-	92.80	In=8", Out=15"	162.25	-0.02	259.65									256.22			255.07
DMH-14	260.27	98.00	-	-	-	-	-	-	-	-	94.45	-	-	94.35		162.27	0.00	260.27									256.72			256.62
DMH-15	-	97.80	-	-	-	-	-	-	-	-	90.30	93.60	-	90.10	93.6inv pipe is 4" dia.	#VALUE!	#VALUE!	260.07	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	252.57	255.87	#VALUE!	252.37
DMH-16	-	97.80	-	-	-	-	-	-	-	-	92.20	91.15	-	91.05	In=(S)10", In=(N)12", Out=12"	#VALUE!	#VALUE!	260.07	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	254.47	253.42	#VALUE!	253.32
DMH-17	-	97.40	-	-	-	-	-	-	-	-	92.05	-	-	91.95	-	#VALUE!	#VALUE!	259.67	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	254.32	#VALUE!	#VALUE!	254.22
DMH-18	259.58	97.00	-	-	-	-	-	-	-	-	93.00	-	-	92.80	-	162.58	0.31	259.58									255.27			255.07
DMH-19	262.37	-	-	-	-	-	-	-	-	-	-	-	-	-	-															
DMH-20	-	99.50	-	-	-	-	-	-	-	-	-	-	-	92.85		#VALUE!	#VALUE!	261.77	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	255.12
Flare End	-	104.50	-	-	-	-	-	-	-	-	-	-	-	-	Verify if Exists	#VALUE!	#VALUE!	266.77	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!
Fdn.Dr.Sump	-	-	-	-	-	-	-	-	-	-	-	-	-	96.40	2x2x2 Sump (Newer Bldg)	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	258.67
Interior Fdn. Drain	-	-	-	-	-	-	-	-	-	-	97.00	-	-	-	Per Dwg. L-5	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	259.27	#VALUE!	#VALUE!	#VALUE!
Exterior Fdn. Drain	-	-	-	-	-	-	-	-	-	-	96.50	95.57	-	95.10	Per Dwg. L-5	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	258.77	257.84	#VALUE!	257.37
CB-1	257.02	94.60	-	-	-	-	-	-	-	-	-	-	-	-	Need field measure	162.42	0.15	257.02												
CB-2	259.05	96.65	-	-	-	-	-	-	-	-	-	-	-	88.80	-	162.40	0.13	259.05												251.07
CB-3	259.15	97.00	-	-	-	-	-	-	-	-	-	-	-	93.50	-	162.15	-0.12	259.15												255.77
CB-4	267.19	104.90	-	-	-	-	-	-	-	-	-	-	-	101.05	-	162.29	0.02	267.19												263.32
CB-5	273.02	110.85	-	-	-	-	-	-	-	-	-	-	-	105.55	-	162.17	-0.10	273.02												267.82
CB-6	276.66	114.45	-	-	-	-	-	-	-	-	-	-	-	106.15	-	162.21	-0.06	276.66												268.42
CB-7	271.36	109.10	-	-	-	-	-	-	-	-	-	-	-	105.15	-	162.26	-0.01	271.36												267.42
CB-8	273.76	111.60	-	-	-	-	-	-	-	-	-	-	-	106.15	-	162.16	-0.11	273.76												268.42
CB-9	270.30	108.10	105.15	?	-	-	-	-	105.15	?	-	-	-	-	-	162.20	-0.07	270.30	267.42						267.42					
CB-10	-	96.80	-	-	-	-	-	-	-	-	91.60	-	-	91.45	In=(N)10", Out=(S)12"	#VALUE!	#VALUE!	259.07	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	253.87	#VALUE!	#VALUE!	253.72
CB-11	-	96.80	-	-	-	-	-	-	-	-	-	-	-	93.45	-	#VALUE!	#VALUE!	259.07	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	255.72
Rim-1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!
Rim-2	-	96.20	-	-	-	-	-	-	-	-	-	-	-	-	-	-	#VALUE!	258.47	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!
Rim-3	260.45	98.20	-	-	-	-	-	-	-	-	-	-	-	-	-	162.25	-0.02	260.45												
Rim-4	275.81	113.55	-	-	-	-	-	-	-	-	-	-	-	-	-	162.26	-0.01	275.81												
Rim-5	276.92	114.60	-	-	-	-	-	-	-	-	-	-	-	-	-	162.32	0.05	276.92												
Rim-6	272.49	110.20	-	-	-	-	-	-	-	-	-	-	-	-	-	162.29	0.02	272.49												
Rim-7	-	111.00	-	-	-	-	-	-	-	-	-	-	-	-	-	#VALUE!	#VALUE!	273.27	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!
Rim-8	272.02	109.50	-	-	-	-	-	-	-	-	-	-	-	-	-	162.52	0.25	272.02												
Rim-9	272.51	110.20	-	-	-	-	-	-	-	-	-	-	-	-	-	162.31	0.04	272.51												
Rim-10	270.92	108.77	-	-	-	-	-	-	-	-	-	-	-	-	-	162.15	-0.12	270.92												
Rim-11	271.83	109.50	-	-	-	-	-	-	-	-	-	-	-	-	-	162.33	0.06	271.83												
Rim-12	271.05	108.77	-	-	-	-	-	-	-	-	-	-	-	-	-	162.28	0.01	271.05												
Rim-13	-	111.00	-	-	-	-	-	-	-	-	-	-	-	-	-	#VALUE!	#VALUE!	273.27	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!

Average Delta: 162.27

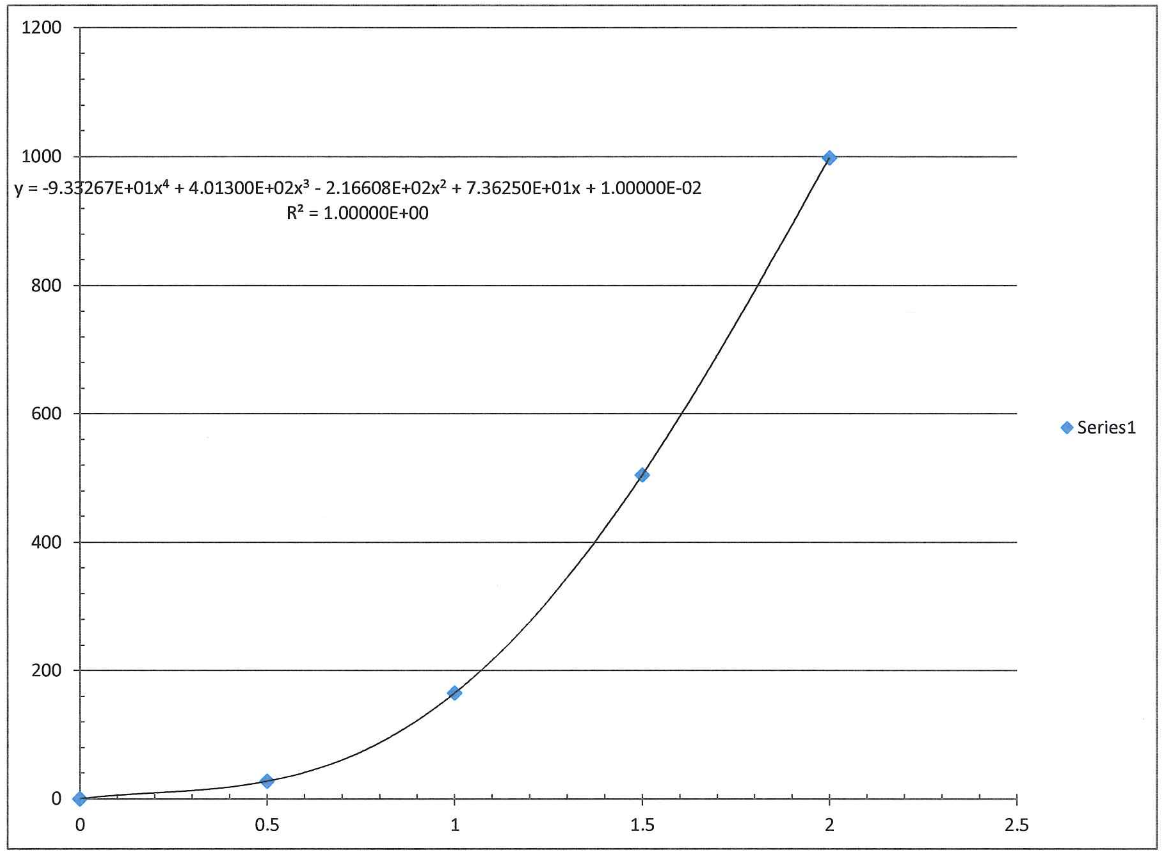
CHARTS

Period #	Date	Recharge			Month	Day	4/1/2015	days	inch/day	1 Dry Well	2 Gallerys s-w	3 Gallerys S-E	4 Gallerys NE	5 Gallerys Mid -E cfd	6 Gallerys SE	7 Gallerys NW	8 Gallerys Mid-W	9 Gallerys SW
1	7/1/2015	9.65E+00	1.00E+00	3.57E+00	7	1	9.65	91.00	0.11	62.25	32.65	167.09	0.00	0.00	0.00	0.00	0.00	5.85
2	7/3/2015	0.00E+00	0.00E+00		7	3	0	2	0.00	0.01	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.01
3	7/6/2015	0.00E+00	0.00E+00		7	6	0	3	0.00	0.01	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.01
4	7/12/2015	1.36E+00	1.41E-01		7	12	1.36	6	0.23	121.88	109.05	360.26	0.00	0.00	0.00	0.00	0.00	10.00
5	7/16/2015	9.00E-02	9.33E-03		7	16	0.09	4	0.02	14.24	3.90	35.06	0.00	0.00	0.00	0.00	0.00	1.56
6	7/18/2015	0.00E+00	0.00E+00		7	18	0	2	0.00	0.01	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.01
7	7/23/2015	7.00E-02	7.25E-03		7	23	0.07	5	0.01	8.94	2.23	21.78	0.00	0.00	0.00	0.00	0.00	1.00
8	7/28/2015	2.80E-01	2.90E-02		7	28	0.28	5	0.06	34.34	12.81	87.69	0.00	0.00	0.00	0.00	0.00	3.52
9	8/4/2015	6.50E-01	6.74E-02		8	4	0.65	7	0.09	55.12	26.69	146.09	0.00	0.00	0.00	0.00	0.00	5.29
10	8/11/2015	0.00E+00	0.00E+00		8	11	0	7	0.00	0.01	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.01
11	8/15/2015	1.00E-02	1.04E-03		8	15	0.01	4	0.00	1.62	0.36	3.89	0.00	0.00	0.00	0.00	0.00	0.19
12	8/30/2015	4.40E-01	4.56E-02		8	30	0.44	15	0.03	18.44	5.42	45.75	0.00	0.00	0.00	0.00	0.00	1.99
13	9/15/2015	9.00E-01	9.33E-02		9	15	0.9	16	0.06	34.49	12.89	88.08	0.00	0.00	0.00	0.00	0.00	3.54
14	9/29/2015	0.00E+00	0.00E+00		9	29	0	14	0.00	0.01	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.01

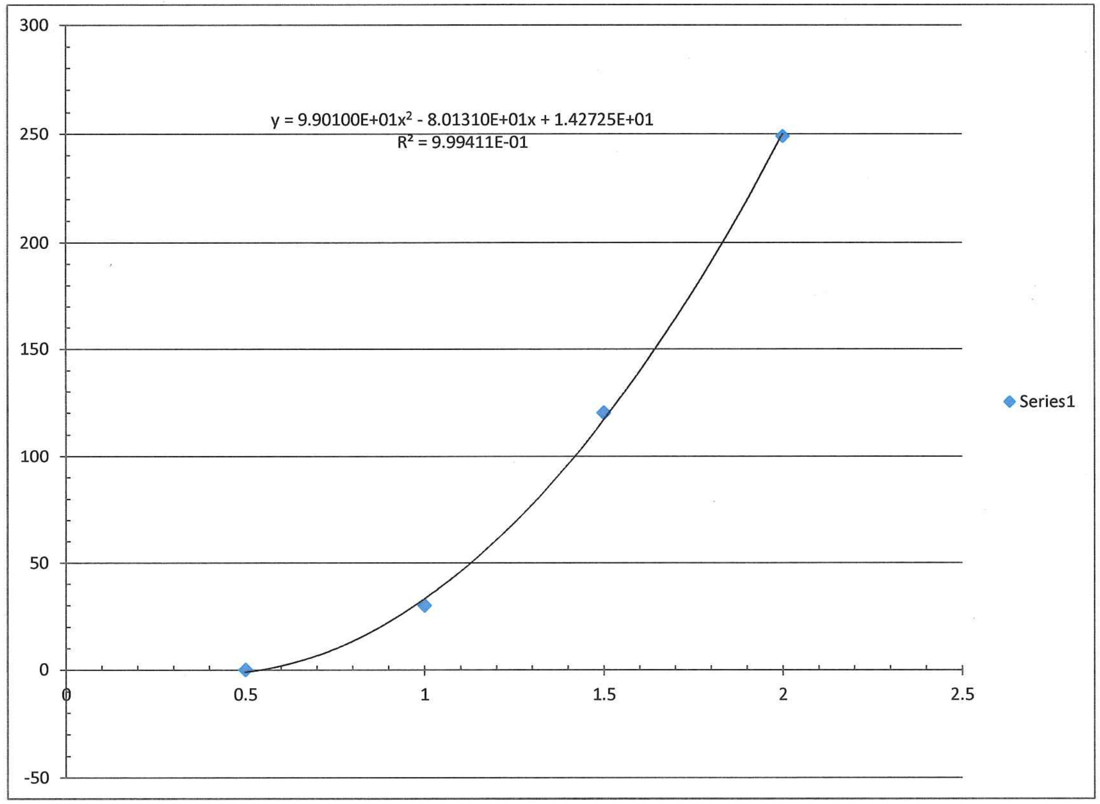
System	Infiltrated (cfd)	Rain (inches)	gpm
Galleys Mid-W	0.01	0	0.00
	27	0.5	0.14
	165	1	0.86
	399	1.5	2.07
	687	2	3.57



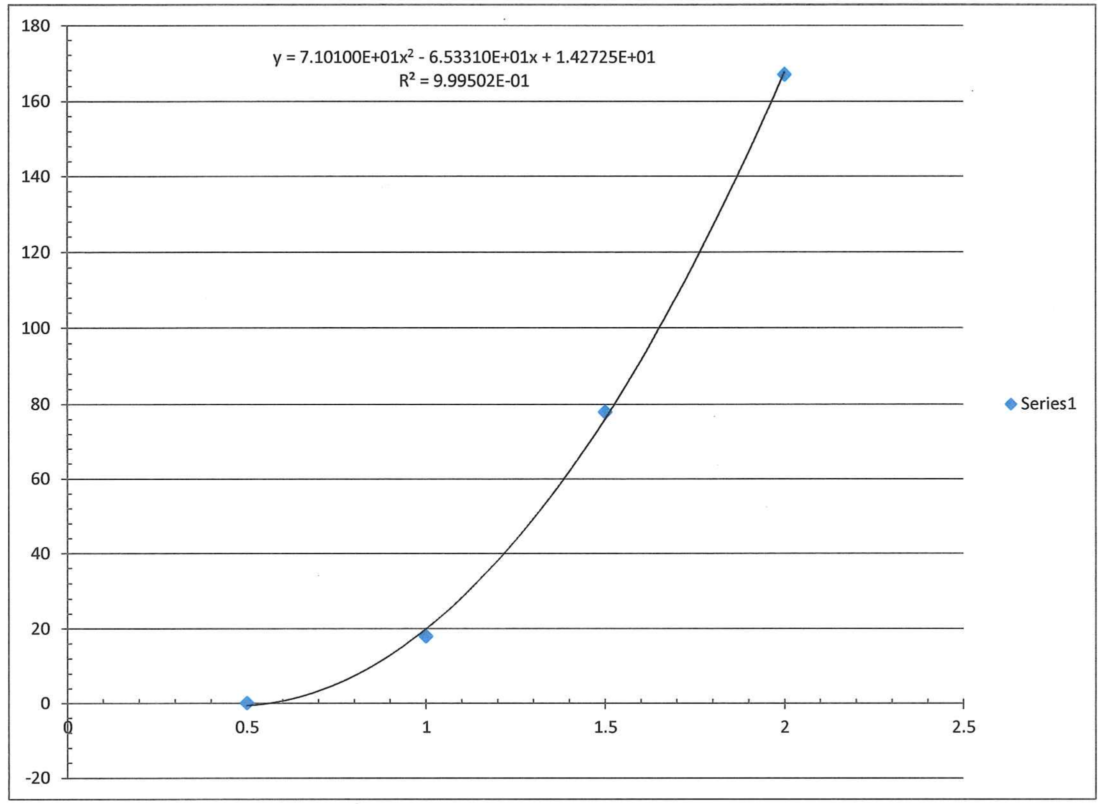
System	Infiltrated (cfd)	Rain (inches)	gpm
Galleys SW	0.01	0	0.00
	27	0.5	0.14
	165	1	0.86
	505	1.5	2.62
	998	2	5.18



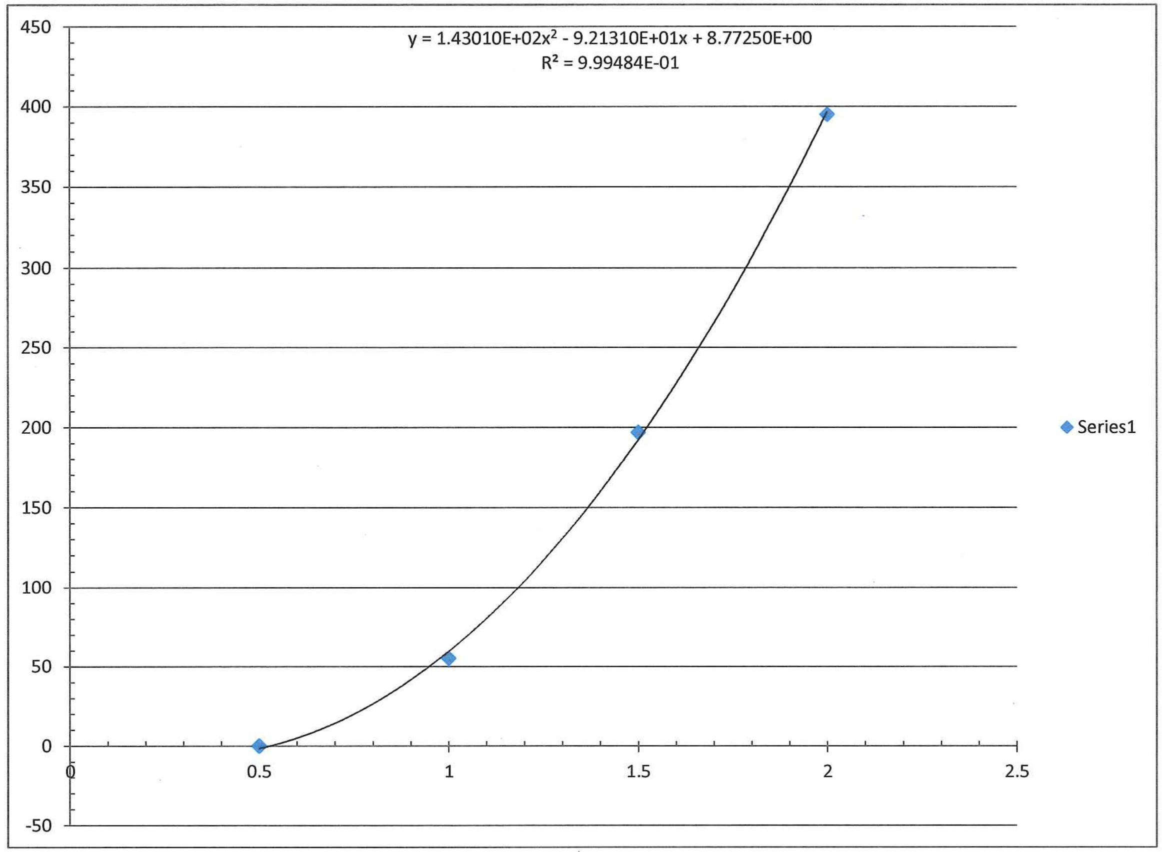
System	Infiltrated (cfd)	Rain (inches)	gpm
Gallerys NW	0.01	0	0.00
	0.01	0.5	0.00
	30	1	0.16
	120	1.5	0.62
	249	2	1.29



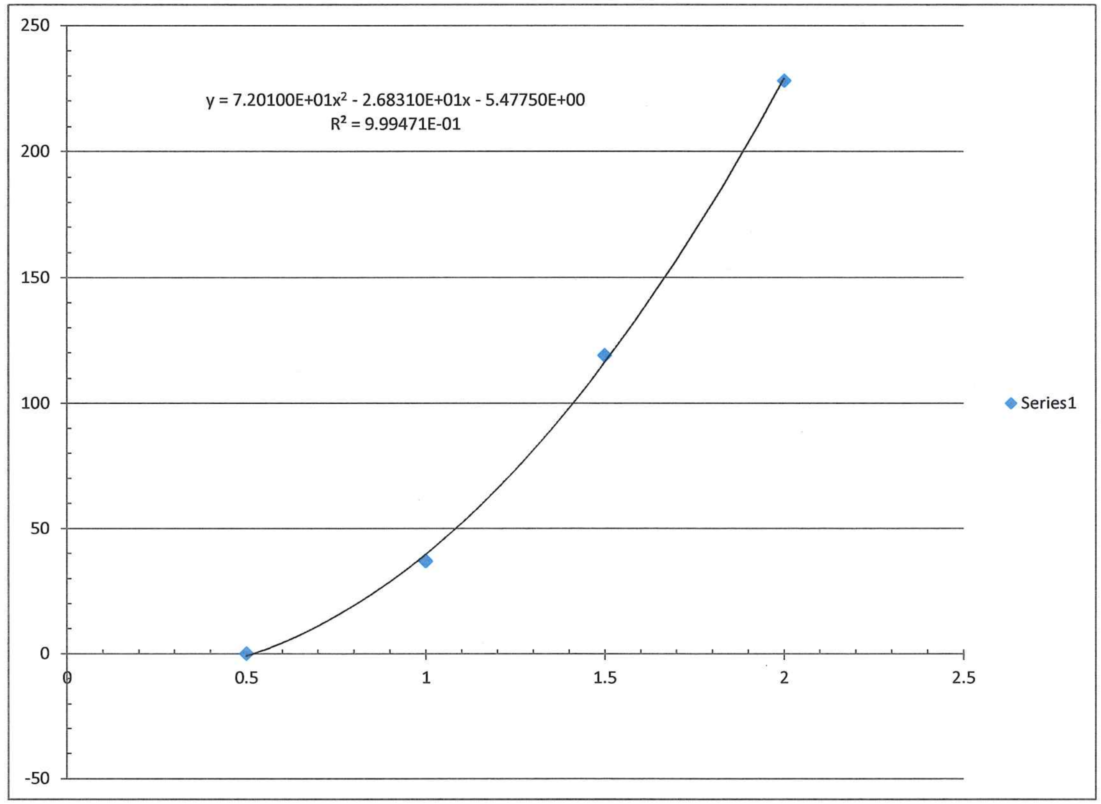
System	Infiltrated (cfd)	Rain (inches)	gpm
Gallerys SE	0.01	0	0.00
	0.01	0.5	0.00
	18	1	0.09
	78	1.5	0.41
	167	2	0.87



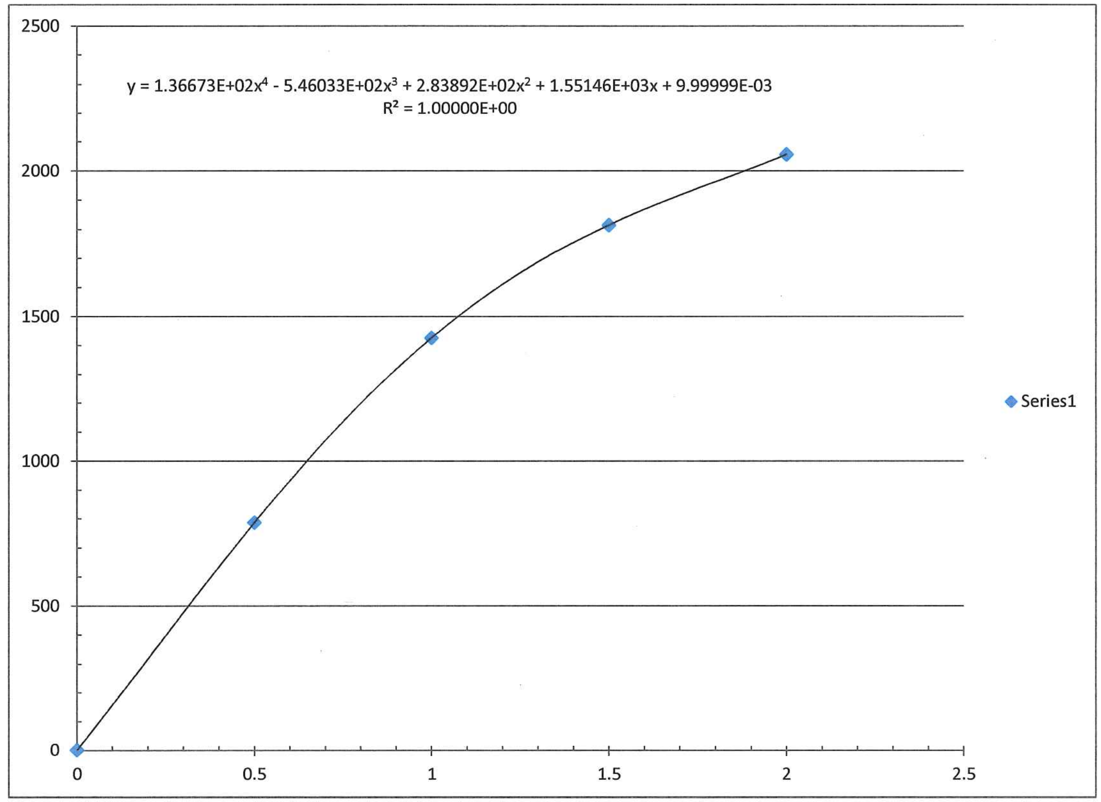
System	Infiltrated (cfd)	Rain (inches)	gpm
Gallerys Mid-E	0.01	0	0.00
	0.01	0.5	0.00
	55	1	0.29
	197	1.5	1.02
	395	2	2.05



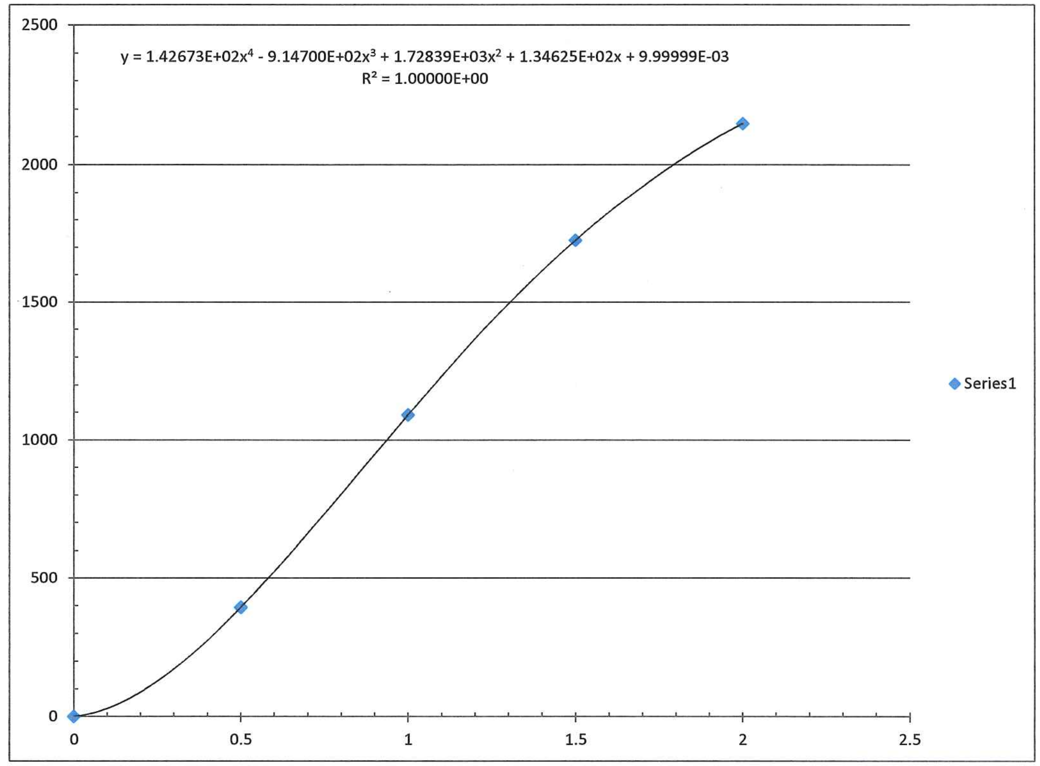
System	Infiltrated (cfd)	Rain (inches)	gpm
Gallery NE	0.01	0	0.00
	0.01	0.5	0.00
	37	1	0.19
	119	1.5	0.62
	228	2	1.18



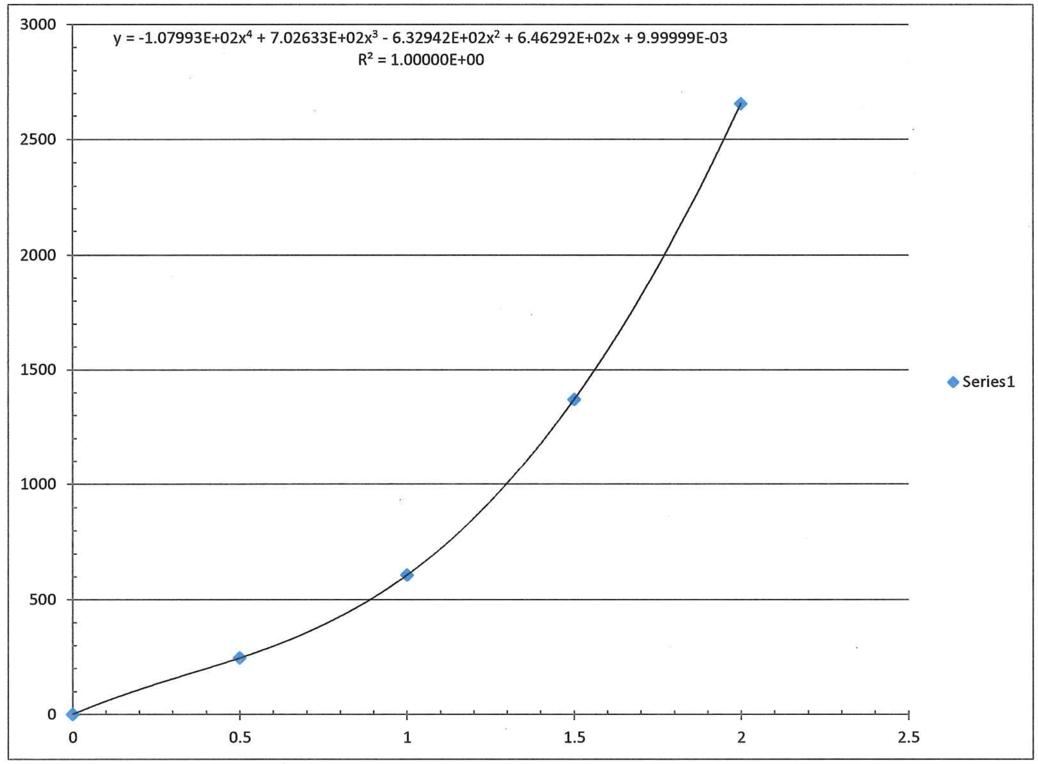
System	Infiltrated (cfd)	Rain (inches)	gpm
Gallerys S-E	0.01	0	0.00
	787	0.5	4.09
	1426	1	7.41
	1815	1.5	9.43
	2057	2	10.69



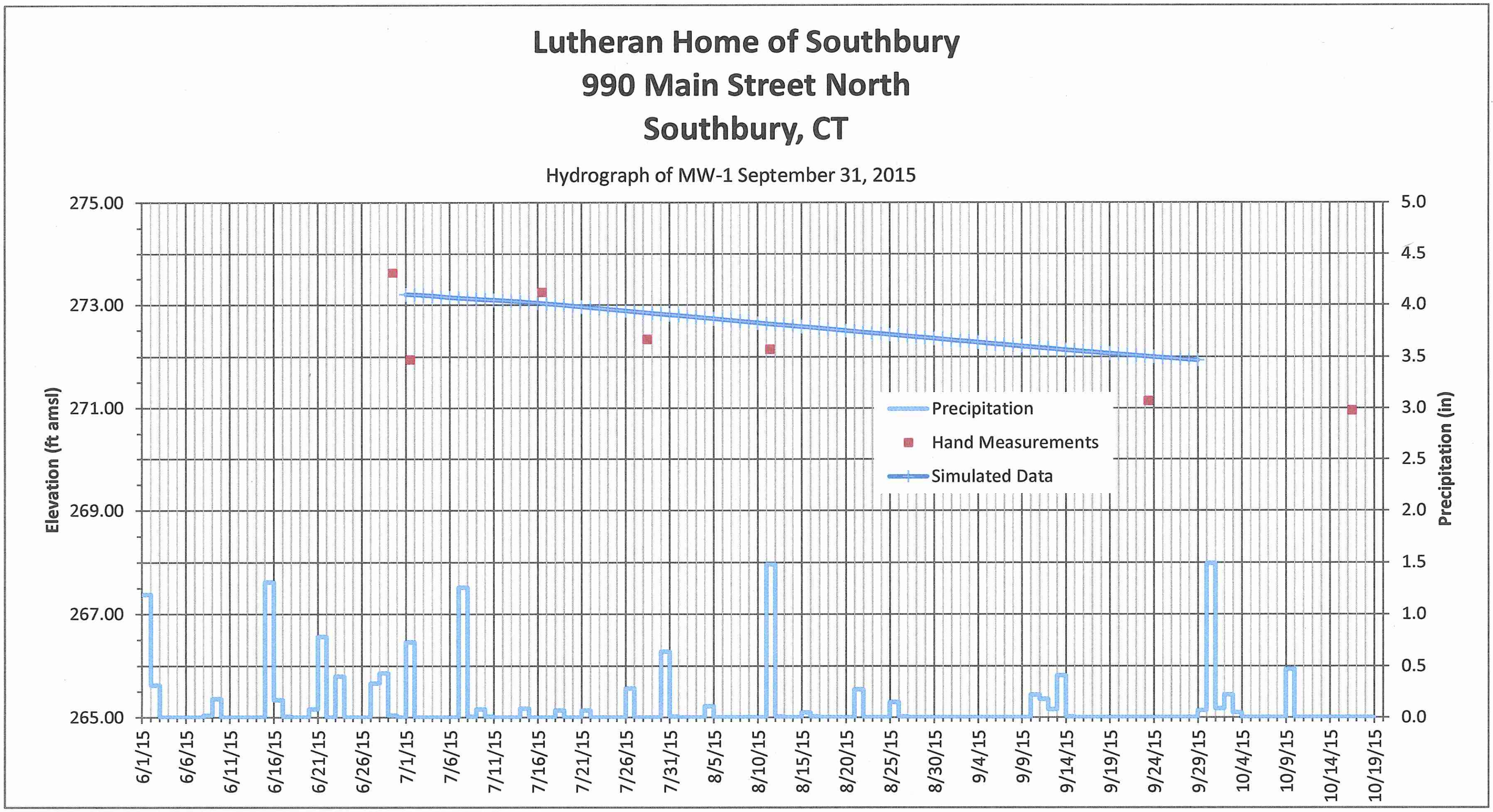
System	Infiltrated (cfd)	Rain (inches)	gpm
Gallery S-W	0.01	0	0.00
	394	0.5	2.05
	1091	1	5.67
	1726	1.5	8.97
	2148	2	11.16



System	Infiltrated (cfd)	Rain (inches)	gpm
Dry Well	0.01	0	0.00
	246	0.5	1.28
	608	1	3.16
	1370	1.5	7.12
	2654	2	13.79



APPENDIX VII
CALIBRATIONS RESULTS

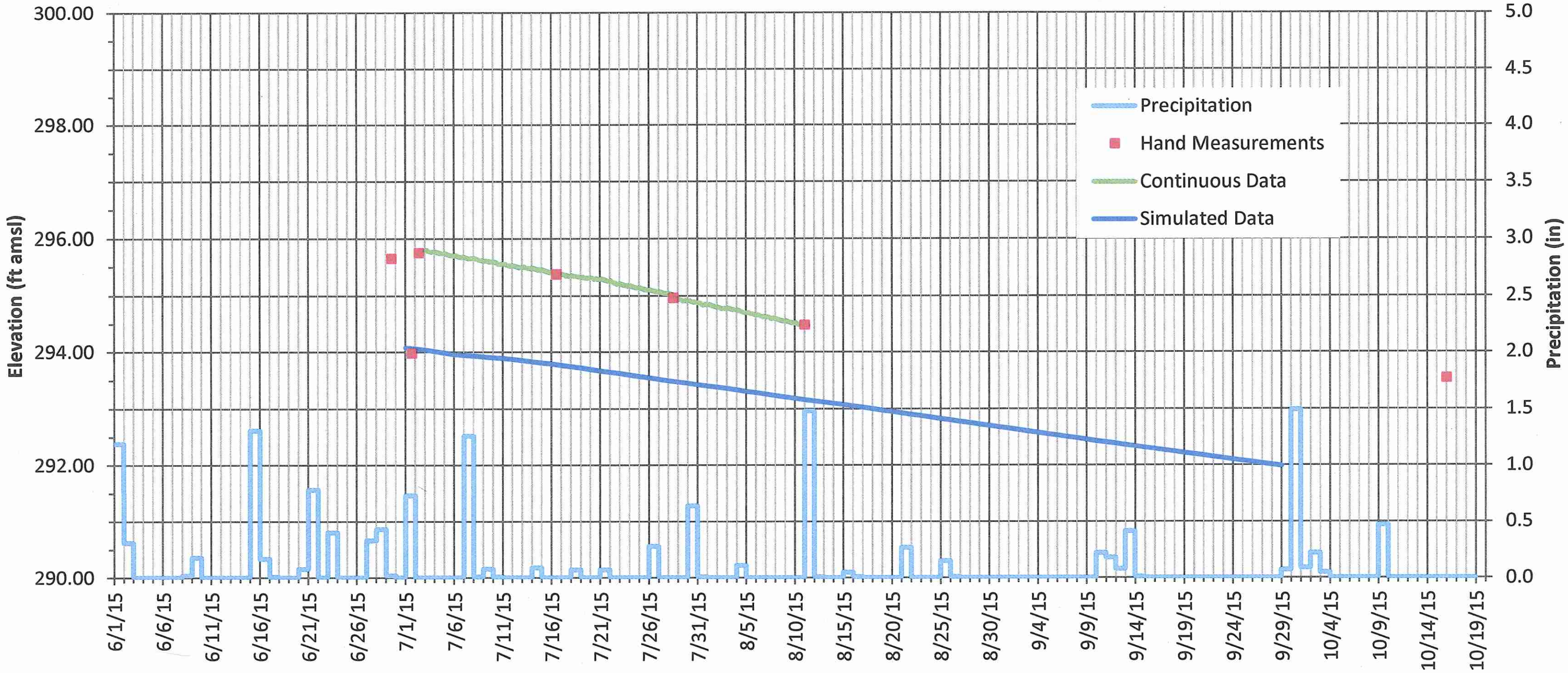


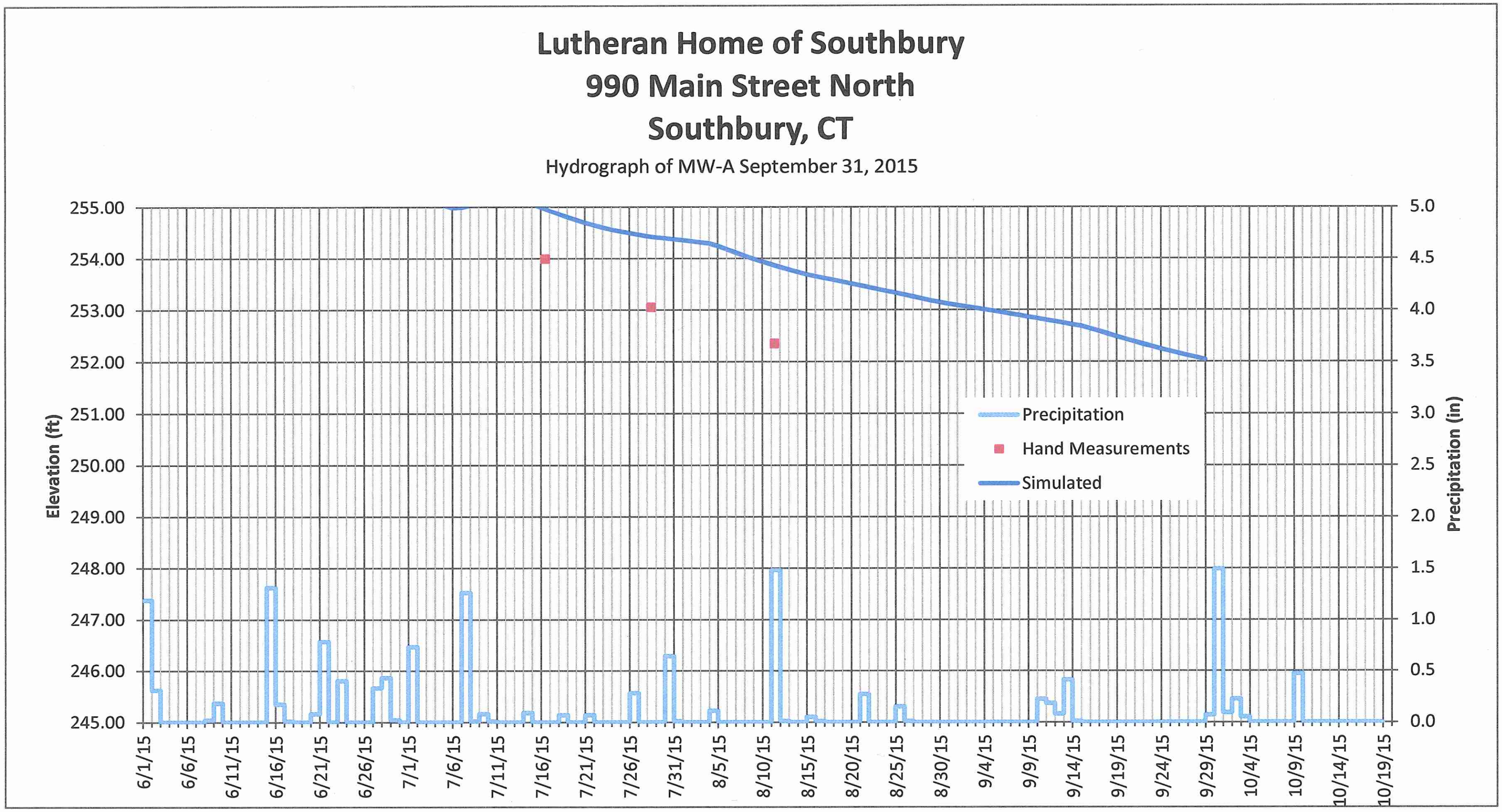
C:\Users\ktaylor\AppData\Local\Microsoft\Windows\Temporary Internet Files\Content.Outlook\YJV7RZ34\Copy of Monitoring Summary - B (2).xlsx

LEGGETTE, BRASHEARS GRAHAM, INC.

Lutheran Home of Southbury
990 Main Street North
Southbury, CT

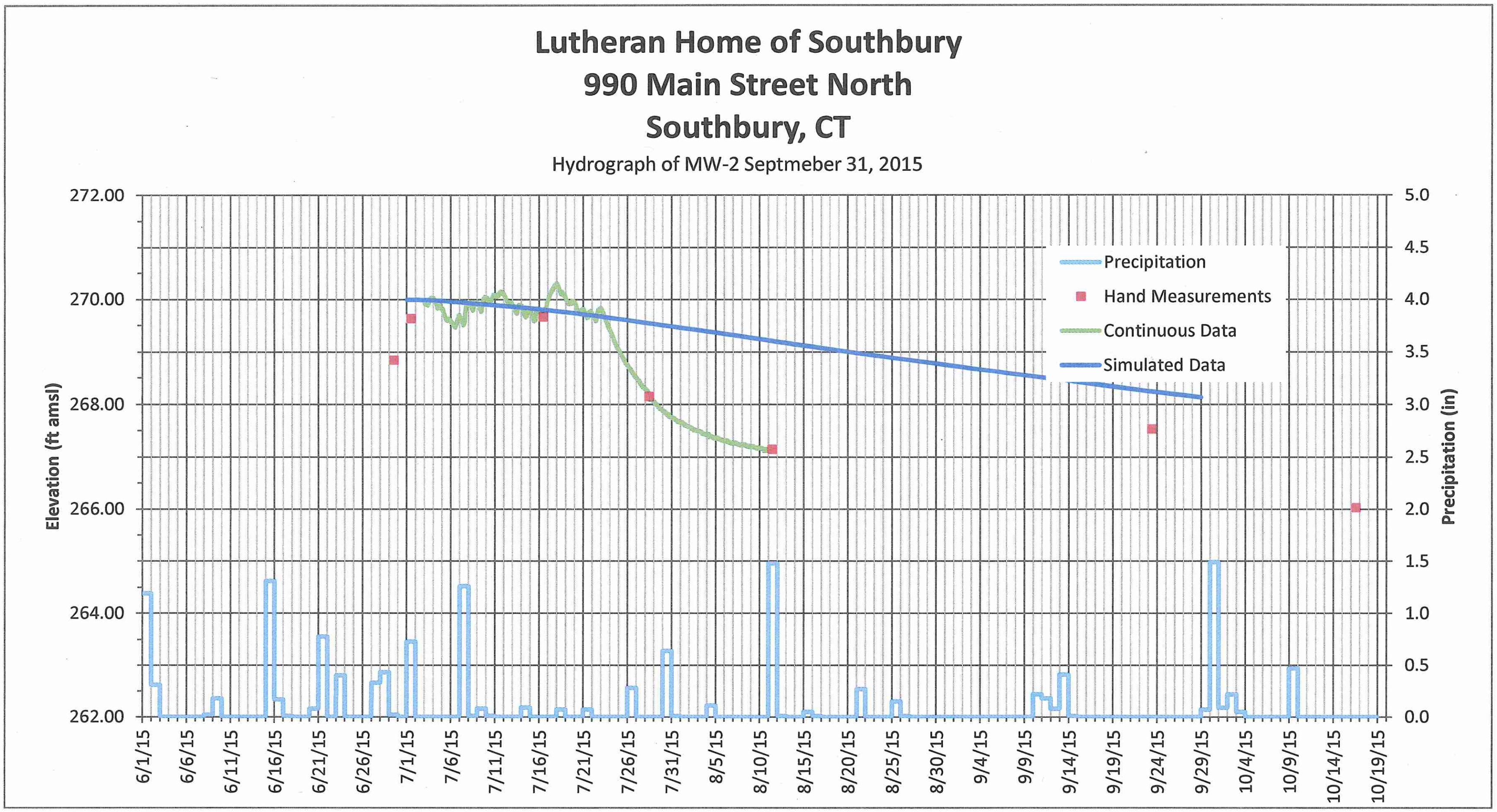
Hydrograph of MW-5 September 31, 2015



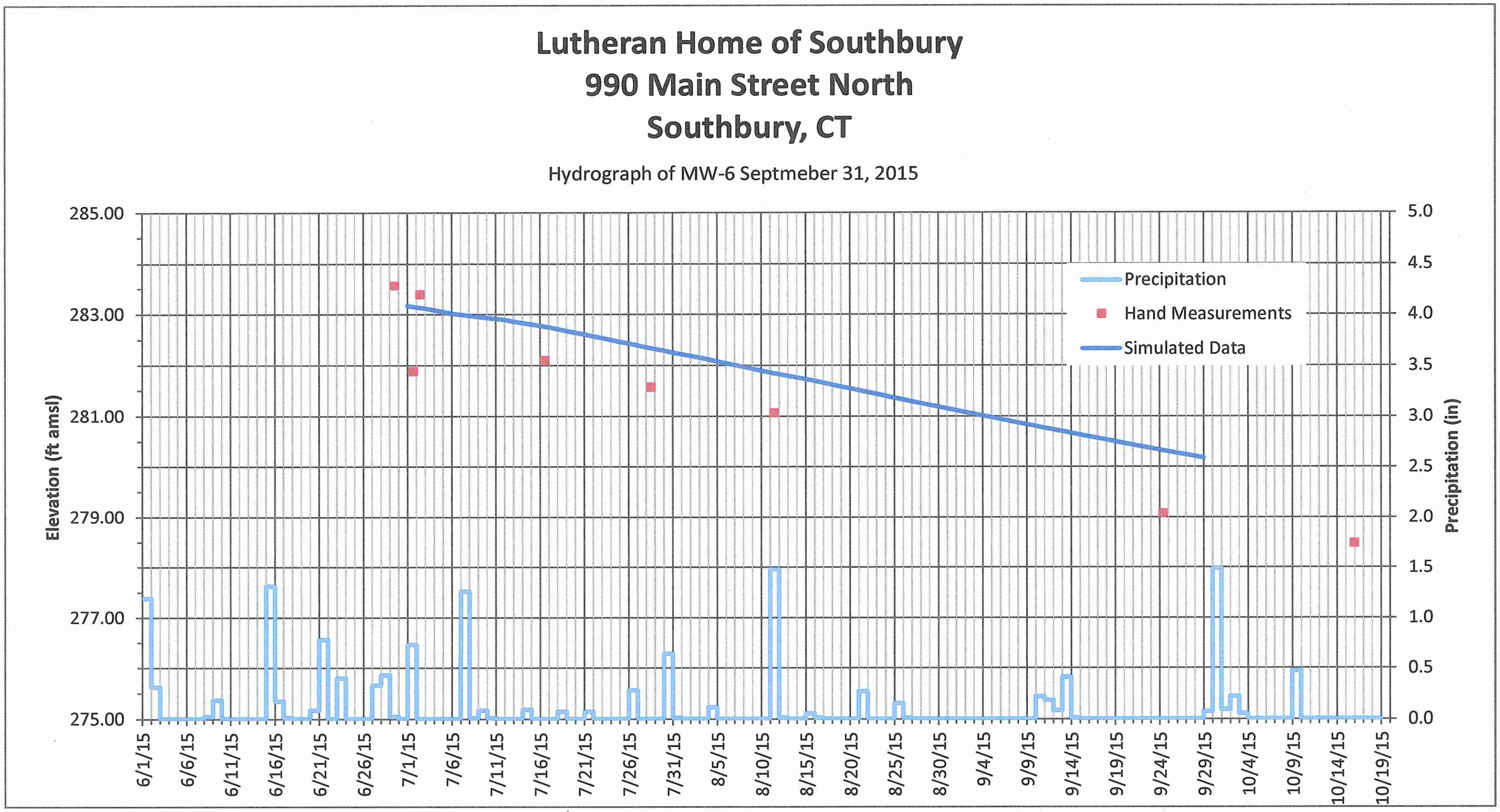


C:\Users\ktaylor\AppData\Local\Microsoft\Windows\Temporary Internet Files\Content.Outlook\YJV7RZ34\Copy of Monitoring Summary - B (2).xlsx

LEGGETTE, BRASHEARS GRAHAM, INC.



Lutheran Home of Southbury
990 Main Street North
Southbury, CT
Hydrograph of MW-2 Septmeber 31, 2015
Elevation (ft amsl)
Precipitation (in)
272.00
270.00
268.00
266.00
264.00
262.00
5.0
4.5
4.0
3.5
3.0
2.5
2.0
1.5
1.0
0.5
0.0
6/1/15
6/6/15
6/11/15
6/16/15
6/21/15
6/26/15
7/1/15
7/6/15
7/11/15
7/16/15
7/21/15
7/26/15
7/31/15
8/5/15
8/10/15
8/15/15
8/20/15
8/25/15
8/30/15
9/4/15
9/9/15
9/14/15
9/19/15
9/24/15
9/29/15
10/4/15
10/9/15
10/14/15
10/19/15
Precipitation
Hand Measurements
Continuous Data
Simulated Data



Lutheran Home of Southbury
990 Main Street North
Southbury, CT
Hydrograph of MW-6 Septmeber 31, 2015
Elevation (ft amsl)
Precipitation (in)
Precipitation
Hand Measurements
Simulated Data
285.00
283.00
281.00
279.00
277.00
275.00
5.0
4.5
4.0
3.5
3.0
2.5
2.0
1.5
1.0
0.5
0.0
6/1/15
6/6/15
6/11/15
6/16/15
6/21/15
6/26/15
7/1/15
7/6/15
7/11/15
7/16/15
7/21/15
7/26/15
7/31/15
8/5/15
8/10/15
8/15/15
8/20/15
8/25/15
8/30/15
9/4/15
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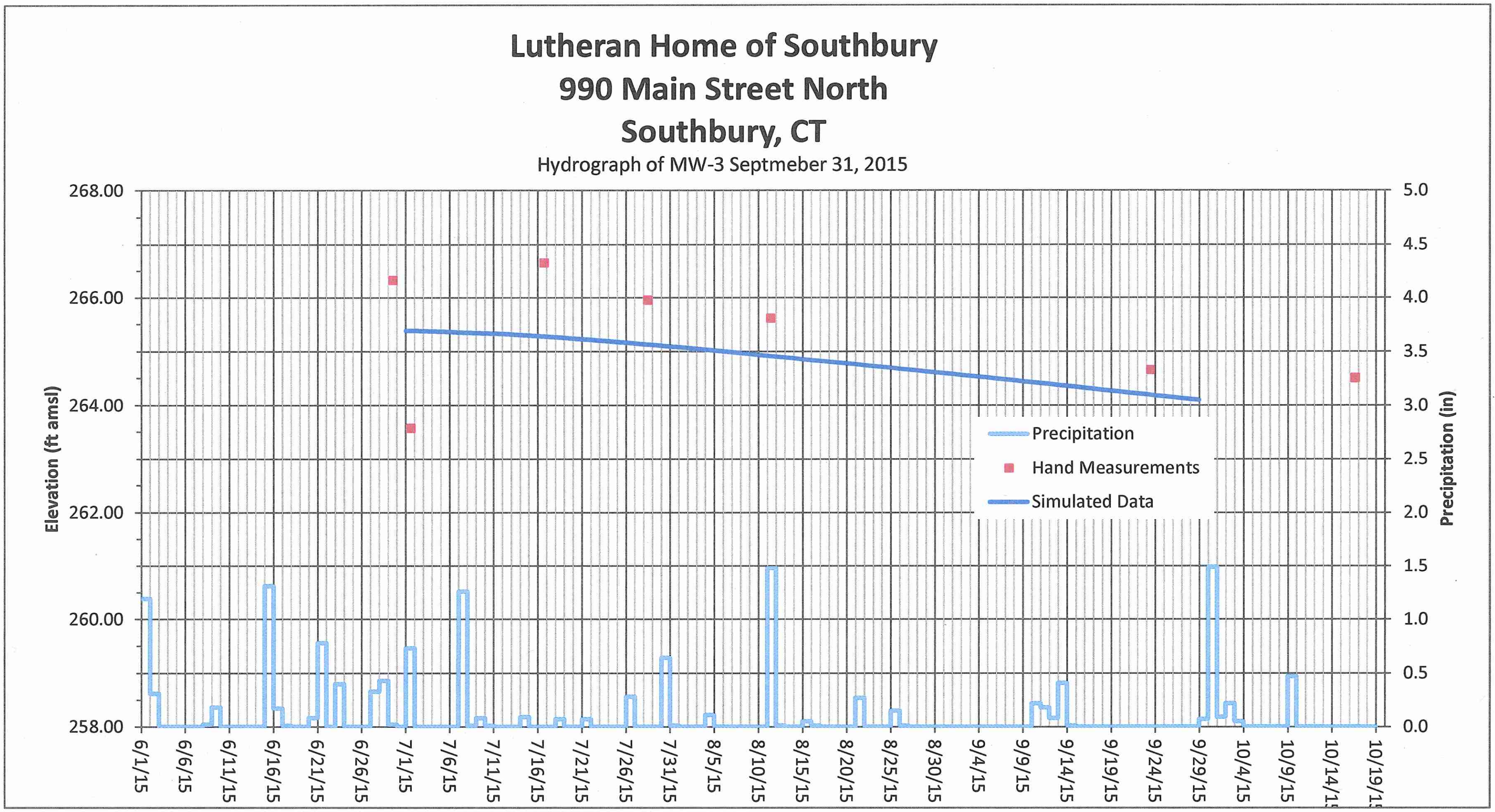
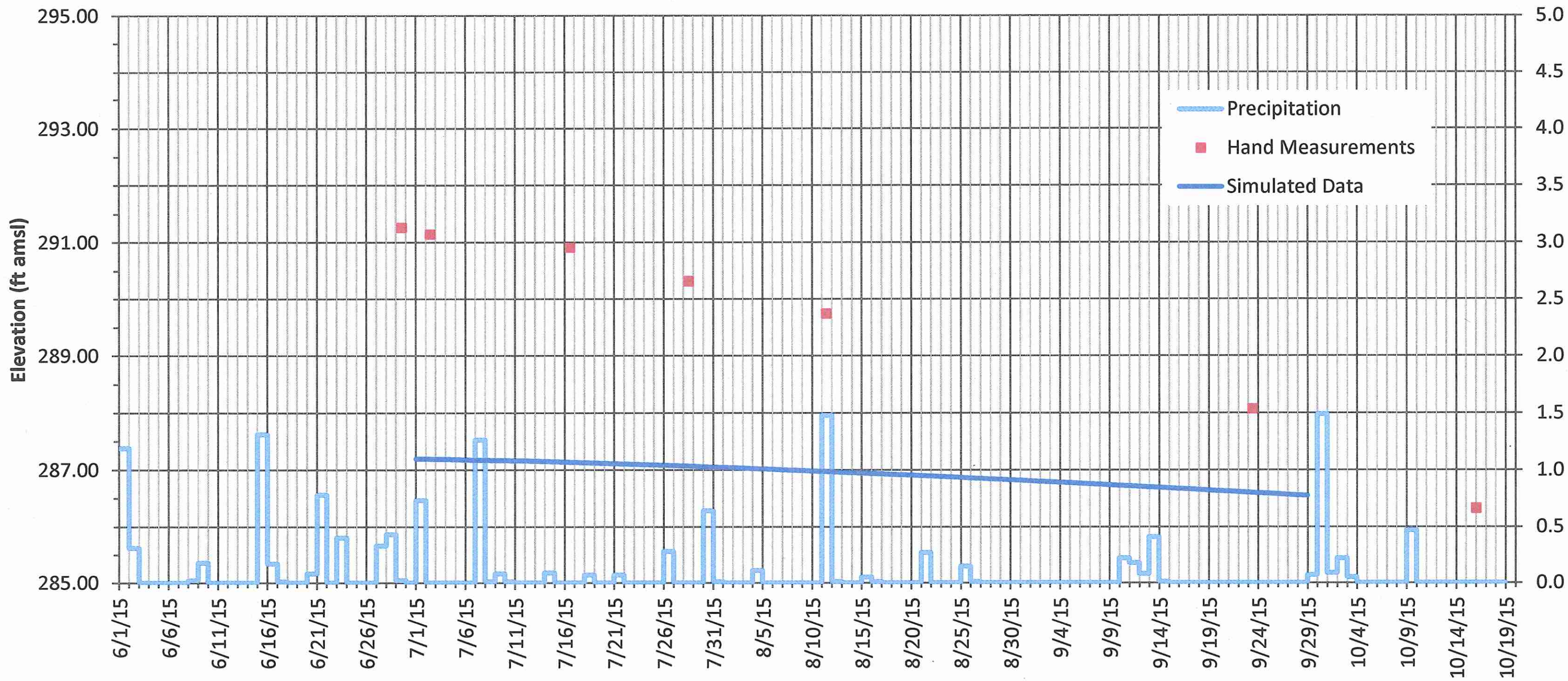
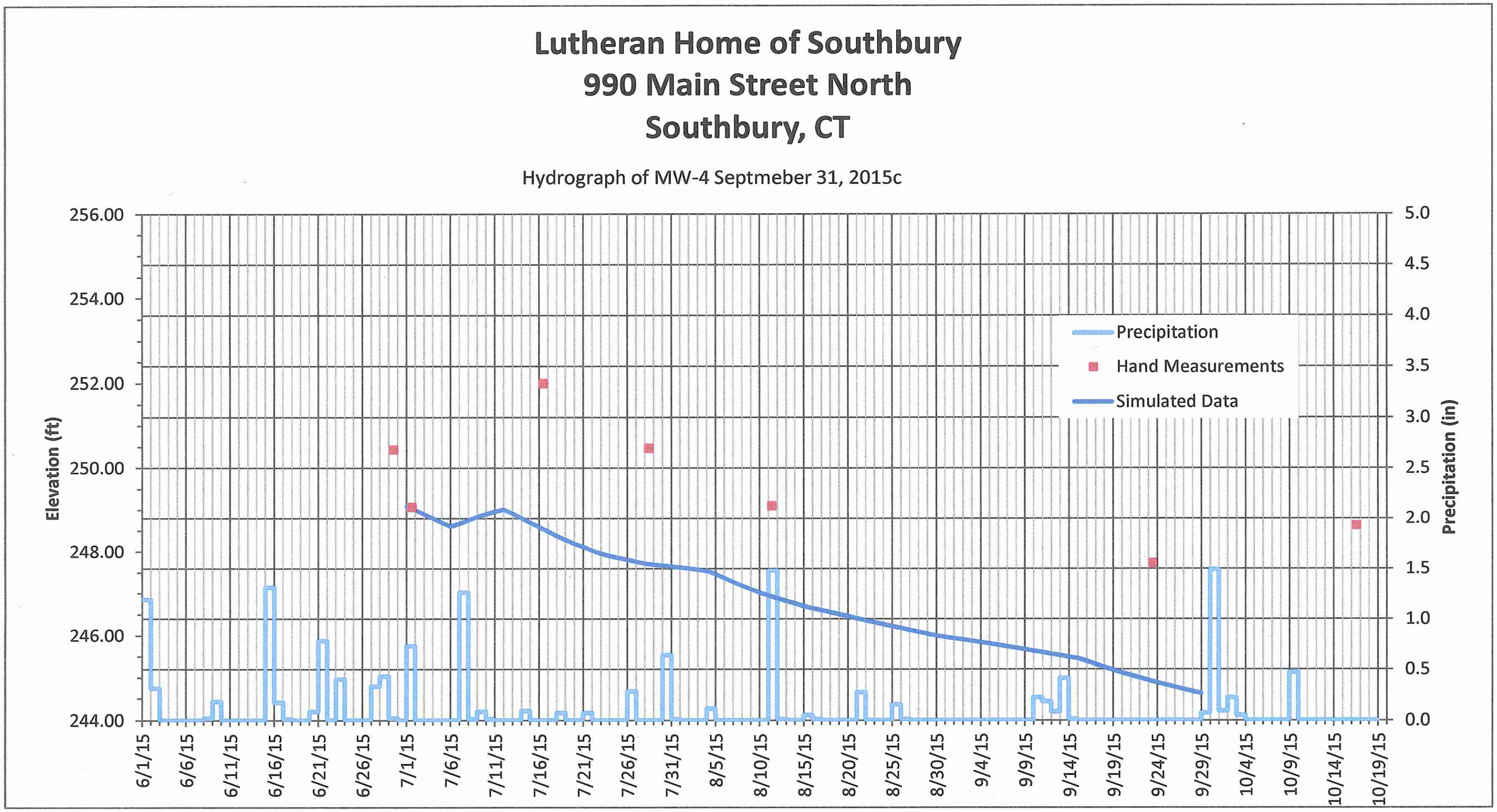
10/14/15
10/19/15


Lutheran Home of Southbury
990 Main Street North
Southbury, CT
Hydrograph of MW-3 Septmeber 31, 2015
Elevation (ft amsl)
Precipitation (in)
268.00
266.00
264.00
262.00
260.00
258.00
5.0
4.5
4.0
3.5
3.0
2.5
2.0
1.5
1.0
0.5
0.0
6/1/15
6/6/15
6/11/15
6/16/15
6/21/15
6/26/15
7/1/15
7/6/15
7/11/15
7/16/15
7/21/15
7/26/15
7/31/15
8/5/15
8/10/15
8/15/15
8/20/15
8/25/15
8/30/15
9/4/15
9/9/15
9/14/15
9/19/15
9/24/15
9/29/15
10/4/15
10/9/15
Precipitation
Hand Measurements
Simulated Data

Lutheran Home of Southbury
990 Main Street North
Southbury, CT

Hydrograph of MW-7 Septmeber 31, 2015





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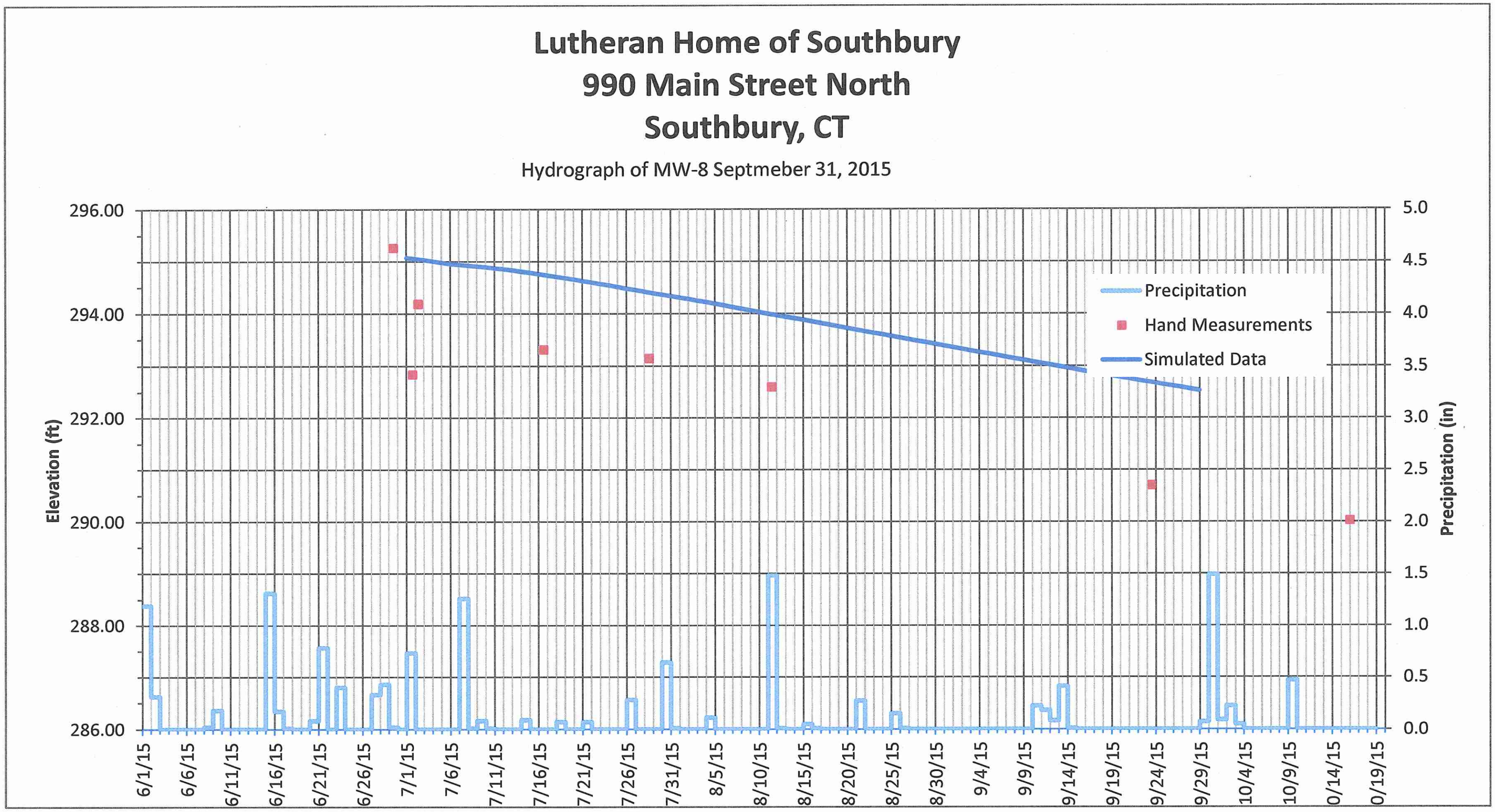
LEGGETTE, BRASHEARS GRAHAM, INC.



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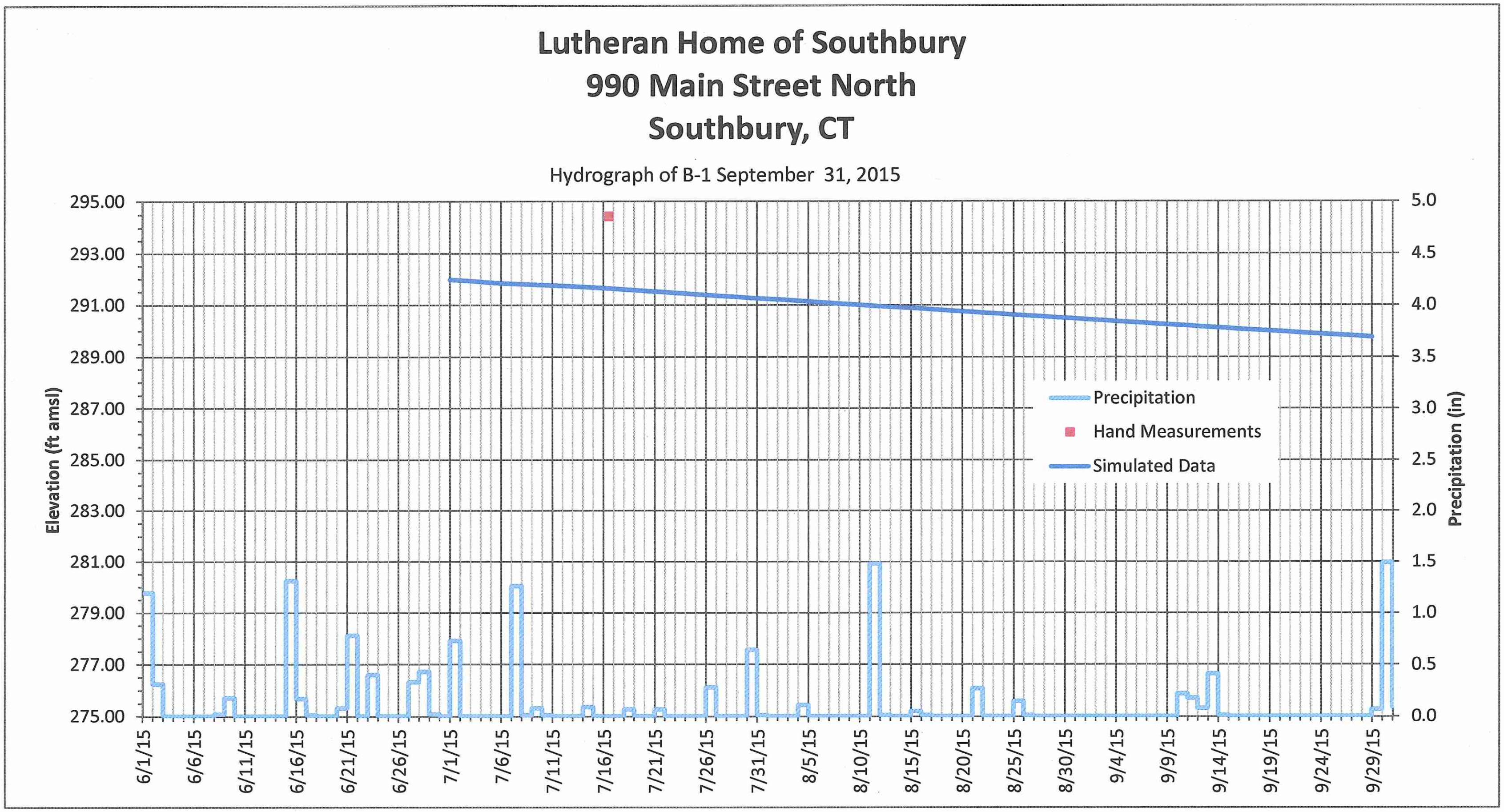
LEGGETTE, BRASHEARS GRAHAM, INC.



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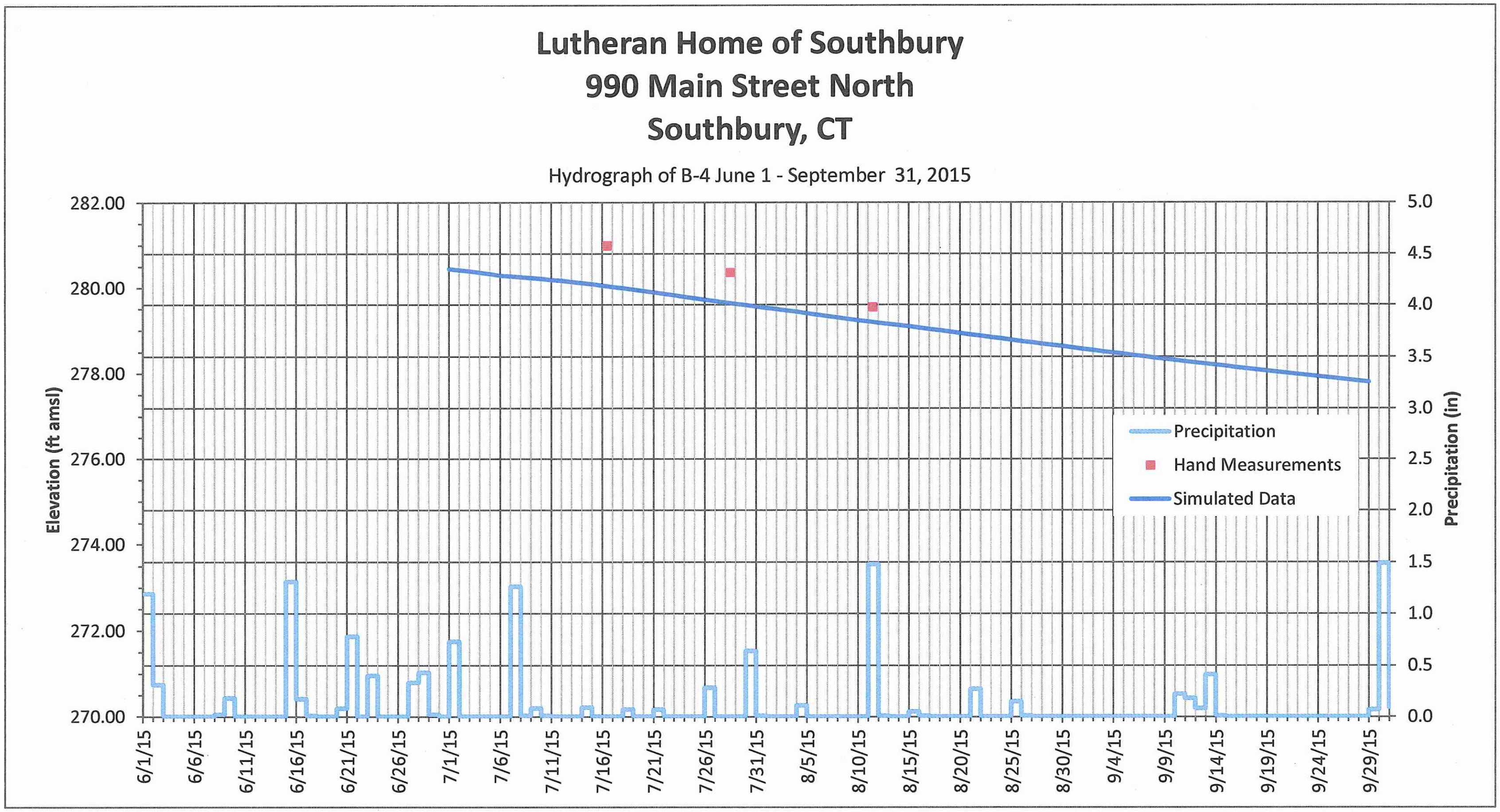
LEGGETTE, BRASHEARS GRAHAM, INC.



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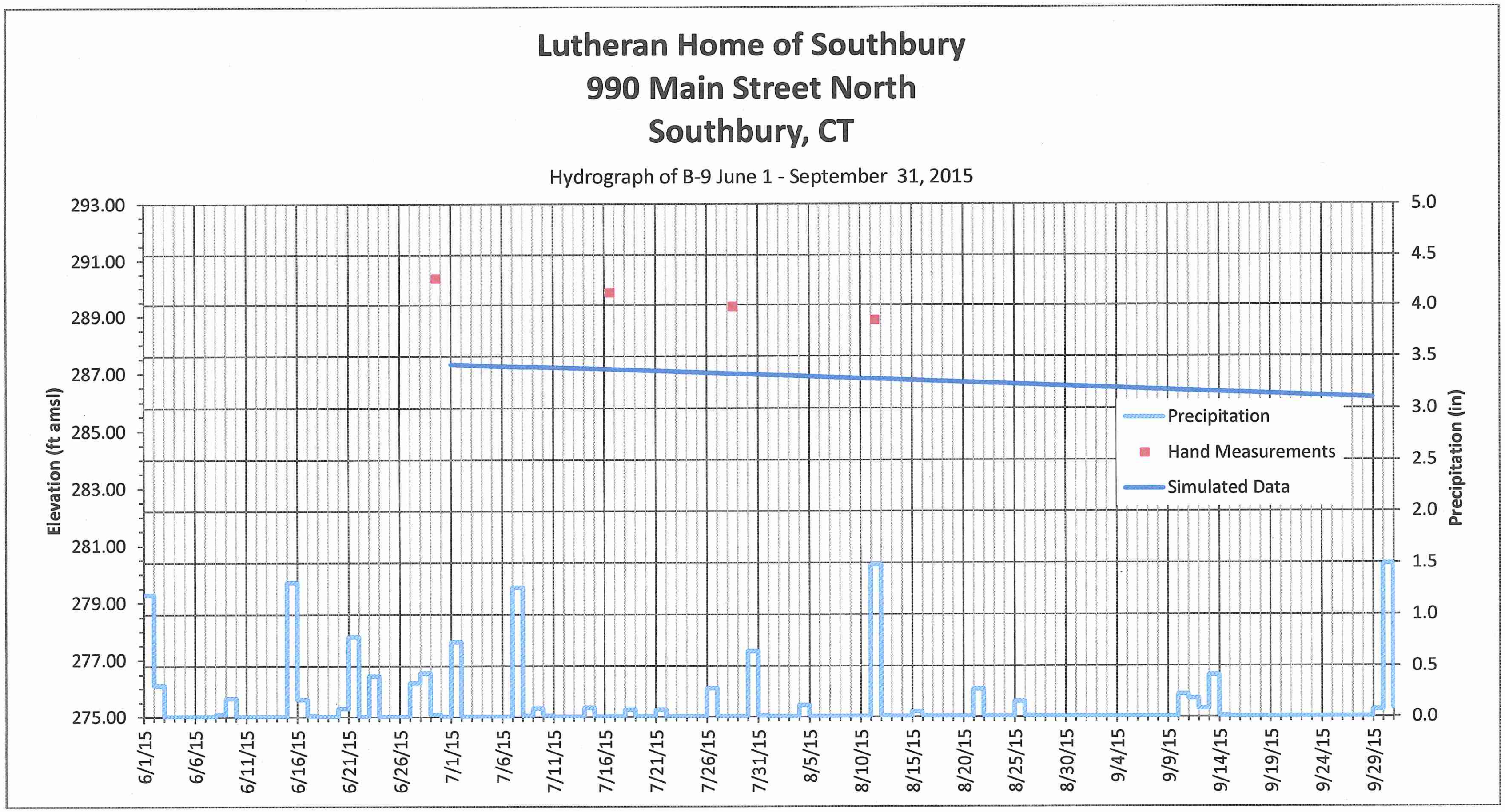
LEGGETTE, BRASHEARS GRAHAM, INC.



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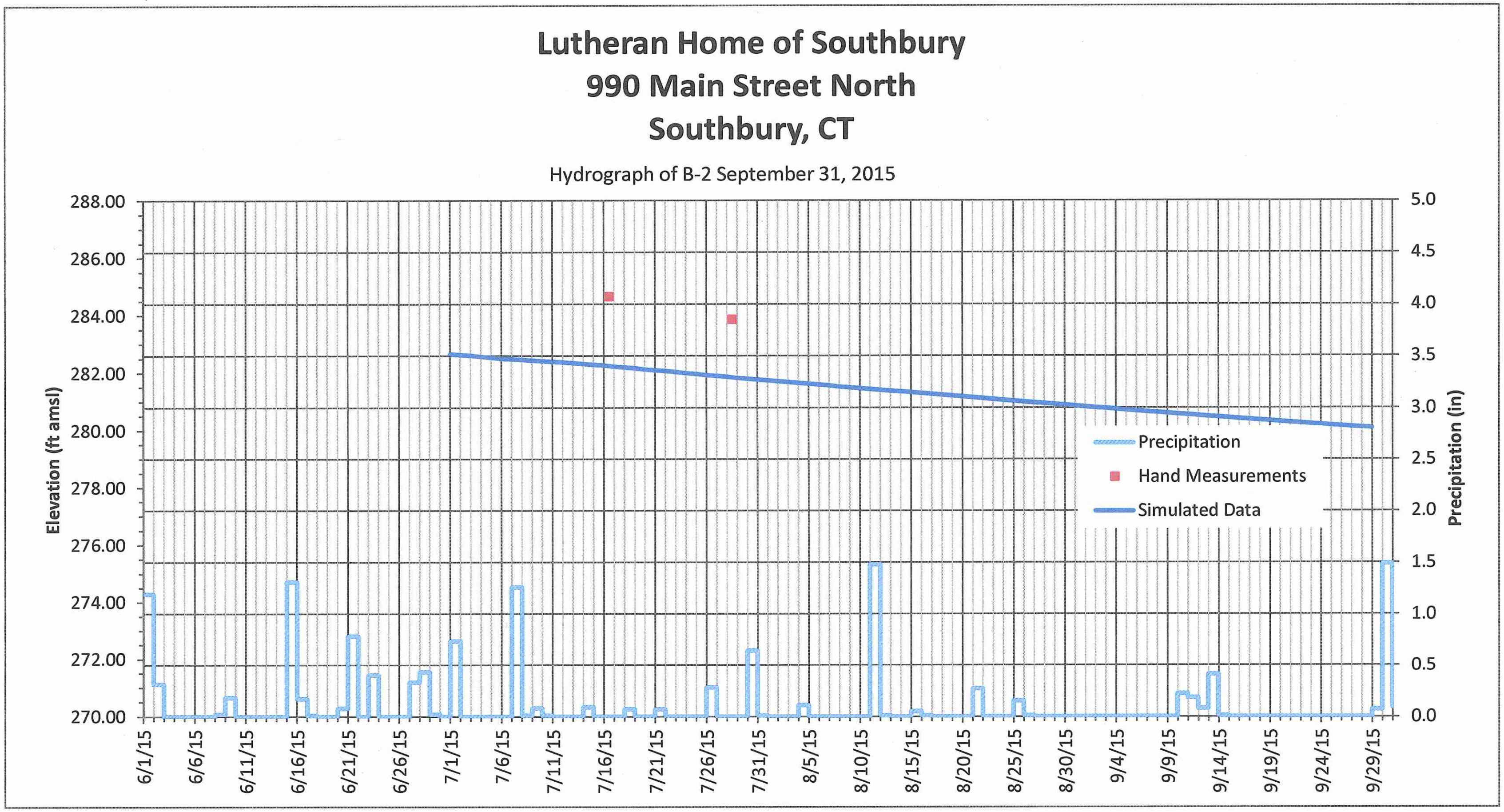
LEGGETTE, BRASHEARS GRAHAM, INC.



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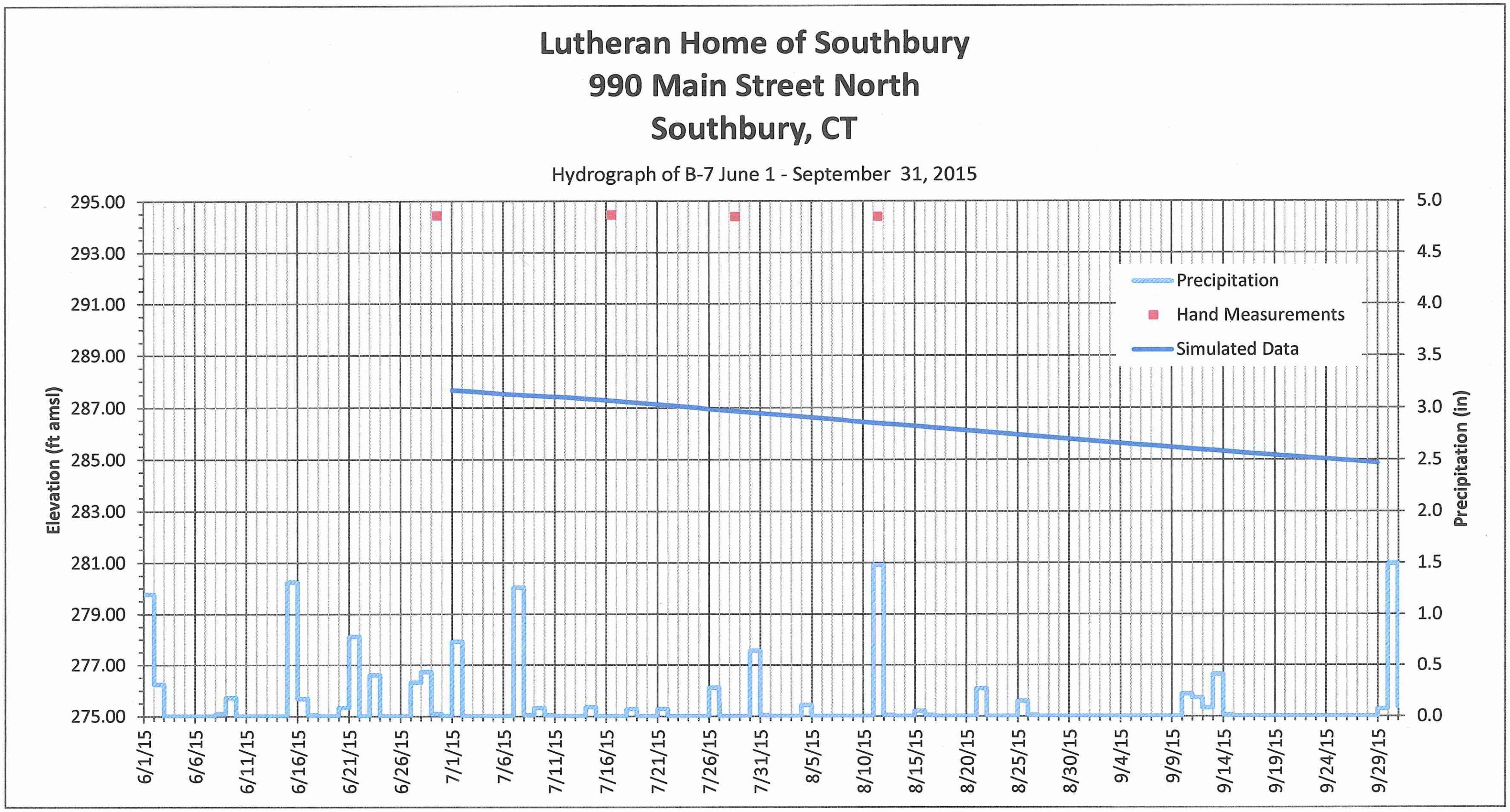
LEGGETTE, BRASHEARS GRAHAM, INC.



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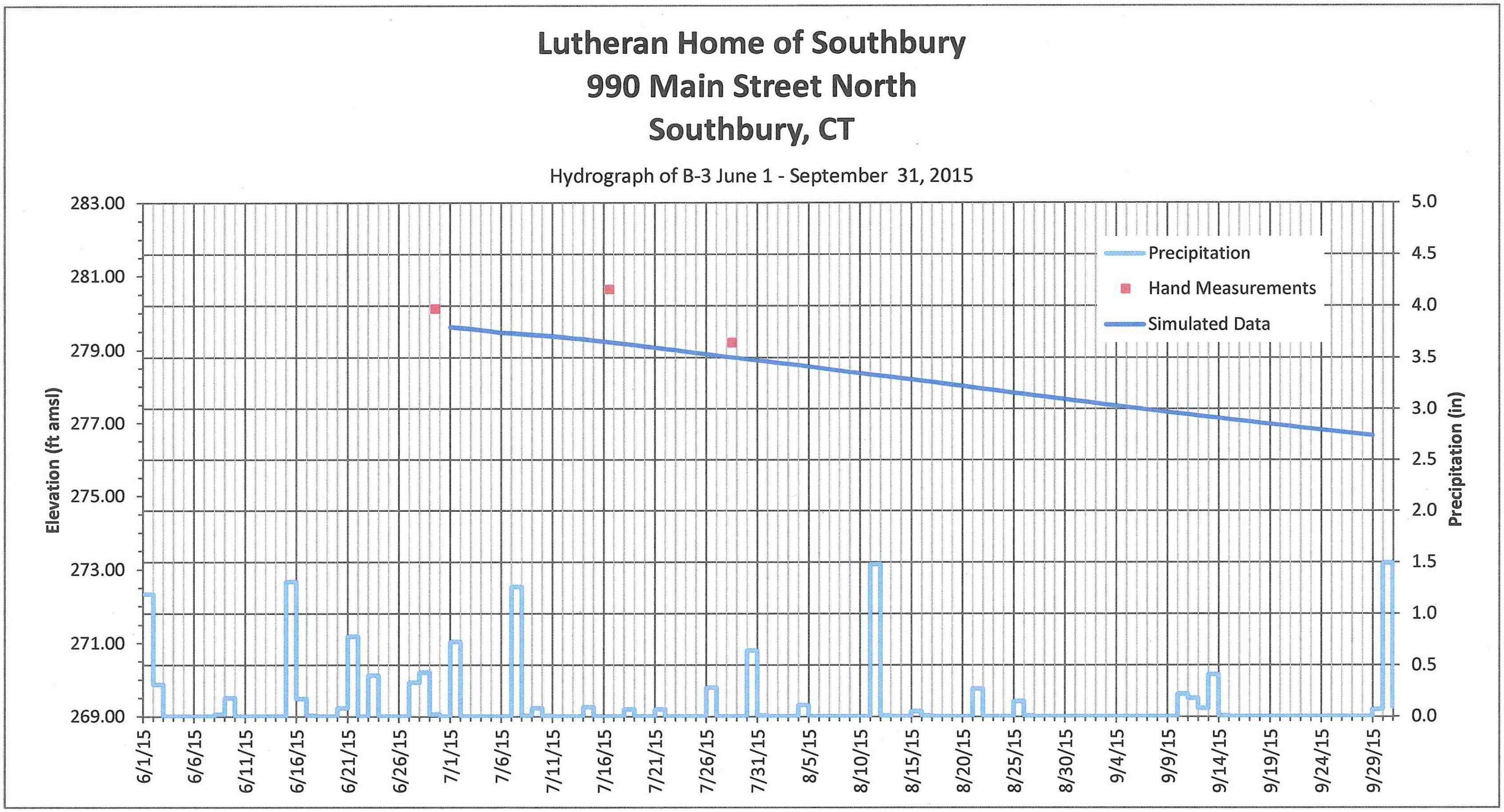
LEGGETTE, BRASHEARS GRAHAM, INC.



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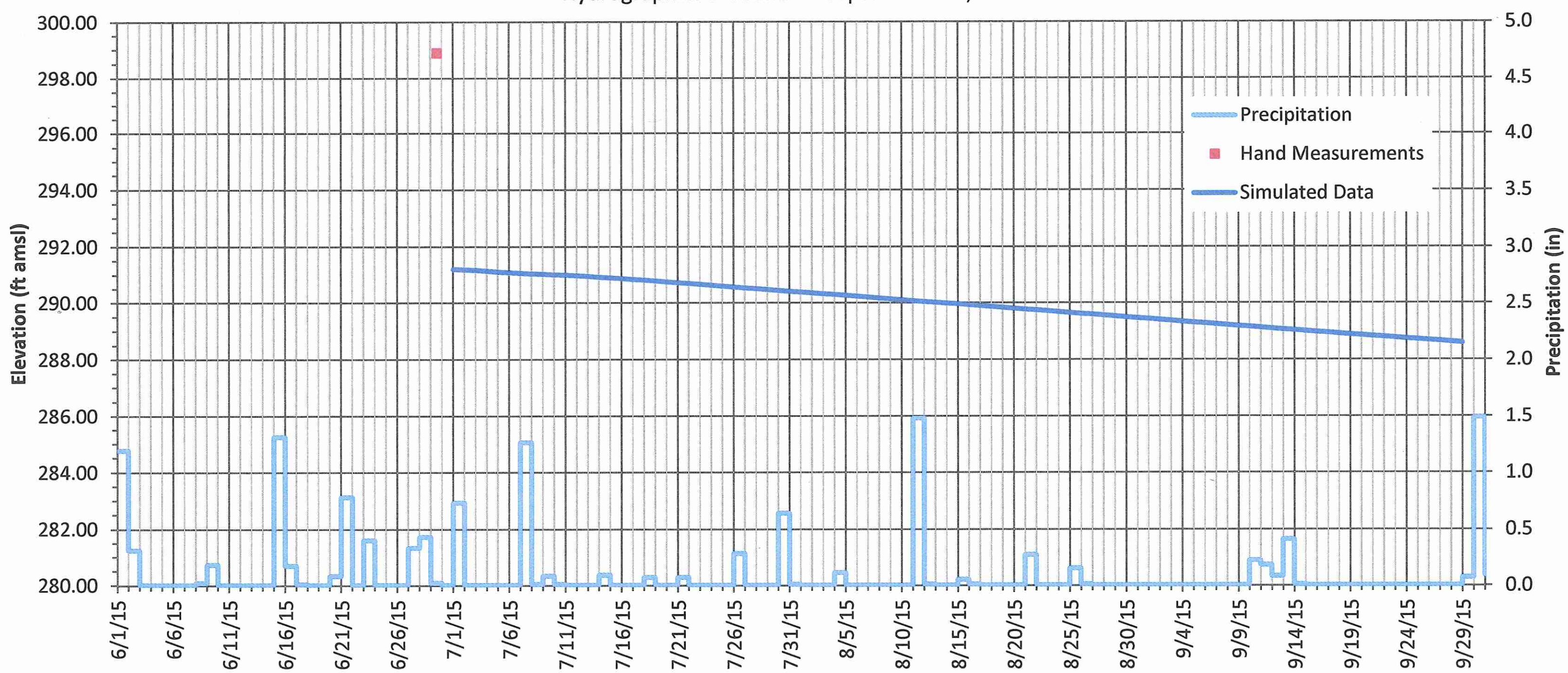
LEGGETTE, BRASHEARS GRAHAM, INC.

Lutheran Home of Southbury
990 Main Street North
Southbury, CT

Hydrograph of B-8 June 1 - September 31, 2015



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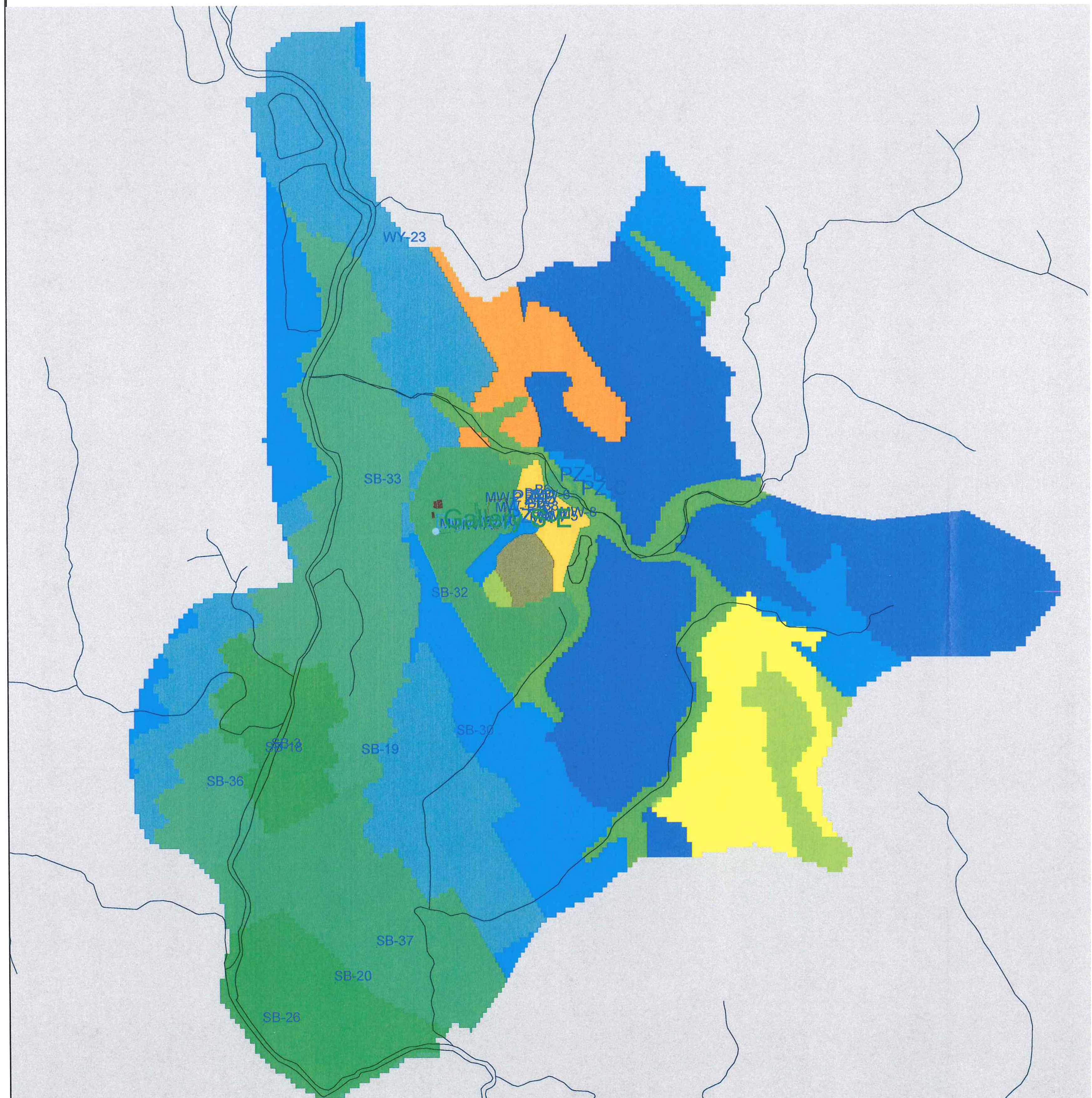
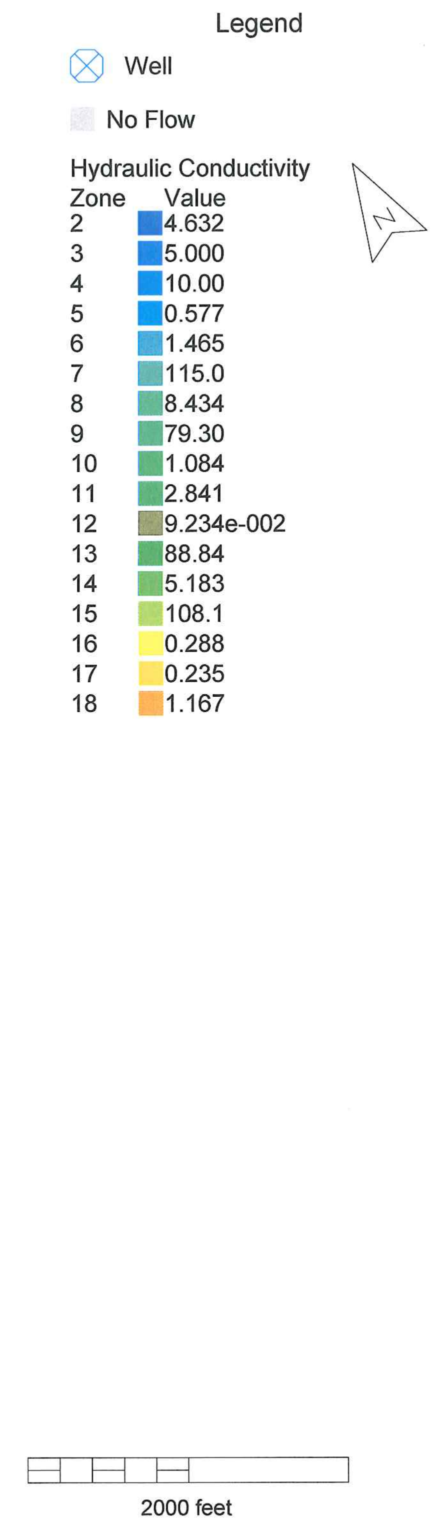
LEGGETTE, BRASHEARS GRAHAM, INC.

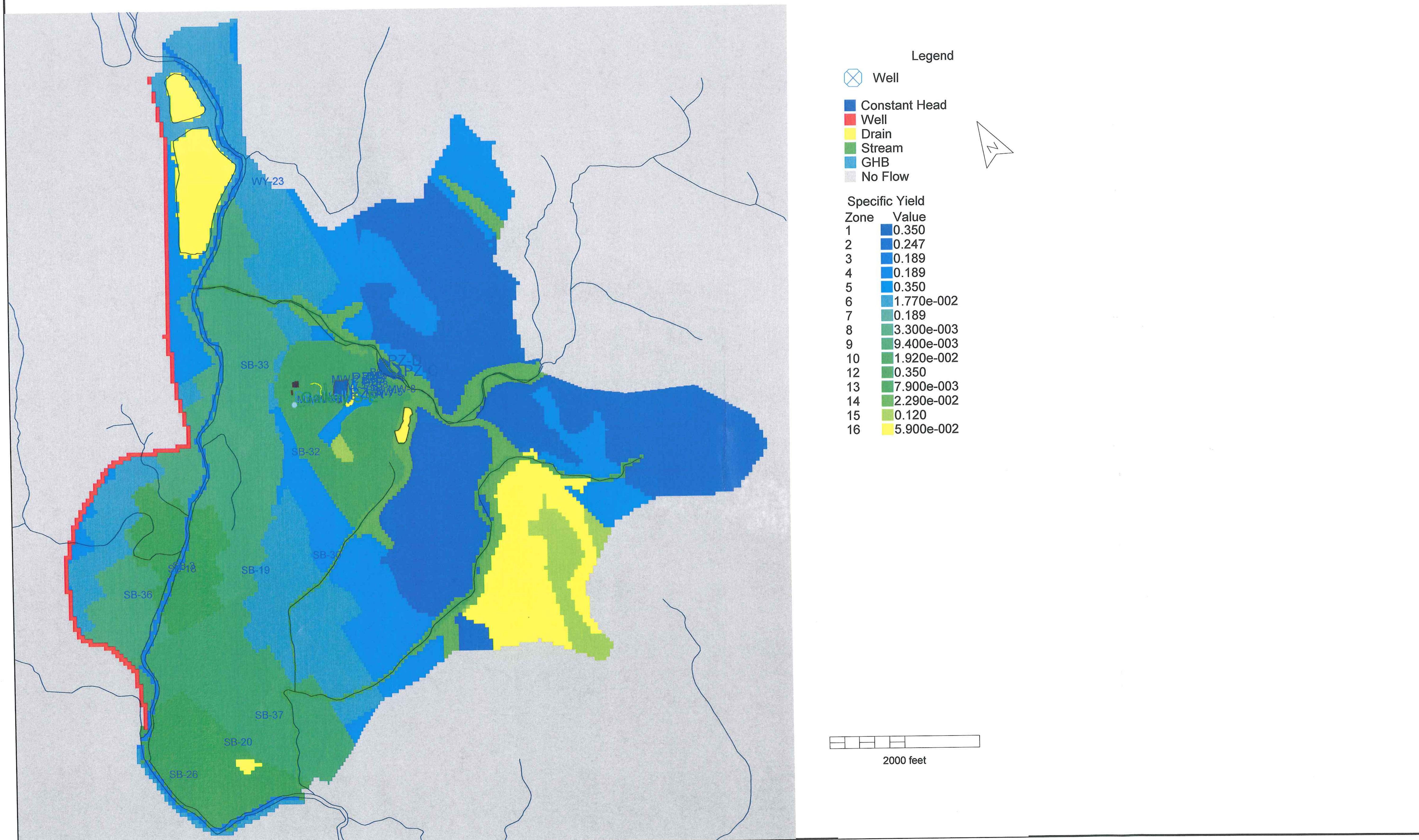
APPENDIX VIII
FINAL MODEL PARAMETERS

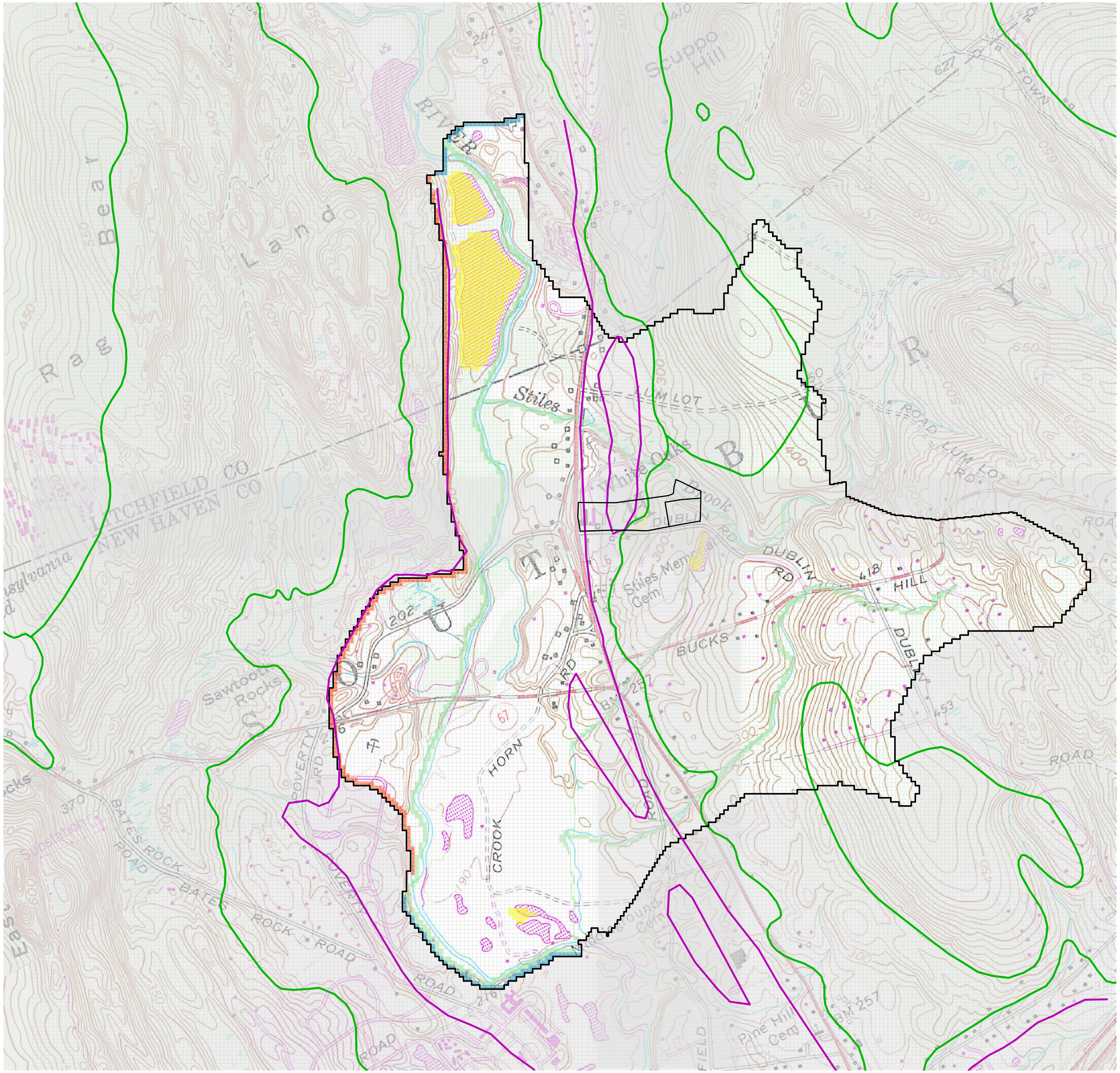
Hydraulic Conductivity Values (feet per day)





Simulated Specific Yield Values





LEGEND

- PROPERTY BOUNDARY
- MODEL BOUNDARY
- STRATIFIED DRIFT / TILL CONTACT
- 10' SATURATED THICKNESS
- GRID
- DRAIN
- GHB
- NO FLOW
- STREAM
- WELL

0 600
SCALE IN FEET

LUTHERAN HOME OF SOUTHBURY
990 MAIN STREET NORTH
SOUTHBURY, CONNECTICUT

MODEL GRID AND BOUNDARY CONDITIONS

DATE	REVISED

PREPARED BY:
LEGGETTE, BRASHEARS & GRAHAM, INC.
Professional Groundwater and Environmental Engineering Services
4 Research Drive
Suite 204
Shelton, Connecticut 06484
(203) 929-8555

DRAWN:	RAC	CHECKED:	KT	DATE:	03/28/16	PLATE:	1

G:\DWG\Beta Group\Lutheran Home Southbury\2016\Plate1.dwg, Layout1, 3/28/2016 4:30:38 PM, DWG To PDF.pc3

80 Lupes Drive
Stratford, CT 06615

Tel: (203) 377-9984
Fax: (203) 377-9952
e-mail: cet1@cetlabs.com

Client: Ms. Tunde Sandor
Leggette, Brashears & Graham
4 Research Dr. Suite 204
Shelton, CT 06484

Analytical Report
CET# 6020202

Report Date:February 18, 2016
Project: BETA, Southbury

Connecticut Laboratory Certificate: PH 0116
Massachusetts laboratory Certificate: M-CT903

New York Certification: 11982
Rhode Island Certification: 199

CET # : 6020202
Project: BETA, Southbury

SAMPLE SUMMARY

The sample(s) were received at 3.0°C.

This report contains analytical data associated with following samples only.

Sample ID	Laboratory ID	Matrix	Collection Date/Time	Receipt Date
MW-2	6020202-01	Water	2/10/2016 10:17	02/11/2016
MW-3	6020202-02	Water	2/10/2016 9:32	02/11/2016
MW-4	6020202-03	Water	2/10/2016 15:50	02/11/2016
MW-6	6020202-04	Water	2/10/2016 11:33	02/11/2016
MW-8	6020202-05	Water	2/10/2016 11:15	02/11/2016
MW-9	6020202-06	Water	2/09/2016 15:45	02/11/2016
MW-10	6020202-07	Water	2/10/2016 10:12	02/11/2016
MW-11	6020202-08	Water	2/09/2016 15:56	02/11/2016
MW-12	6020202-09	Water	2/10/2016 12:00	02/11/2016
MW-13	6020202-10	Water	2/10/2016 12:00	02/11/2016
PZ-A	6020202-11	Water	2/10/2016 14:45	02/11/2016
PZ-B	6020202-12	Water	2/10/2016 10:20	02/11/2016

CET # : 6020202
Project: BETA, Southbury

Analyte: Total Nitrogen [Calculated Analyte]

Analyst: Various
Matrix: Water

Laboratory ID	Client Sample ID	Result	RL	Units	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
6020202-01	MW-2	**14**	1.2	mg/L	1				
6020202-02	MW-3	**5.5**	1.2	mg/L	1				
6020202-03	MW-4	**2.8**	1.2	mg/L	1				
6020202-04	MW-6	ND	1.2	mg/L	1				
6020202-05	MW-8	**4.8**	1.2	mg/L	1				
6020202-06	MW-9	**12**	1.2	mg/L	1				
6020202-07	MW-10	**6.1**	1.2	mg/L	1				
6020202-08	MW-11	ND	1.2	mg/L	1				
6020202-09	MW-12	**98**	10	mg/L	10				
6020202-10	MW-13	**2.7**	1.2	mg/L	1				
6020202-11	PZ-A	**3.3**	1.2	mg/L	1				
6020202-12	PZ-B	**1.8**	1.2	mg/L	1				

Analyte: Nitrite as N [EPA 300.0]

Analyst: CC
Matrix: Water

Laboratory ID	Client Sample ID	Result	RL	Units	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
6020202-01	MW-2	ND	0.10	mg/L	1	B6B1116	02/11/2016	02/11/2016 14:08	
6020202-02	MW-3	ND	0.10	mg/L	1	B6B1116	02/11/2016	02/11/2016 14:24	
6020202-03	MW-4	ND	0.10	mg/L	1	B6B1116	02/11/2016	02/11/2016 14:41	
6020202-04	MW-6	ND	0.10	mg/L	1	B6B1116	02/11/2016	02/11/2016 14:57	
6020202-05	MW-8	ND	0.10	mg/L	1	B6B1116	02/11/2016	02/11/2016 16:04	
6020202-06	MW-9	ND	0.10	mg/L	1	B6B1116	02/11/2016	02/11/2016 15:14	
6020202-07	MW-10	ND	0.10	mg/L	1	B6B1116	02/11/2016	02/11/2016 16:20	
6020202-08	MW-11	ND	0.10	mg/L	1	B6B1116	02/11/2016	02/11/2016 15:30	
6020202-09	MW-12	ND	0.10	mg/L	1	B6B1116	02/11/2016	02/11/2016 16:37	
6020202-10	MW-13	ND	0.10	mg/L	1	B6B1116	02/11/2016	02/11/2016 16:53	
6020202-11	PZ-A	ND	0.10	mg/L	1	B6B1116	02/11/2016	02/11/2016 17:10	
6020202-12	PZ-B	ND	0.10	mg/L	1	B6B1116	02/11/2016	02/11/2016 17:26	

Analyte: Nitrate as N [EPA 300.0]

Analyst: CC

Matrix: Water

Laboratory ID	Client Sample ID	Result	RL	Units	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
6020202-01	MW-2	ND	0.10	mg/L	1	B6B1116	02/11/2016	02/11/2016 14:08	
6020202-02	MW-3	ND	0.10	mg/L	1	B6B1116	02/11/2016	02/11/2016 14:24	
6020202-03	MW-4	**2.8**	0.10	mg/L	1	B6B1116	02/11/2016	02/11/2016 14:41	
6020202-04	MW-6	**0.38**	0.10	mg/L	1	B6B1116	02/11/2016	02/11/2016 14:57	
6020202-05	MW-8	**0.10**	0.10	mg/L	1	B6B1116	02/11/2016	02/11/2016 16:04	
6020202-06	MW-9	ND	0.10	mg/L	1	B6B1116	02/11/2016	02/11/2016 15:14	
6020202-07	MW-10	**4.4**	0.10	mg/L	1	B6B1116	02/11/2016	02/11/2016 16:20	
6020202-08	MW-11	ND	0.10	mg/L	1	B6B1116	02/11/2016	02/11/2016 15:30	
6020202-09	MW-12	ND	0.10	mg/L	1	B6B1116	02/11/2016	02/11/2016 16:37	
6020202-10	MW-13	ND	0.10	mg/L	1	B6B1116	02/11/2016	02/11/2016 16:53	
6020202-11	PZ-A	ND	0.10	mg/L	1	B6B1116	02/11/2016	02/11/2016 17:10	
6020202-12	PZ-B	ND	0.10	mg/L	1	B6B1116	02/11/2016	02/11/2016 17:26	

Analyte: Ammonia as N [EPA 350.1]

Analyst: CC

Matrix: Water

Laboratory ID	Client Sample ID	Result	RL	Units	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
6020202-01	MW-2	**12**	0.10	mg/L	1	B6B1226	02/12/2016	02/12/2016 16:57	
6020202-02	MW-3	**4.5**	0.10	mg/L	1	B6B1226	02/12/2016	02/12/2016 16:57	
6020202-03	MW-4	ND	0.10	mg/L	1	B6B1226	02/12/2016	02/12/2016 16:57	
6020202-04	MW-6	**0.20**	0.10	mg/L	1	B6B1226	02/12/2016	02/12/2016 16:57	
6020202-05	MW-8	**0.24**	0.10	mg/L	1	B6B1226	02/12/2016	02/12/2016 16:57	
6020202-06	MW-9	**12**	0.10	mg/L	1	B6B1226	02/12/2016	02/12/2016 16:57	
6020202-07	MW-10	**0.13**	0.10	mg/L	1	B6B1226	02/12/2016	02/12/2016 16:57	
6020202-08	MW-11	ND	0.10	mg/L	1	B6B1226	02/12/2016	02/12/2016 16:57	
6020202-09	MW-12	ND	0.10	mg/L	1	B6B1226	02/12/2016	02/12/2016 16:57	
6020202-10	MW-13	**2.6**	0.10	mg/L	1	B6B1226	02/12/2016	02/12/2016 16:57	
6020202-11	PZ-A	**0.50**	0.10	mg/L	1	B6B1226	02/12/2016	02/12/2016 16:57	
6020202-12	PZ-B	**0.23**	0.10	mg/L	1	B6B1226	02/12/2016	02/12/2016 16:57	

Analyte: Phosphorous, Total [EPA 365.4]

Analyst: CC

Matrix: Water

Laboratory ID	Client Sample ID	Result	RL	Units	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
6020202-01	MW-2	**2.5**	0.10	mg/L	1	B6B1606	02/17/2016	02/17/2016 14:00	
6020202-02	MW-3	ND	0.10	mg/L	1	B6B1606	02/17/2016	02/17/2016 14:00	
6020202-03	MW-4	ND	0.10	mg/L	1	B6B1606	02/17/2016	02/17/2016 14:00	
6020202-04	MW-6	ND	0.10	mg/L	1	B6B1606	02/17/2016	02/17/2016 14:00	
6020202-05	MW-8	**29**	1.0	mg/L	10	B6B1606	02/17/2016	02/17/2016 14:00	
6020202-06	MW-9	**0.36**	0.10	mg/L	1	B6B1606	02/17/2016	02/17/2016 14:00	
6020202-07	MW-10	**0.87**	0.10	mg/L	1	B6B1606	02/17/2016	02/17/2016 14:00	
6020202-08	MW-11	ND	0.10	mg/L	1	B6B1606	02/17/2016	02/17/2016 14:00	
6020202-09	MW-12	**31**	1.0	mg/L	10	B6B1606	02/17/2016	02/17/2016 14:00	
6020202-10	MW-13	ND	0.10	mg/L	1	B6B1606	02/17/2016	02/17/2016 14:00	
6020202-11	PZ-A	**0.32**	0.10	mg/L	1	B6B1606	02/17/2016	02/17/2016 14:00	
6020202-12	PZ-B	ND	0.10	mg/L	1	B6B1606	02/17/2016	02/17/2016 14:00	

Analyte: Orthophosphate as P [SM 4500-P E]

Analyst: CC

Matrix: Water

Laboratory ID	Client Sample ID	Result	RL	Units	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
6020202-01	MW-2	**0.74**	0.10	mg/L	1	B6B1131	02/11/2016	02/11/2016 15:11	
6020202-02	MW-3	**0.11**	0.10	mg/L	1	B6B1131	02/11/2016	02/11/2016 15:11	
6020202-03	MW-4	ND	0.10	mg/L	1	B6B1131	02/11/2016	02/11/2016 15:11	
6020202-04	MW-6	ND	0.10	mg/L	1	B6B1131	02/11/2016	02/11/2016 15:11	
6020202-05	MW-8	**0.85**	0.10	mg/L	1	B6B1131	02/11/2016	02/11/2016 15:11	
6020202-06	MW-9	**0.33**	0.10	mg/L	1	B6B1131	02/11/2016	02/11/2016 15:11	
6020202-07	MW-10	**0.13**	0.10	mg/L	1	B6B1131	02/11/2016	02/11/2016 15:11	
6020202-08	MW-11	**0.16**	0.10	mg/L	1	B6B1131	02/11/2016	02/11/2016 15:11	
6020202-09	MW-12	ND	0.10	mg/L	1	B6B1131	02/11/2016	02/11/2016 15:11	
6020202-10	MW-13	ND	0.10	mg/L	1	B6B1131	02/11/2016	02/11/2016 15:11	
6020202-11	PZ-A	**0.13**	0.10	mg/L	1	B6B1131	02/11/2016	02/11/2016 15:11	
6020202-12	PZ-B	ND	0.10	mg/L	1	B6B1131	02/11/2016	02/11/2016 15:11	

Analyte: Total Kjeldahl Nitrogen (TKN) [EPA 351.2]

Analyst: CC

Matrix: Water

Laboratory ID	Client Sample ID	Result	RL	Units	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
6020202-01	MW-2	**14**	1.0	mg/L	1	B6B1607	02/17/2016	02/17/2016 17:21	
6020202-02	MW-3	**5.5**	1.0	mg/L	1	B6B1607	02/17/2016	02/17/2016 17:21	
6020202-03	MW-4	ND	1.0	mg/L	1	B6B1607	02/17/2016	02/17/2016 17:21	
6020202-04	MW-6	ND	1.0	mg/L	1	B6B1607	02/17/2016	02/17/2016 17:21	
6020202-05	MW-8	**4.7**	1.0	mg/L	1	B6B1607	02/17/2016	02/17/2016 17:21	
6020202-06	MW-9	**12**	1.0	mg/L	1	B6B1607	02/17/2016	02/17/2016 17:21	
6020202-07	MW-10	**1.7**	1.0	mg/L	1	B6B1607	02/17/2016	02/17/2016 17:21	
6020202-08	MW-11	ND	1.0	mg/L	1	B6B1607	02/17/2016	02/17/2016 17:21	
6020202-09	MW-12	**98**	10	mg/L	10	B6B1607	02/17/2016	02/17/2016 17:21	
6020202-10	MW-13	**2.7**	1.0	mg/L	1	B6B1607	02/17/2016	02/17/2016 17:21	
6020202-11	PZ-A	**3.3**	1.0	mg/L	1	B6B1607	02/17/2016	02/17/2016 17:21	
6020202-12	PZ-B	**1.8**	1.0	mg/L	1	B6B1607	02/17/2016	02/17/2016 17:21	

Analyte: pH [SM 4500-H B]

Analyst: KP

pH analyzed in lab

Matrix: Water

Laboratory ID	Client Sample ID	Result	RL	Units	Dilution	Batch	Prepared	Date/Time Analyzed	Notes
6020202-01	MW-2	**6.59**	NA	pH Units	1	B6B1204	02/11/2016	02/11/2016 16:16	
6020202-02	MW-3	**6.62**	NA	pH Units	1	B6B1204	02/11/2016	02/11/2016 16:17	
6020202-03	MW-4	**6.91**	NA	pH Units	1	B6B1204	02/11/2016	02/11/2016 16:19	
6020202-04	MW-6	**8.02**	NA	pH Units	1	B6B1204	02/11/2016	02/11/2016 16:21	
6020202-05	MW-8	**7.97**	NA	pH Units	1	B6B1204	02/11/2016	02/11/2016 16:22	
6020202-06	MW-9	**6.77**	NA	pH Units	1	B6B1204	02/11/2016	02/11/2016 16:25	
6020202-07	MW-10	**6.59**	NA	pH Units	1	B6B1204	02/11/2016	02/11/2016 16:27	
6020202-08	MW-11	**6.81**	NA	pH Units	1	B6B1204	02/11/2016	02/11/2016 16:29	
6020202-09	MW-12	**6.43**	NA	pH Units	1	B6B1204	02/11/2016	02/11/2016 16:33	
6020202-10	MW-13	**6.98**	NA	pH Units	1	B6B1204	02/11/2016	02/11/2016 16:40	
6020202-11	PZ-A	**10.0**	NA	pH Units	1	B6B1204	02/11/2016	02/11/2016 16:46	
6020202-12	PZ-B	**10.3**	NA	pH Units	1	B6B1204	02/11/2016	02/11/2016 16:47	

QUALITY CONTROL SECTION

Batch B6B1116 - EPA 300.0

Analyte	Result (mg/L)	RL (mg/L)	Spike Level	Source Result	% Rec	% Rec Limits	RPD	RPD Limit	Notes
Blank (B6B1116-BLK1)					Prepared: 2/11/2016 Analyzed: 2/11/2016				
Nitrate as N	ND	0.10							
Nitrite as N	ND	0.10							
LCS (B6B1116-BS1)					Prepared: 2/11/2016 Analyzed: 2/11/2016				
Nitrate as N	4.9	0.10	5.000		98.9	80 - 120			
Nitrite as N	5.1	0.10	5.000		103	80 - 120			

Batch B6B1131 - SM 4500-P E

Analyte	Result (mg/L)	RL (mg/L)	Spike Level	Source Result	% Rec	% Rec Limits	RPD	RPD Limit	Notes
Blank (B6B1131-BLK1)					Prepared: 2/11/2016 Analyzed: 2/11/2016				
Orthophosphate as P	ND	0.10							
LCS (B6B1131-BS1)					Prepared: 2/11/2016 Analyzed: 2/11/2016				
Orthophosphate as P	0.355	0.10	0.326		109	80 - 120			
Duplicate (B6B1131-DUP1)		**Source: 6020202-10**			Prepared: 2/11/2016 Analyzed: 2/11/2016				
Orthophosphate as P	ND	0.10		ND				20	

Batch B6B1204 - SM 4500-H B

Analyte	Result (pH Units)	RL (pH Units)	Spike Level	Source Result	% Rec	% Rec Limits	RPD	RPD Limit	Notes
Blank (B6B1204-BLK1)					Prepared: 2/11/2016 Analyzed: 2/11/2016				
pH	6.42								
Duplicate (B6B1204-DUP1)		**Source: 6020202-12**			Prepared: 2/11/2016 Analyzed: 2/11/2016				
pH	10.4			10.3			0.0967	5	

CET # : 6020202

Project: BETA, Southbury

Batch B6B1226 - EPA 350.1

Analyte	Result (mg/L)	RL (mg/L)	Spike Level	Source Result	% Rec	% Rec Limits	RPD	RPD Limit	Notes
Blank (B6B1226-BLK1)					Prepared: 2/12/2016 Analyzed: 2/12/2016				
Ammonia as N	ND	0.10							
LCS (B6B1226-BS1)					Prepared: 2/12/2016 Analyzed: 2/12/2016				
Ammonia as N	5.2	0.10	5.000		104	80 - 120			

CET # : 6020202
Project: BETA, Southbury

Batch B6B1606 - EPA 365.4

Analyte	Result (mg/L)	RL (mg/L)	Spike Level	Source Result	% Rec	% Rec Limits	RPD	RPD Limit	Notes
Blank (B6B1606-BLK1)					Prepared: 2/17/2016 Analyzed: 2/17/2016				
Phosphorous, Total	ND	0.10							
LCS (B6B1606-BS1)					Prepared: 2/17/2016 Analyzed: 2/17/2016				
Phosphorous, Total	0.530	0.10	0.509		104	80 - 120			
Duplicate (B6B1606-DUP1)		**Source: 6020202-01**			Prepared: 2/17/2016 Analyzed: 2/17/2016				
Phosphorous, Total	2.32	0.10		2.50			7.47	20	
Matrix Spike (B6B1606-MS1)		**Source: 6020202-01**			Prepared: 2/17/2016 Analyzed: 2/17/2016				
Phosphorous, Total	2.96	0.10	0.509	2.50	90.5	80 - 120			

Batch B6B1607 - EPA 351.2

Analyte	Result (mg/L)	RL (mg/L)	Spike Level	Source Result	% Rec	% Rec Limits	RPD	RPD Limit	Notes
Blank (B6B1607-BLK1)					Prepared: 2/17/2016 Analyzed: 2/17/2016				
Total Kjeldahl Nitrogen (TKN)	ND	1.0							
LCS (B6B1607-BS1)					Prepared: 2/17/2016 Analyzed: 2/17/2016				
Total Kjeldahl Nitrogen (TKN)	5.43	1.0	5.000		109	80 - 120			
Duplicate (B6B1607-DUP1)		**Source: 6020202-01**			Prepared: 2/17/2016 Analyzed: 2/17/2016				
Total Kjeldahl Nitrogen (TKN)	14.8	1.0		14.0			5.56	20	
Matrix Spike (B6B1607-MS1)		**Source: 6020202-01**			Prepared: 2/17/2016 Analyzed: 2/17/2016				
Total Kjeldahl Nitrogen (TKN)	19.6	1.0	5.000	14.0	112	80 - 120			

Questions related to this report should be directed to David Ditta, Timothy Fusco, or Robert Blake at 203-377-9984.

Sincerely,

David Ditta
Laboratory Director

Report Comments:

Sample Result Flags:
E- The result is estimated, above the calibration range.
H- The surrogate recovery is above the control limits.
L- The surrogate recovery is below the control limits.
B- The compound was detected in the laboratory blank.
P- The Relative Percent Difference (RPD) of dual column analyses exceeds 40%.
D- The RPD between the sample and the sample duplicate is high. Sample Homogenity may be a problem.
+- The Surrogate was diluted out.
*C1- The Continuing Calibration did not meet method specifications and was biased low for this analyte. Increased uncertainty is associated with the reported value which is likely to be biased low.
*C2- The Continuing Calibration did not meet method specifications and was biased high for this analyte. Increased uncertainty is associated with the reported value which is likely to be biased high.
*F1- The Laboratory Control Sample recovery is outside of control limits. Reported value for this analyte is likely to be biased on the low side.
*F2- The Laboratory Control Sample recovery is outside of control limits. Reported value for this analyte is likely to be biased on the high side.
I- The Analyte exceeds %RSD limits for the Initial Calibration. This is a non-directional bias.

All results met standard operating procedures unless indicated by a data qualifier next to a sample result, or a narration in the QC report.

Complete Environmental Testing is only responsible for the certified testing and is not directly responsible for the integrity of the sample before laboratory receipt.

ND is None Detected at the specified detection limit
All analyses were performed in house unless a Reference Laboratory is listed.
Samples will be disposed of 30 days after the report date.

80 Lupes Drive
Stratford, CT 06615

COMPLETE ENVIRONMENTAL TESTING, INC.

Tel: (203) 377-9984
Fax: (203) 377-9952
email: cet1@cetlabs.com

Quality Control Definitions and Abbreviations

Internal Standard (IS)	An Analyte added to each sample or sample extract. An internal standard is used to monitor retention time, calculate relative response, and quantify analytes of interest.
Surrogate Recovery	The % recovery for non-tarer organic compounds that are spiked into all samples. Used to determine method performance.
Continuing Calibration	An analytical standard analyzed with each set of samples to verify initial calibration of the system.
Batch	Samples that are analyzed together with the same method, sequence and lot of reagents within the same time period.
ND	Not detected
RL	Reporting Limit
Dilution	Multiplier added to detection levels (MDL) and/or sample results due to interferences and/or high concentration of target compounds.
Duplicate	Result from the duplicate analysis of a sample.
Result	Amount of analyte found in a sample.
Spike Level	Amount of analyte added to a sample
Matrix Spike Result	Amount of analyte found including amount that was spiked.
Matrix Spike Dup	Amount of analyte foun in duplicate spikes including amount that was spike.
Matrix Spike % Recovery	% Recovery of spiked amount in sample.
Matrix Spike Dup % Recovery	% Recovery of spiked duplicate amount in sample.
RPD	Relative percent difference between Matrix Spike and Matrix Spike Duplicate.
Blank	Method Blank that has been taken through all steps of the analysis.
LCS % Recovery	Laboratory Control Sample percent recovery. The amount of analyte recovered from a fortified sample.
Recovery Limits	A range within which specified measurements results must fall to be compliant.
CC	Calibration Verification

Flags:

- H- Recovery is above the control limits
- L- Recovery is below the control limits
- B- Compound detected in the Blank
- P- RPD of dual column results exceeds 40%
- #- Sample result too high for accurate spike recovery.

Connecticut Laboratory Certification PH0116
Massachussets Laboratory Certification M-CT903

New York Certification 11982
Rhode Island Certification 199

REASONABLE CONFIDENCE PROTOCOL
LABORATORY ANALYSIS QA/QC CERTIFICATION FORM

Laboratory Name: Complete Environmental Testing, Inc.

Client: Leggette, Brashears & Graham

Project Location: BETA, Southbury

Project Number:

Laboratory Sample ID(s):
6020202-01 thru 6020202-12

Sample Date(s):
02/09/2016, 02/10/2016

List RCP Methods Used:
,

CET #: 6020202

1	For each analytical method referenced in this laboratory report package, were all specified QA/QC performance criteria followed, including the requirement to explain any criteria falling outside of acceptable guidelines, as specified in the CTDEP method-specific Reasonable Confidence Protocol documents?	☑ Yes ☐ No
1A	Were the method specified preservation and holding time requirements met?	☑ Yes ☐ No
1B	VPH and EPH Methods only: Was the VPH and EPH method conducted without significant modifications (see Section 11.3 of respective RCP methods)?	☐ Yes ☐ No ☑ N/A
2	Were all samples received by the laboratory in a condition consistent with that described on the associated chain-of-custody document(s)?	☑ Yes ☐ No
3	Were samples received at an appropriate temperature (< 6 degrees C.)?	☑ Yes ☐ No ☐ N/A
4	Were all QA/QC performance criteria specified in the CT DEP Reasonable Confidence Protocol documents achieved?	☑ Yes ☐ No
5a	a) Were reporting limits specified or referenced on the chain-of-custody?	☑ Yes ☐ No
5b	b) Were these reporting limits met?	☑ Yes ☐ No
6	For each analytical method referenced in this laboratory report package, were results reported for all consituents identified in the method-specific analyte lists presented in the Reasonable Confidence Protocol documents?	☑ Yes ☐ No
7	Are project specific matrix spikes and laboratory duplicates included with this data set?	☑ Yes ☐ No

Notes: For all questions to which the response was "No" (with the exception of question #7), additional information must be provided in an attached narrative. If the answer to question #1, #1A, or #1B is "No", the data package does not meet the requirements for "Reasonable Confidence."
This form may not be altered and all questions must be answered.

I, the undersigned, attest under the pains and penalties of perjury that, to the best of my knowledge and belief and based upon my personal inquiry of those responsible for providing the information contained in this analytical report, such information is accurate and complete.

Authorized Signature: [signature] **Position: Laboratory Director**

Printed Name: David Ditta **Date: 02/18/2016**

Name of Laboratory: Complete Environmental Testing, Inc.

This certification form is to be used for RCP methods only.

QC Batch/Sequence Report

Batch	Sequence	CET ID	Sample ID	Specific Method	Matrix	Collection Date
[CALC]		6020202-01	MW-2	Calculated Analyte	Water	02/10/2016
[CALC]		6020202-02	MW-3	Calculated Analyte	Water	02/10/2016
[CALC]		6020202-03	MW-4	Calculated Analyte	Water	02/10/2016
[CALC]		6020202-04	MW-6	Calculated Analyte	Water	02/10/2016
[CALC]		6020202-05	MW-8	Calculated Analyte	Water	02/10/2016
[CALC]		6020202-06	MW-9	Calculated Analyte	Water	02/09/2016
[CALC]		6020202-07	MW-10	Calculated Analyte	Water	02/10/2016
[CALC]		6020202-08	MW-11	Calculated Analyte	Water	02/09/2016
[CALC]		6020202-09	MW-12	Calculated Analyte	Water	02/10/2016
[CALC]		6020202-10	MW-13	Calculated Analyte	Water	02/10/2016
[CALC]		6020202-11	PZ-A	Calculated Analyte	Water	02/10/2016
[CALC]		6020202-12	PZ-B	Calculated Analyte	Water	02/10/2016
B6B1116		6020202-01	MW-2	EPA 300.0	Water	02/10/2016
B6B1116		6020202-02	MW-3	EPA 300.0	Water	02/10/2016
B6B1116		6020202-03	MW-4	EPA 300.0	Water	02/10/2016
B6B1116		6020202-04	MW-6	EPA 300.0	Water	02/10/2016
B6B1116		6020202-05	MW-8	EPA 300.0	Water	02/10/2016
B6B1116		6020202-06	MW-9	EPA 300.0	Water	02/09/2016
B6B1116		6020202-07	MW-10	EPA 300.0	Water	02/10/2016
B6B1116		6020202-08	MW-11	EPA 300.0	Water	02/09/2016
B6B1116		6020202-09	MW-12	EPA 300.0	Water	02/10/2016
B6B1116		6020202-10	MW-13	EPA 300.0	Water	02/10/2016
B6B1116		6020202-11	PZ-A	EPA 300.0	Water	02/10/2016
B6B1116		6020202-12	PZ-B	EPA 300.0	Water	02/10/2016
B6B1226		6020202-01	MW-2	EPA 350.1	Water	02/10/2016
B6B1226		6020202-02	MW-3	EPA 350.1	Water	02/10/2016
B6B1226		6020202-03	MW-4	EPA 350.1	Water	02/10/2016
B6B1226		6020202-04	MW-6	EPA 350.1	Water	02/10/2016
B6B1226		6020202-05	MW-8	EPA 350.1	Water	02/10/2016
B6B1226		6020202-06	MW-9	EPA 350.1	Water	02/09/2016
B6B1226		6020202-07	MW-10	EPA 350.1	Water	02/10/2016
B6B1226		6020202-08	MW-11	EPA 350.1	Water	02/09/2016
B6B1226		6020202-09	MW-12	EPA 350.1	Water	02/10/2016
B6B1226		6020202-10	MW-13	EPA 350.1	Water	02/10/2016
B6B1226		6020202-11	PZ-A	EPA 350.1	Water	02/10/2016
B6B1226		6020202-12	PZ-B	EPA 350.1	Water	02/10/2016
B6B1607		6020202-01	MW-2	EPA 351.2	Water	02/10/2016
B6B1607		6020202-02	MW-3	EPA 351.2	Water	02/10/2016
B6B1607		6020202-03	MW-4	EPA 351.2	Water	02/10/2016
B6B1607		6020202-04	MW-6	EPA 351.2	Water	02/10/2016
B6B1607		6020202-05	MW-8	EPA 351.2	Water	02/10/2016
B6B1607		6020202-06	MW-9	EPA 351.2	Water	02/09/2016
B6B1607		6020202-07	MW-10	EPA 351.2	Water	02/10/2016
B6B1607		6020202-08	MW-11	EPA 351.2	Water	02/09/2016
B6B1607		6020202-09	MW-12	EPA 351.2	Water	02/10/2016
B6B1607		6020202-10	MW-13	EPA 351.2	Water	02/10/2016
B6B1607		6020202-11	PZ-A	EPA 351.2	Water	02/10/2016
B6B1607		6020202-12	PZ-B	EPA 351.2	Water	02/10/2016

B6B1606	6020202-01	MW-2	EPA 365.4	Water	02/10/2016
B6B1606	6020202-02	MW-3	EPA 365.4	Water	02/10/2016
B6B1606	6020202-03	MW-4	EPA 365.4	Water	02/10/2016
B6B1606	6020202-04	MW-6	EPA 365.4	Water	02/10/2016
B6B1606	6020202-05	MW-8	EPA 365.4	Water	02/10/2016
B6B1606	6020202-06	MW-9	EPA 365.4	Water	02/09/2016
B6B1606	6020202-07	MW-10	EPA 365.4	Water	02/10/2016
B6B1606	6020202-08	MW-11	EPA 365.4	Water	02/09/2016
B6B1606	6020202-09	MW-12	EPA 365.4	Water	02/10/2016
B6B1606	6020202-10	MW-13	EPA 365.4	Water	02/10/2016
B6B1606	6020202-11	PZ-A	EPA 365.4	Water	02/10/2016
B6B1606	6020202-12	PZ-B	EPA 365.4	Water	02/10/2016
B6B1204	6020202-01	MW-2	SM 4500-H B	Water	02/10/2016
B6B1204	6020202-02	MW-3	SM 4500-H B	Water	02/10/2016
B6B1204	6020202-03	MW-4	SM 4500-H B	Water	02/10/2016
B6B1204	6020202-04	MW-6	SM 4500-H B	Water	02/10/2016
B6B1204	6020202-05	MW-8	SM 4500-H B	Water	02/10/2016
B6B1204	6020202-06	MW-9	SM 4500-H B	Water	02/09/2016
B6B1204	6020202-07	MW-10	SM 4500-H B	Water	02/10/2016
B6B1204	6020202-08	MW-11	SM 4500-H B	Water	02/09/2016
B6B1204	6020202-09	MW-12	SM 4500-H B	Water	02/10/2016
B6B1204	6020202-10	MW-13	SM 4500-H B	Water	02/10/2016
B6B1204	6020202-11	PZ-A	SM 4500-H B	Water	02/10/2016
B6B1204	6020202-12	PZ-B	SM 4500-H B	Water	02/10/2016
B6B1131	6020202-01	MW-2	SM 4500-P E	Water	02/10/2016
B6B1131	6020202-02	MW-3	SM 4500-P E	Water	02/10/2016
B6B1131	6020202-03	MW-4	SM 4500-P E	Water	02/10/2016
B6B1131	6020202-04	MW-6	SM 4500-P E	Water	02/10/2016
B6B1131	6020202-05	MW-8	SM 4500-P E	Water	02/10/2016
B6B1131	6020202-06	MW-9	SM 4500-P E	Water	02/09/2016
B6B1131	6020202-07	MW-10	SM 4500-P E	Water	02/10/2016
B6B1131	6020202-08	MW-11	SM 4500-P E	Water	02/09/2016
B6B1131	6020202-09	MW-12	SM 4500-P E	Water	02/10/2016
B6B1131	6020202-10	MW-13	SM 4500-P E	Water	02/10/2016
B6B1131	6020202-11	PZ-A	SM 4500-P E	Water	02/10/2016
B6B1131	6020202-12	PZ-B	SM 4500-P E	Water	02/10/2016

6020202

COMPLETE ENVIRONMENTAL TESTING, INC.

CHAIN OF CUSTODY

Volatile Soils Only:

Date and Time in Freezer
Client:
CET:

80 Lupes Drive
Stratford, CT 06615
Tel: (203) 377-9984
Fax: (203) 377-9952
e-mail: cet1@cetlabs.com
Bottle Request e-mail: bottleorders@cetlabs.com

Matrix: A=Air, S=Soil, W=Water, DW=Drinking Water, C=Cassette, Solid, Wipe, Other (Specify)

Turnaround Time ** (check one)

Organics / Metals (check all that apply) / Additional Analysis

Sample ID	Sample Depths (Units)	Collection Date/Time	Matrix	Same Day *	Next Day *	2-3 Days *	Std (5-7 Days)	8260 CT List	8260 Aromatics	8260 Halogens	624	CT ETPH	8270 CT List	8270 PNAs	PCBs	Pesticides	13 Priority Poll	8 RCRA	TOTAL	TCLP	SPLP	Field Filtered	Lab To Filter	Ammonia,	Nitrate,	Nitrite,	TKN,	Nitrogen, pH,	phosphate,	total phosphorus	TOTAL # OF CONT.	NOTE #
MW-2		2/10/16@1017	W				X																	X	X	X	X	X	X	X	2	
MW-3		932					X																	X	X	X	X	X	X	X	2	
MW-4		1550					X																	X	X	X	X	X	X	X	2	
MW-6		1133					X																	X	X	X	X	X	X	X	2	
MW-8		↓ 1115					X																	X	X	X	X	X	X	X	2	
MW-9		2/9/16@1545					X																	X	X	X	X	X	X	X	2	
MW-10		2/10/16@102					X																	X	X	X	X	X	X	X	2	
MW-11		2/9/16@1556					X																	X	X	X	X	X	X	X	2	
MW-12		2/10/16@1200					X																	X	X	X	X	X	X	X	2	
MW-13		↓	↓				X																	X	X	X	X	X	X	X	2	

PRESERVATIVE (Cl–HCl, N–HNO_3, S–H_2SO_4, Na–NaOH, C=Cool, O–Other)

CONTAINER TYPE (P–Plastic, G–Glass, V–Vial, O–Other) 20

Soil VOCs Only (M=MeOH B=Sodium Bisulfate W=Water F=Empty Vial E=Encore)

RELINQUISHED BY:	DATE/TIME	RECEIVED BY:
[signature]	2/11/16 1036	[signature]
[signature]	2/11/16 1055	[signature]

NOTES:

Client / Reporting Information

Company Name: LBG Inc.

Address: 4 Research Dr. Suite 204

City: Shelton State: CT Zip: 06484

Report To: Tunde Sandor E-mail: tsandor@lbgct.com

Phone #: 2039298555 Fax #:

Project Information

Project Contact: Tunde Sandor PO #:

Project: BETA Project #:

Location: Southbury, CT Collector(s): PL/JP

QA/QC ☐ Std ☐ Site Specific (MS/MSD) * ☒ RCP Pkg * ☐ DQAW *

Data Report ☒ PDF ☐ EDD - Specify Format ☐ Other

RSR Reporting Limits (check one) ☒ GA ☐ GB ☐ SWP ☐ Other

Laboratory Certification Needed (check one) ☒ CT ☐ NY ☐ RI ☐ MA

Temp Upon Receipt 3.0 °C Evidence of Cooling: Y N

SHEET 1 OF 2

* Additional charge may apply. ** TAT begins when the samples are received at the Lab and all issues are resolved. TAT for samples received after 3 p.m. will start on the next business day.

REV. 06/14

6020202

COMPLETE ENVIRONMENTAL TESTING, INC.

CHAIN OF CUSTODY

Volatile Soils Only:
Date and Time in Freezer
Client:
CET:

80 Lupes Drive
Stratford, CT 06615
Tel: (203) 377-9984
Fax: (203) 377-9952
e-mail: cet1@cetlabs.com
Bottle Request e-mail: bottleorders@cetlabs.com

Matrix: A=Air, S=Soil, W=Water, DW=Drinking Water, C=Cassette, Solid, Wipe, Other (Specify)

Turnaround Time ** (check one)

Organics: 8260 CT List, 8260 Aromatics, 8260 Halogens, 624, CT ETPH, 8270 CT List, 8270 PNAs, PCBs, Pesticides
Metals (check all that apply): 13 Priority Poll, 8 RCRA, TOTAL, TCLP, SPLP, Field Filtered, Lab To Filter
Additional Analysis: Ammonia, Nitrate, Nitrite, TKN, Nitrogen, pH, phosphate, total phosphorus

Sample ID	Sample Depths (Units)	Collection Date/Time	Matrix	Same Day *	Next Day *	2-3 Days *	Std (5-7 Days)	Ammonia	Nitrate	Nitrite	TKN	Nitrogen	pH, phosphate	total phosphorus	TOTAL # OF CONT.	NOTE #
PZ-A		2/10/16 @ 1445	W				X	X	X	X	X	X	X	X	2	
PZ-B		↓ 1020	↓				X	X	X	X	X	X	X	X	2	

PRESERVATIVE (Cl–HCl, N–HNO_3, S–H_2SO_4, Na–NaOH, C=Cool, O–Other) 4
CONTAINER TYPE (P–Plastic, G–Glass, V–Vial, O–Other)
Soil VOCs Only (M=MeOH B=Sodium Bisulfate W=Water F=Empty Vial E=Encore)

RELINQUISHED BY:	DATE/TIME	RECEIVED BY:
[signature]	2/11/16 1030	R. B[illegible]
[signature]	2/11/16 1051	[signature]

NOTES:

Client / Reporting Information

Company Name: LBG Inc
Address: 4 Research Dr. Suite 204
City: Shelton State: CT Zip: 06484
Report To: Tunde Sandor E-mail: tsandor@lbgct.com
Phone #: 2039298555 Fax #:

Project Information

Project Contact: Tunde Sandor PO #:
Project: BETA Project #:
Location: Southbury, CT Collector(s): PL/JP
QA/QC ☐ Std ☐ Site Specific (MS/MSD) * ☒ RCP Pkg * ☐ DQAW *
Data Report ☒ PDF ☐ EDD - Specify Format ☐ Other
RSR Reporting Limits (check one) ☒ GA ☐ GB ☐ SWP ☐ Other
Laboratory Certification Needed (check one) ☒ CT ☐ NY ☐ RI ☐ MA
Temp Upon Receipt 3.1 °C Evidence of Cooling: Y N
SHEET 2 OF 2

* Additional charge may apply. ** TAT begins when the samples are received at the Lab and all issues are resolved. TAT for samples received after 3 p.m. will start on the next business day.

REV. 06/14