



*Eric Weinrieb
Altus Engineering*

Background

- 1980s Construction
- 86 beds
- 50 acres
- Berry's Brook watershed
- Aquifer



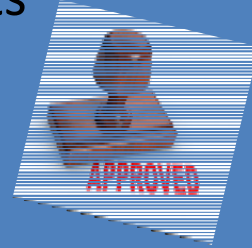
Required Permits

State

- NHDES Alteration of Terrain
- NHDES-SSB Construction Approval

Local

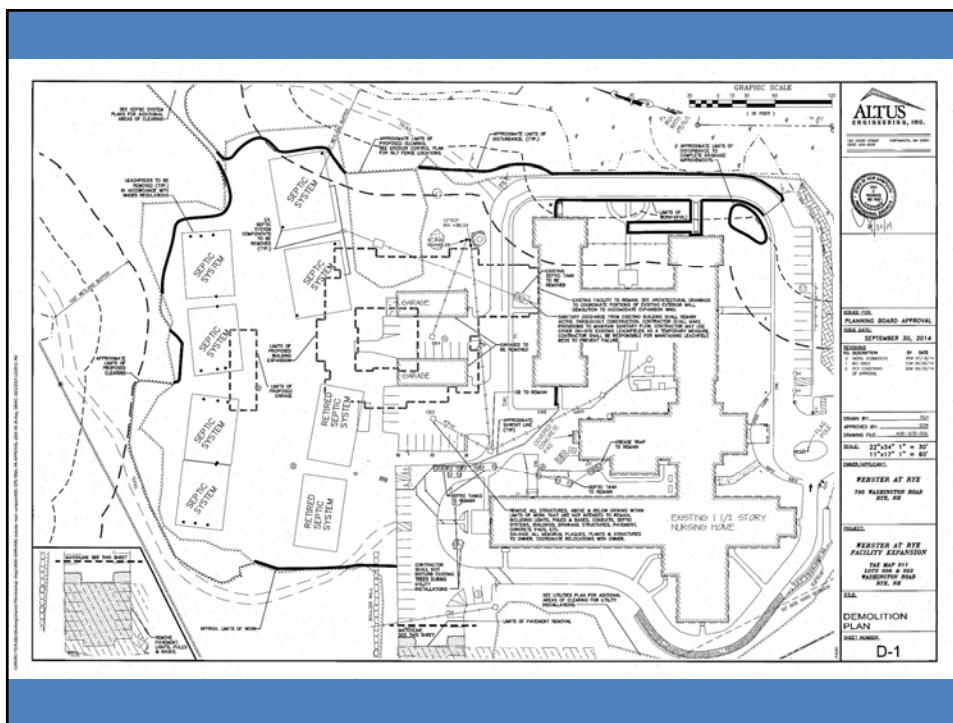
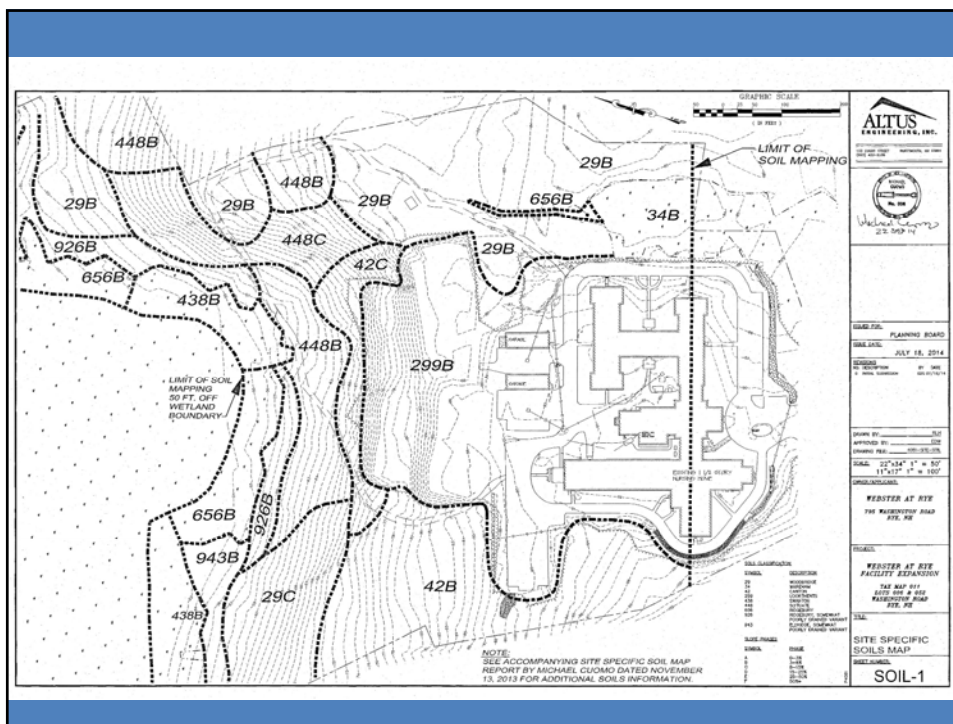
- Board of Adjustment - Special Exception for an Expansion of Use
- Board of Adjustment - Variance for work within the 100-foot town wetland buffer (6,150 SF)
- Planning Board - Site Plan Review



Septic Design challenges

- Multiple Failures
- Lint Clogs
- Aquifer Recharge Zone
- Abutters





More challenges...

- Water Supply
- Electricity
- Underground Propane Tank
- Existing Septic
- Lack of Stormwater Management Devices
- AoT Permitting
- Remain Operational



Open for Business



Good news

- Lot Loading Capacity
- Good soils
- Supportive Client
- Municipal Water Supply
- Qualified Design Team

EGA Architects
Woodburn & Co.
Michael Cuomo

- Superb Construction Team

BPS
Busby Construction
AOS and Pump Systems



Flow Data

Consistent water use – 70 GPD

Existing 86 beds (6,020 GPD)

Proposed 135 beds (9,450 GPD)

Peak factor 1.3

89 GPD per bed

12,000 GPD design flow

NHDES design flow 125 GPD/bed

16,875 GPD

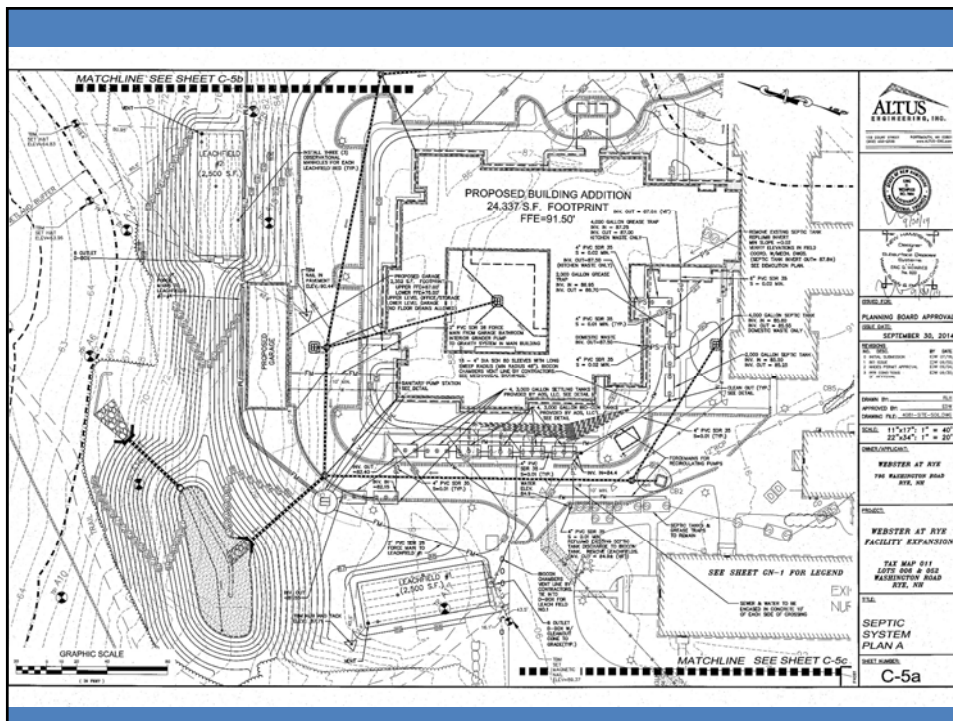
55 emp. @35 GPD/emp. – 1,925

18,800



ISDS

- 4 Bed Design
 - 3,000 GPD per bed design flow
 - 2,363 GPD per bed real flow
- 6 min/inch perc – 18,600 SF
- Provided 4-2,500SF beds – 10,000 SF
- 0.54 reduction





KITCHEN FLOW

Grease

- Kitchens
- Tanks

New Flow (49 beds)

- 50% from kitchen

Hydraulic retention time

- NHDES 36 hours
- Webster 48 hour



Domestic flow

Existing 5,000 and 3,000 gallon tank in series to remain for existing 86 beds

Expansion 49 beds

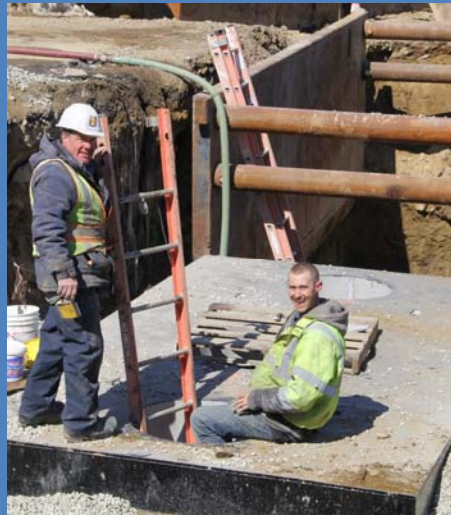
89 gpd/bed

4,361 gpd

DES tank sizing -

5,052 gallons required

Provided 6,000 and 3,000 septic tanks series



AOS SYSTEM

- 4-3,000 gallon bio-con tanks
- 4-3,000 gallon settling tanks
- Recirculation lines provided with heat tape to prevent condensation freezing





PUMP CHAMBER

- Quadraplex pump chamber
- Controller in the building
- Autodialer allows remote monitoring of system
- Pump systems provided the controller and hardware
- Run 30 days on 2 beds cycling on a dosage of 750 gallons
- Allowing to beds to rest fully for 30-days
- 30-day rest period allows bed to fully recover from use
- 6.3 doses per day per field
- 0.5"/SF per dose per field



Testing



PRE-DESIGN TESTING

| | SYSTEM 1 | SYSTEM 2 |
|-------|----------|----------|
| BOD | 240 | 150 |
| TSS | 250 | 34 |
| COD | 280 | 370 |
| Ph | 7.2 | 7.1 |
| O & G | 77* | 56** |

* AFTER 1ST TANK (6,000 GAL)

** AFTER 2ND TANK (6,000 GAL)

POST CONSTRUCTION TESTING

| | S.T. EFF. | AT PC |
|--------------------|-----------|-----------|
| TSS | 53 | <5 |
| NITRATE.NITRITE-N | <0.5 | 14 |
| AMMONIA | 18 | 0.13 |
| TKN | 25 | 1.7 |
| TOTAL NITROGEN | 25 | 15.7 |
| TOTAL PHOSPHORUS-P | 4.9 | 3.7 |
| BOD | 270 | <6 |
| COD | 470 | 41 |
| Ph | 6.6 | 7.8 |
| fecal Coliform | 57.1 | 20,980ppm |
| O & G | 30 | <5 |

Special thanks to Webster
at Rye and Tom Argue



Questions

