# SEPTIC SUITABILITY REPORT

FOR THE

## GOODWIN ELEMENTARY SCHOOL SITE
## 321 HUNTING LODGE ROAD
## MANSFIELD, CT

PREPARED FOR

## TOWN OF MANSFIELD
## FACILITIES MANAGEMENT DEPARTMENT

## APRIL 19, 2012

ANCHOR
ENGINEERING SERVICES, INC.

41 Sequin Drive
Glastonbury, CT 06033
T: 860.633.8770
F: 860.633.5971

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## EXECUTIVE SUMMARY

The Town of Mansfield is exploring the feasibility of consolidating the separate elementary schools in Town into two (2) buildings, one of which will be constructed on the Goodwin Elementary School Site located at 321 Hunting Lodge Road. This consolidated school will accommodate up to 375 elementary school students, faculty and staff.

Anchor Engineering Services, Inc. was retained by the Town of Mansfield Facilities Management Department to analyze the septic suitability of the subject site. This analysis was performed through data collection, field testing and preliminary subsurface sewage disposal system (SSDS) calculations.

Preliminary soil testing was performed to determine whether the existing soils have sufficient capacity to carry the septic tank effluent into subsurface soils. The results of this preliminary testing along with estimates of the proposed sewage flow were utilized to evaluate the suitability of a subsurface sewage disposal system on this site. The following parameters indicate that the site has adequate hydraulic capacity to accommodate the SSDS.

- Percolation Rate = 5.1 to 10.0 min./in.
- Depth to Restrictive Layer = 64 inches
- School Discharge (Q) = 4,125 gpd (375 Students)
- Effective Leaching Area (ELA) = 3,406.25 sq ft

Based on our observations of the site and the surrounding area, including topography, soils, groundwater depths and etc., it appears that the site can adequately accept the wastewater flows of a 375 student elementary school. This opinion is based upon the data obtained and preliminary calculations performed as part of this feasibility study. As stated in the following report, additional investigations and calculations will be necessary as part of the final design in order to fully satisfy the requirements of the CTDPH.

ANCHOR
ENGINEERING SERVICES, INC.
41 Sequin Drive
Glastonbury, CT 06033
Phone: (860) 633-8770
Fax: (860) 633-5971
www.anchorengr.com
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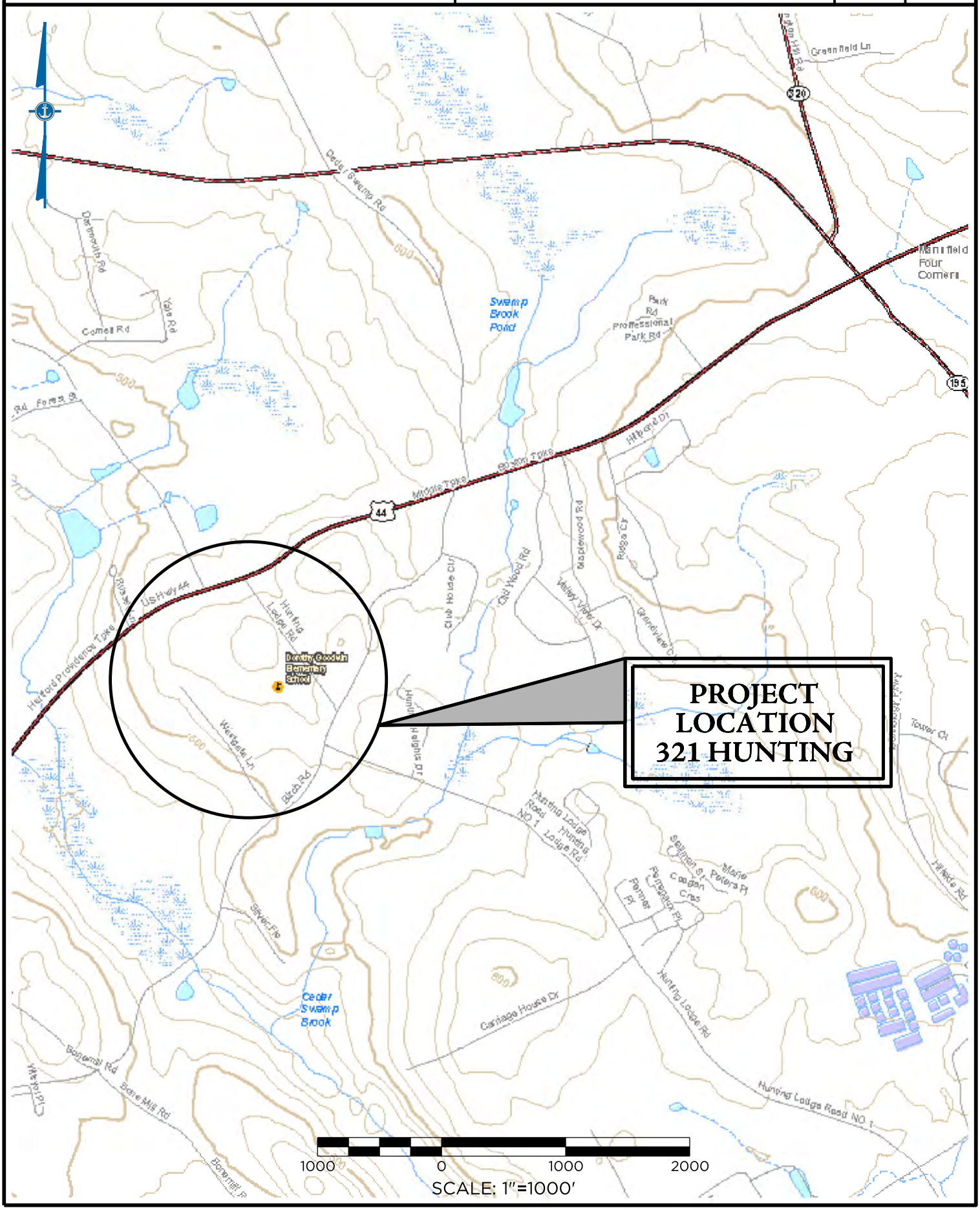
# SITE LOCATION MAP

GOODWIN ELEMENTARY SCHOOL
321 HUNTING LODGE ROAD

FIGURE 1

| PROJECT | DATE |
|---|---|
| 486-05 | 4/18/12 |



# INTRODUCTION

The Town of Mansfield is exploring the feasibility of consolidating the separate elementary schools in Town into two (2) buildings, one of which will be constructed on the Goodwin Elementary School Site located at 321 Hunting Lodge Road. This consolidated school will accommodate up to 375 elementary school students, faculty and staff.

Anchor Engineering Services, Inc. has been retained by the Town of Mansfield Facilities Management Department to analyze the septic suitability of the subject site. This analysis generally consists of the following:

1. Data collection
2. Soil testing
3. Sewage flow estimates for an 375 student elementary school
4. Evaluation of septic suitability

The following report has been prepared to summarize the work completed and provides an opinion of the septic suitability of the site based upon the information compiled to date.

# DATA COLLECTION

Anchor Engineering collected data on the subject parcel through the compilation of available public information and field investigations.

## COMPILATION OF EXISTING INFORMATION

The following information was obtained from public sources listed below:

- Connecticut Department of Energy & Environmental Protection (GIS data)
  - Natural Diversity Database
- USDA Natural Resource Conservation Service
  - Major Soil Types
  - Engineering Properties of Identified Soils
- Eastern Highlands Health District, Mansfield Office
  - 1989 result analysis summary of existing subsurface sewage disposal systems
- Town of Mansfield
  - Additions and Alterations of the Mansfield Public Schools 2/8/90.
  - Mansfield Schools Well Location Schematics 6/6/05
  - Well Pump House Additions, Site Plan ,Goodwin School 2/8/06
  - Dorothy Goodwin Elem. School Schematics, The Lawrence Associates 2/9/11

Based upon a review of the information obtained from the above mentioned sources, it was determined that additional field investigations were necessary to determine the septic suitability of the site. The testing methods described below were selected to allow for classification of existing soils and the determination of groundwater, mottling, ledge and/or other restrictive depths.

# SOIL TESTING

## DEEP TEST PITS

Six (6) deep hole observation test pits were excavated throughout the site by Town Of Mansfield Public Works Department and witnessed by Anchor Engineering, CTDPH, Eastern Highlands Health District and Town of Mansfield Facility Maintenance staff. The test pits were performed to examine the soil at close range and identify characteristics such as color, firmness, particle size and moisture content and to record the presence of restrictive layers.

The test pits ranged in depth from 90" to 138". Five of the six test pits had no apparent restrictive layers, such as ledge, hardpan or seasonally high groundwater. Mottling (high seasonal groundwater) was observed in one of the test pits. In general, the observed soils consisted of tan/gray fine to medium sand with some gravel and cobles and overlain by topsoil and loam or topsoil and fill depending on the location of the pit within the athletic fields or woods. These observed soil types are consistent with NRCS published soil mapping, which indicates the presence of Sutton Fine Sandy Loam or Canton and Charlton Soils in the vicinity of the site. The deep test pit data logs can be found in Appendix B.

Canton and Charlton soils generally consist of coarse-loamy over sandy gravelly melt-out till derived from granite and/or schist and/or gneiss and are well drained, with a hydraulic conductivity ranging from 4.0 to 11.9 feet/day within the underlying soil strata. Observations made in the field during deep hole observation pit testing generally confirm the presence of soils consistent with the Canton and Charlton Series.

Sutton soils generally consist of coarse-loamy melt-out derived from granite and/or schist and/or gneiss and are moderately well drained, with a hydraulic conductivity ranging from 1.1 to 11.9 feet/day within the underlying soil strata. Observations made in the field during deep hole observation pit testing generally confirm the presence of soils consistent with the Sutton Series.

## PERCOLATION TEST DATA

Two in-situ percolation tests were performed at the site by Anchor Engineering on April 2, 2012. A summary of results is provided below. Refer to Appendix B expanded data information.

| | **Test P-102G** | **Test P-104G** |
|---|---|---|
| **Percolation Rate** | 5.1 to 10.0 Min./In. | 5.1 to 10.0 Min./In. |

**Table No. 1 – Percolation Test Result**

## FALLING HEAD TEST DATA

Soil samples obtained from deep hole observation test pits were analyzed by Anchor Engineering to determine soil permeability. An in-situ 1½" diam. by 6" long core sample was obtained at a depth of 38" and a falling head permeability test was conducted. Results of the falling head permeability tests are provided in the table below:

| | **Test Hole 101G** |
|---|---|
| **Coefficient of Permeability** | 10.4 Ft/Day |

**Table No. 2 – Permeability Test Result**

The in-situ core sample obtained from the site was delivered intact therefore the sample was not re-compacted as is often done. Therefore a re-compaction correction factor was not applied to the results. The permiability of **10.4 ft/day** falls within the range for the Canton and Charlton Series (4.0 to 11.9 ft/day) published by the NRCS.

### GROUNDWATER STANDPIPE INSTALLATION & MONITORING

Two (2) shallow groundwater monitoring wells were installed by Mansfield DPW and witnessed by Anchor staff. The wells consisted of the installation of 10 foot lengths of 4" diameter PVC pipes in the deep test pits prior to backfilling. A brief summary of the well data is provided below.

| Monitoring Well | Observed GW Depth | Total Well Depth |
|---|---|---|
| MW-104G | N/A | 96" |
| MW-105G | N/A | 103" |

Groundwater depths within the monitoring wells were measured on 4/02/12 and 4/17/12. Results on both days revealed no measurable groundwater, indicating that the actual ground water elevation during this time period is beyond the reaches of installed wells.

## SEWAGE FLOW ESTIMATES

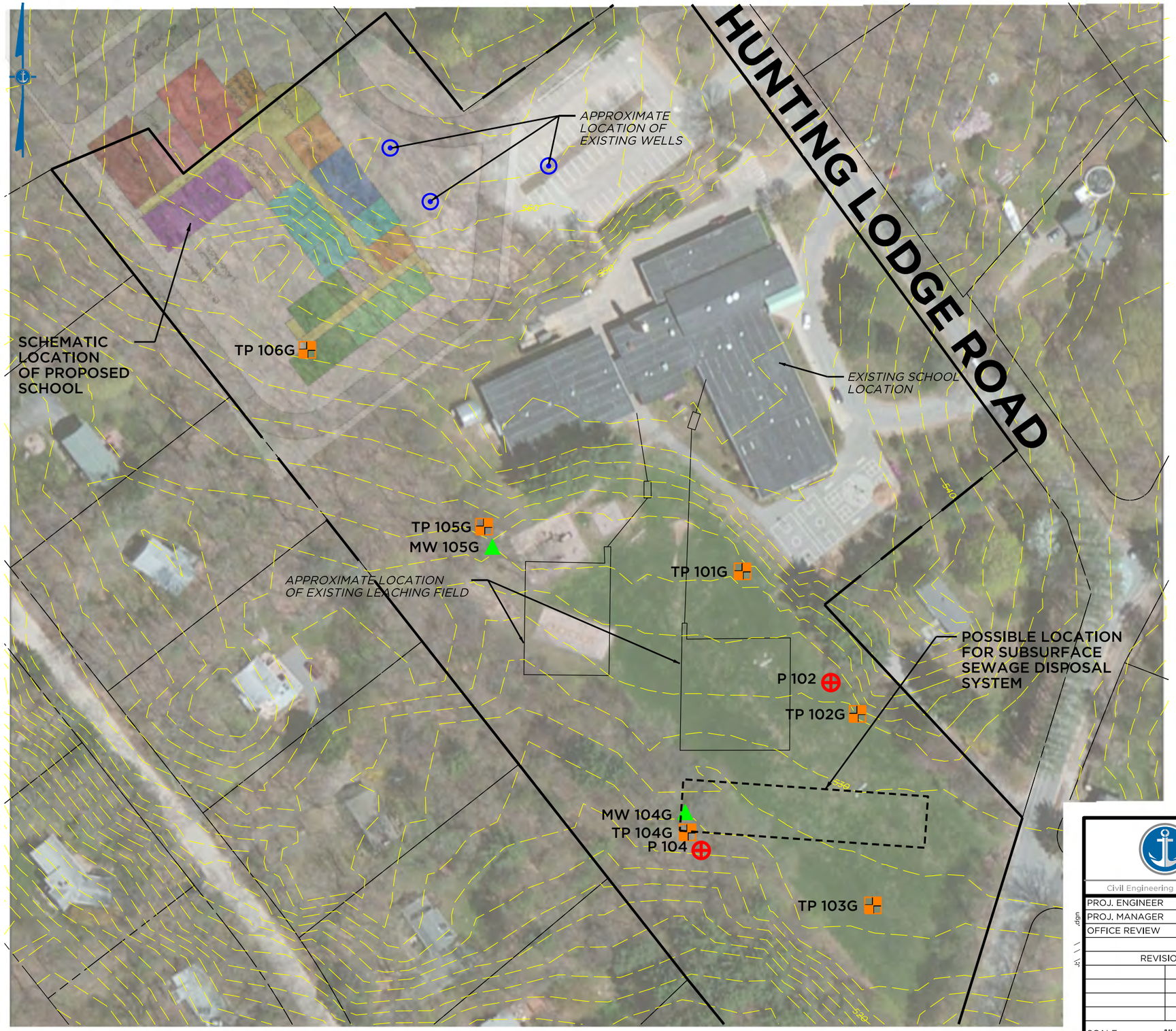
### SEWAGE FLOW ESTIMATES

The Town of Mansfield has stipulated that the Subsurface Sewage Disposal System (SSDS) required for the proposed school will need to be designed to accommodate up to 375 elementary school students.

Sewage design flows for an elementary school, as provided in Table No. 4 of the Connecticut Public Health Code, Regulations and Technical Standards for Subsurface Sewage Disposal Systems, is 8.0 gallons per day/per pupil (gpd/pp). Additional design flows to be considered include those resulting from kitchen facilities (+3.0 gpd/pp) and/or shower facilities (+3.0 gpd/pp).

As a conservative measure, a total sewage design flow of 11.0 gpd/pp was used in consideration of the base flow and the likely presen0ce of full kitchen facilities in the new school. Shower facilities were not considered in the study as they are not typical for an elementary school. The projected daily sewage flow for the proposed school is **4,125 gpd**.

Prior to final design, it is recommended that water usage data for the three (3) existing Mansfield elementary schools be compiled to confirm or adjust the conservative design flow utilized in this preliminary study.




## LEGEND

- ANCHOR STANDPIPE LOCATION
- ANCHOR DEEP TEST PIT
- ANCHOR PERCOLATION TEST
- EXISTING DOMESTIC WATER WELL

100 0 100 200

SCALE: 1"= 100'

ANCHOR
ENGINEERING SERVICES, INC.
41 Sequin Drive
Glastonbury, CT 06033
Phone: (860) 633-8770
Fax: (860) 633-5971
www.anchorengr.com

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| | |
|---|---|
| PROJ. ENGINEER | ECP |
| PROJ. MANAGER | BJH |
| OFFICE REVIEW | BJH |
| REVISIONS | |
| SCALE: | 1"=100' |

# GOODWIN ELEMENTARY SCHOOL

PREPARED FOR
TOWN OF MANSFIELD

## SOIL TEST LOCATION PLAN

321 HUNTING LODGE ROAD MANSFIELD, CT

| PROJECT | DATE | FIGURE |
|---|---|---|
| 486-05 | 4/19/12 | 2 |

# EVALUATION OF SEPTIC SUITABILITY

The SSDS required for the proposed school will be designed to accommodate up to 375 elementary school students in accordance with the CT Public Health Code. The following preliminary calculations and determinations were performed to determine the septic suitability of the site.

## DESIGN DATA

The following summary of data was collected during on the site investigation performed on April 2, 2012. Refer to Appendix B expanded data information.

| | |
|---|---|
| Depth to Mottling: | 64" (TP-105G) |
| Depth to Ledge: | N/A |
| Depth to Groundwater: | N/A |
| Percolation Rate: | 5.1 to 10.0 Min./In. |

## EFFECTIVE LEACHING AREA (ELA)

The effective leaching surface area (ELA) of a SSDS is the interface area between the soil and the facilities used for applying the pretreated wastewater to the soil (the leaching system). For the purposes of this study a range of anticipated effective leaching area values was calculated.

Daily Design Flow = 4,125 gal/day
ELA = Design Flow/Application Rate
Use App. Rate of 1.5 for Base Student Flow (Table 8, CT Public Health Code)
Use App. Rate of 0.8 for Kitchen Flow (Table 7, CT Public Health Code)
ELA = 3,000 gpd/1.5 + 1,125 gpd/0.8 = **3,406.25 Sq Ft**

Based upon available site area for construction of the SSDS it appears that the site can accommodate a system with an effective area of 3,406.25 square feet.

## MINIMUM LEACHING SYSTEM SPREAD (MLSS)

The minimum leaching system spread (MLSS) of a SSDS is the required minimum length of leaching system for effective effluent application to the receiving soils based on hydraulic gradient and percolation rates of the receiving soils as well as flow factors of the design building. MLSS is not applicable on sites having a receiving soil depth that exceeds 60 inches.

Minimum depth to a restrictive layer encountered on this site is 64" (TP105G) therefore MLSS is not applicable for this system.

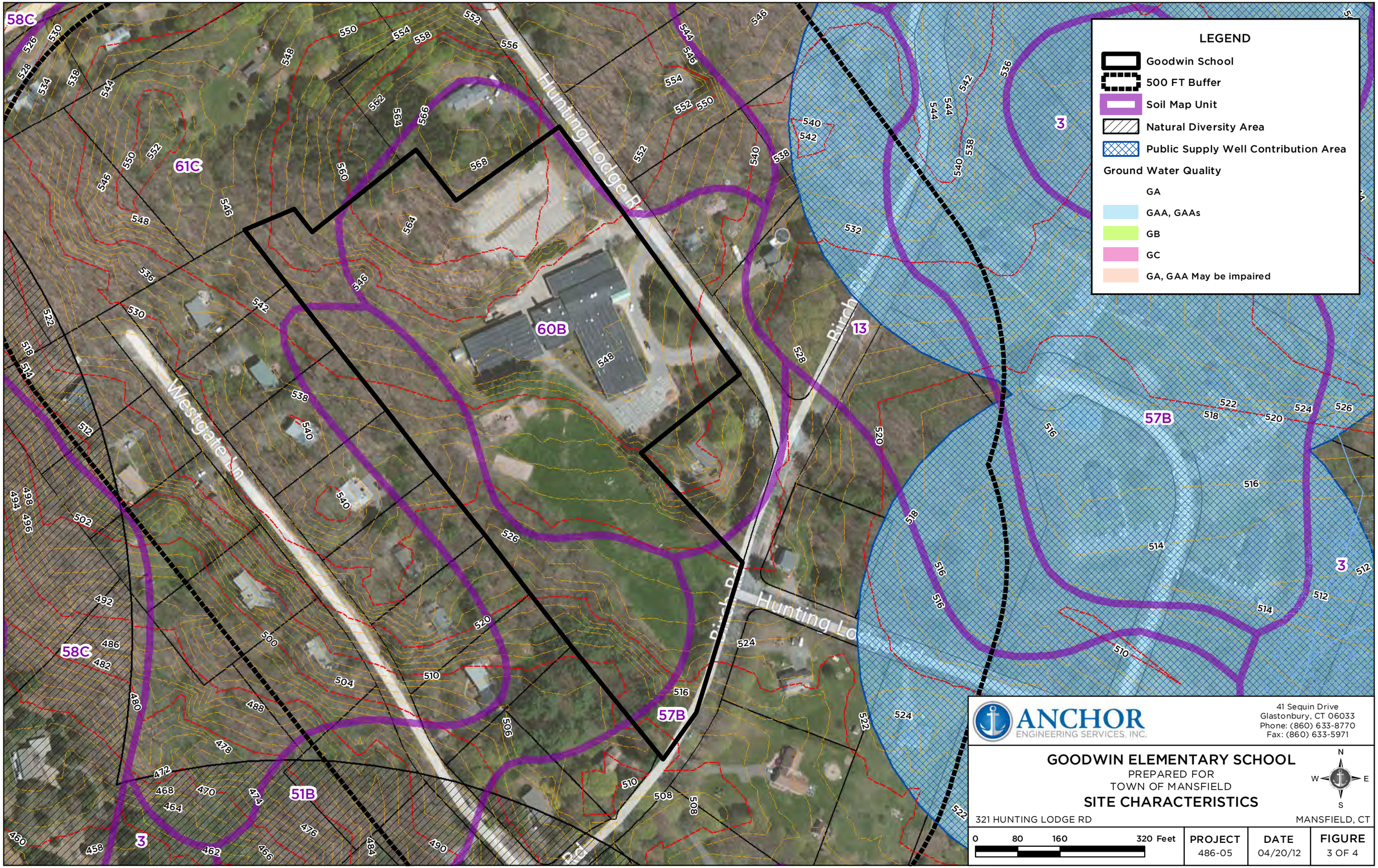
## PRELIMINARY OPINION OF SITE SEPTIC SUITABILITY

Based on our observations of the site and the surrounding area, including topography, soils, groundwater depths, and etc., it appears that the site can adequately accept the wastewater flows of a 375 student elementary school. This opinion is based upon the data obtained and preliminary calculations performed as part of this feasibility study. As stated throughout this report, additional investigations and calculations will be necessary as part of the final design in order to fully satisfy the requirements of the CTDPH.

# Appendix A1

# Data Collection

Connecticut Department of Energy & Environmental Protection




ANCHOR ENGINEERING SERVICES, INC.

41 Sequin Drive
Glastonbury, CT 06033
Phone: (860) 633-8770
Fax: (860) 633-5971

**GOODWIN ELEMENTARY SCHOOL**
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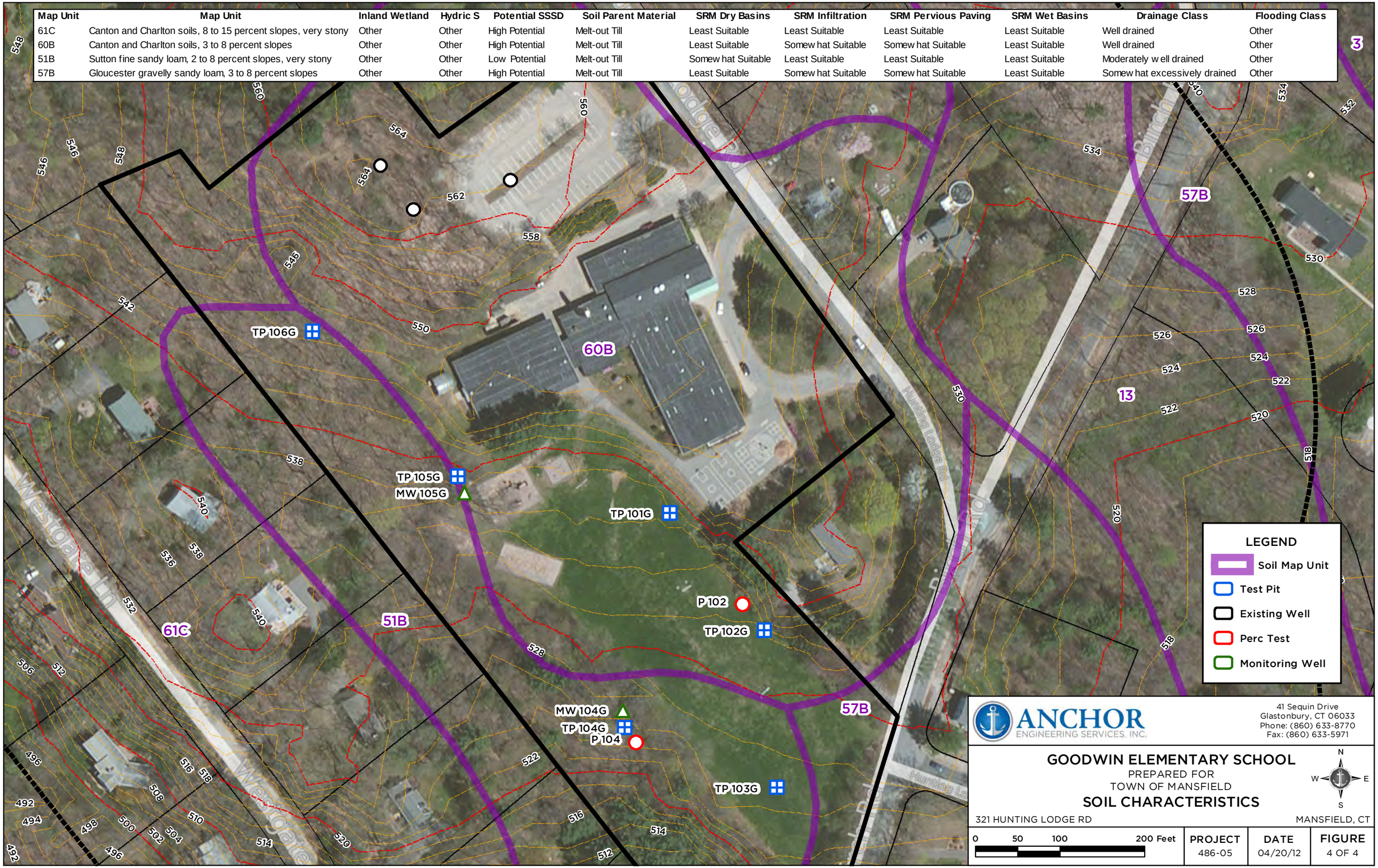
TOWN OF MANSFIELD
**SITE CHARACTERISTICS**

321 HUNTING LODGE RD — MANSFIELD, CT

0 80 160 320 Feet

| PROJECT | DATE | FIGURE |
|---|---|---|
| 486-05 | 04/20/12 | 3 OF 4 |

| Map Unit | Map Unit | Inland Wetland | Hydric S | Potential SSSD | Soil Parent Material | SRM Dry Basins | SRM Infiltration | SRM Pervious Paving | SRM Wet Basins | Drainage Class | Flooding Class |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 61C | Canton and Charlton soils, 8 to 15 percent slopes, very stony | Other | Other | High Potential | Melt-out Till | Least Suitable | Least Suitable | Least Suitable | Least Suitable | Well drained | Other |
| 60B | Canton and Charlton soils, 3 to 8 percent slopes | Other | Other | High Potential | Melt-out Till | Least Suitable | Somew hat Suitable | Somew hat Suitable | Least Suitable | Well drained | Other |
| 51B | Sutton fine sandy loam, 2 to 8 percent slopes, very stony | Other | Other | Low Potential | Melt-out Till | Somew hat Suitable | Least Suitable | Least Suitable | Least Suitable | Moderately w ell drained | Other |
| 57B | Gloucester gravelly sandy loam, 3 to 8 percent slopes | Other | Other | High Potential | Melt-out Till | Least Suitable | Somew hat Suitable | Somew hat Suitable | Least Suitable | Somew hat excessively drained | Other |

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41 Sequin Drive
Glastonbury, CT 06033
Phone: (860) 633-8770
Fax: (860) 633-5971

**GOODWIN ELEMENTARY SCHOOL**
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**SOIL CHARACTERISTICS**

321 HUNTING LODGE RD — MANSFIELD, CT

0 50 100 200 Feet

| PROJECT | DATE | FIGURE |
|---|---|---|
| 486-05 | 04/20/12 | 4 OF 4 |

# Appendix A2

# Data Collection

USDA Natural Resource Conservation Service

# State of Connecticut

## 60B—Canton and Charlton soils, 3 to 8 percent slopes

### Map Unit Setting

*Elevation:* 0 to 1,200 feet
*Mean annual precipitation:* 43 to 54 inches
*Mean annual air temperature:* 45 to 55 degrees F
*Frost-free period:* 140 to 185 days

### Map Unit Composition

*Canton and similar soils:* 45 percent
*Charlton and similar soils:* 35 percent
*Minor components:* 20 percent

### Description of Canton

#### Setting

*Landform:* Hills
*Down-slope shape:* Linear
*Across-slope shape:* Convex
*Parent material:* Coarse-loamy over sandy and gravelly melt-out till derived from granite and/or schist and/or gneiss

#### Properties and qualities

*Slope:* 3 to 8 percent
*Depth to restrictive feature:* More than 80 inches
*Drainage class:* Well drained
*Capacity of the most limiting layer to transmit water (Ksat):* High (1.98 to 5.95 in/hr)
*Depth to water table:* More than 80 inches
*Frequency of flooding:* None
*Frequency of ponding:* None
*Available water capacity:* Low (about 5.6 inches)

#### Interpretive groups

*Land capability (nonirrigated):* 2e

#### Typical profile

*0 to 1 inches:* Moderately decomposed plant material
*1 to 3 inches:* Gravelly fine sandy loam
*3 to 15 inches:* Gravelly loam
*15 to 24 inches:* Gravelly loam
*24 to 30 inches:* Gravelly loam
*30 to 60 inches:* Very gravelly loamy sand

### Description of Charlton

#### Setting

*Landform:* Hills
*Down-slope shape:* Linear
*Across-slope shape:* Linear
*Parent material:* Coarse-loamy melt-out till derived from granite and/or schist and/or gneiss

**Properties and qualities**

*Slope:* 3 to 8 percent
*Depth to restrictive feature:* More than 80 inches
*Drainage class:* Well drained
*Capacity of the most limiting layer to transmit water (Ksat):* Moderately high to high (0.57 to 5.95 in/hr)
*Depth to water table:* More than 80 inches
*Frequency of flooding:* None
*Frequency of ponding:* None
*Available water capacity:* Low (about 5.9 inches)

**Interpretive groups**

*Land capability (nonirrigated):* 2e

**Typical profile**

*0 to 4 inches:* Fine sandy loam
*4 to 7 inches:* Fine sandy loam
*7 to 19 inches:* Fine sandy loam
*19 to 27 inches:* Gravelly fine sandy loam
*27 to 65 inches:* Gravelly fine sandy loam

**Minor Components**

**Sutton**

*Percent of map unit:* 5 percent
*Landform:* Depressions, drainageways
*Down-slope shape:* Concave
*Across-slope shape:* Linear

**Leicester**

*Percent of map unit:* 5 percent
*Landform:* Depressions, drainageways
*Down-slope shape:* Linear
*Across-slope shape:* Concave

**Chatfield**

*Percent of map unit:* 5 percent
*Landform:* Hills, ridges
*Down-slope shape:* Convex
*Across-slope shape:* Linear

**Hollis**

*Percent of map unit:* 3 percent
*Landform:* Hills, ridges
*Down-slope shape:* Convex
*Across-slope shape:* Convex

**Unnamed, silt loam surface**

*Percent of map unit:* 2 percent

# Data Source Information

Soil Survey Area: State of Connecticut
Survey Area Data: Version 10, Mar 31, 2011

# State of Connecticut

## 61C—Canton and Charlton soils, 8 to 15 percent slopes, very stony

### Map Unit Setting

*Elevation:* 0 to 1,200 feet
*Mean annual precipitation:* 43 to 54 inches
*Mean annual air temperature:* 45 to 55 degrees F
*Frost-free period:* 140 to 185 days

### Map Unit Composition

*Canton and similar soils:* 45 percent
*Charlton and similar soils:* 35 percent
*Minor components:* 20 percent

### Description of Canton

#### Setting

*Landform:* Hills
*Down-slope shape:* Linear
*Across-slope shape:* Convex
*Parent material:* Coarse-loamy over sandy and gravelly melt-out till derived from granite and/or schist and/or gneiss

#### Properties and qualities

*Slope:* 8 to 15 percent
*Surface area covered with cobbles, stones or boulders:* 1.6 percent
*Depth to restrictive feature:* More than 80 inches
*Drainage class:* Well drained
*Capacity of the most limiting layer to transmit water (Ksat):* High (1.98 to 5.95 in/hr)
*Depth to water table:* More than 80 inches
*Frequency of flooding:* None
*Frequency of ponding:* None
*Available water capacity:* Low (about 5.6 inches)

#### Interpretive groups

*Land capability (nonirrigated):* 6s

#### Typical profile

*0 to 1 inches:* Moderately decomposed plant material
*1 to 3 inches:* Gravelly fine sandy loam
*3 to 15 inches:* Gravelly loam
*15 to 24 inches:* Gravelly loam
*24 to 30 inches:* Gravelly loam
*30 to 60 inches:* Very gravelly loamy sand

### Description of Charlton

#### Setting

*Landform:* Hills
*Down-slope shape:* Linear
*Across-slope shape:* Linear

*Parent material:* Coarse-loamy melt-out till derived from granite and/or schist and/or gneiss

**Properties and qualities**

*Slope:* 8 to 15 percent
*Surface area covered with cobbles, stones or boulders:* 1.6 percent
*Depth to restrictive feature:* More than 80 inches
*Drainage class:* Well drained
*Capacity of the most limiting layer to transmit water (Ksat):* Moderately high to high (0.57 to 5.95 in/hr)
*Depth to water table:* More than 80 inches
*Frequency of flooding:* None
*Frequency of ponding:* None
*Available water capacity:* Low (about 5.9 inches)

**Interpretive groups**

*Land capability (nonirrigated):* 6s

**Typical profile**

*0 to 4 inches:* Fine sandy loam
*4 to 7 inches:* Fine sandy loam
*7 to 19 inches:* Fine sandy loam
*19 to 27 inches:* Gravelly fine sandy loam
*27 to 65 inches:* Gravelly fine sandy loam

**Minor Components**

**Sutton**

*Percent of map unit:* 5 percent
*Landform:* Depressions, drainageways
*Down-slope shape:* Concave
*Across-slope shape:* Linear

**Leicester**

*Percent of map unit:* 5 percent
*Landform:* Depressions, drainageways
*Down-slope shape:* Linear
*Across-slope shape:* Concave

**Chatfield**

*Percent of map unit:* 5 percent
*Landform:* Hills, ridges
*Down-slope shape:* Convex
*Across-slope shape:* Linear

**Hollis**

*Percent of map unit:* 5 percent
*Landform:* Hills, ridges
*Down-slope shape:* Convex
*Across-slope shape:* Convex

# Data Source Information

Soil Survey Area: State of Connecticut
Survey Area Data: Version 10, Mar 31, 2011

# State of Connecticut

## 51B—Sutton fine sandy loam, 2 to 8 percent slopes, very stony

### Map Unit Setting

*Elevation:* 0 to 1,200 feet
*Mean annual precipitation:* 43 to 56 inches
*Mean annual air temperature:* 45 to 55 degrees F
*Frost-free period:* 140 to 185 days

### Map Unit Composition

*Sutton and similar soils:* 80 percent
*Minor components:* 20 percent

### Description of Sutton

#### Setting

*Landform:* Depressions, drainageways
*Down-slope shape:* Concave
*Across-slope shape:* Linear
*Parent material:* Coarse-loamy melt-out till derived from granite and/or schist and/or gneiss

#### Properties and qualities

*Slope:* 2 to 8 percent
*Surface area covered with cobbles, stones or boulders:* 1.6 percent
*Depth to restrictive feature:* More than 80 inches
*Drainage class:* Moderately well drained
*Capacity of the most limiting layer to transmit water (Ksat):* Moderately high to high (0.57 to 5.95 in/hr)
*Depth to water table:* About 18 to 30 inches
*Frequency of flooding:* None
*Frequency of ponding:* None
*Available water capacity:* Moderate (about 6.9 inches)

#### Interpretive groups

*Land capability (nonirrigated):* 6s

#### Typical profile

*0 to 6 inches:* Fine sandy loam
*6 to 12 inches:* Fine sandy loam
*12 to 24 inches:* Fine sandy loam
*24 to 28 inches:* Fine sandy loam
*28 to 36 inches:* Gravelly fine sandy loam
*36 to 65 inches:* Gravelly sandy loam

### Minor Components

#### Charlton

*Percent of map unit:* 5 percent
*Landform:* Hills
*Down-slope shape:* Linear
*Across-slope shape:* Linear

**Canton**

*Percent of map unit:* 4 percent
*Landform:* Hills
*Down-slope shape:* Linear
*Across-slope shape:* Convex

**Paxton**

*Percent of map unit:* 3 percent
*Landform:* Drumlins, hills, till plains
*Down-slope shape:* Linear
*Across-slope shape:* Convex

**Leicester**

*Percent of map unit:* 3 percent
*Landform:* Depressions, drainageways
*Down-slope shape:* Linear
*Across-slope shape:* Concave

**Woodbridge**

*Percent of map unit:* 2 percent
*Landform:* Drumlins, hills
*Down-slope shape:* Concave
*Across-slope shape:* Linear

**Rainbow**

*Percent of map unit:* 2 percent
*Landform:* Drumlins, hills
*Down-slope shape:* Linear
*Across-slope shape:* Concave

**Narragansett**

*Percent of map unit:* 1 percent
*Landform:* Hills, till plains
*Down-slope shape:* Linear
*Across-slope shape:* Convex

# Data Source Information

Soil Survey Area: State of Connecticut
Survey Area Data: Version 10, Mar 31, 2011

# Sewage Disposal

This table shows the degree and kind of soil limitations that affect septic tank absorption fields and sewage lagoons. The ratings are both verbal and numerical. Rating class terms indicate the extent to which the soils are limited by all of the soil features that affect these uses. *Not limited* indicates that the soil has features that are very favorable for the specified use. Good performance and very low maintenance can be expected. *Somewhat limited* indicates that the soil has features that are moderately favorable for the specified use. The limitations can be overcome or minimized by special planning, design, or installation. Fair performance and moderate maintenance can be expected. *Very limited* indicates that the soil has one or more features that are unfavorable for the specified use. The limitations generally cannot be overcome without major soil reclamation, special design, or expensive installation procedures. Poor performance and high maintenance can be expected.

Numerical ratings in the table indicate the severity of individual limitations. The ratings are shown as decimal fractions ranging from 0.01 to 1.00. They indicate gradations between the point at which a soil feature has the greatest negative impact on the use (1.00) and the point at which the soil feature is not a limitation (0.00).

*Septic tank absorption fields* are areas in which effluent from a septic tank is distributed into the soil through subsurface tiles or perforated pipe. Only that part of the soil between depths of 24 and 72 inches or between a depth of 24 inches and a restrictive layer is evaluated. The ratings are based on the soil properties that affect absorption of the effluent, construction and maintenance of the system, and public health. Saturated hydraulic conductivity (Ksat), depth to a water table, ponding, depth to bedrock or a cemented pan, and flooding affect absorption of the effluent. Stones and boulders, ice, and bedrock or a cemented pan interfere with installation. Subsidence interferes with installation and maintenance. Excessive slope may cause lateral seepage and surfacing of the effluent in downslope areas.

Some soils are underlain by loose sand and gravel or fractured bedrock at a depth of less than 4 feet below the distribution lines. In these soils the absorption field may not adequately filter the effluent, particularly when the system is new. As a result, the ground water may become contaminated.

*Sewage lagoons* are shallow ponds constructed to hold sewage while aerobic bacteria decompose the solid and liquid wastes. Lagoons should have a nearly level floor surrounded by cut slopes or embankments of compacted soil. Nearly impervious soil material for the lagoon floor and sides is required to minimize seepage and contamination of ground water. Considered in the ratings are slope, saturated hydraulic conductivity (Ksat), depth to a water table, ponding, depth to bedrock or a cemented pan, flooding, large stones, and content of organic matter.

Saturated hydraulic conductivity (Ksat) is a critical property affecting the suitability for sewage lagoons. Most porous soils eventually become sealed when they are used as sites for sewage lagoons. Until sealing occurs, however, the hazard of pollution is severe. Soils that have a Ksat rate of more than 14 micrometers per second are too porous for the proper functioning of sewage lagoons. In these soils, seepage of the effluent can result in contamination of the ground water. Ground-water contamination is also a hazard if fractured bedrock is within a depth of 40 inches, if the water table is high enough to raise the level of sewage in the lagoon, or if floodwater overtops the lagoon.

A high content of organic matter is detrimental to proper functioning of the lagoon because it inhibits aerobic activity. Slope, bedrock, and cemented pans can cause construction problems, and large stones can hinder compaction of the lagoon floor. If the lagoon is to be uniformly deep throughout, the slope must be gentle enough and the soil material must be thick enough over bedrock or a cemented pan to make land smoothing practical.

Information in this table is intended for land use planning, for evaluating land use alternatives, and for planning site investigations prior to design and construction. The information, however, has limitations. For example, estimates and other data generally apply only to that part of the soil between the surface and a depth of 5 to 7 feet. Because of the map scale, small areas of different soils may be included within the mapped areas of a specific soil.

The information is not site specific and does not eliminate the need for onsite investigation of the soils or for testing and analysis by personnel experienced in the design and construction of engineering works.

Government ordinances and regulations that restrict certain land uses or impose specific design criteria were not considered in preparing the information in this table. Local ordinances and regulations should be considered in planning, in site selection, and in design.

## Report—Sewage Disposal

[Onsite investigation may be needed to validate the interpretations in this table and to confirm the identity of the soil on a given site. The numbers in the value columns range from 0.01 to 1.00. The larger the value, the greater the potential limitation. The table shows only the top five limitations for any given soil. The soil may have additional limitations]

| Sewage Disposal– State of Connecticut | | | | | |
|---|---|---|---|---|---|
| Map symbol and soil name | Pct. of map unit | Septic tank absorption fields | | Sewage lagoons | |
| | | Rating class and limiting features | Value | Rating class and limiting features | Value |
| 51B—Sutton fine sandy loam, 2 to 8 percent slopes, very stony | | | | | |
| Sutton | 80 | Very limited | | Very limited | |
| | | Depth to saturated zone | 1.00 | Seepage | 1.00 |
| | | Seepage, bottom layer | 1.00 | Depth to saturated zone | 1.00 |
| | | | | Slope | 0.68 |
| 57B—Gloucester gravelly sandy loam, 3 to 8 percent slopes | | | | | |
| Gloucester | 80 | Very limited | | Very limited | |
| | | Seepage, bottom layer | 1.00 | Seepage | 1.00 |
| | | Filtering capacity | 1.00 | Slope | 0.92 |

| Sewage Disposal– State of Connecticut | | | | | |
|---|---|---|---|---|---|
| Map symbol and soil name | Pct. of map unit | Septic tank absorption fields | | Sewage lagoons | |
| | | Rating class and limiting features | Value | Rating class and limiting features | Value |
| 58C—Gloucester gravelly sandy loam, 8 to 15 percent slopes, very stony | | | | | |
| Gloucester | 80 | Very limited | | Very limited | |
| | | Seepage, bottom layer | 1.00 | Slope | 1.00 |
| | | Filtering capacity | 1.00 | Seepage | 1.00 |
| | | Slope | 0.63 | | |
| 60B—Canton and Charlton soils, 3 to 8 percent slopes | | | | | |
| Canton | 45 | Very limited | | Very limited | |
| | | Seepage, bottom layer | 1.00 | Seepage | 1.00 |
| | | | | Slope | 0.92 |
| Charlton | 35 | Very limited | | Very limited | |
| | | Seepage, bottom layer | 1.00 | Seepage | 1.00 |
| | | | | Slope | 0.92 |
| 61C—Canton and Charlton soils, 8 to 15 percent slopes, very stony | | | | | |
| Canton | 45 | Very limited | | Very limited | |
| | | Seepage, bottom layer | 1.00 | Slope | 1.00 |
| | | Slope | 0.63 | Seepage | 1.00 |
| Charlton | 35 | Very limited | | Very limited | |
| | | Seepage, bottom layer | 1.00 | Slope | 1.00 |
| | | Slope | 0.63 | Seepage | 1.00 |

## Data Source Information

Soil Survey Area: State of Connecticut
Survey Area Data: Version 10, Mar 31, 2011

# Appendix A3

# Data Collection

Eastern Highlands Health District, Mansfield Office

ed lally and associates

CIVIL ENGINEER • 111 PROSPECT HILL ROAD • WINDSOR, CONN. 06095 • (203) 688-241

March 17, 1989

Robert Mocarsky
Schoenhardt Architects
One Massaco Place
Simsbury, CT 06070

Re: Northwest, Southeast, and Annie Vinton
Elementary Schools
Mansfield, CT

Dear Mr. Mocarsky:

The following summarizes the results of analysis of existing subsurface sewage disposal systems at the above referenced schools. The analysis was based upon Public Health Code Criteria, review of original design plans, discussion with Dr. Rein Laak of Mansfield, one of the original design engineers, and projected population data supplied by your office.

Northwest School

Two existing 4000 gallon septic tanks have adequate capacity for the proposed increase in flow.

The existing leaching area is slightly short of that required by design calculations. The additional area required (44 sq ft) is so small, however, and because the design calculation is conservative, the existing systems can be considered adequate for the proposed addition.

Annie Vinton School

Existing septic tank volume of about 6500 gallons is more than adequate to accommodate the proposed increase.

The existing leaching field is also adequate to handle the proposed increase.

Southeast School

The existing septic tank is marginally adequate for the proposed increase. Design plans indicate an existing 4042 gallon tank. A minimum of 4200 gallons is required. If the maximum projected population is realized, an additional 1000 gallon tank should be installed.

**ED LALLY & ASSOCIATES**
111 Prospect Hill Road
WINDSOR, CONNECTICUT 06095
(203) 688-2413

JOB SCHOENHARDT-80025I
SHEET NO. 1 OF 4
CALCULATED BY MJG DATE 3-17-89
CHECKED BY DATE
SCALE

MANSFIELD ELEMENTARY SCHOOLS

Evaluation of Existing Septic Systems

Assumptions:

1) Max. school population from Architect
2) Wastewater generation = 15 gpcpd
3) Existing systems scaled or estimated from previous plans.
4) Soil data taken from previous plans or SCS Soil Survey.
5) Existing systems may be utilized for expansion.
6) No additional kitchen facilities are proposed.

Northwest School

Proposed pop. = 320 students + 22 staff
= 342 p

Design flow $Q_d$ = 342p × 15 gpcpd
= 5130 gpd

Septic Tank $V_{req'd}$ = 5130 gal. → 6000 gal.

Existing Tanks = 2 - 4000 gal. = 8000 > 6000 O.K.

PRODUCT 205-1 NEBS Inc., Groton, Mass. 01471. To Order PHONE TOLL FREE 1-800-225-6380

**ED LALLY & ASSOCIATES**
111 Prospect Hill Road
WINDSOR, CONNECTICUT 06095
(203) 688-2413

JOB C-0025 I
SHEET NO. 3 OF 4
CALCULATED BY MJG DATE 3-17-89
CHECKED BY DATE
SCALE

Annie Vinton School

Proposed pop. = 320 students + 22 staff = 342

$Q_d$ = 342 p × 15 gpcpd = 5130 gpd

Septic Tank $V_{req'd}$ = 5130 gal → 6000 gal.

Existing tank V = 6550 gal > 6000 O.K.

Leaching System 1970 Plan

18 trenches × 60' l × 3' w = 3240 S.F.

8 trenches × 65' l × 3' w = 1560 S.F.

11 trenches × 50' l = 550 S.F.

Σ 5350 S.F.

Perc. Rate = 15 min/in.

Application rate = 1.1 gpd/SF

Area req'd = 5130/1.1 = 4664 < 5350 O.K.

PRODUCT 205-1 NEBS Inc., Groton, Mass. 01471. To Order PHONE TOLL FREE 1-800-225-6380

# Appendix A4

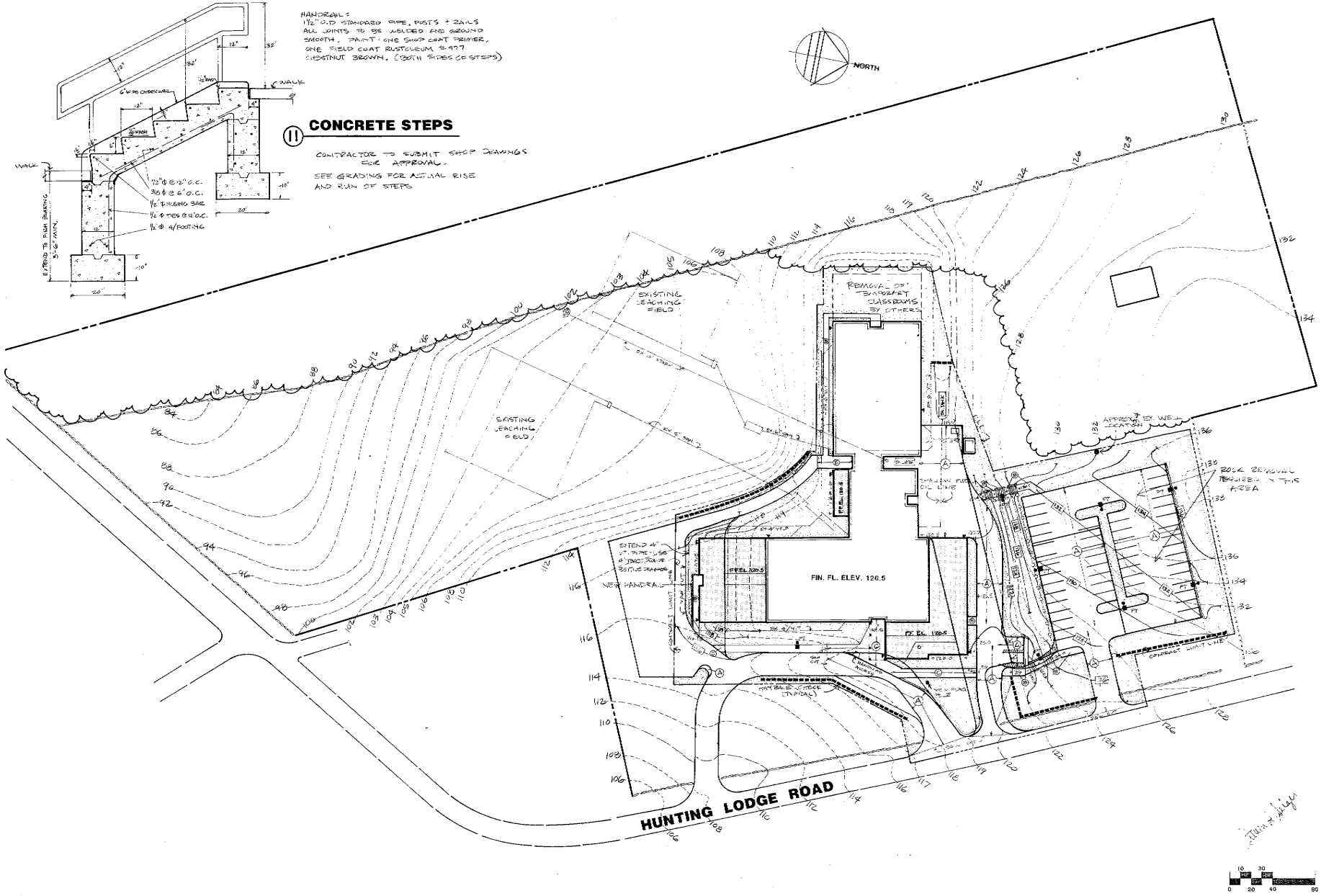
# Data Collection

Town of Mansfield

## 11 CONCRETE STEPS

CONTRACTOR TO SUBMIT SHOP DRAWINGS FOR APPROVAL.

SEE GRADING FOR ACTUAL RISE AND RUN OF STEPS




SCALE: 1"=40'

# GRADING, DRAINAGE & EROSION CONTROL PLAN

DOE PROJECT #'S
078-88-045 EC/E 078-88-042 CV 078-88-051 SP 078-87-035 RR

ADDITIONS AND ALTERATIONS TO THE
MANSFIELD PUBLIC SCHOOLS
MANSFIELD, CONNECTICUT
NORTHWEST ELEMENTARY SCHOOL
231 HUNTING LODGE ROAD
STORRS, CONNECTICUT

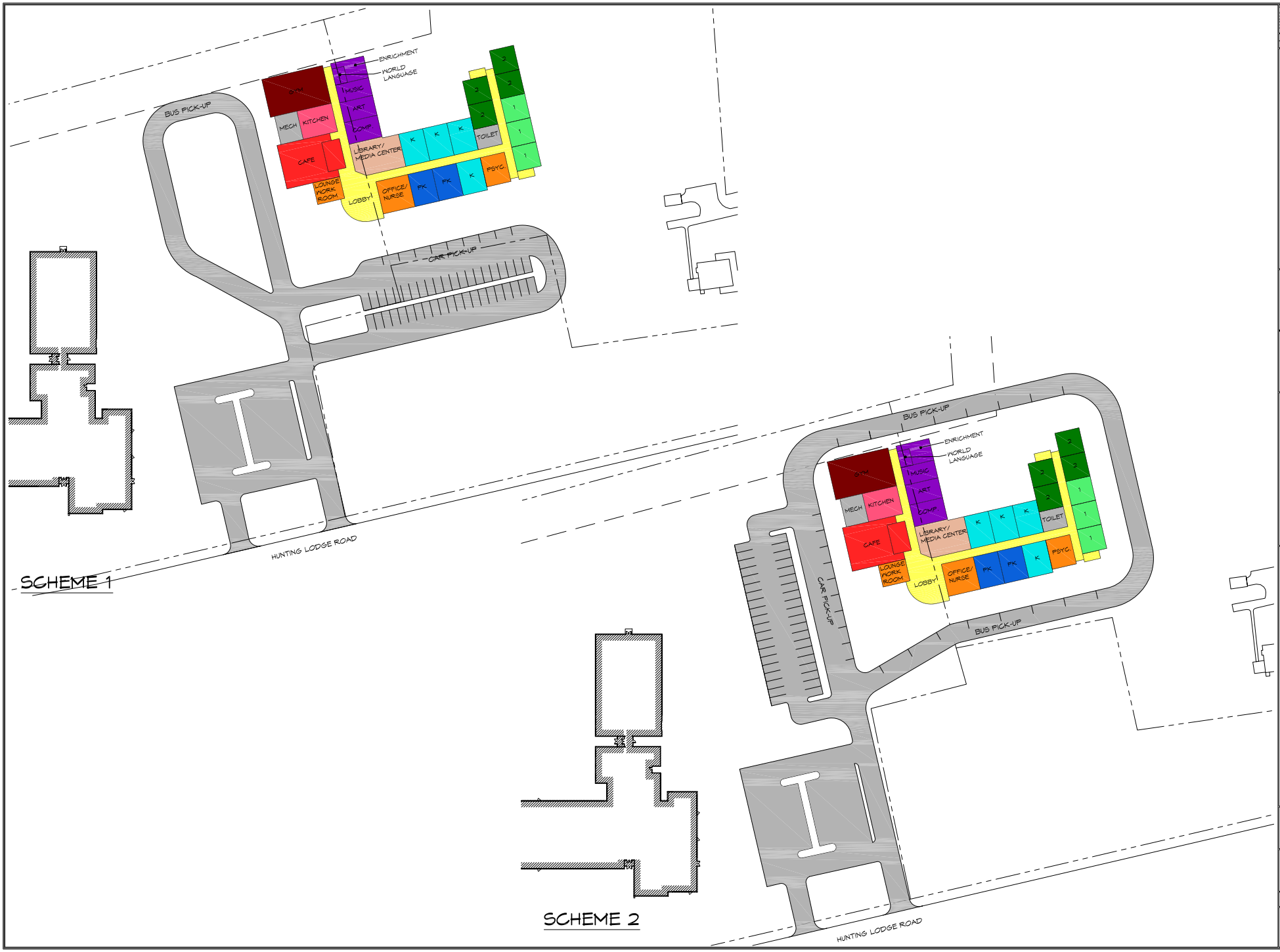
LANDSCAPE ARCHITECTURAL
DESIGN ASSOCIATES, P.C.
SITE PLANNERS/LANDSCAPE ARCHITECTS
SIMSBURY, CONNECTICUT

DATE 8/21/91
DRAWN BY SHS
PROJECT NUMBER 8812

REV. 2/8/90

L-6

SCHOENHARDT ARCHITECTS INC.

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|---|---|---|

THE LAWRENCE ASSOCIATES
ARCHITECTS, PLANNERS, INC.
10 B TOLLAND TURNPIKE MANCHESTER, CT 06040
FAX: (860) 646-9478 (860) 646-2121
WWW.THELAWRENCEASSOCIATES.COM

PROJECT NUMBER: 06-0067

STATE PROJECT NO.

PROJECT TITLE:
DOROTHY GOODWIN ELEM. SCHOOL
321 HUNTING LODGE ROAD
MANSFIELD, CT

N

DRAWING TITLE:

SCALE: 1" = 40'-0"

DATE: 2/4/11

DRAWING OF

SCHEME 3

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|---|---|---|

THE LAWRENCE ASSOCIATES
ARCHITECTS PLANNERS INC.
1075 TOLLAND TURNPIKE MANCHESTER CT 06040
TEL (860) 649-9473 FAX (860) 649-9474
WWW.THELAWRENCEASSOCIATES.COM

PROJECT NUMBER: 06-0087

STATE PROJECT NO.

PROJECT TITLE:
DOROTHY GOODWIN ELEM. SCHOOL
321 HUNTING LODGE ROAD
MANSFIELD, CT

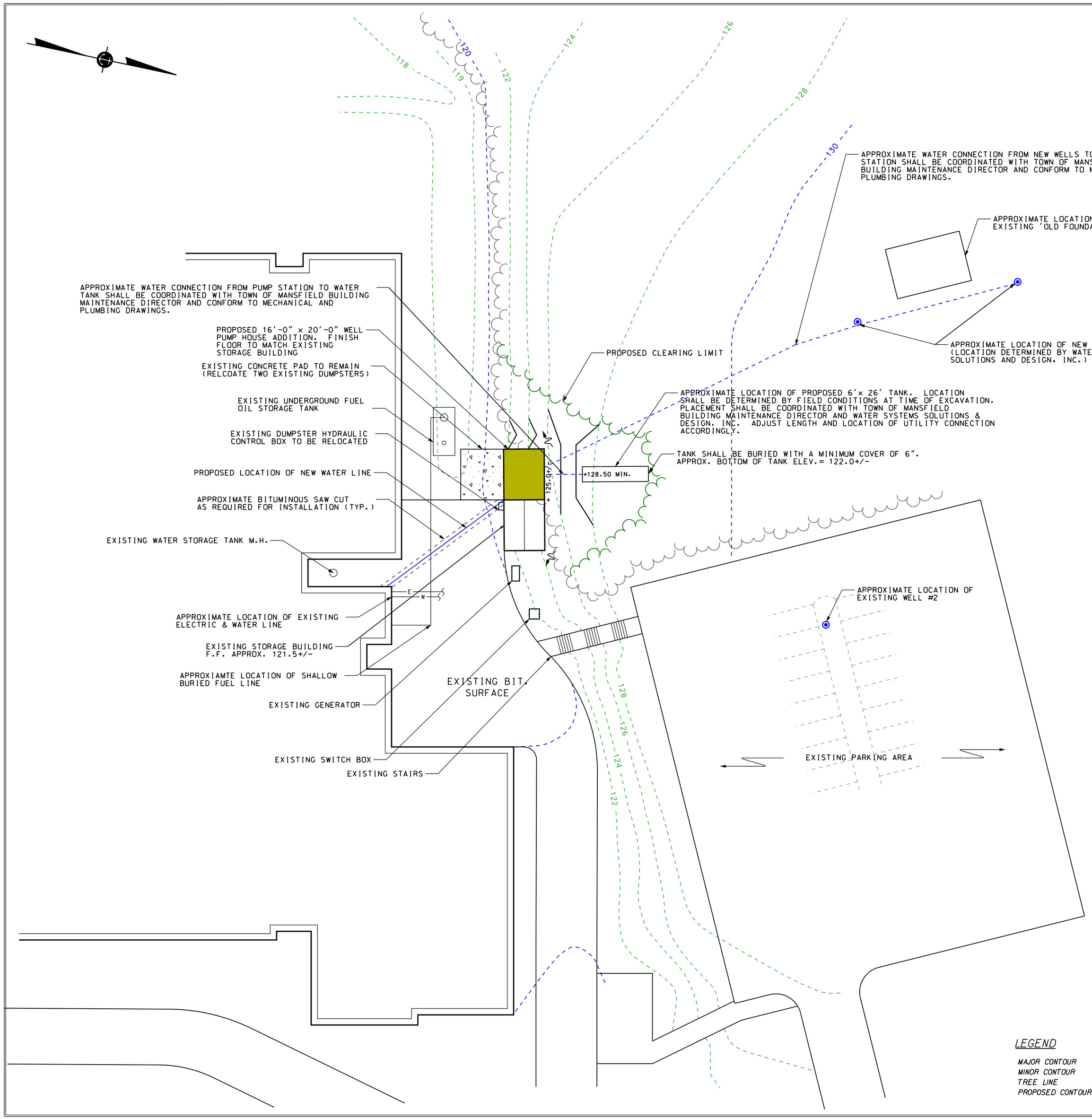
N

DRAWING TITLE:

SCALE: 1" = 40'-0"

DATE: 2/9/11

DRAWING OF




NOTES:

1. LOCATION OF UTILITIES AND PROPERTY LINES ARE FROM BEST INFORMATION AVAILABLE. EXACT LOCATION AND COMPLETENESS ARE NOT GUARANTEED.
2. THE CONTRACTOR SHALL BE RESPONSIBLE FOR NOTIFYING "CALL BEFORE YOU DIG" AT 1-800-922-4455 TO ARRANGE FOR MARKING OUT OF EXISTING UNDERGROUND UTILITIES AT LEAST 48 HOURS IN ADVANCE OF MAKING EXCAVATION AT ANY GIVEN LOCATION.
3. IN THOSE GRASSED OR WOODED AREAS DISTURBED BY THE CONTRACTORS OPERATION THE SURFACE SHALL BE RESTORED WITH A MINIMUM OF 6" OF SEEDED TOPSOIL UNLESS OTHERWISE DIRECTED. GRADE AFTER INSTALLATION SHALL BE THE SAME AS EXISTING UNLESS NOTED OTHERWISE.
4. HEADWALLS, SIGNS, GUARDRAILS, SIDEWALKS, PAVEMENTS, CURBING AND ANY OTHER OBJECTS DAMAGED OR REMOVED BY THE CONTRACTOR'S OPERATION SHALL BE RESTORED TO THEIR ORIGINAL CONDITION.
5. ALL MATERIALS AND METHODS OF CONSTRUCTION SHALL CONFORM TO THE TOWN OF MANSFIELD REQUIREMENTS.
6. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE TRANSPORT OF WASTE MATERIALS REMOVED DURING CONSTRUCTION (CLEARING DEBRIS, PIPE, BIT. CONCRETE, MANHOLES) TO AN APPROVED DISPOSAL AREA.
7. PROPOSED WATER LINE FROM PUMP HOUSE TO SCHOOL SHOWN AS APPROXIMATE.
8. NEW WELL LOCATIONS AS SHOWN ON PLANS ARE APPROXIMATE.
9. PROPOSED ELECTRICAL CONNECTION FROM EXISTING POWER SOURCE TO PROPOSED PUMP HOUSE SHALL BE PLACED IN SAME TRENCH AS WATER CONNECTION. UNLESS OTHERWISE NOTED.
10. CONTRACTORS SHALL COORDINATE DEMOLITION WORK WITH PROJECT PHASING, OWNERS SCHEDULE AND THE WORK OF OTHER DIVISIONS PRIOR TO THE START OF ANY WORK.
11. CONTRACTORS SHALL FIELD VERIFY EXISTING CONDITIONS PRIOR TO START OF ANY WORK.
12. COORDINATE WELL PUMP HOUSE ADDITIONS AND NEW DOMESTIC WATER SERVICE PIPING WITH MECHANICAL AND PLUMBING DRAWINGS AND WORK OF OTHER DIVISIONS (TYP.).

MAP REFERENCE:

1. BASE MAP INFORMATION REFERENCED FROM MAP TITLED ADDITIONS AND ALTERATIONS TO THE MANSFIELD PUBLIC SCHOOLS, MANSFIELD CONENCTICUT, NORTHWEST ELEMENTARY SCHOOL. GRADING AND DRAINAGE & EROSION CONTROL PLAN. PREPARED BY SCHOENHARDT ARCHITECTS INC. SIMSBURY CT. SHEET L-6. DATED 8/21/89.
2. FIELD INVESTIGATION PERFORMED BY ANCHOR ENGINEERING SERVICES, INC. MAY 2005.

DRAFT

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| NO. | DATE | DESCRIPTION |
|---|---|---|

Anchor Engineering Services, Inc.
75 Nutmeg Lane Glastonbury, CT 06033
TEL (860) 633-8710 FAX (860) 633-5971

ANCHOR PROJECT NUMBER 426-44
PROJ. ENGINEER KRG
PROJ. MANAGER JCO

THE LAWRENCE ASSOCIATES
ARCHITECTS / PLANNERS, P.C.
1075 TOLLAND TURNPIKE, MANSFIELD CENTER 06250
FAX (860) 429-6372 (860) 429-3181

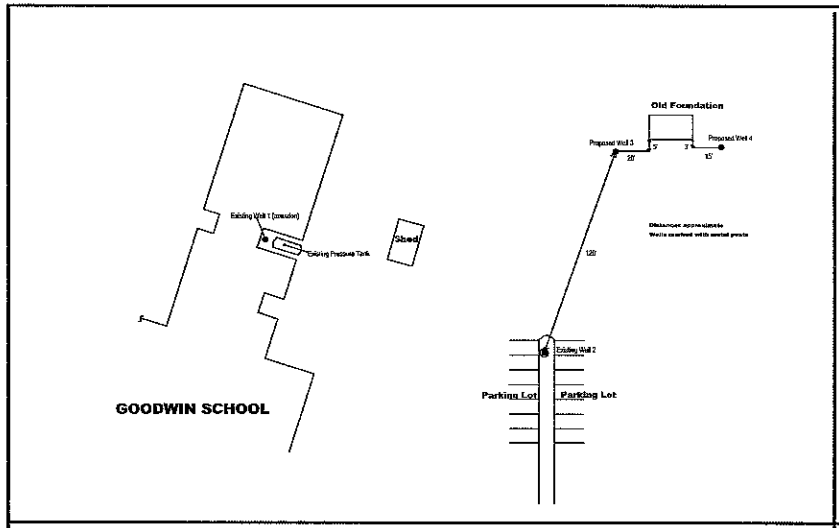
PROJECT NUMBER 05-0006
STATE PROJECT NO. 078-0064 CV

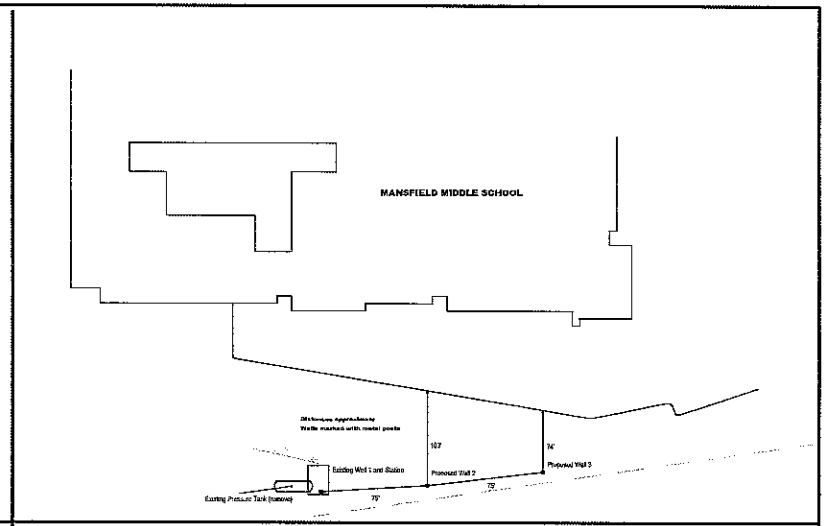
PROJECT TITLE:
# WELL PUMP HOUSE ADDITIONS
MANSFIELD PUBLIC SCHOOLS
GOODWIN SCHOOL
MANSFIELD, CONNECTICUT

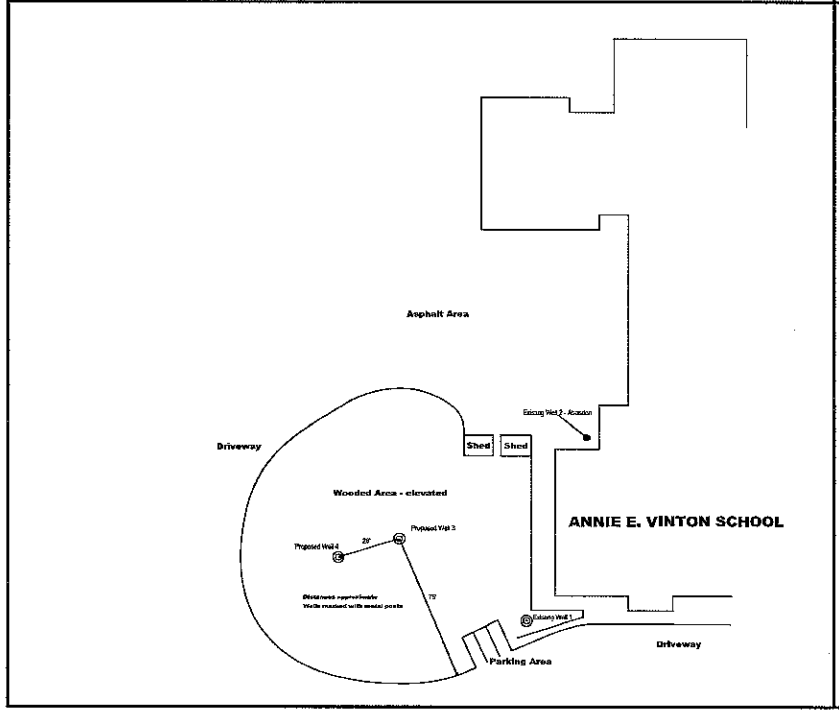
DRAWING TITLE:
SITE PLAN

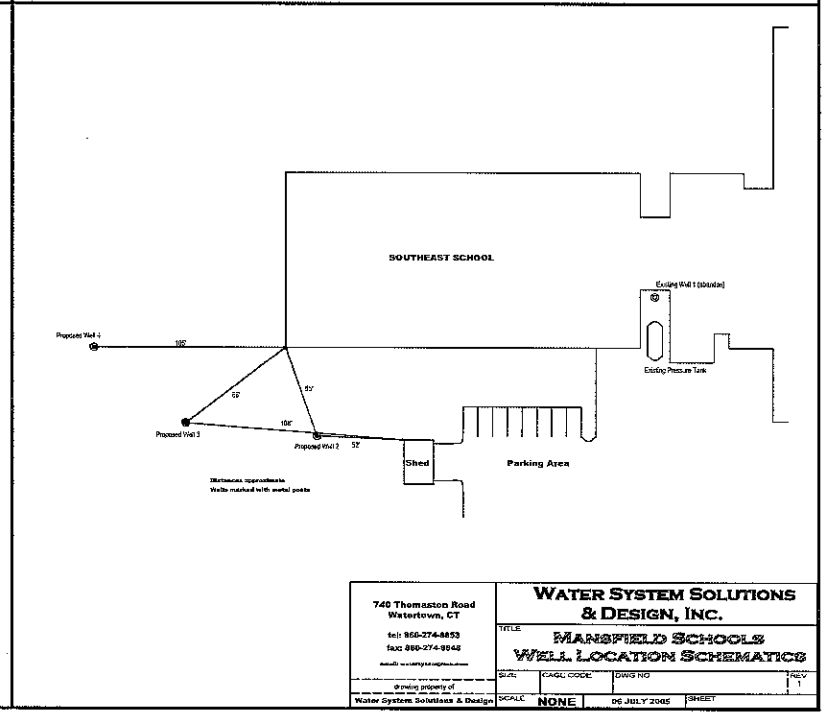
SCALE: 1" = 20'
DATE: 02/08/06

L3
DRAWING OF




740 Thomaston Road
Watertown, CT
tel: 860-274-8853
fax: 860-274-9848

drawing property of
Water System Solutions & Design

**WATER SYSTEM SOLUTIONS & DESIGN, INC.**

TITLE: MANSFIELD SCHOOLS WELL LOCATION SCHEMATICS

| SIZE | CAGE CODE | DWG NO | REV |
|---|---|---|---|
| | | | 1 |
| SCALE: NONE | 06 JULY 2005 | SHEET | |

# Appendix B

# Soil Test Results

ANCHOR
ENGINEERING SERVICES, INC.
41 Sequin Drive
Glastonbury, CT 06033
Phone: (860) 633-8770
Fax: (860) 633-5971
www.anchorengr.com
Civil Engineering • Environmental Consulting • Land Surveying • Construction Management

# SOIL DEEP TEST PIT RESULTS

GOODWIN ELMENTARY SCHOOL
321 HUNTING LODGE ROAD, MANSFIELD, CT

FIGURE A

| PROJECT | DATE |
|---|---|
| 486-05 | 4/13/12 |

| | |
|---|---|
| TEST PIT #: | TP 101G |
| DATE PERFORMED: | 4/02/12 |
| DEPTH OF TEST PIT: | 94" |
| SEEPAGE OBSERVED AT: | N/A |
| LEDGE OBSERVED AT: | N/A |
| ROOTS OBSERVED AT: | N/A |
| MOTTLING OBSERVED AT: | N/A |

## SOILS DESCRIPTION

| | |
|---|---|
| 0" - 7" | TOPSOIL |
| 7" - 18" | LIGHT BR. FINE SANDY LOAM |
| 18" - 94" | TAN FINE/MED SAND W/ GRAVEL & COBBLES |

| | |
|---|---|
| TEST PIT #: | TP 102G |
| DATE PERFORMED: | 4/02/12 |
| DEPTH OF TEST PIT: | 90" |
| SEEPAGE OBSERVED AT: | N/A |
| LEDGE OBSERVED AT: | N/A |
| ROOTS OBSERVED AT: | N/A |
| MOTTLING OBSERVED AT: | N/A |

## SOILS DESCRIPTION

| | |
|---|---|
| 0" - 6" | TOPSOIL |
| 6" - 13" | LIGHT BR. FINE SANDY LOAM |
| 13" - 44" | TAN FINE SAND W/ GRAVEL FRIABLE |
| 44" - 90" | TAN FINE SAND W/ COBBLES PLATEY |

| | |
|---|---|
| TEST PIT #: | TP 103G |
| DATE PERFORMED: | 4/02/12 |
| DEPTH OF TEST PIT: | 138" |
| SEEPAGE OBSERVED AT: | N/A |
| LEDGE OBSERVED AT: | N/A |
| ROOTS OBSERVED AT: | N/A |
| MOTTLING OBSERVED AT: | N/A |

## SOILS DESCRIPTION

| | |
|---|---|
| 0" - 6" | TOPSOIL |
| 6" - 53" | FILL MATERIAL |
| 53" - 138" | MED. SAND STRATIFIED W/ GRAVEL & COBBLES |

| | |
|---|---|
| TEST PIT #: | TP 104G |
| DATE PERFORMED: | 4/02/12 |
| DEPTH OF TEST PIT: | 96" |
| SEEPAGE OBSERVED AT: | N/A |
| LEDGE OBSERVED AT: | N/A |
| ROOTS OBSERVED AT: | 42" |
| MOTTLING OBSERVED AT: | N/A |

## SOILS DESCRIPTION

| | |
|---|---|
| 0" - 13" | TOPSOIL |
| 13" - 43" | RED/BR. FINE SANDY LOAM |
| 43" - 96" | TAN FINE/MED. SAND FRIABLE |

| | |
|---|---|
| TEST PIT #: | TP 105G |
| DATE PERFORMED: | 4/02/12 |
| DEPTH OF TEST PIT: | 103" |
| SEEPAGE OBSERVED AT: | N/A |
| LEDGE OBSERVED AT: | N/A |
| ROOTS OBSERVED AT: | 46" |
| MOTTLING OBSERVED AT: | 64" |

## SOILS DESCRIPTION

| | |
|---|---|
| 0" - 9" | TOPSOIL |
| 9" - 50" | LIGHT BR. FINE SANDY LOAM |
| 50" - 103" | ORANGE/GRAY FINE/MED. SAND |

| | |
|---|---|
| TEST PIT #: | TP 106G |
| DATE PERFORMED: | 4/02/12 |
| DEPTH OF TEST PIT: | 110" |
| SEEPAGE OBSERVED AT: | N/A |
| LEDGE OBSERVED AT: | N/A |
| ROOTS OBSERVED AT: | 43" |
| MOTTLING OBSERVED AT: | N/A |

## SOILS DESCRIPTION

| | |
|---|---|
| 0" - 3" | TOPSOIL |
| 3" - 21" | RED/BR. FINE SANDY LOAM, LOOSE |
| 21" - 46" | GRAY/TAN FINE SANDY LOAM |
| 46" - 110" | TAN FINE SAND W/SOME GRAVEL |

ANCHOR
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41 Sequin Drive
Glastonbury, CT 06033
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Fax: (860) 633-5971
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# SOIL PERCOLATION RATES

GOODWIN ELEMENTARY SCHOOL
321 HUNTING LODGE ROAD, MANSFIELD, CT

FIGURE B

| PROJECT | DATE |
|---|---|
| 486-05 | 4/13/12 |

## PERC TEST RESULTS

PERCOLATION TEST (PT 102G)
PERFORMED 04/02/12
TOTAL DEPTH = 48"
PRESOAK @ 10:29 AM & 1:15 PM
PERC TEST STARTED @1:54 PM
PRESOAK WATER COLUMN= 20"

| TIME | READING | RATE |
|---|---|---|
| 0 | 9.25 | - |
| 5 | 11.75 | 2.00 |
| 10 | 13.25 | 3.33 |
| 15 | 14.875 | 3.07 |
| 20 | 16.25 | 3.63 |
| 25 | 17.25 | 5.00 |
| 30 | 18.125 | 5.71 |
| 35 | 19.00 | 5.71 |
| 40 | 19.875 | 5.71 |

PERC RATE 5.1-10.0 MIN./IN.

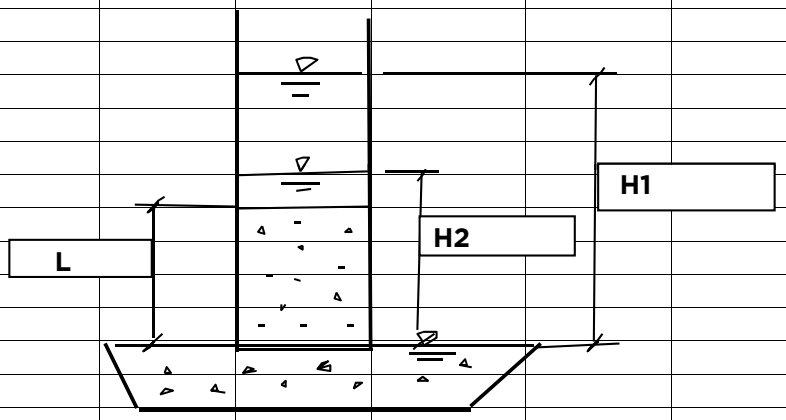
PERCOLATION TEST (PT 104G)
PERFORMED 04/02/12
TOTAL DEPTH = 55"
PRESOAK @ 12:10 PM & 1:18 PM
PERC TEST STARTED @1:56 PM
PRESOAK WATER COLUMN= 20"

| TIME | READING | RATE |
|---|---|---|
| 0 | 10.00 | - |
| 5 | 11.50 | 3.33 |
| 10 | 13.125 | 3.07 |
| 15 | 14.75 | 3.07 |
| 20 | 15.875 | 4.44 |
| 25 | 17.25 | 4.44 |
| 30 | 18.25 | 5.00 |
| 35 | 19.125 | 5.71 |
| 40 | 20.00 | 5.71 |
| 45 | 20.75 | 6.67 |

PERC RATE 5.1-10.0 MIN./IN.

# FALLING HEAD
# PERMEABILITY TEST

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **PROJECT:** | Goodwin Elementary School | | | **PROJECT #486-05** | | **BY:** | ECP |
| | Hunting Lodge Rd, Mansfield, CT | | | **DATE: 04/08/12** | | | |
| **TEST PIT #** | | **TP-101G** | | | | | |
| **SAMPLE DEPTH:** | | **38"** | | **SAMPLE LENGTH:** | | **6.00** | **in.** |
| **SAMPLE #1** | | | | | | | |




$$K = \frac{(H1 - H2) \times L}{t \times (H1 + H2)/2}$$

| Time (min.) | H1 (in.) | H2 (in.) | H1 - H2 | H1 + H2/2 | K (in/min.) | K (in/hr) |
|---|---|---|---|---|---|---|
| 0 | 9.50 | | | | | |
| 5.00 | 9.50 | 9.125 | 0.375 | 9.313 | 0.048 | 2.90 |
| 10.00 | 9.50 | 7.875 | 1.625 | 8.688 | 0.112 | 6.73 |
| 15.00 | 9.50 | 7.375 | 2.125 | 8.438 | 0.101 | 6.04 |
| 20.00 | 9.50 | 7.125 | 2.375 | 8.313 | 0.086 | 5.14 |
| 25.00 | 9.50 | 6.625 | 2.875 | 8.063 | 0.086 | 5.13 |
| | | | | | **Average=** | **5.19** |

30 Minute Pre-Soak

# Appendix C

# Septic Suitability Calculations

ANCHOR
ENGINEERING SERVICES, INC.
41 Sequin Drive
Glastonbury, CT 06033
Phone 860-633-8770
Fax 860-633-5971



# SSDS Design Calculations

Goodwin

Solve for: Sewage flow Estimate

Given:
- Town of Mansfield proposes a ~375 student Elementary School
- Table #4 of the CT Public Health Code
  - 8 gpd/pupil
  - Additional 3 gpd/pupil for kitchen
  - Additional 3 gpd/pupil for showers
- Showers are not typical for Elementary Schools therefore the 3 gpd/pupil will not be included
- A conservative calculation of 11 gpd/pupil shall be applied

Conclusion:

- 375 students × 11 gpd/pupil = **4,125 gal per day**

Proposed Daily Sewage Flow For The Proposed School shall be

**4,125 gal per day**

Prepared By: E.C.P.

Checked By: BJA

ANCHOR
ENGINEERING SERVICES, INC.
41 Sequin Drive
Glastonbury, CT 06033
Phone 860-633-8770
Fax 860-633-5971



SSDS Design Calculations

Solve For: Effective Leaching Area (ELA)

Given:
- Daily Design flow = 4,125 gpd (3,000 student + 1,125 Kitchen)
- Application Rate
  - Use application rate of 1.5 for base student flow (Table #8)
  - use application rate of 0.8 for Kitchen flow (Table #7)
  - Percolation Rate = 5.1 to 10.0 min./in.

Conclusion:

$$ELA = \frac{\text{Daily Design Flow}}{\text{Application Rate}}$$

$$= \frac{3000 \text{ gpd}}{1.5} + \frac{1,125 \text{ gpd}}{0.8}$$

$$= 2000 \text{ Sq ft} + 1,406.25 \text{ Sq ft}$$

$$= 3,406.25 \text{ Sq.Ft.}$$

Required Effective Leaching Area = **3,406.25 sq.ft**

Prepared By: E.C.P

Checked By: BOH

ANCHOR
ENGINEERING SERVICES, INC.
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Glastonbury, CT 06033
Phone 860-633-8770
Fax 860-633-5971



SSDS Design Calculations

Solve for: Minimum Leaching System Spread (MLSS)

Given: • Depth to restrictive layer = 64" in TP-105G

Conclusion:

• MLSS is not applicable on sites that have a receiving soil depth exceeding 60 inches.

Prepared By: E.C.P. Checked By: BM

ANCHOR ENGINEERING SERVICES, INC.
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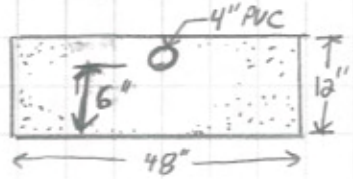
Fax 860-633-5971



SSDS Design

Solve for: Possible system size

Given:
- ELA = 3,406.25 SF
- MLSS = N/A
- Stone Leaching Trench 12" x 48"

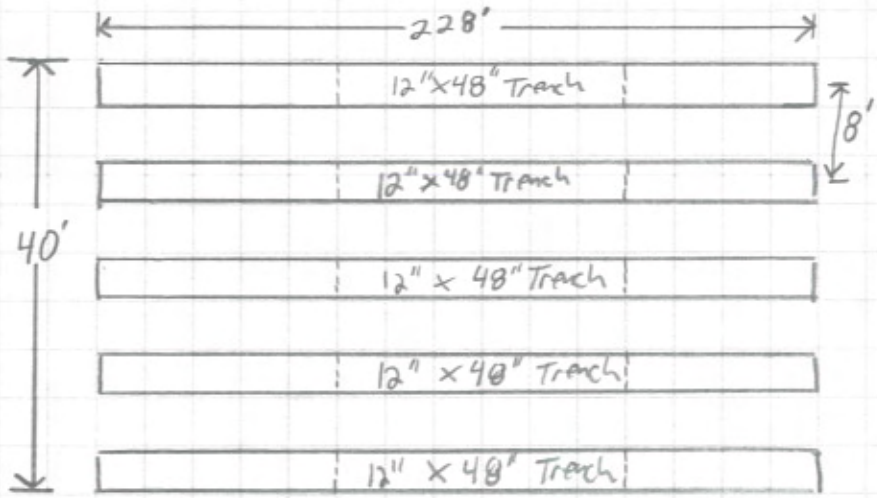



- Effective Leaching Area = 3.0 sf/LF (section VIII.B)
- Center to Center spacing = 8.0 ft (section VIII.B)

Conclusion:

- Length of trench = $\frac{ELA}{3.0\ sf/LF} = \frac{3406.25\ SF}{3.0\ sf/LF} = \boxed{1,135.5\ LF}$

- USE 5 rows at 228 LF Each of trench




Prepared By: E.C.P. Checked By: BJ